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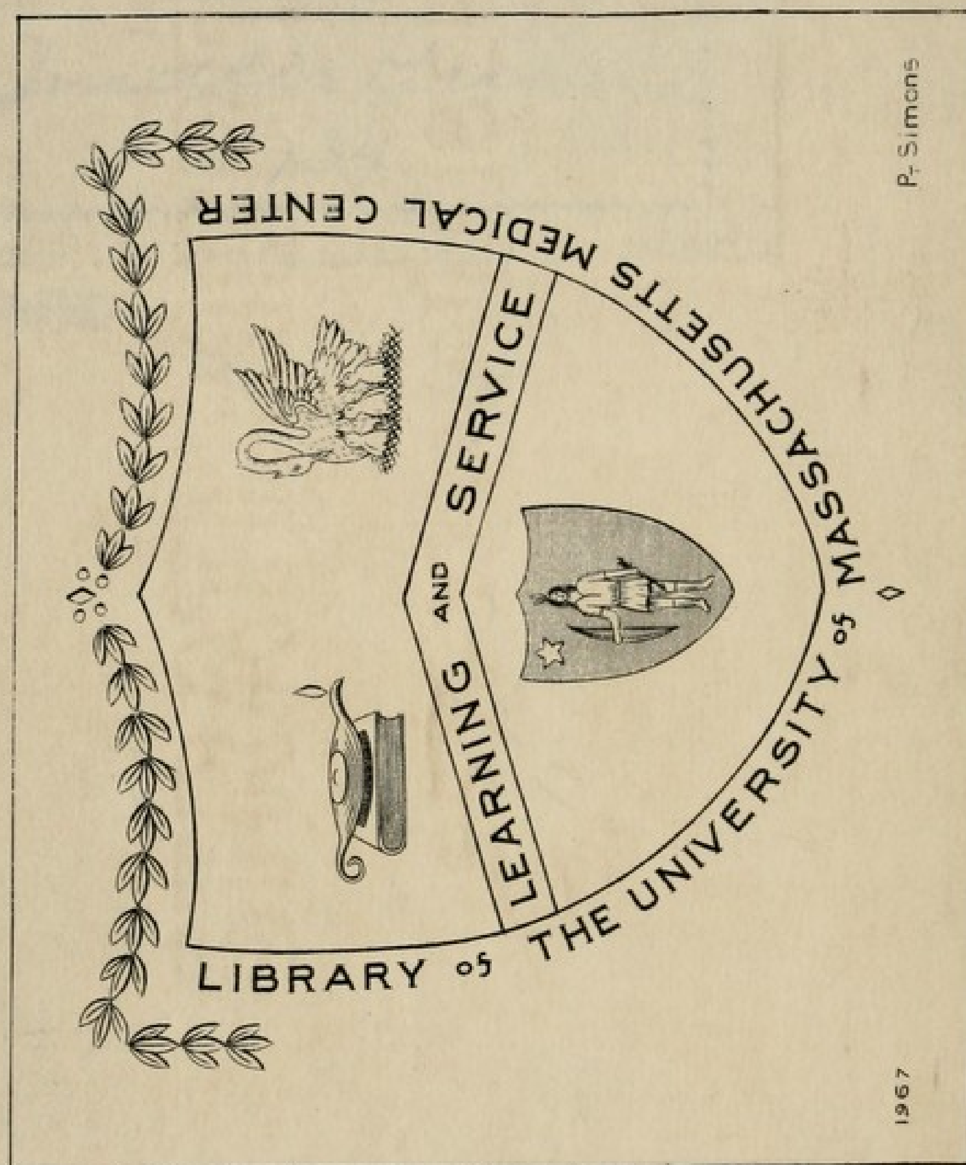

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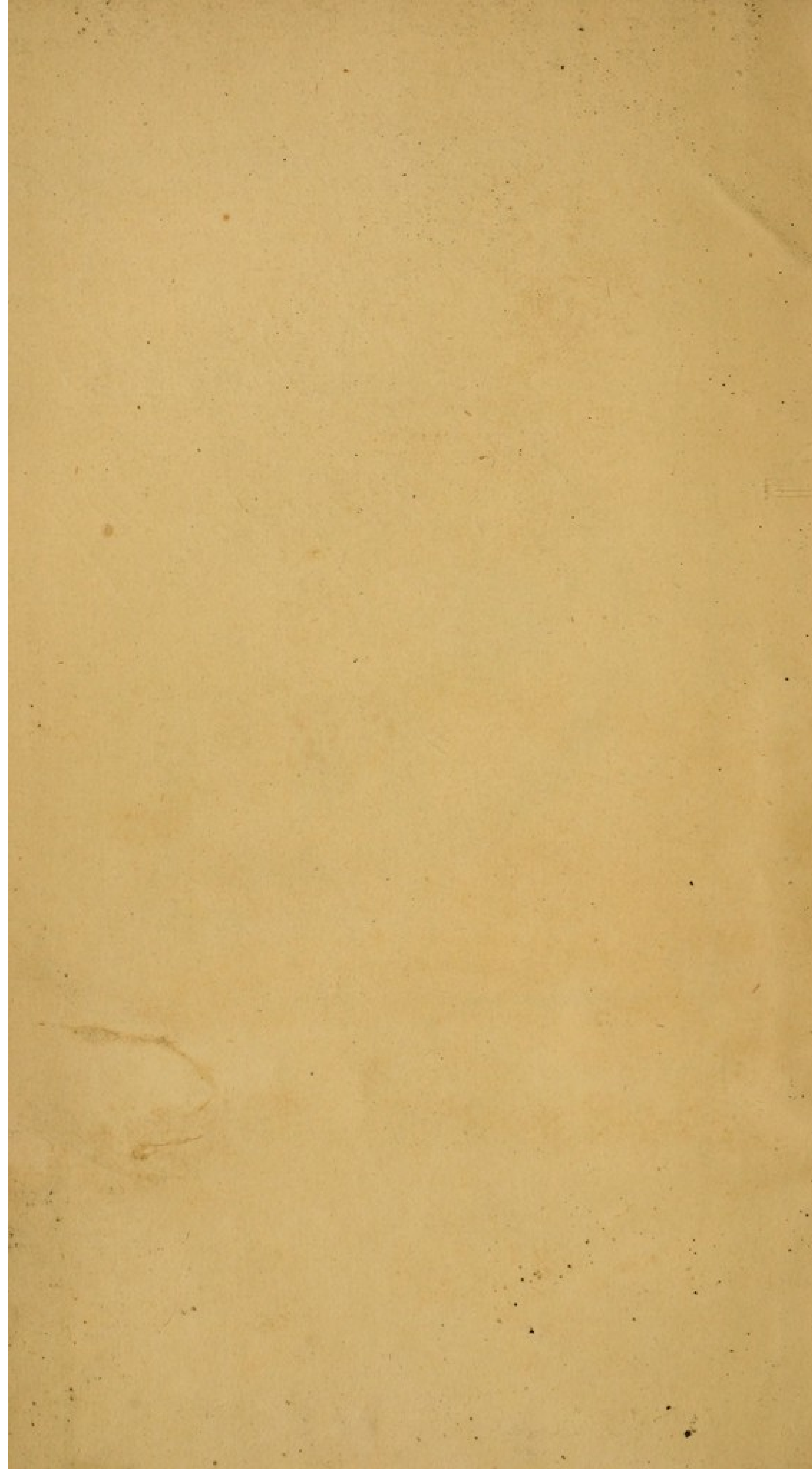

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OBSERVATIONS

ON

OBSTETRIC AUSCULTATION,

WITH

AN ANALYSIS

OF THE

EVIDENCES OF PREGNANCY,

AND

AN INQUIRY INTO THE PROOFS OF THE LIFE AND DEATH OF THE FŒTUS IN UTERO.

By EVORY KENNEDY, M.D.,

Licentiate of the King and Queen's College of Physicians in Ireland, Lecturer on Midwifery, and the Diseases of Women and Children, at the Richmond Hospital School, and late Assistant to the Dublin Lying-in Hospital.

WITH AN APPENDIX CONTAINING LEGAL NOTES,

By JOHN SMITH, Esq.,

BARRISTER AT LAW.

WITH NOTES AND ADDITIONAL ILLUSTRATIONS,

By ISAAC E. TAYLOR, M.D.

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CONTENTS.

	Page
Dedication	vii
Editor's Preface	9
Dedication	11
Evidences of Pregnancy	1
Divided, first, into those ascertained through the representation of the individual supposed pregnant	5
Rigor coitûs and general excitement	8
Pelvic and lumbar pains	9
Morning Sickness, &c.	9
Menstrual suppression	10
Sympathetic mammary pains	20
Cerebral sympathies, vitiated tastes, cramps, &c.	21
Alvine and urinary excretions	22
Quickening	23
Divided, secondly, into those sensible to the medical attendant	30
Tangible Evidences	31
Those ascertained *per vaginam*, as the state of the hymen	31
Changes in the os uteri (Levret's test)	35
Development of the neck	36
Tilting up of the fœtus (*abattement*)	43
Those ascertained through the abdomen, abdominal enlargement	45
Percussion	49
Active motions af the fœtus	52
Passive motions (*ballottement*)	54
Visible Evidences	58
Mammary development, formation of areola, &c., and secretion of milk	58
Emerging of umbilicus, abdominal fissures	64
Countenance, discoloured skin, spots, jaundice, &c.	64
Swelled limbs, varicose veins, &c.	65
M. Nauche's urinary test	66
Audible Evidences	71
Auscultation, mediate and immediate	73
Wrisberg's test	75
Placental souffle	78

Page
How produced 78
Dr. Haus's views 84
Laennec's and Corrigan's explanation of *bruit de soufflet* . 87
Possible sources of deception in exploring for a placental souffle 88
Practical benefits derived from the placental souffle . . 94
Fœtal heart 103
Extent of its pulsation, on what depending . . . 104
Its frequency and varieties 107
Remarkable connexion between vascular system of mother and fœtus 108
Situation of fœtal heart 115
Period of its detection 118
Its utility as an evidence of pregnancy 127
Difficulties attending its detection 131
Funic pulsation and souffle 137
Compound Pregnancy 147
Popular signs of twins 147
Signs afforded by auscultation 149
Utility of auscultation where a doubt exists of a second child remaining in the uterus 152
Singular case in which a child was heard to breathe and cry in the womb 159
Complicated Pregnancy 161
Pregnancy complicated by the co-existence of an inordinate secretion of liquor amnii 161
of air and hydatids in the uterus 164
of structural disease of the uterus 165
of abdominal and pelvic tumours, tympanites, and ascites 166
Pseudo-Pregnancy 176
Actual pseudo-pregnancy depending on extra-uterine organic alteration or disease, as ascites 178
tympanites abdominalis 181
visceral enlargement, ovarian development, &c. . . 184
Depending on functional changes of the uterus, as retention of menses 187
menorrhagia, dysmenorrhea, &c. 192
Depending on structural disease of the uterus . . . 193
Upon intra-uterine growths, as moles 196

Page
hydatids, hydrometa, and tympanites uterinus 198
Nervous or Ideal Pseudo-Pregnancy 202
Premeditated or simulated Pseudo-Pregnancy 206
Motives for having recourse to this deceit 207
Joanna Southcott's case 210
As a plea in bar of execution in criminal cases . . . 211
Case of Margaret Mackessy, tried at Limerick, March, 1831 212
Anomalies of our law as regards quickening in these cases . 214
Case of Catherine Smith, tried at Carlow, January, 1830 . 215
Objections to the present jury of matrons system . . 218
Case of Mary Wright, and Norwich jury of matrons . . 220
Pseudo-pregnancy resorted to for the purpose of imposition in civil cases 223
Writ *de ventre inspiciendo* 224
Inquiry into the Proofs of the Life and Death of the Fœtus in Utero 225
Causes of child's death 226
Importance of ascertaining whether the child be alive during pregnancy 227
Maternal evidences of its death; general health . . 230
State of the breasts 231
Flaccidity, with sense of falling and coldness in abdomen . 232
Fœtal evidences; child's motion 233
Evidences afforded by auscultation; fœtal heart . . . 237
Placental souffle 241
Cases by Dr. Wm. Stokes, M. Kergaradec, Dr. Brèheret, and M. De Lens 247
Importance of ascertaining whether the child be alive or dead during labour 249
Causes of child's death in labour 252
Merat's experiments 253
Popular signs of child's death in labour; falling of abdomen, and absence of child's motion 255
Fœtid discharge 256
Discharge of meconium 258
State of the head in dead fœtus 258
State of the arm; abrasion of cuticle, &c. &c. . . . 261
Want of contraction of sphincter, and action of jaws . . 262
Absence of pulsation in funis 262

Page

Importance of ascertaining the life or death of the child *in labour* 264
Utility of auscultation in this respect 265
Position in which fœtal heart is perceptible in different stages of labour, in natural presentation 266
In presentation of the arm, breech, foot, &c. . . . 267
Difficulties attending exploring in cases of labour, from uterine action; distention of bladder 270
Extension of the maternal heart's action and aorta; irregularity of fœtal heart's action; muscular irritation . . 271
Cases illustrative of benefits of auscultation in pronouncing on the vitality of the child 272
Application of the stethoscope to detect the heart's action in still-born children 280

APPENDIX.

LEGAL NOTES.

Offences against the fœtus in utero considered with reference to the supposed importance (in point of law) of ascertaining the period of quickening. Note [A] 285
The plea of pregnancy in stay of execution considered in the same point of view. Note [*a*] 293
The writ *de ventre inspiciendo* considered in the same point of view. Note [B] 301

TO

FRANCIS E. BERGER, M.D.,

&c. &c. &c.

My Dear Sir,

There is no one whose name I can with so much pleasure, and propriety, prefix to the following pages as your own. Permit me, then, in testimony of your public worth, and private virtues, the high esteem in which your character is held, and my grateful remembrance of a series of kindnesses bestowed, which can never be repaid nor forgotten, to inscribe them to you.

Yours, most truly,

Isaac E. Taylor.

New-York, *April* 11, 1843.

EDITOR'S PREFACE.

As the Profession in this country have not through the numerous republications been presented with any work on Obstetric Auscultation, the Editor has been induced to enter upon the present undertaking with the hope of providing for the obstetric student, that which he regarded as a desideratum in the profession—especially as only short notices have been given on this subject, in the late English publications, that have been republished in this country.

Since the publication of the author's work, much valuable information has been elicited, and the editor has endeavoured to adduce all that relates to this point up to the present period, together with the results of his own experience. He has also ventured to draw comparisons between pregnant and non-pregnant females—primiparæ, and those who have borne children, which may possibly be acceptable to the younger members of the profession, and to those whose minds have not yet been directed to this subject. He has also enlarged more fully on other late signs of pregnancy, which have received but a passing notice from the author.

Should he be chargeable with deficiencies, notwithstanding his earnest solicitude to supply all that is essential to the subject—his short-comings will he hopes meet with indulgence. He trusts nevertheless that the object which he has felt anxious to accomplish, may tend to a wide diffusion and more correct opinions, than have hitherto prevailed in the profession, and that society may reap advantage from his labours.

TO

JOSEPH CLARKE, Esq. M.D.,

HONORARY FELLOW OF THE COLLEGE OF PHYSICIANS, SENIOR VICE-PRESIDENT OF THE ROYAL IRISH ACADEMY, ETC.

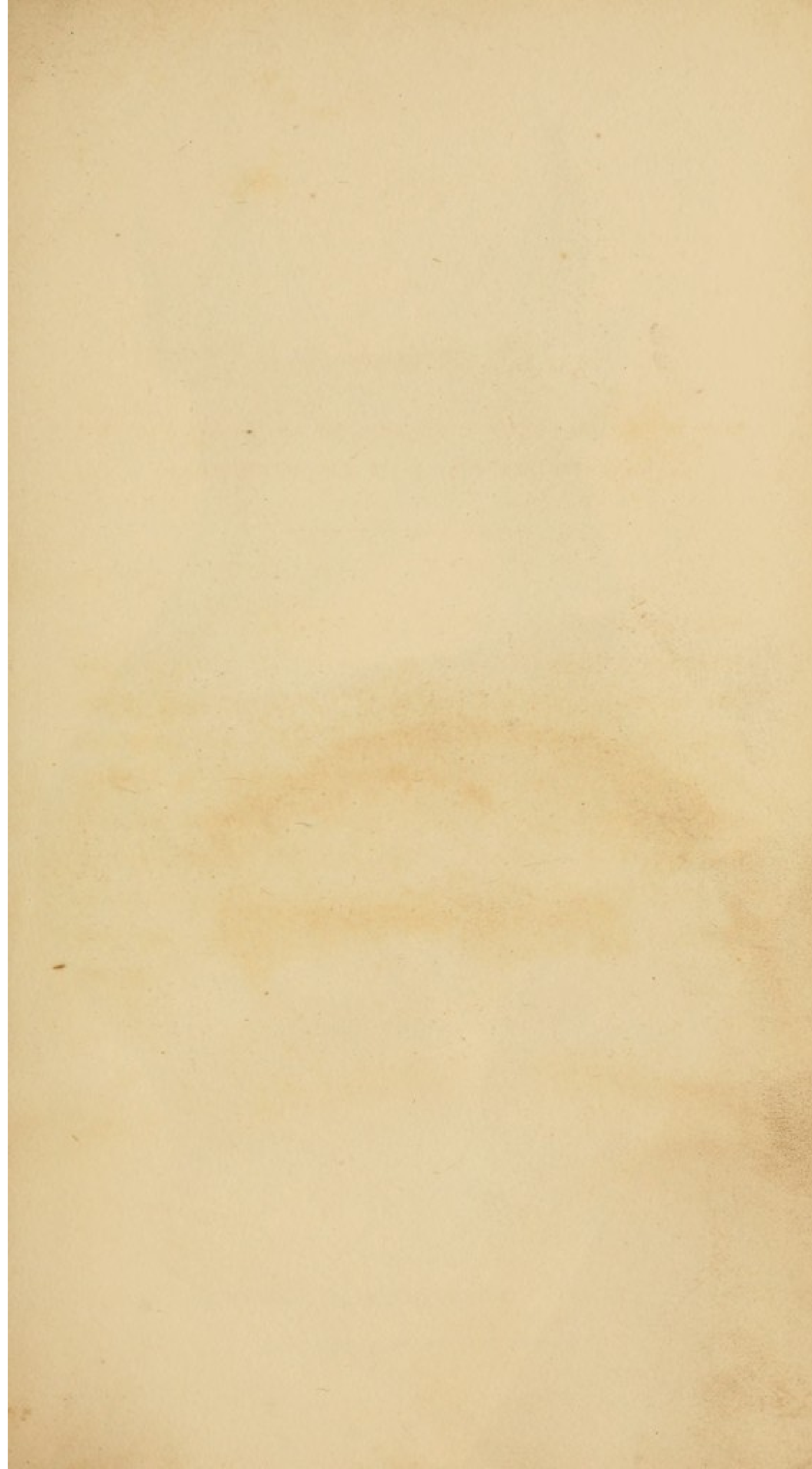
Sir,

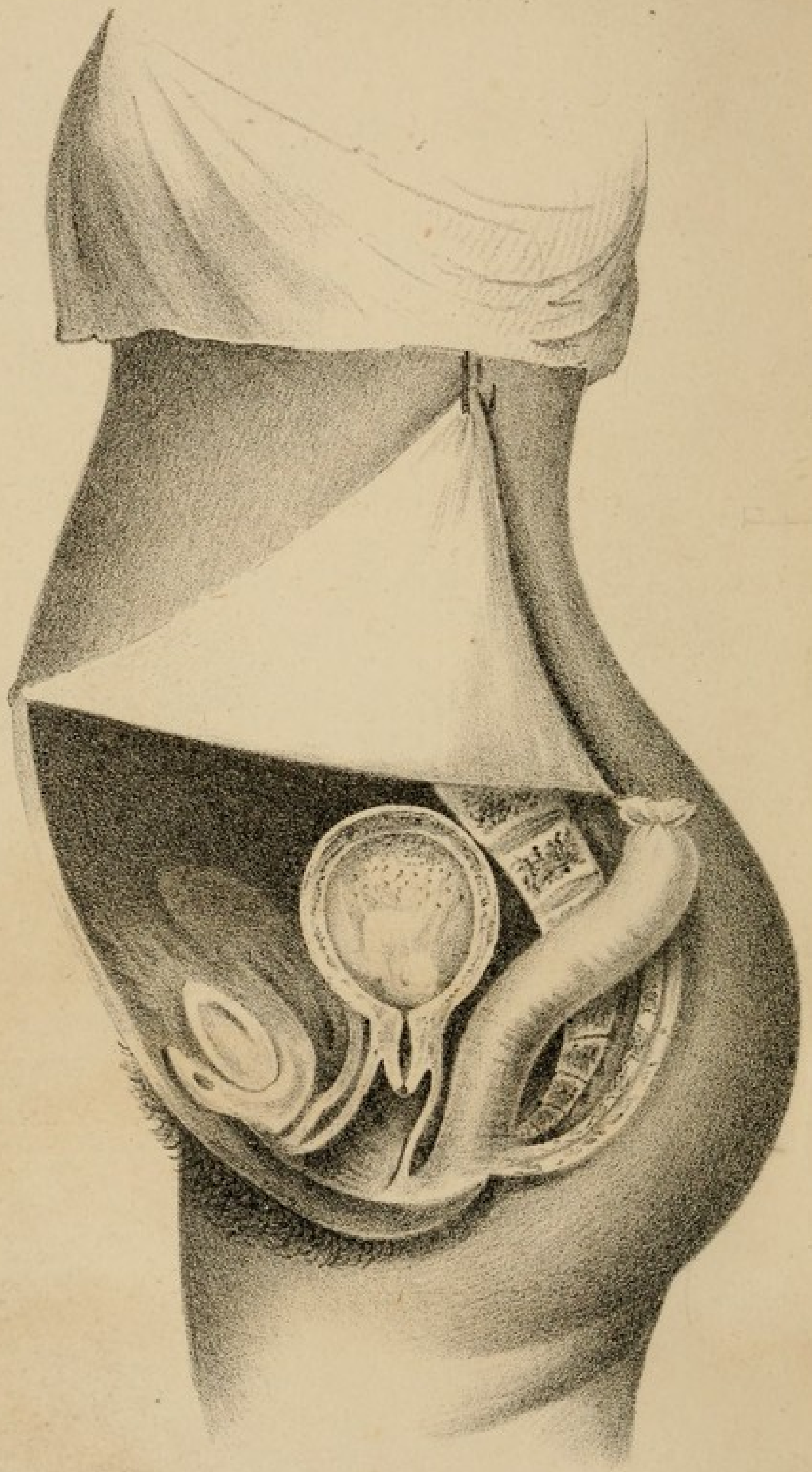
Admiration of those talents which have enabled you to confer such benefits upon society, throughout a professional career of extraordinary duration and celebrity, veneration for active philanthropy, and strong feelings of personal regard, induce me to dedicate to you the following Treatise. The importance which you attached to the subject was influential in directing my attention to its investigation. Anxiously hoping that you may not consider as valueless the results of that investigation,

I have the honour to remain,

Your faithful and obedient servant,

Evory Kennedy.





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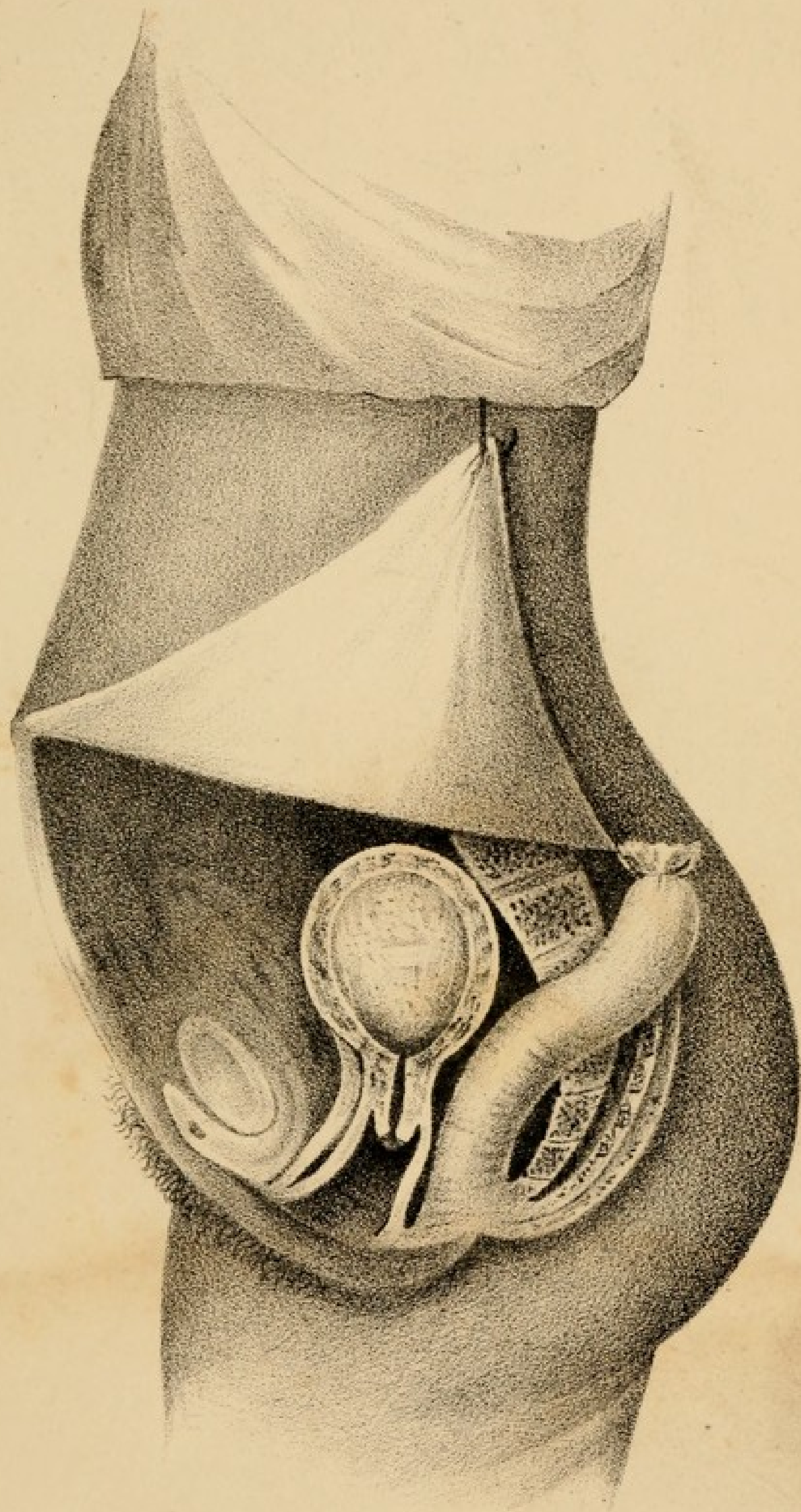

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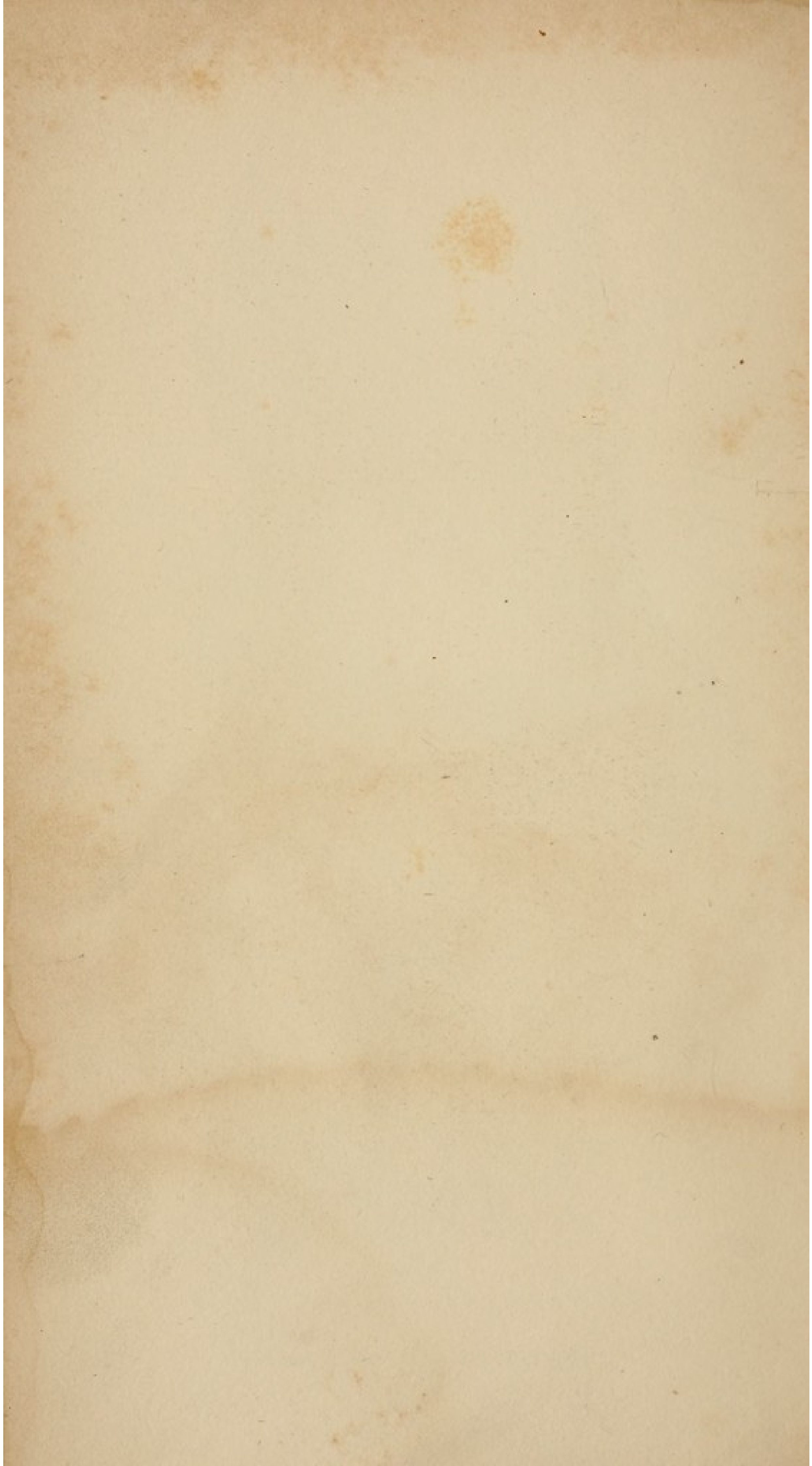

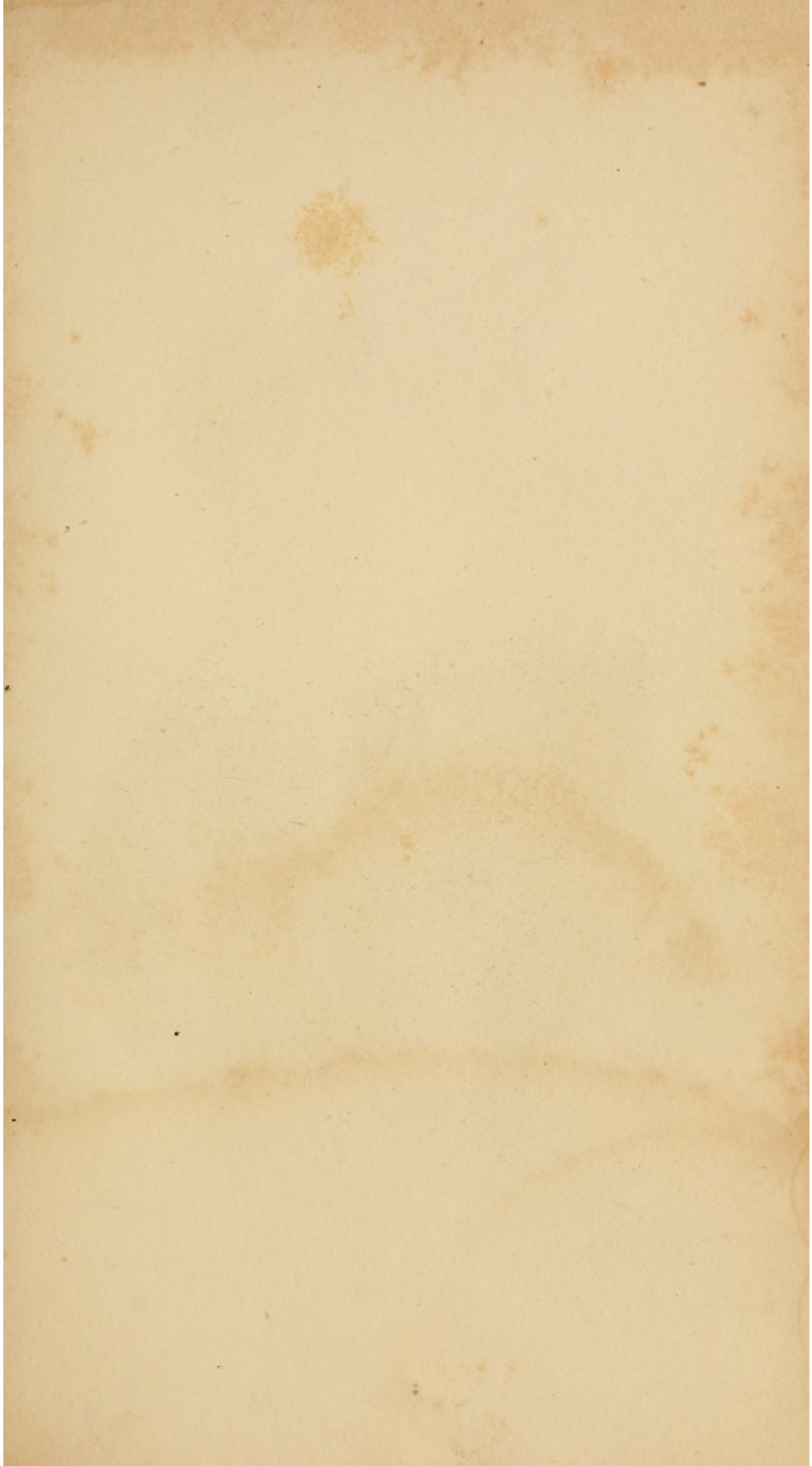

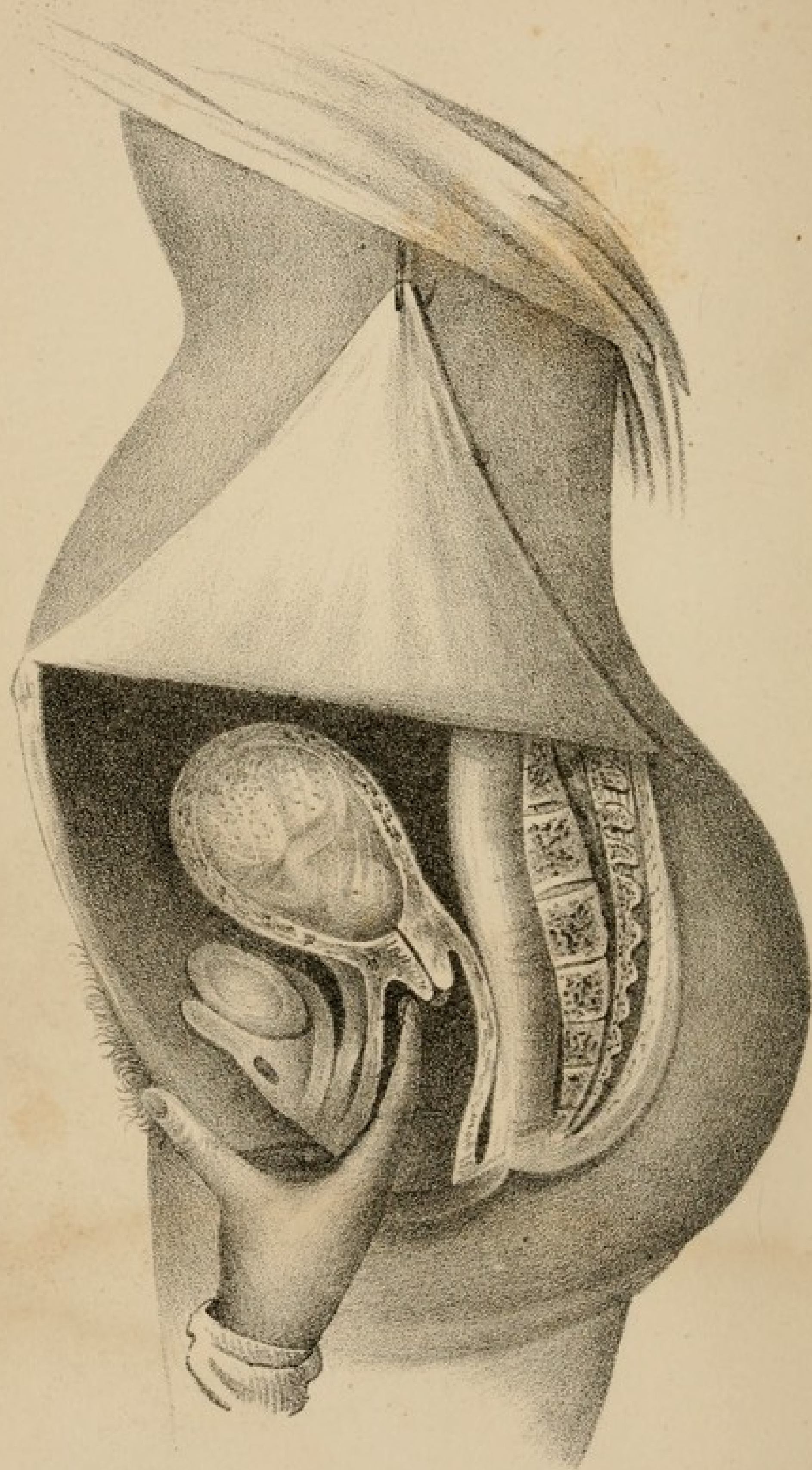

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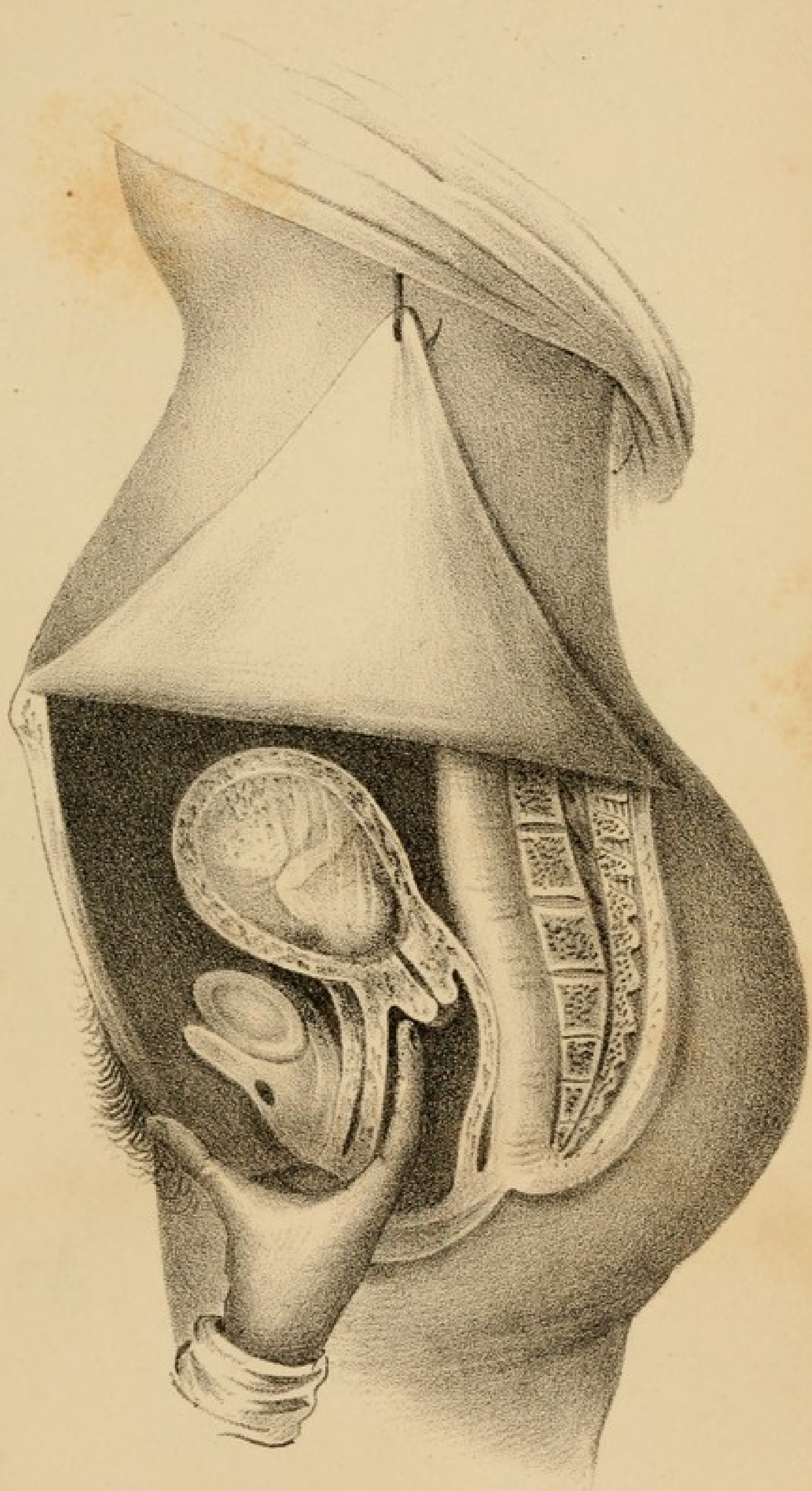

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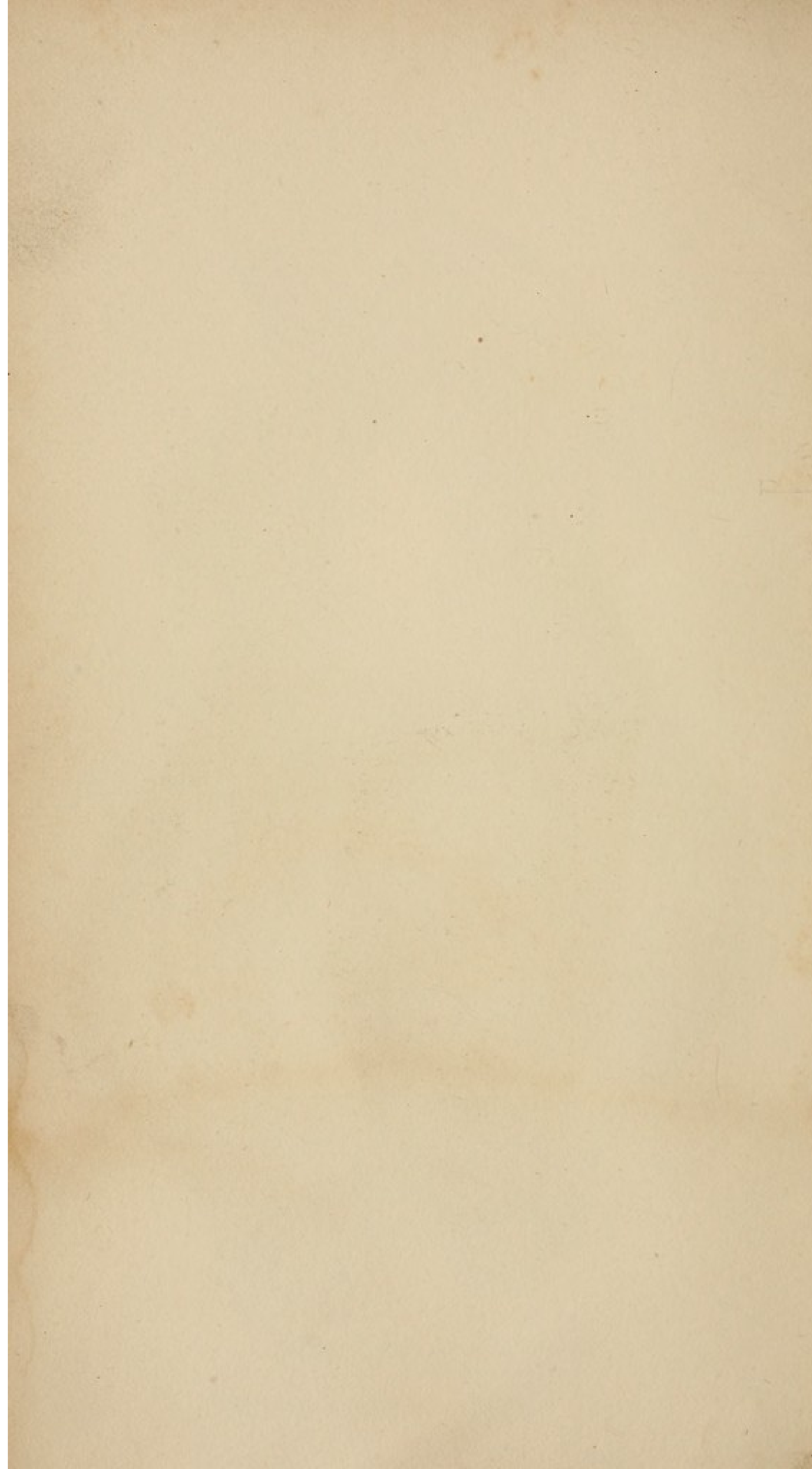

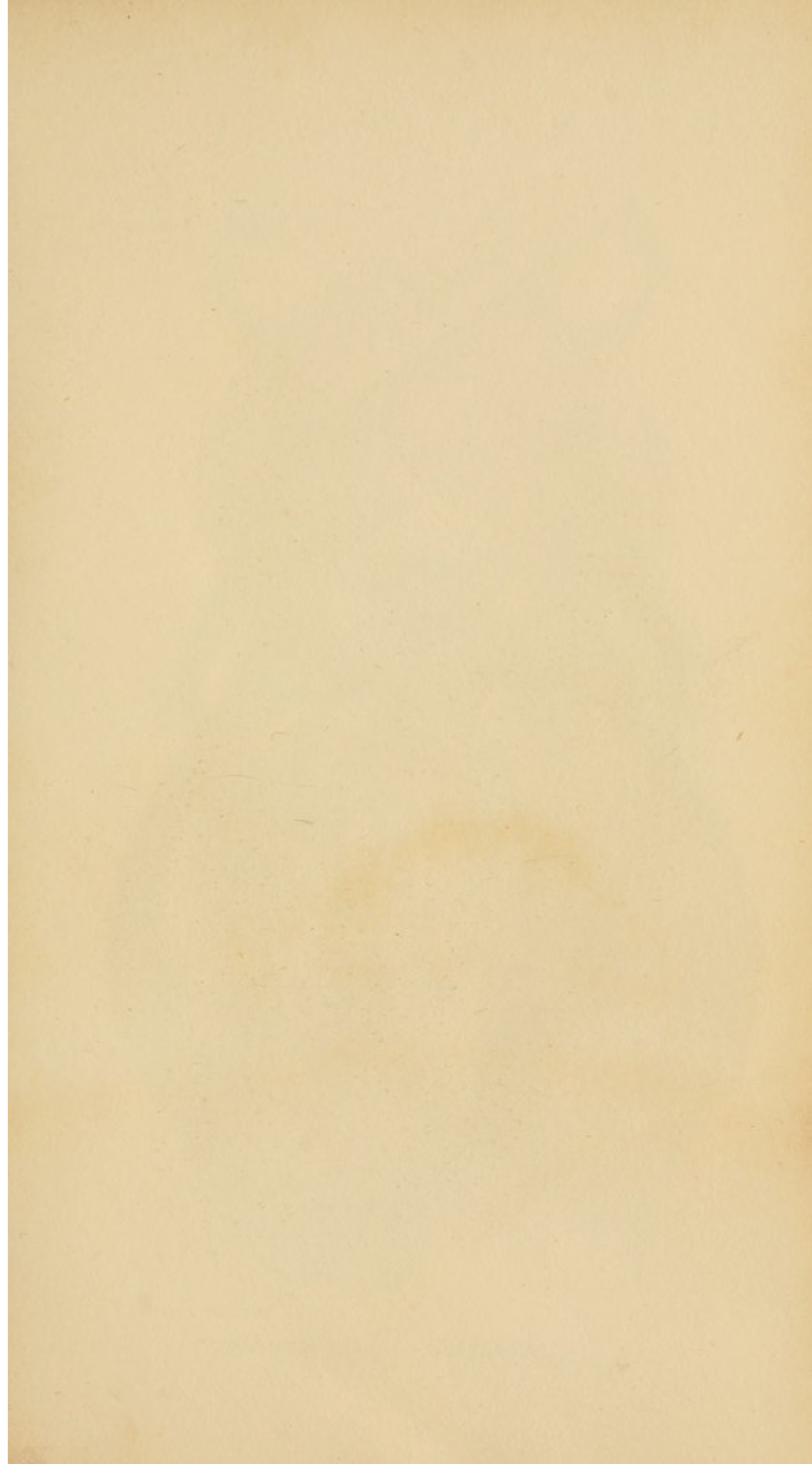

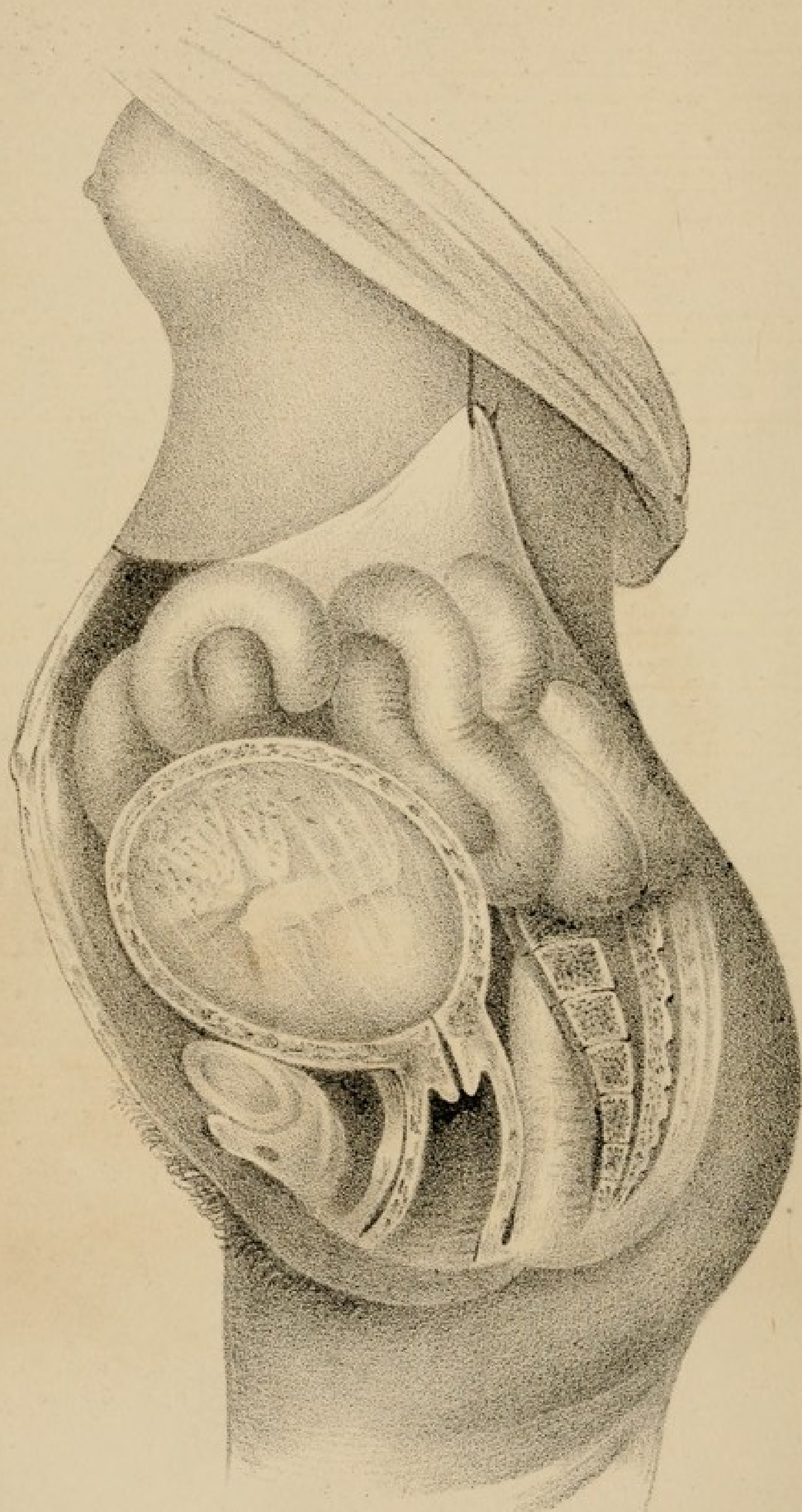

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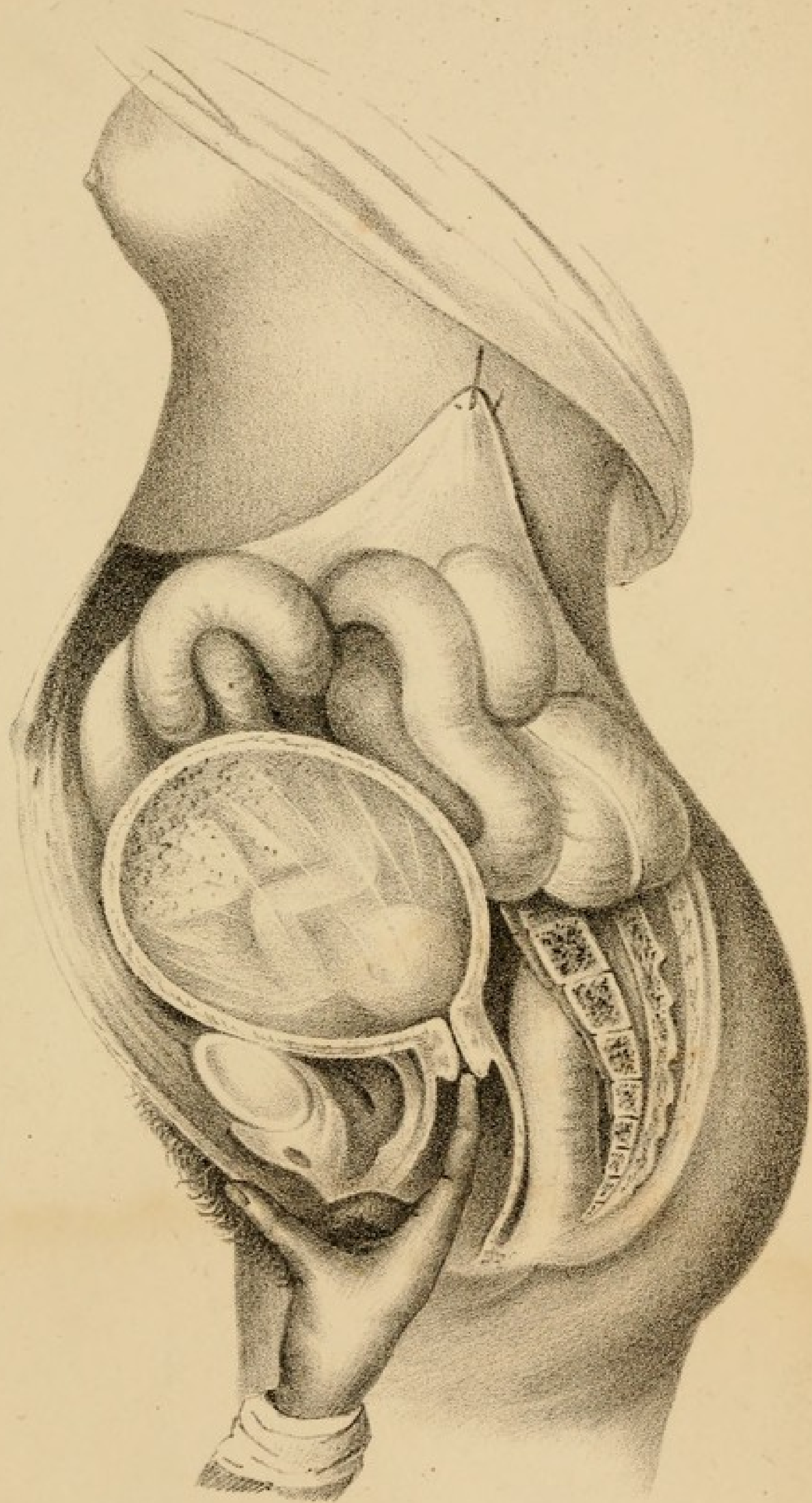

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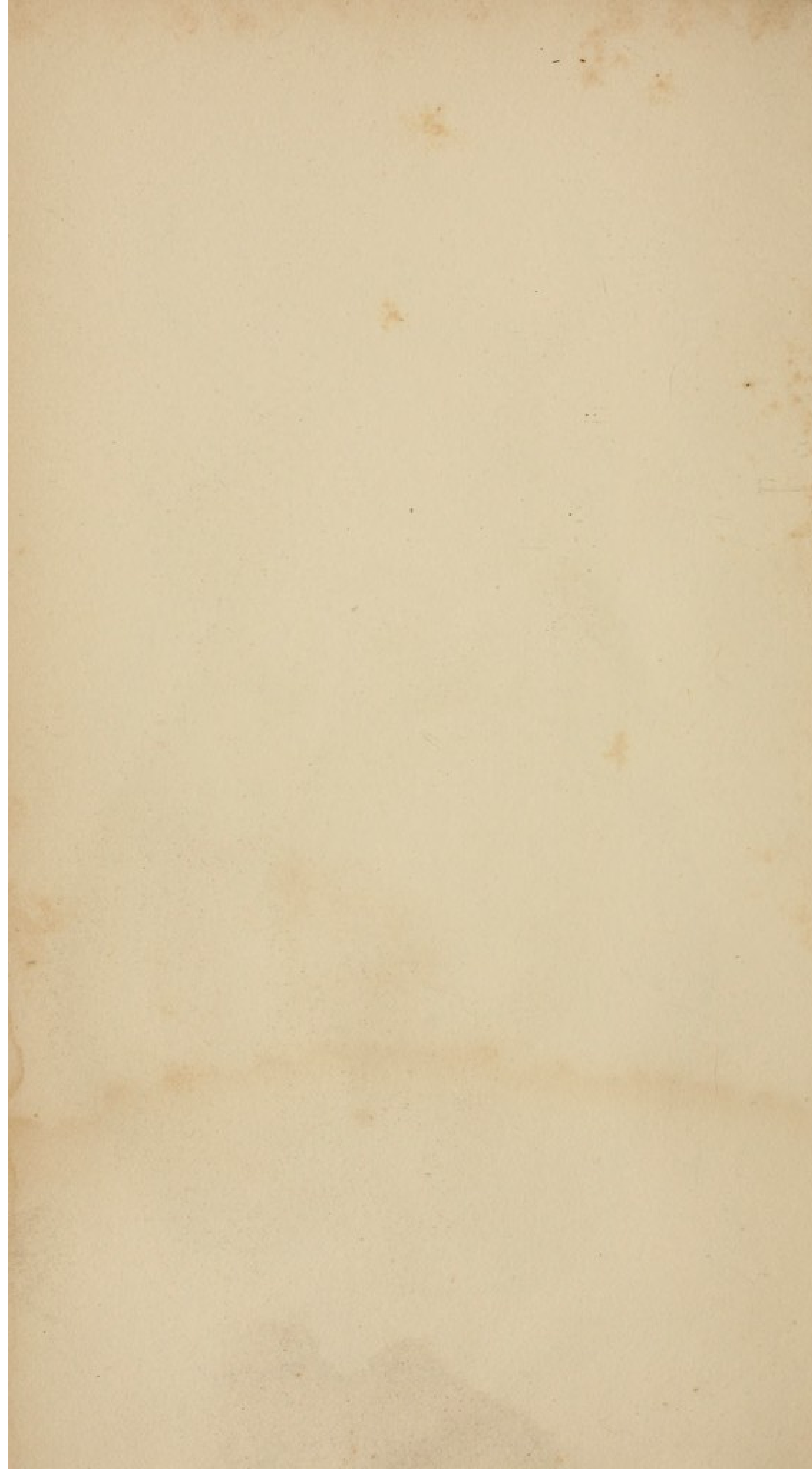

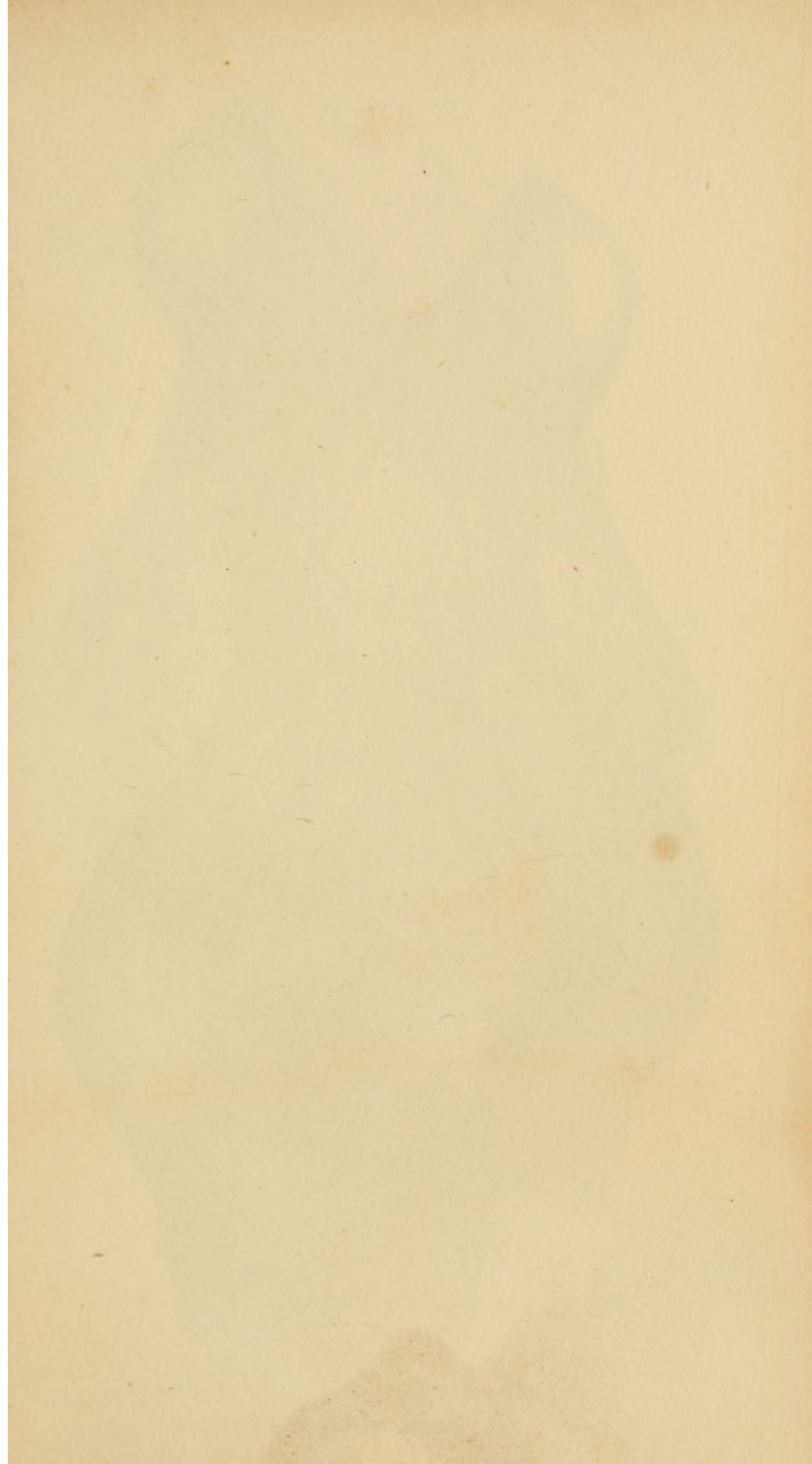

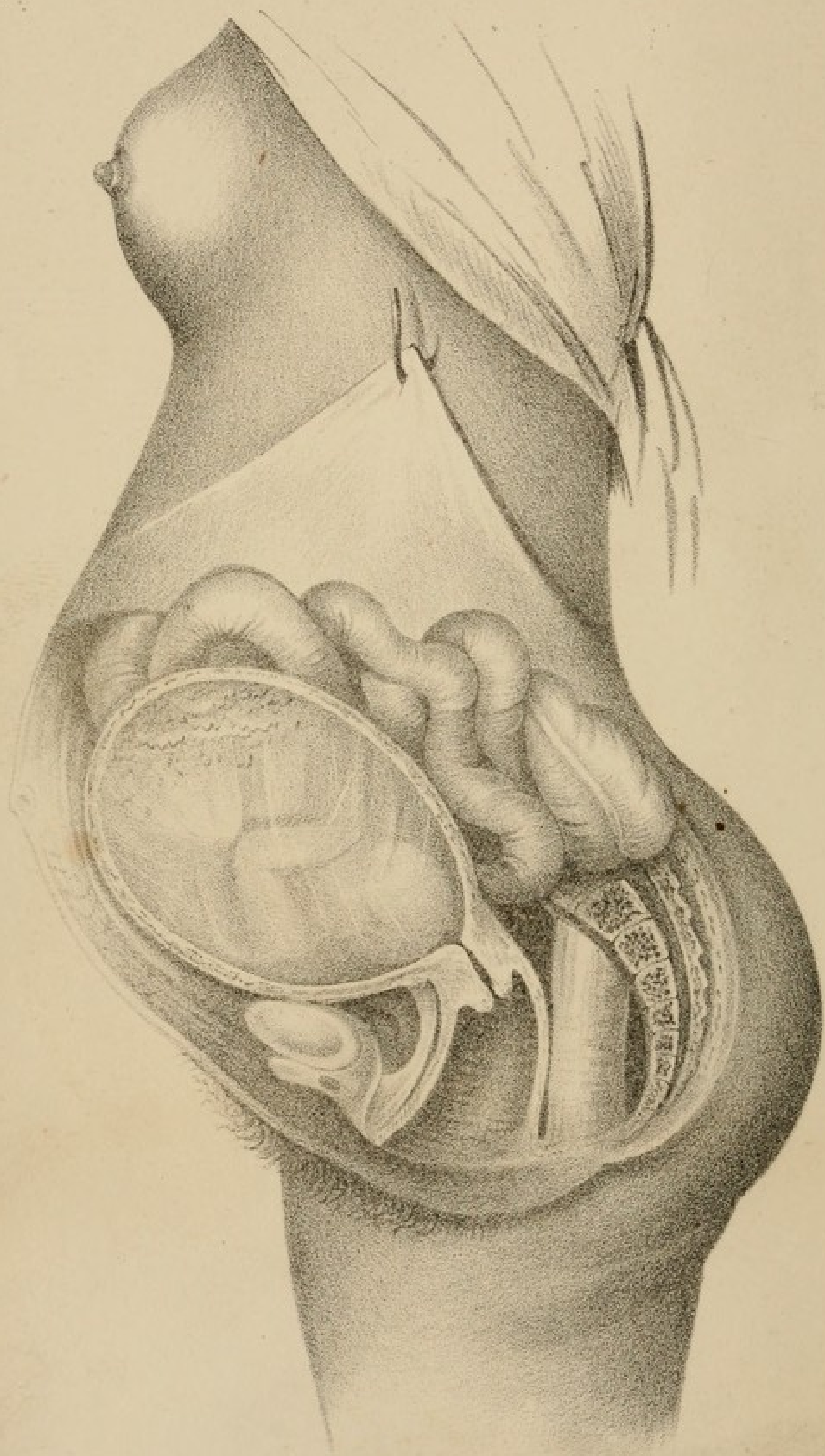

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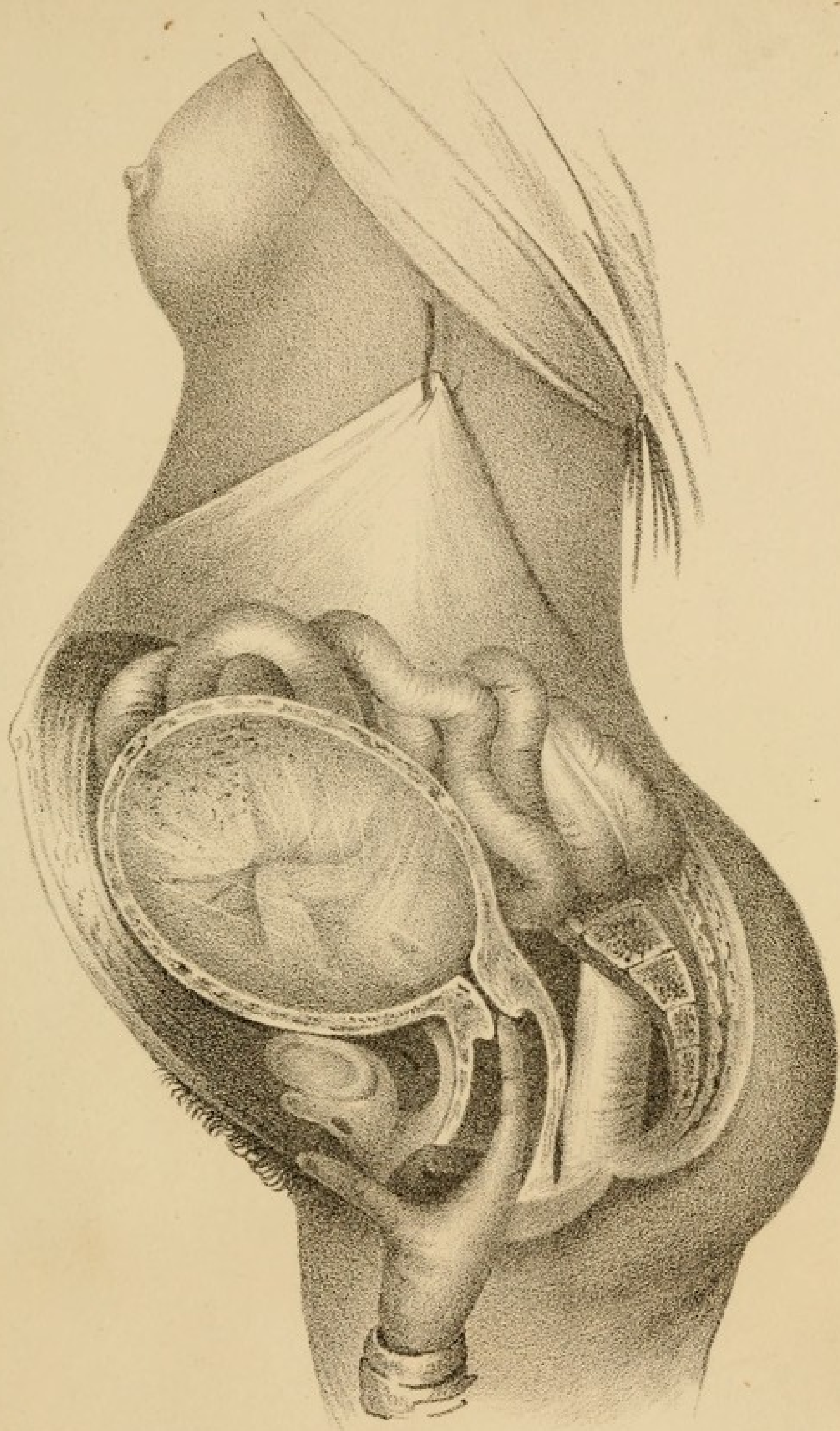

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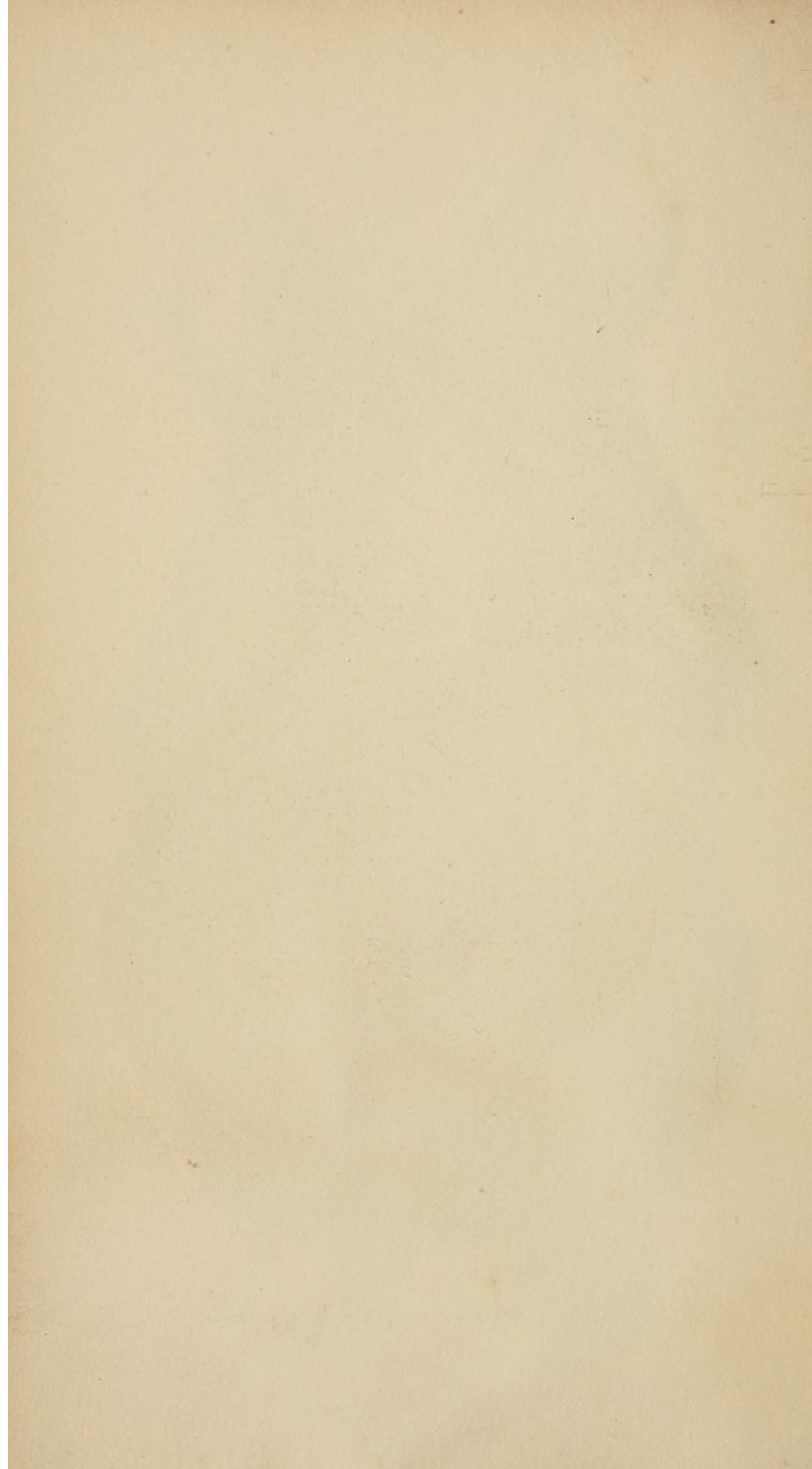

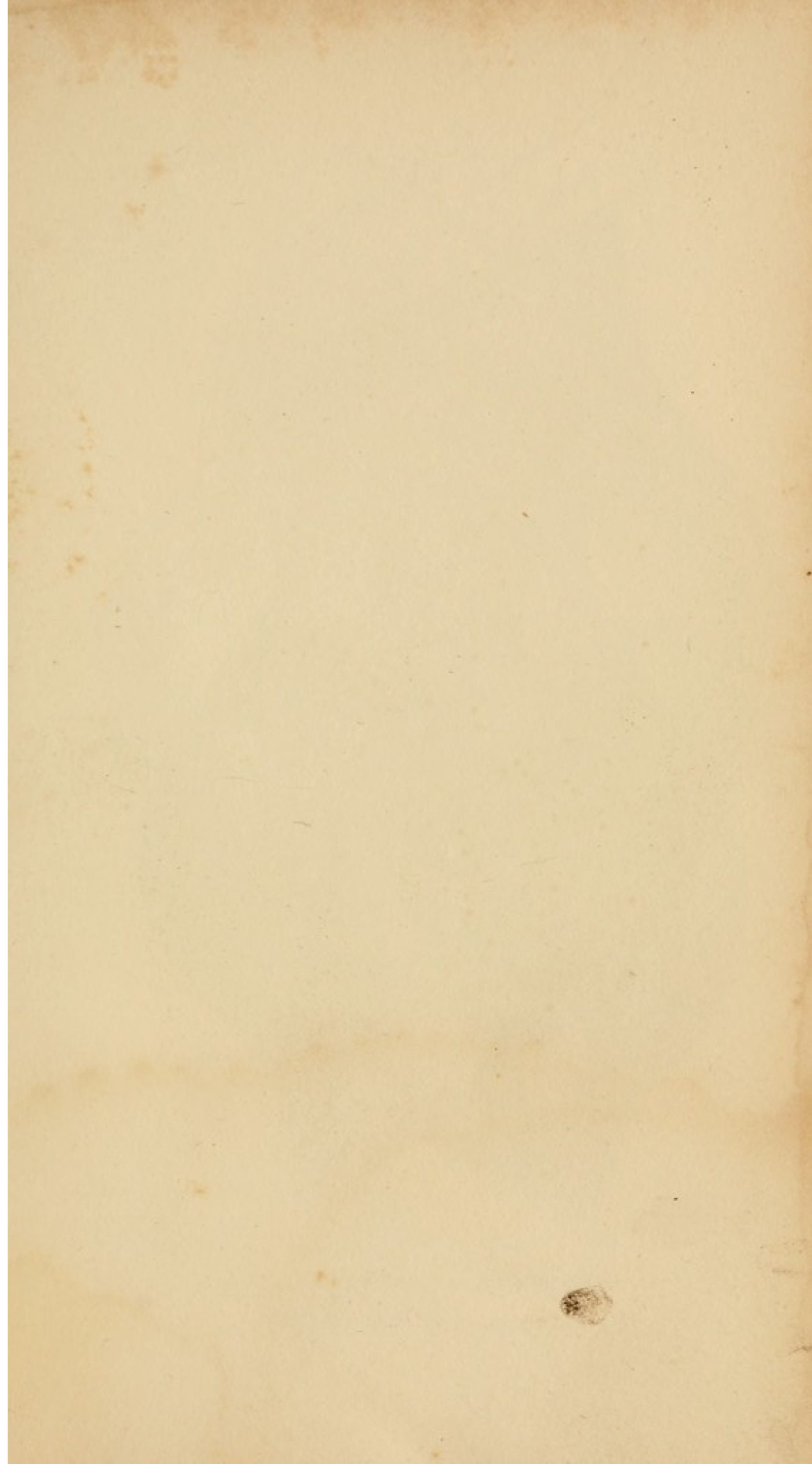

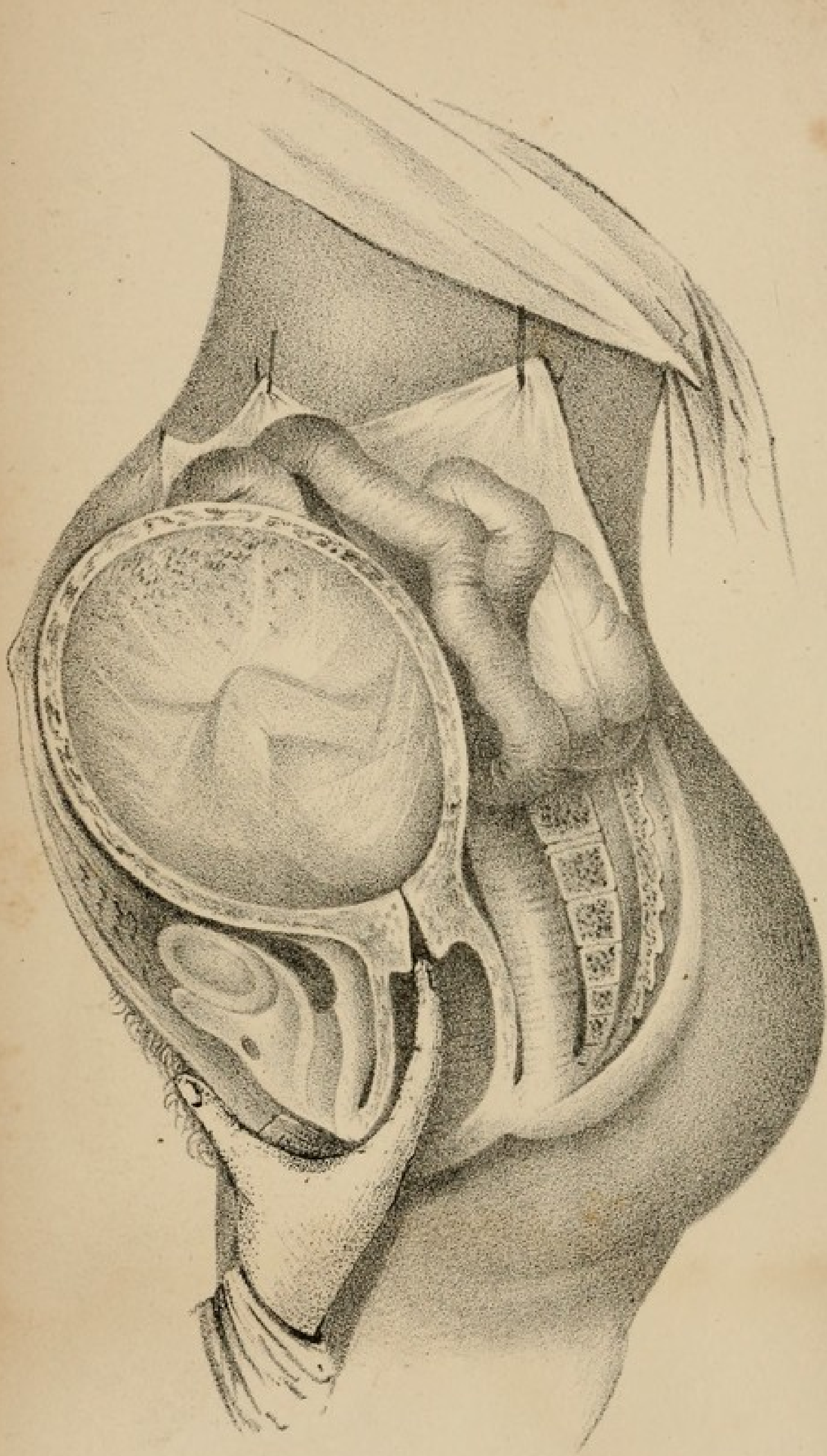

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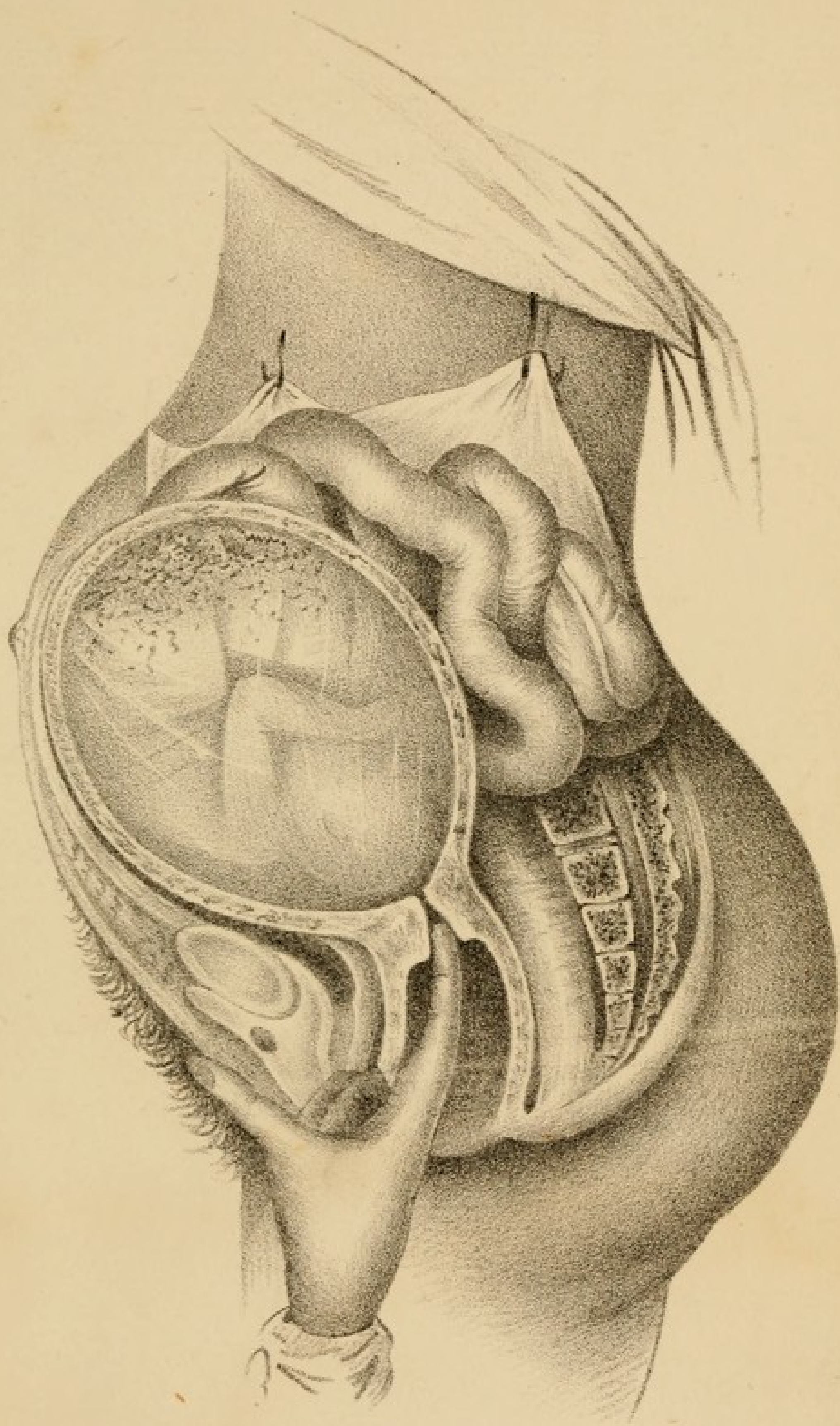

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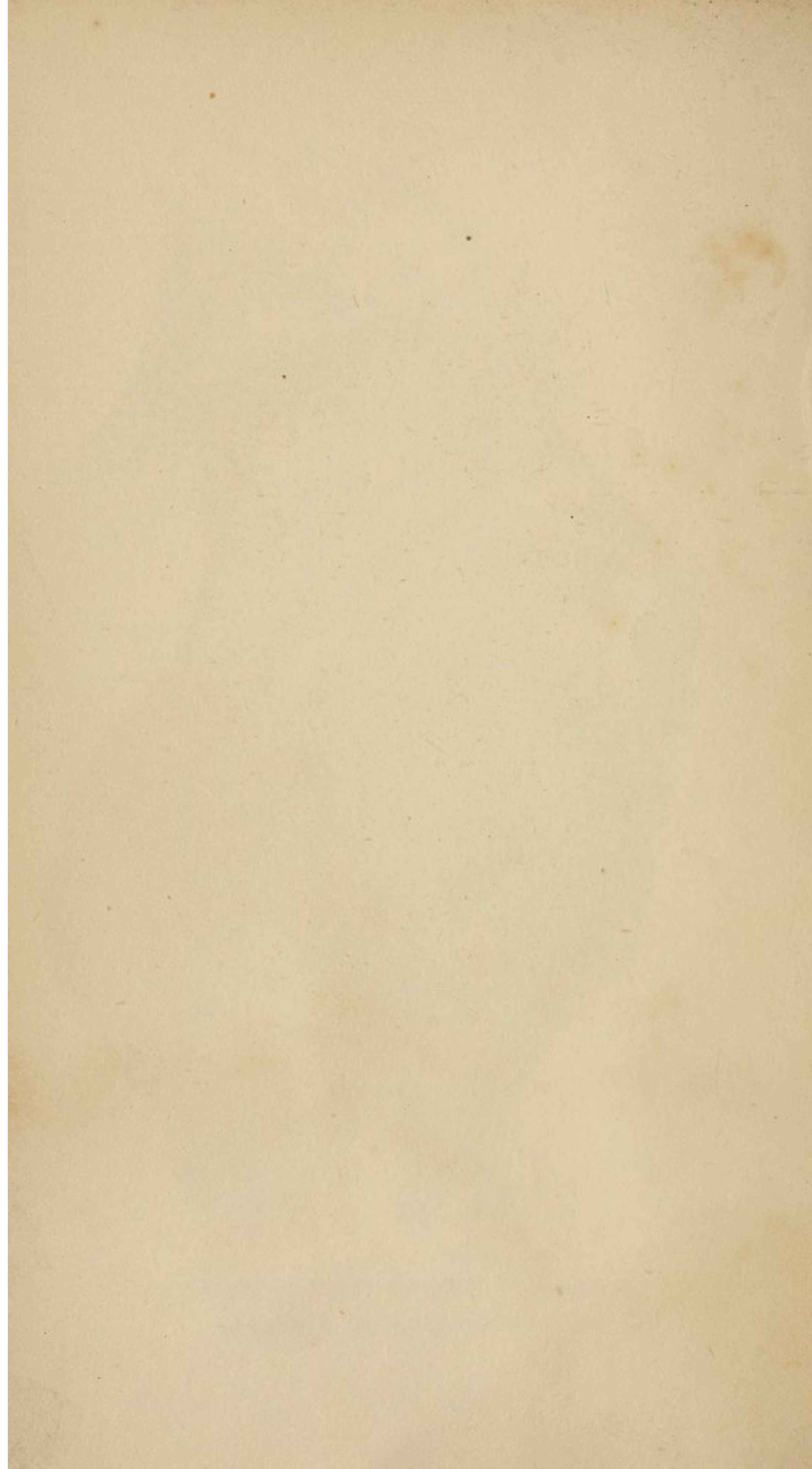

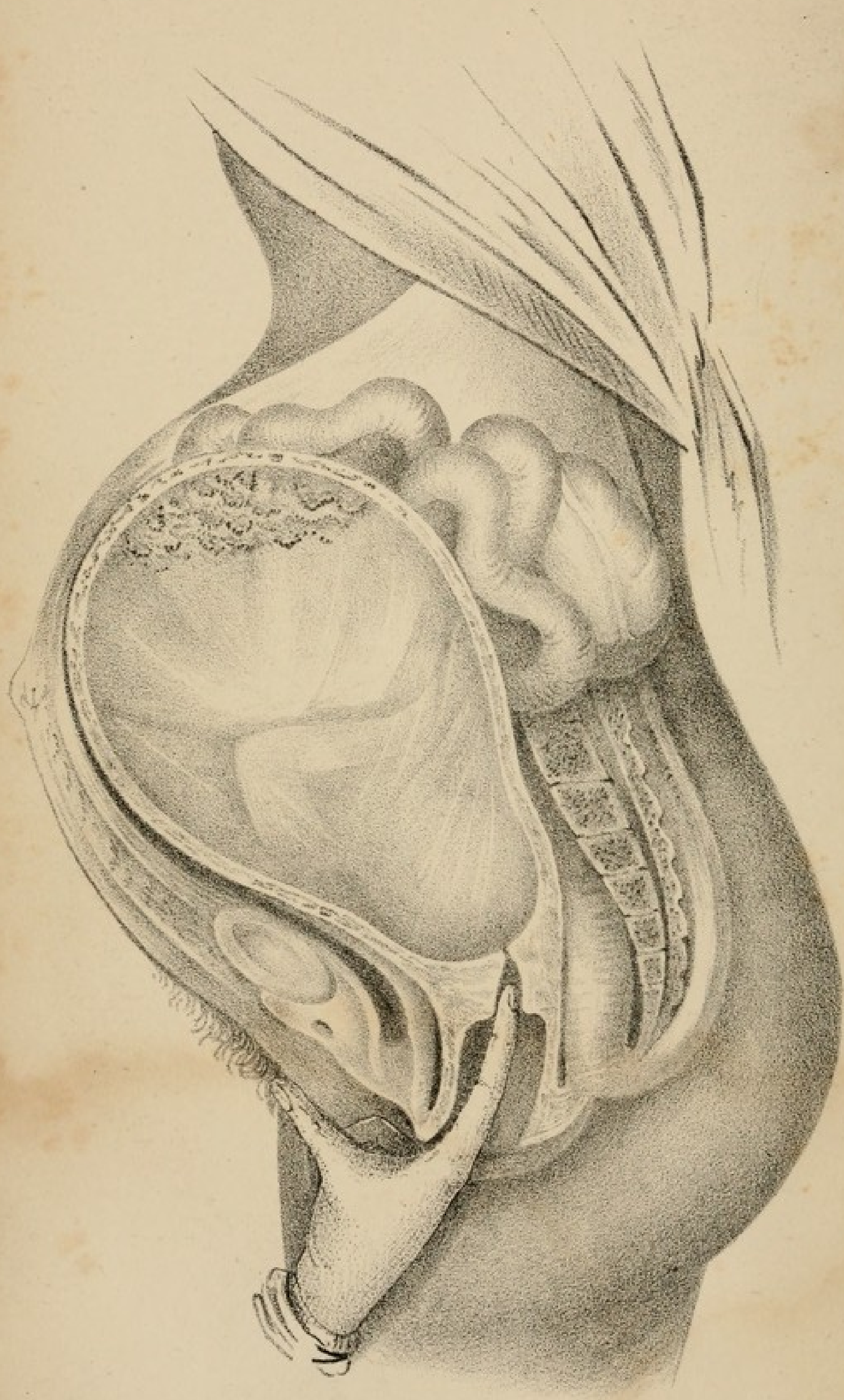

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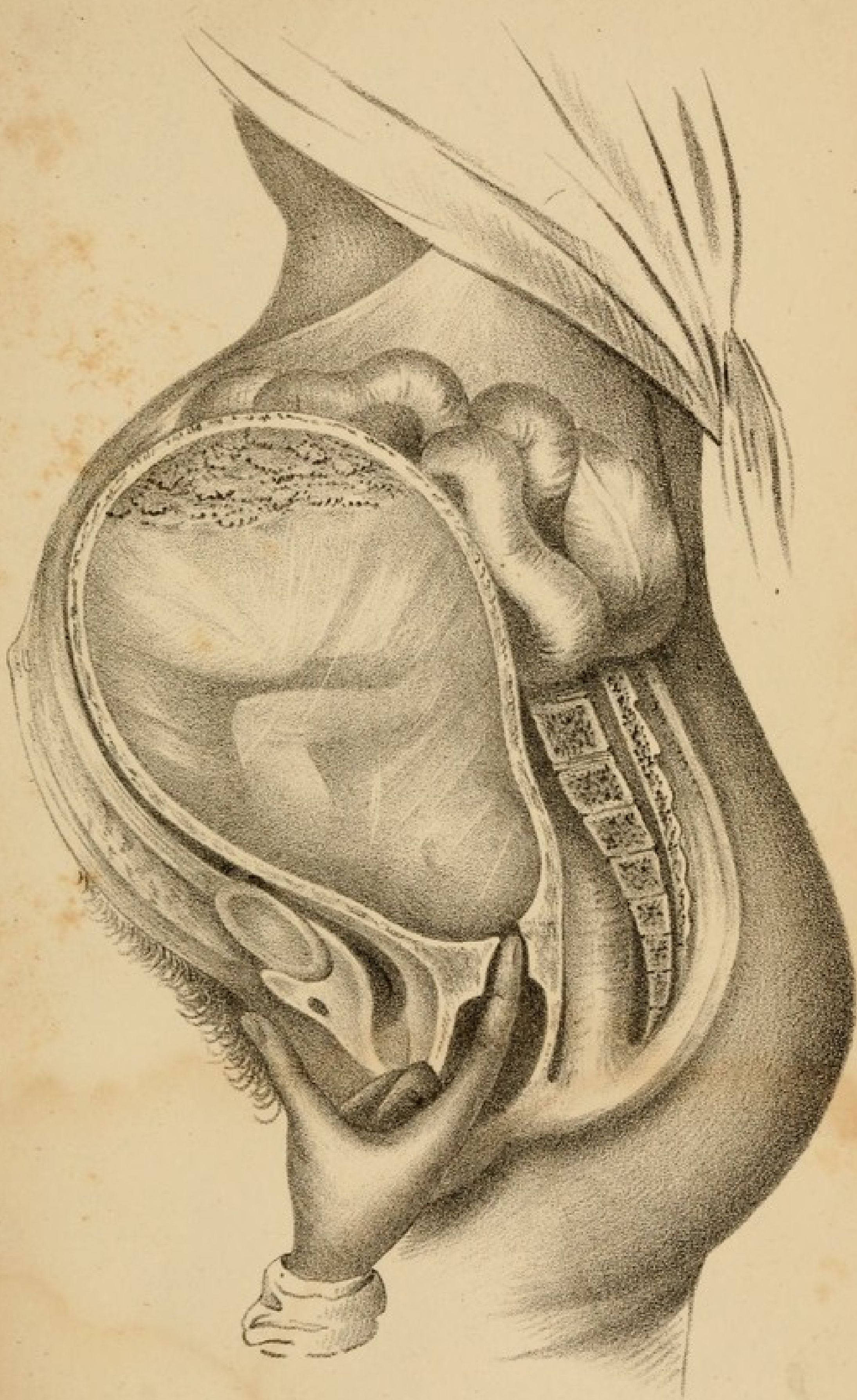

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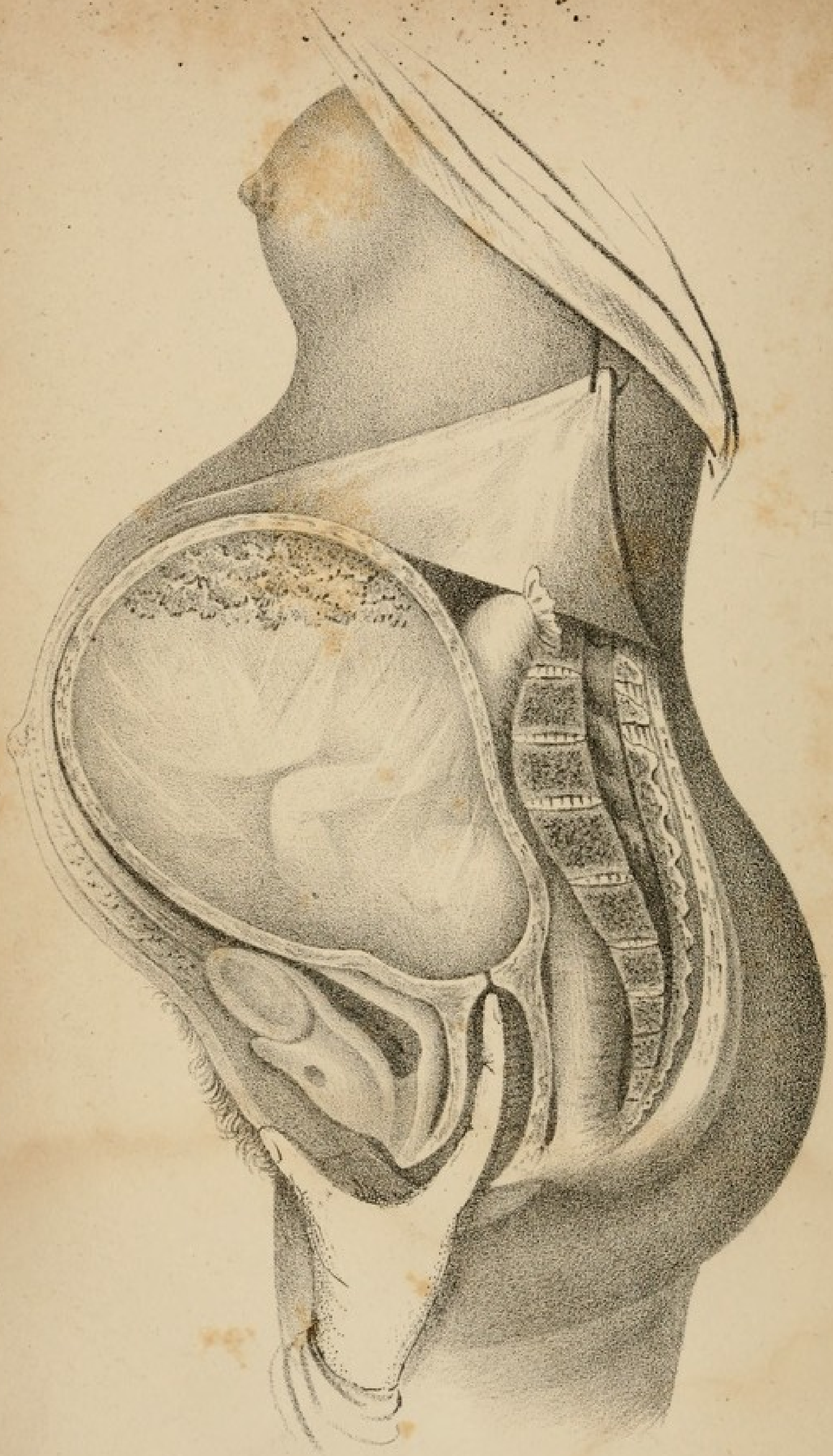

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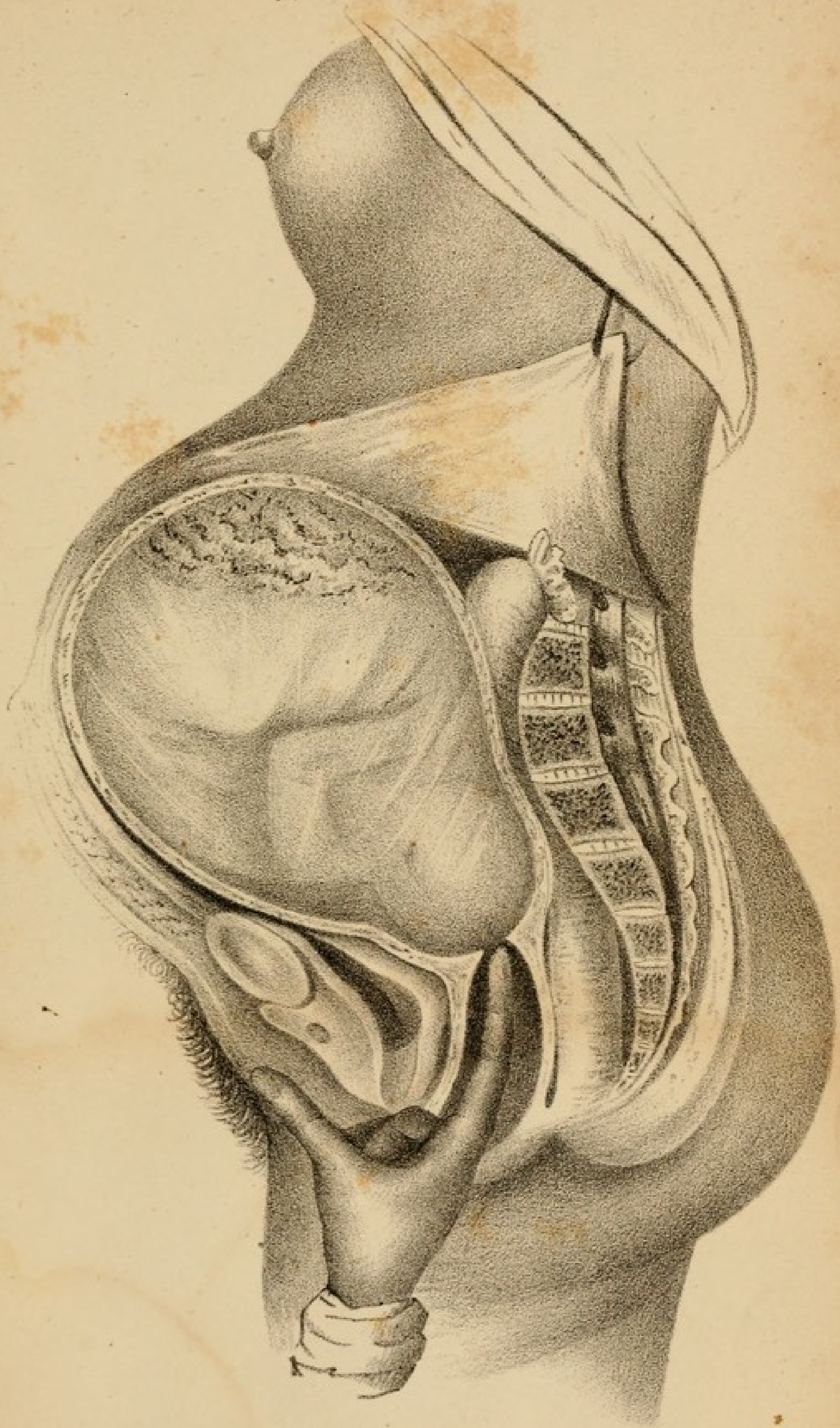

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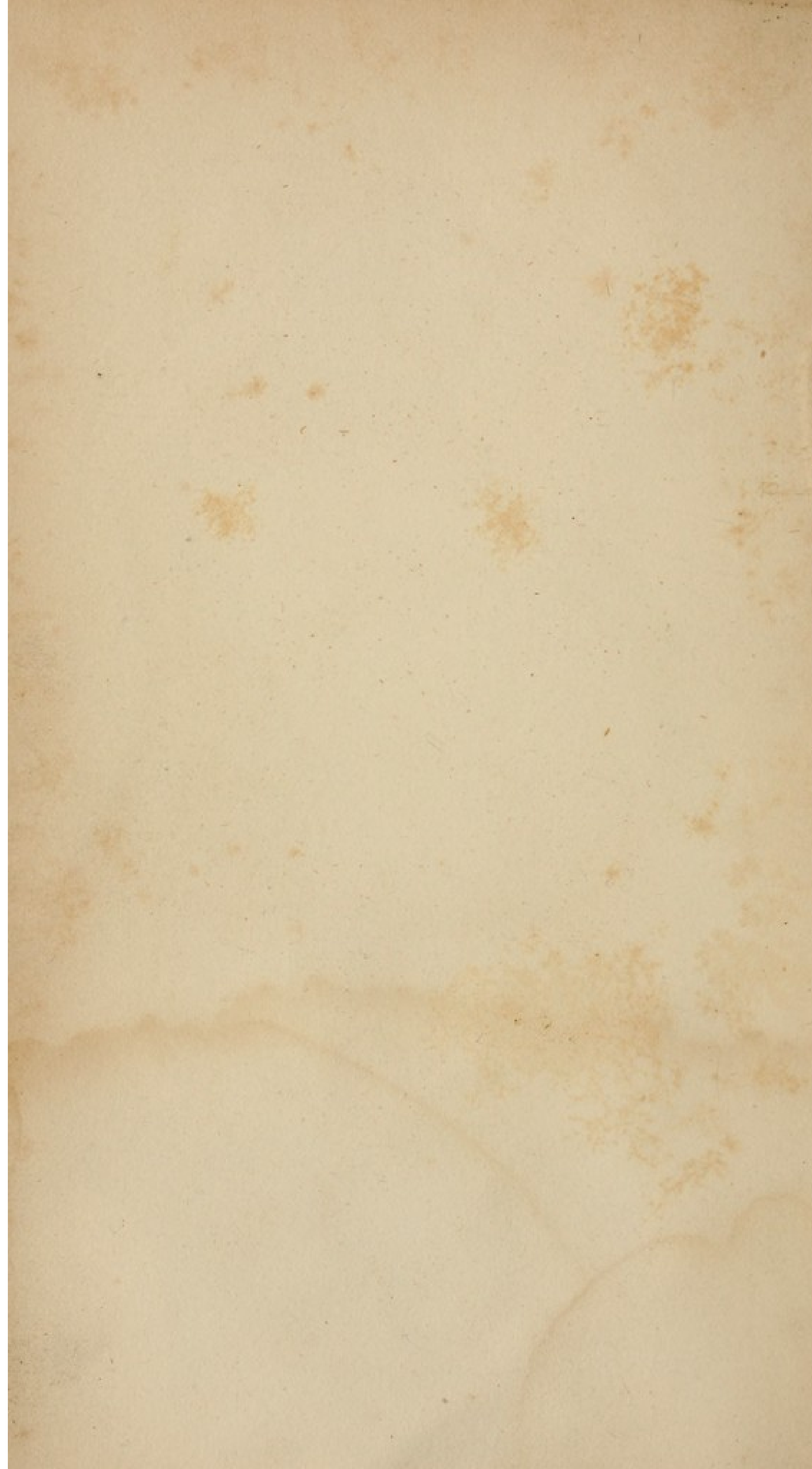

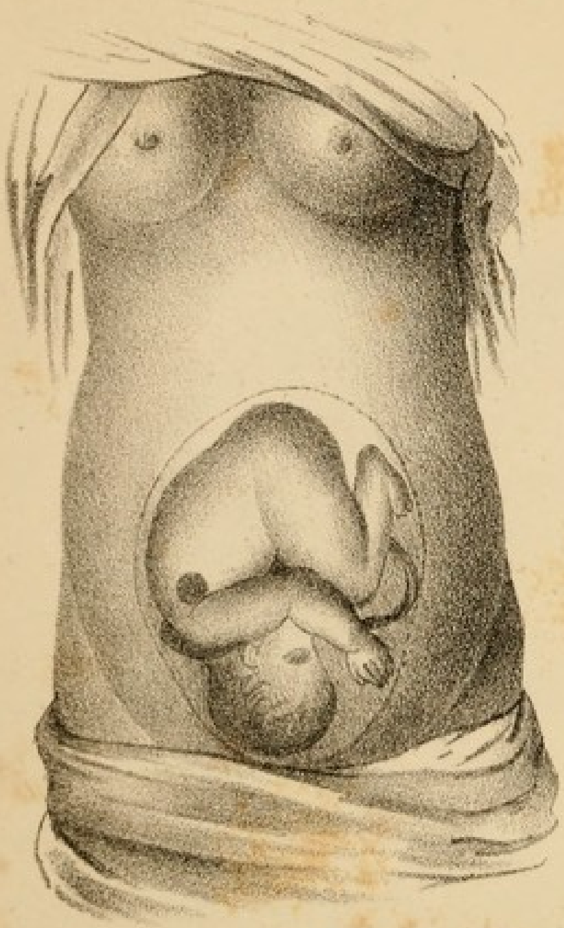

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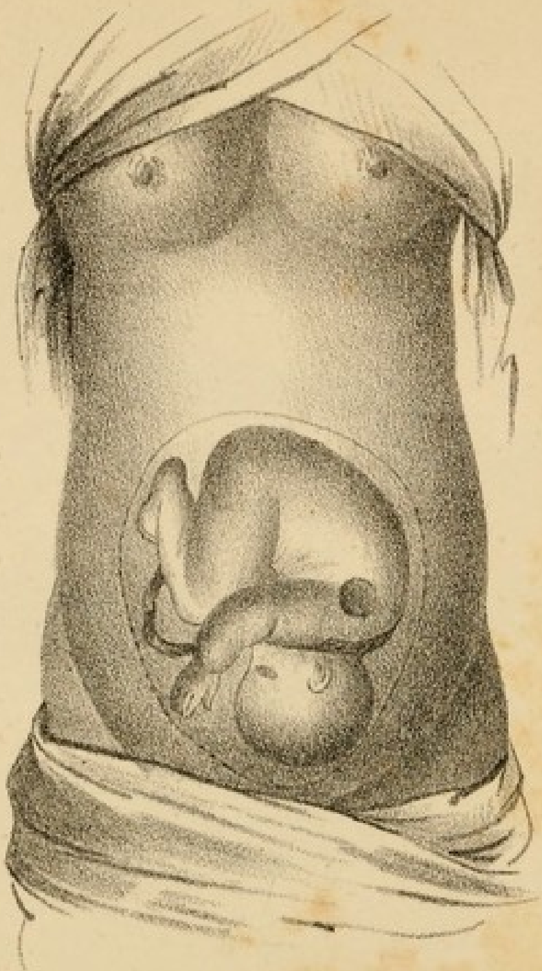

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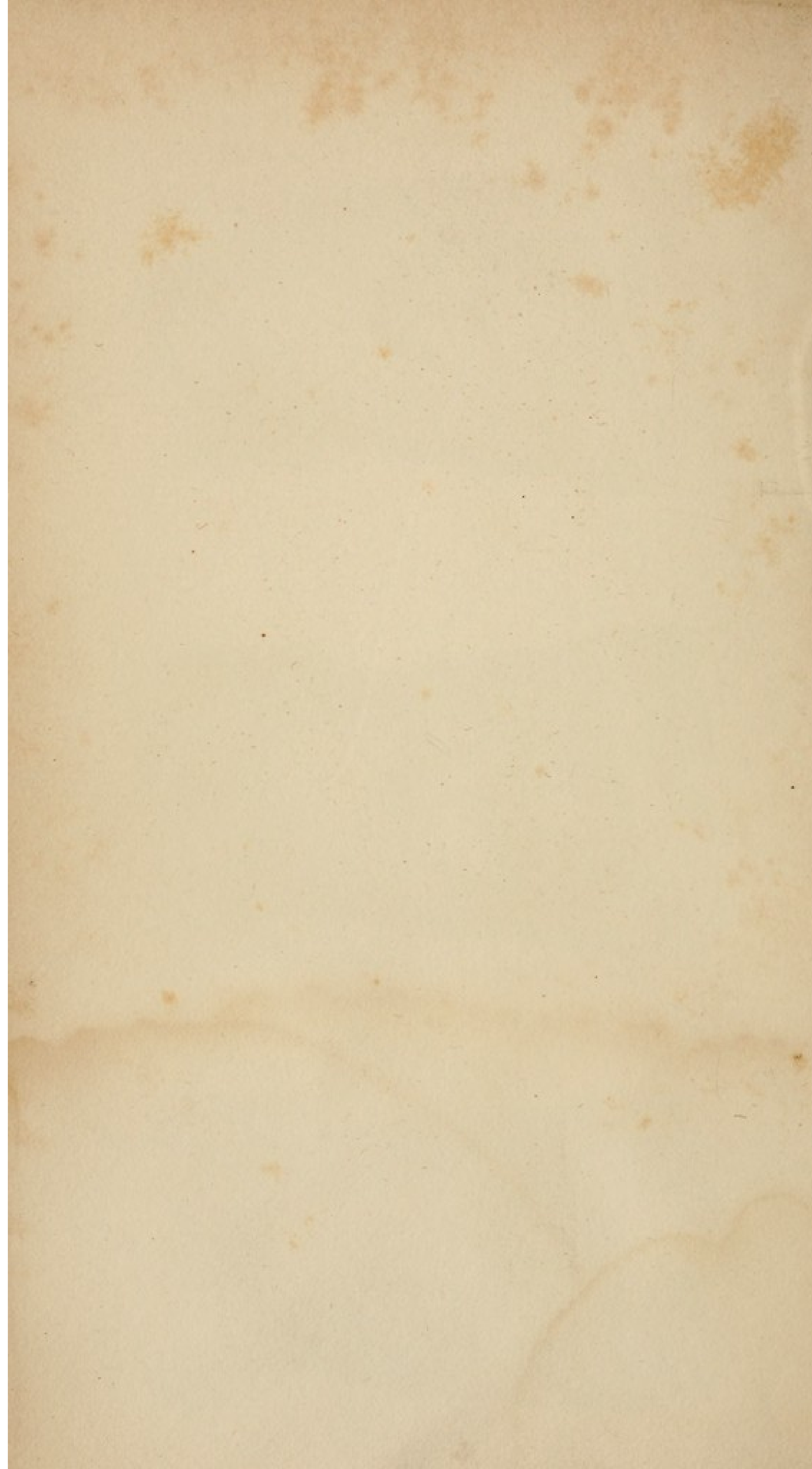

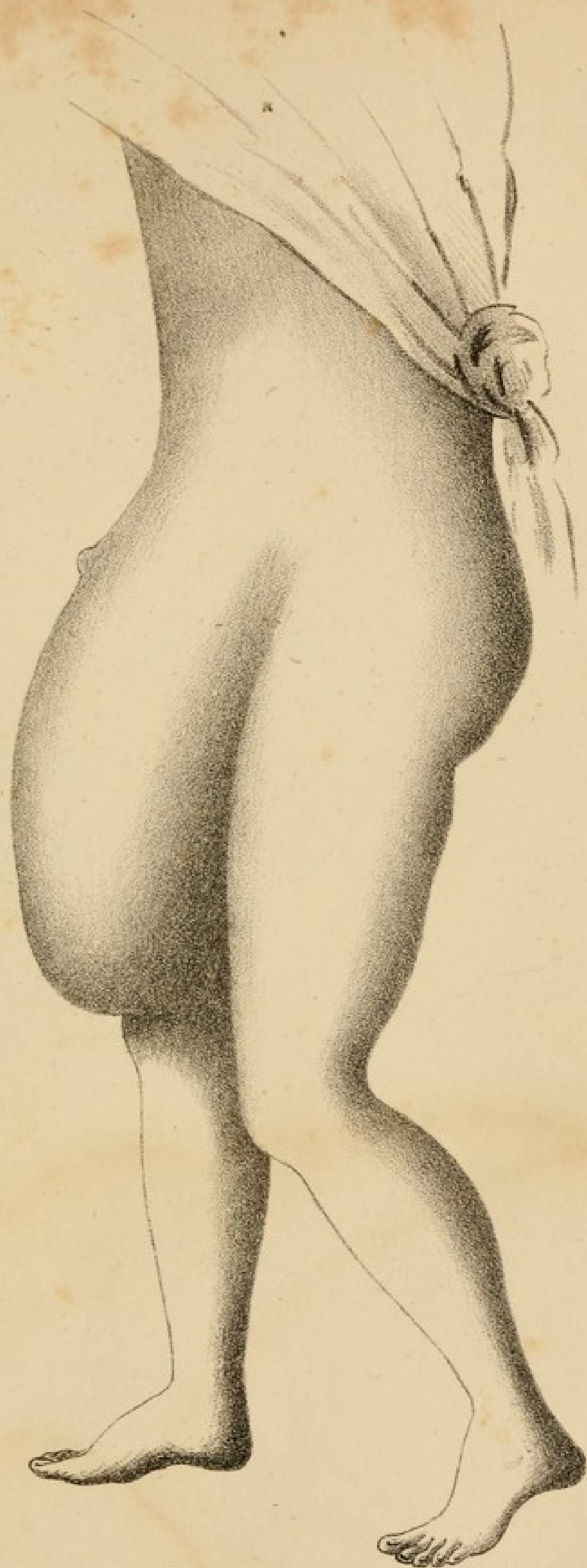
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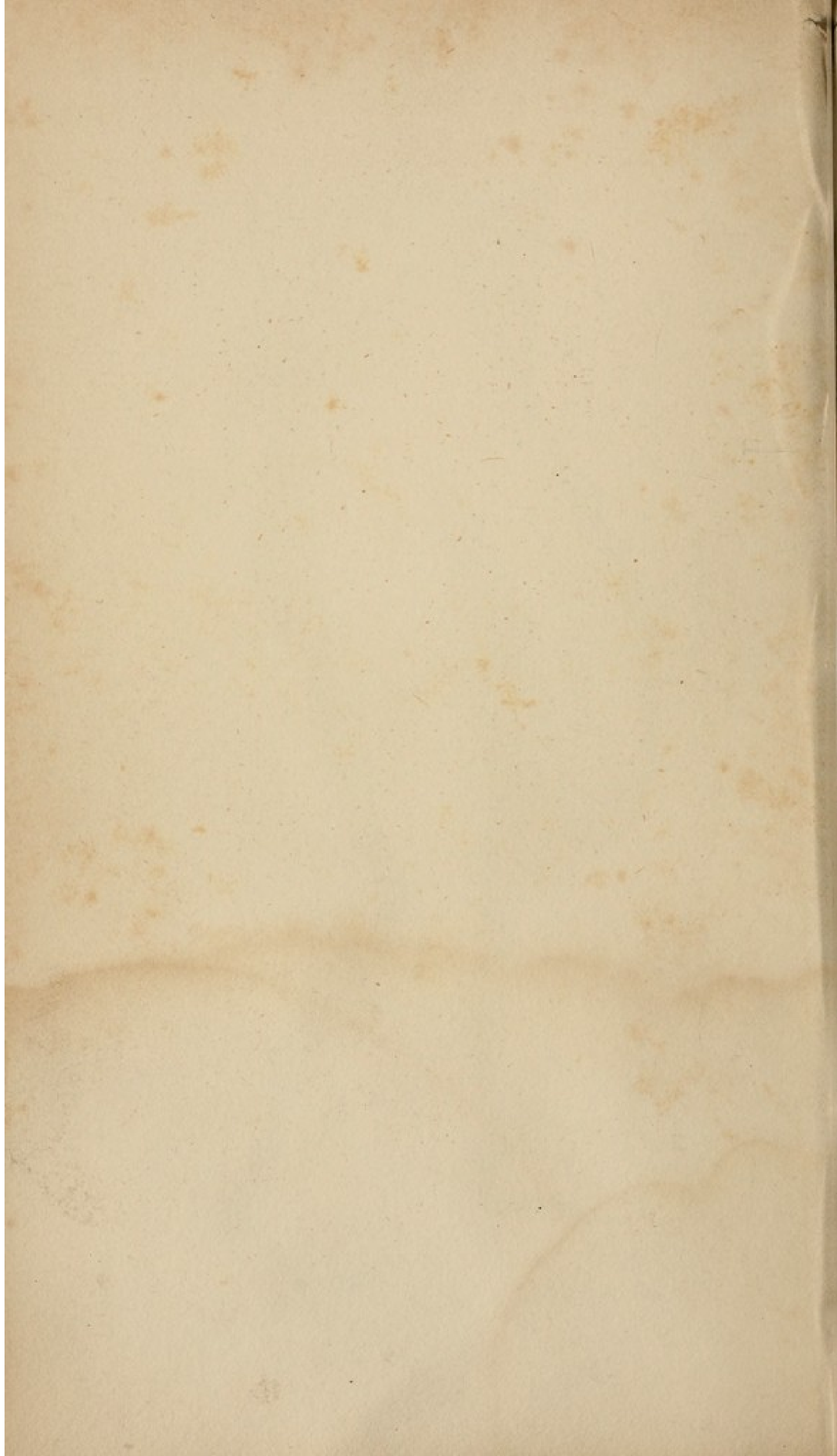

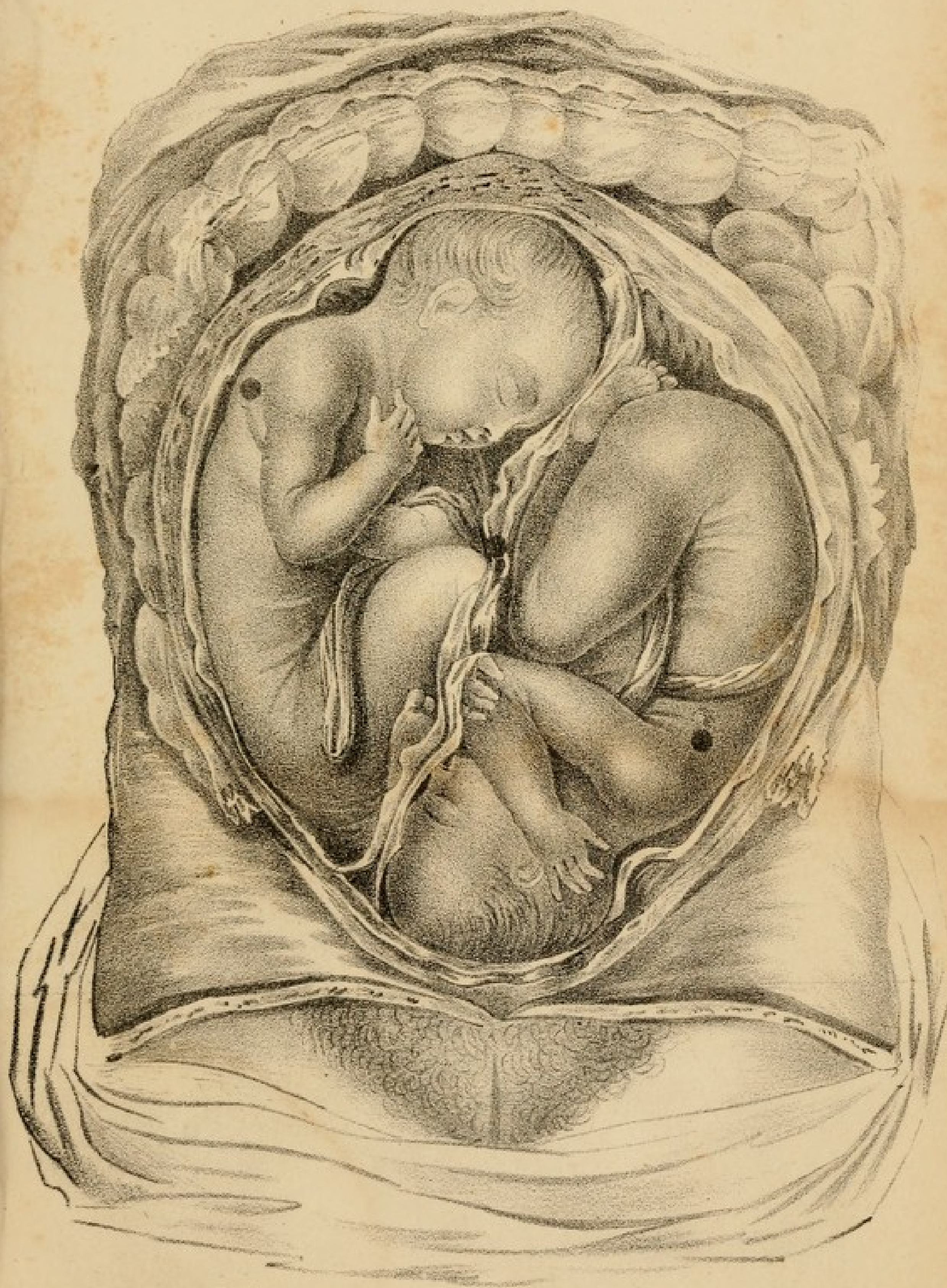

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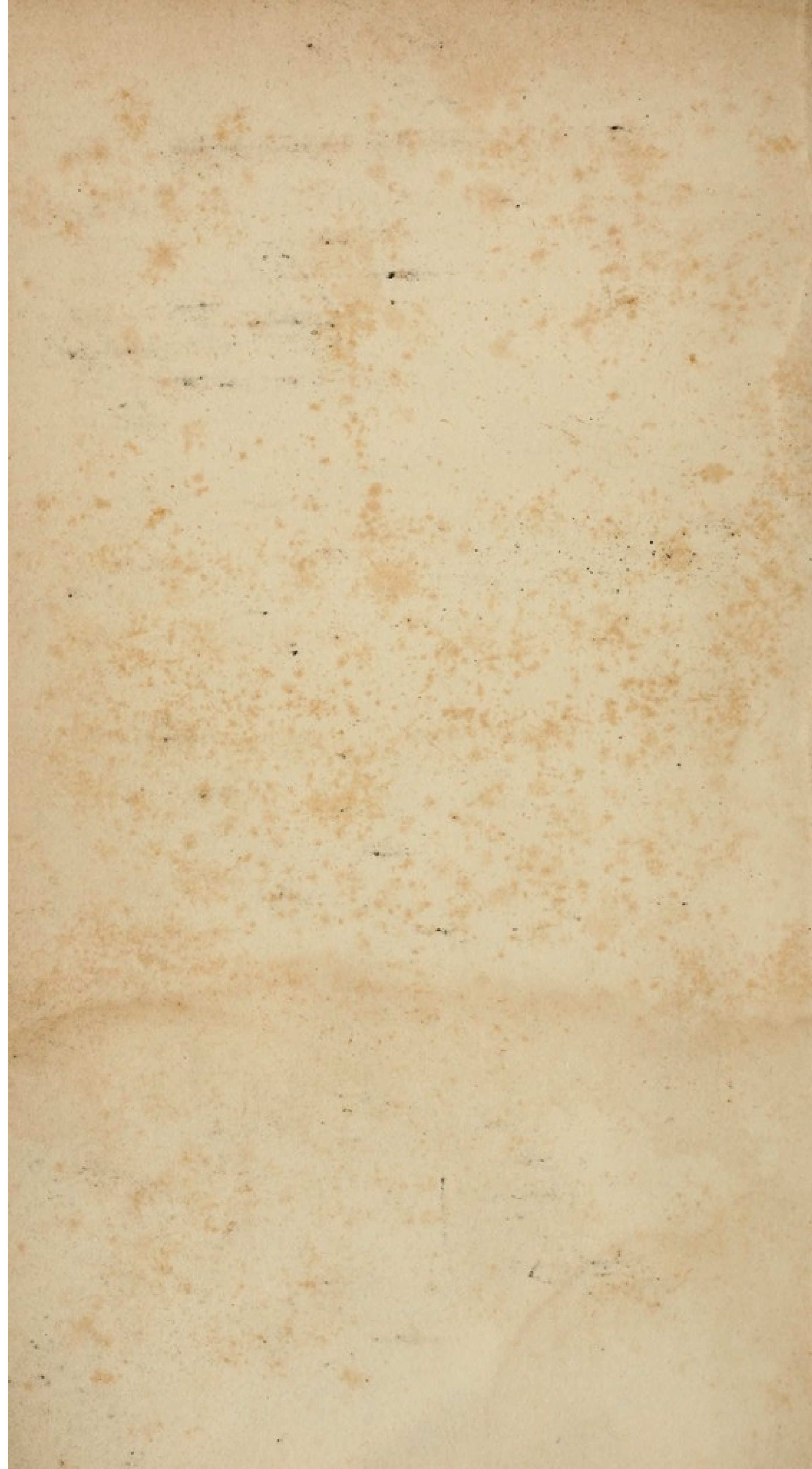

OBSERVATIONS,

&c. &c.

CHAPTER I.

EVIDENCES OF PREGNANCY.

If we for a moment consider the responsible task the medical adviser is occasionally called upon to perform, when desired to pronounce on the existence or absence of pregnancy; that peace of mind, domestic happiness, character, property, nay, even life itself, may be sacrificed by inaccuracy in his diagnosis; we shall find ample reason to question, whether there be, in the broad field of medical science, any subject which more calls for the attention of the practitioner, as well from its importance as from the difficulty so frequently attending its investigation.

Every medical man, at all conversant with midwifery practice, knows how often he is required to give an opinion in cases of doubtful pregnancy, by his ordinary patients, who are naturally anxious to be acquainted with their real situation; and he also well knows what dissatisfaction and want of confidence his refusal to give a decided answer on this subject frequently engenders. How much is his embarrassment increased, when he is

called on to decide in those cases where private character or public justice is at stake, and in which, from their very nature, must be expected nought but concealment and misrepresentation!

It is a matter very easily proved, that difficulties in this respect do, and by no means very unfrequently, meet us in our practice. It shall be our endeavour to explain upon what these depend, to canvass the means at present relied upon for meeting them, and to offer some in addition, which may guide and assist us in overcoming them.

The appearance of a distinct treatise having such objects in view may to some seem superfluous; these subjects having been treated of at large in all the standard works on Midwifery. They have, however, and that very lately, engrossed the attention of some of the most eminent writers in that department; and the candid opinion of any man who will be at the trouble to consult such, must be, that the subject still demands elucidation. If it were necessary, the testimony of numberless authors could be adduced to corroborate this statement; but every individual possessed of even a moderate opportunity of observation must bear witness to its correctness, and agree in thinking that the diagnostic signs of pregnancy are still very obscure, particularly in some of those cases where their assistance is most required; as, for instance, where pregnancy is simulated by, or complicated with, other altered or morbid conditions, and where, with a view to treatment, diagnosis is a matter of the utmost importance: while candour obliges us to admit, not only that in such cases mistakes too frequently occur, but that they are occasionally productive of the most mischievous consequences.

In this state of acknowledged deficiency in our diagnosis, more than ten years have elapsed since the attention of the profession was directed to auscultation by Dr. Kergaradec, who published some cases proving its utility in this respect: yet, strange to say, notwithstanding the splendid results which have, in the course of a very few years, attended its employment as a diagnostic means in other branches of physiological and pathological investigation, auscultation in pregnancy has heretofore either escaped the notice of authors, and been altogether passed over in the systematic and other works on midwifery which are daily issuing from the press, or else has been noticed in so cursory a manner as to prove that it had not engrossed the attention or undergone the scrutiny due to so useful and so interesting a discovery.

On the necessity which exists for accurate knowledge on the subject of the life or death of the *fœtus in utero*, and the total inefficiency of the means which have hitherto been in use to assist us in forming our decision on that point, it is unnecessary to dwell, as every tyro in midwifery must be aware of the former, and every individual who has practised must have had painful experience of the latter. One of the objects of this treatise is, if not to supply this deficiency, at least to lessen the difficulties which so frequently meet us under such circumstances.

In turning my attention at first to the investigation of the subject, I was merely actuated by a wish to obtain a more accurate method of deciding in cases involved in doubt and uncertainty. Having with this view instituted a series of experiments, and carefully noted the phenomena that presented themselves, and that in an ample field for observation, I found my trouble fully repaid by the experience thus acquired of the advantages of aus-

cultation, as it not unfrequently enabled me to pronounce with a certainty which actual demonstration could alone warrant in those very cases in which, without it, had I formed any opinion, I should have done so with extreme hesitation. The benefit derived from it must explain my motive in drawing the attention of the profession to what must be pronounced as an improvement of practical utility in midwifery. It is not meant, in recommending auscultation, to do so to the exclusion of those means already relied on, nor to ascribe to it any undue merits, which would totally frustrate the object of the author in recommending it, as by thus "loading it with pieces of superfluous armour, which encumber rather than defend," he would undoubtedly bring it into disrepute.

To such as object to it, because opposed to all innovation, I would merely repeat the words of one of our patriarchs on midwifery, Mauriceau: "I desire, if you mean to profit by my book, you will read and examine it without critical envy, free from all pre-occupation that may obscure your judgment, and hinder your acknowledging the truth of what I profess to teach; therefore, follow not such as condemn a conception when they understand it not, and believe it false because it is new." Whilst one can freely enter into, and commend the feelings of such as are deliberate in forming opinions upon *reputed improvements* in science, and particularly in medicine, it cannot be denied that there are few things which injure and retard science more than scientific incredulity; and if we inquire into its cause, we shall not unfrequently find it arise from feelings directly opposed to philosophy and moral principle. I say so much, because there are, even at the present day, some who not only deny the utility of auscultation as a means of diagnosis, but even attempt to turn it into ridicule.

Pregnancy has been defined as that state in which a woman is when she has conceived, and which is limited by the period of conception, constituting its commencement, and that of delivery or abortion, its termination. The ovum may be situated within or without the uterus, thus giving rise to the denominations uterine and extra-uterine pregnancy. As a useful practical division of this subject, we shall here adopt the French plan, and consider pregnancy under the heads simple, compound, and complicated. The first occurs when there exists but one fœtus; the second, when there are two or more; and the last, when there is a complication from the co-existence of one or more, with disease either of the uterus or some of the neighbouring parts, rendering diagnosis in these cases doubly difficult from the contradictory symptoms which attend them. The consideration of pseudo-pregnancy, which may be defined as that condition simulating pregnancy by the presence of the symptoms usually accompanying this state, shall afterwards demand our attention.

Innumerable are the symptoms of pregnancy as mentioned by all those authors who have treated upon this subject. Our more particular attention shall be directed to such as are generally looked upon as most deserving of confidence, at the same time that the others shall not be passed over altogether unnoticed. As the motley way in which we generally find them enumerated by authors tends rather to embarrass than to elucidate the subject, with a view to facilitate their consideration they shall be arranged under distinct heads. The least objectionable and the simplest division appears to be the classing them into those signs which are evident to the medical attendant, and with which he can of himself become ac-

quainted, and into those which from their nature are restricted in their recognition to the individual supposed pregnant, and with which the attendant can only become acquainted through her representations.

Of the evidence of the latter class, some depend upon sympathetic, others upon mechanical causes. We must bear in mind the fact, that the human frame is composed of a variety of organs supplied with nerves enabling it to perform a double function; first, one by which it maintains its connexion with the external world, receives impressions, and performs certain voluntary and involuntary motions and actions; and, secondly, one which unites the parts of the animal frame, constituting it a whole. This last quality, with which every part of the body is more or less endowed, is termed sympathy. The nearer animals approach to the most perfect state of existence, the more acute will be their sympathies; or, in other words, the more perfectly organized the animal is, the more will the well being of the whole depend on the right execution of each individual function. On the other hand, in cold blooded animals, where each separate part possesses a greater share of individual vitality, there is much less sympathy between the different organs and functions of the body; and of course we find a less perfect general organization. Blumenbach explains this by the proportion the brain bears in size to that of the nerves proceeding from it, which in the inferior animals is much smaller than in the higher classes.

Sympathy has a general and particular operation; general, when the whole frame sympathises with an organ; particular, when one organ sympathises with another. This sympathetic connexion is much more observable between some organs than others, and it is in

many latent until developed by a variety of causes, such as newly acquired or periodic functions, and altered or diseased actions. Sympathy between organs may be mediate or immediate ; mediate when this peculiar connexion or consent exists between two organs directly ; immediate, when it exists through the intervention of a third. The uterus furnishes us with examples of these different kinds of sympathy, which become developed in a most striking manner in pregnancy, and the diseases most likely to be confounded with it ; they may, therefore, with justice be termed the sympathetic signs of pregnancy. The sympathy existing between almost all organs is reciprocal ; that this is particularly the case with the uterus will be apparent, when we recollect how frequently the uterus sympathises with other organs as well as they with it. Of this fact we have abundant proof in the frequency of the occurrence of abortion from vesical, alimentary, or even mental irritation, which indicates the necessity of attending to this connexion as a matter of paramount importance in treating such cases.

Tiedemann* has gone a considerable length in explaining the sympathies existing between the uterus and other organs, by means of actual anatomical demonstrations. He proves that the nerves of the uterus form six plexuses, which he traces to the great sympathetic on each side ; he describes them as soft and closely applied to the coats of the arteries at their entering the substance of the organ, where they all at once disappear.

The first symptom mentioned by authors as indicating pregnancy, is to be observed immediately on conception taking place. It has been stated, that a peculiar sensa-

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*Tabula Nervorum Uteri, T. Tiedemann, M. D., Heidelberg.

tion is experienced, described by some as a slight rigour, by others as a spasm, followed by a feeling of indescribable pleasure of some continuance, which is again succeeded by a sense of languor and depression. The excitement into which the uterine system is thrown at the time of conception may occasionally produce these symptoms, but by no means so frequently or decidedly as to constitute a guide to us in determining on the existence of pregnancy. Sensitive females have been known to experience similiar sensations after each coitus, though never becoming pregnant.

Conception is occasionally accompanied by a general excitement of the system, attended with all the evidences of increased vascular action, such as a quick pulse, heat of surface, &c.; this sometimes merges into a decidedly febrile state, perhaps assuming a hectic form, attended with periodic exacerbations, succeeded by intervals of exhaustion and debility, and even considerable emaciation. This state, however, is rare, and only occurs in females of a peculiarly nervous temperament, or when the natural state of the system is altered by luxurious habits or other causes. In such, impregnation, which under other circumstances would have been attended with scarcely any sensible change in the constitution, may induce various morbid alterations, when the uterus, sympathising with the vascular system generally, may produce the febrile state alluded to. The general febrile state can be but little relied on as a symptom of pregnancy inasmuch as that in the great proportion of pregnant women it is not present, or if so, in but a trifling degree; and when present, it may depend on a state of the system quite unconnected with this, and may be produced by any cause, however remote from pregnancy,

operating either directly, by stimulating the heart or vascular system, or indirectly through the brain or nervous system.

Pains in the pelvic and lumbar regions often accompany impregnation. They may occur immediately on its taking place, or after a few days, when they depend upon sympathy. The mechanical pressure of the uterus on the pelvic nerves may also produce pain in those parts, which often continues rather distressing up to the time of quickening. These pains, although frequently, do not invariably attend pregnancy, and are also present in cases of retained or difficult menstruation, as well as in those of pelvic and abdominal tumours, precisely the cases in which we stand most in need of diagnostic marks; therefore they are of little value.

The sympathetic connexion existing between the stomach and uterus is a remarkable one, and from the frequency of its evincing itself in pregnancy is looked upon as an important evidence of this state. The manner in which this sympathetic connexion exhibits itself, is that of total or partial derangement of the functions of the former organ, attended with diminished or depraved appetite, but most frequently with cardialgia, dyspepsia, nausea, and vomiting, constituting what is commonly called *morning sickness*, from its occurring early in the day. Now these symptoms do very frequently occur in pregnancy; unfortunately, however, they as frequently depend upon other causes, and even upon deranged or suppressed menstruation.* We cannot better express

* On Conçoit que les dègoûts, les nausées, les vomissemens, &c., symptomes presque toujours insêperables de la retention et de la suppression, quelle qu'en soit la cause, soit une *preuve* encore plus equivoque.—*Foderé.*

the opinion we have formed of the reliance to be placed on them, than by quoting the words of Dr. Beck, who, in treating of this subject, says,* "I merely notice loss of appetite, nausea, and vomiting, &c. &c. to state that they are altogether equivocal. They accompany many diseases, are wanting in many pregnancies, and even if present, occur only in the early stages, the time precisely when no certain judgment can be formed." Whilst the accuracy of Dr. Beck's opinion is admitted, we ought not to lose sight of the fact, that although the state of the stomach can afford us no certain data, yet the occurrence of morning sickness in a married female, or where pregnancy is suspected, is a matter well worthy our attention, and when distinctly present, ought to induce us at least to hesitate ere we pronounce the individual not pregnant, unless we have very strong reason indeed to induce us to do so. If these symptoms continue after the period at which quickening ought to have occurred, then we may place less reliance upon them. We must, however, bear in mind the fact, that morning sickness and dyspeptic symptoms may continue into advanced pregnancy, and sometimes even occur at that period, although they may have been absent in the early months.

As there is no symptom of pregnancy which has engrossed more attention on the part of authors and practitioners, or upon which a greater difference of opinion exists, than suppression of the menstrual discharge, it will demand an attentive examination. This discharge we know to be a secretion from the internal surface of the uterus, occurring at periodical intervals, and continuing, with few exceptions, from puberty to the approach

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* Elem. of Med. Jurisp., 3d edit., by J. Darwall, M. D.

of old age, unless the individual be pregnant, nursing, or in a state of disease, at which times the functions of this organ are altered or suspended. To constitute a woman capable of conceiving, the uterus must be in a fit state to perform this function, as proved by its periodic occurrence or tendency to it. In ordinary cases, when conception takes place, it ceases, and does not return until after the term of gestation or nursing. The lips of the uterus in pregnancy become glued together, and membranes are formed lining its cavity throughout, and adhering to its inner wall. A moment's consideration must satisfy us, that under these circumstances the menstrual secretion could not take place, and that even if it could, its egress would be prevented. The absence of menstrual discharge has, therefore, and with much apparent justice, been looked upon by the majority of authors as a symptom of the utmost importance in cases of doubtful pregnancy. Dr. Denman says, (vol. i. p. 270), "I have not met with a single instance of any woman continuing to menstruate when she was pregnant." Some persons even propose relying on this sign to the exclusion of all others. On the other hand there are some, and those equally deserving of credit, who look upon it as quite inconclusive.

To arrive at a proper estimate of the degree of confidence which this sign merits, we must inquire first, do the menses always cease in pregnancy? and next, do they not also sometimes cease in the absence of this state?

In answer to the first question, we have no want of testimony tending to prove, that a discharge reputed menstruous does continue in pregnancy. Heberden* and

* Commentaries, cap. 43.

other authors have given such cases; and Daventer* even mentions a case in which the female never menstruated unless during the period of utero-gestation. I have myself met with individuals who, if their own statements be credited, were similarly circumstanced.

[Two cases of this description have occurred under my notice, where the females had had six children and never had their periods, except as a sign of their being pregnant during nursing. Rondelet speaks of a female who had borne twelve children, and Joubert of another, who had eighteen children, and never menstruated. Cases of this nature are not rare in the science, and Roderic a Castro, and others, have observed that pregnancy may be the only period when the catamenia will exhibit itself. I have in several instances had occasion to examine females at this particular time, and three cases were especially noticed where pregnancy existed, while this discharge continued—two were at the fourth month, and the third, in the third month. Two of these cases ceased at the fifth month, and were afterwards attended by myself, the other case I did not attend, but repeatedly saw her prior to her accouchement. The os uteri in all the cases was covered with small, bright scarlet elevated points, a "fac-simile" of the red elevated papillæ on the tongue of scarlet fever, and appeared as though the blood would discharge itself from these points; it was also perceived issuing in two of them "goutte à goutte" and flowing in the third from the os uteri. Some of this was collected, two teaspoonfuls. It did not separate into its constituent parts, but evaporated, though it was retained in a glass stopple bottle. This small specimen presented the same characters, appearence, smell, and retained its elements without separating, as though pregnancy was not present. I should, therefore, coincide from this investigation, with those who consider that the menstrual fluid issued from the uterus, though only from the upper part of the neck during gestation.]

Dr. Blundel is very decided on this subject, as regards the early months of pregnancy. He states in his lecture

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* Daventer's Midwifey, cap. 15.

on menstruation,* "that we must not conclude that a woman is not pregnant merely because she menstruates; for although doubts may be raised respecting the continuance of the catamenia during the whole term of gestation, yet I have repeatedly met with cases of pregnancy, in which the catamenia have continued to flow during the first two or three months; indeed this, notwithstanding Dr. Denman's assertion to the contrary, may, I think, be looked upon as by no means very uncommon."

I shall take the liberty of quoting a case which is to be found in Chamberlen's edition of Mauriceau,† as it bears very strongly upon this point, and that without curtailing his pithy comments upon it: "If there be any occasions where physicians or chirurgeons ought to be more prudent, and to make more reflections upon their *prognostics* of an affair so important as this is, it is in this which concerns their judgments as to conceptions and women being with child, to avoid the great accidents and misfortunes which they cause who are too percipitate in it without a certain knowledge. The faults committed through too much fear at such a time are in some measure excusable and to be pardoned, but not those caused by temerity, which are incomparably greater. There are but too many poor women who have been caused to miscarry by medicines and bleeding, not believing they were with child, which are so many murders they are guilty of who caused it, either through ignorance or rashness; besides the deaths which they bring to those little innocent creatures by destroying them in their mother's belly, they often thereby put the

* Lancet for July 18th, 1828-9. † Book I., p. 17.

mothers into great danger. We have lately had in Paris, (in the year 1666,) a miserable example of this kind in a woman hanged, and afterwards publicly dissected near the Kitchen Court of the Louvre, who was four months gone with child, notwithstanding the report of such persons as visited her, by the judge's order, before her execution, who affirmed, contrary to the truth, that she was not with child. They were deceived because the woman had her *monthly courses*." "Whereupon," he adds, "it is not fit to be too confident, forasmuch as there are many with child who *have their courses;* and I have known some who have had them all the time of their great belly till the fifth or sixth month, which happens according to the woman's being more or less sanguine, though the greatest number usually have them not; but there are few general rules which may not be sometimes excepted against." Dr. Davis,* in his Evidence on the Gardiner Peerage case, also gives the particulars of an interesting case, clearly proving the occurrence of a vaginal discharge in pregnancy.

Thus, then, there can be no question that a discharge reputed menstruous does occur during pregnancy; nor does it merely rest, to prove this, upon the opinions of the authors already quoted, as many others could be referred to equally conclusive; and, in fact, every man engaged in midwifery practice must have met with such. Is this discharge which occurs in pregnancy, strictly speaking a menstruous discharge? I think not; and yet how are we to distinguish? The fact is, that in certain females, in whom there is great local determination, par-

* Le Marchant's Reports of the Proceedings of the House of Lords on the Gardiner Peerage Claims, p. 54.

ticularly if this be attended with general fulness of the vascular system, the orifices of the secreting vessels at the upper part of the vagina and neck of the uterus yield and allow of the escape of a red fluid, exhibiting, however, more of the character of blood than of the secretion which naturally takes place from the walls of the uterus. In some cases, an actual hemorrhagic discharge occurs from these vessels, or from the vessels within the neck of the uterus; and, singularly enough, this discharge will recur again and again periodically,* although not with the regularity observed by the true menstrual discharge. In other cases, a partial separation of the ovum will take place, and the discharge of blood, which ought to indicate threatened abortion, will be pronounced menstruous. Again, females have been known, when anxious to conceal their pregnancy, to have recourse to the ingenious expedient of staining their linen with blood, for the purpose of deception, a case of which kind occurred to myself about a year since, on the part of an unfortunate girl, who by this means so completely deceived her mother, that my repeated assurances had no effect in persuading her that her daugher was pregnant, until she had ocular proof of the fact by the birth of a boy, when the girl confessed the deception she had practiced.

To obviate the difficulties attending these possible sources of deception, it has been proposed to ascertain by its † sensible qualities whether the fluid discharged be

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* Burn's Midwifery, edit. 5, p. 197.

† Il faut exiger alors que les parties soient lavées avec de l'eau tiéde ; si la sang ne reparait pas le cas est suspect. (Capuron, p. 81.) See also Sir C. M. Clarke on Female Diseases, p. 14, Part I.

menstruous; and with this view the fact of true menstruous fluid not coagulating as blood does, has been much insisted on by some. Dr. Lavagna,* of Milan, ascertained that it differed principally from blood in containing little or no fibrine. I knew of one accoucheur, of great professional eminence, who placed so much dependence on his knowledge of its sensible qualities, that he was in the habit of having towels sent to him from considerable distances, in order to distinguish from the stain the nature of the fluid. That certain individuals possessed of nice powers of discrimination may, by great practice, arrive at some degree of accuracy in distinguishing in matters of this kind, there can be no doubt; but that even with them sufficiently accurate data could be in this way adduced to enable them to pronounce on the existence or absence of pregnancy, cannot be admitted, much less that it could be generally available as a means of judging in these cases. How often, for instance, do we find, in cases of profuse menstruation, that the discharge will eventually become hemorrhagic? What, then, becomes of the marks which characterise the menses? Again, how difficult is it to obtain a sufficient quantity of the fluid discharged to submit it to an examination? and how can we be sure in what manner and from whom it was obtained?

Having thus seen the difficulties that meet us in considering the possibility of the continuance of a discharge reputed menstruous in pregnancy, let us now look to the other branch of this subject, and see whether the menses do not often cease where there is no pregnancy. There

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* Anderson's Journal, vol. i., 1824.

is no affection, perhaps, to which the female frame is more liable than a deranged state of the uterine function. The secretion from this organ may either be too copious, too spăring, or entirely suppressed. The suppression may depend upon a variety of causes quite unconnected with impregnation, such as an idiopathic affection of the uterus, some general condition of the system not yet understood,* or some local affection, with the existence of which the proper discharge of this uterine function is incompatible.

[It is a singular fact, that more than one half of the Irish and German emigrants, who arrive on our shores, have amenorrhea, and it is difficult, through the various treatments adopted to cause them to return, till they have been residing in this country from six to seven months, when they return naturally. I have, therefore, ceased to prescribe only mild cathartics when they come under my charge, not only for the suppression, but from the frequency of pregnancy occurring among them, having, in many instances, discovered it in the earlier months, they positively asserting that it could not possibly be the case, and one case in particular where the female was but seventeen, and brought by her mother to procure some "active medicine" for her irregularity of four months. A careful investigation satisfied me, that she was pregnant, and in this instance a hymen was perceived, and afterwards she admitted, that the individual had only attempted once to have connexion with her on board of ship. It is in instances and circumstances of this nature, that it is requisite for the physician to be on the "qui vive" to decide with correctness in the earlier months, what course of treatment he should adopt, for he might innocently produce abortion, relying chiefly upon the word of the patient.]

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* I have known many instances of married women who had ceased to menstruate for several months, independently of any disease, when they were not pregnant.—*Denman's Midwifery*, p. 272.

Again, the menstrual discharge may be naturally enough secreted, but may be retained by mechanical causes, as imperforate hymen, or adhesion of the walls of the vagina, arising either from inflammation after delivery, or, as I know to have been the case in a young unmarried girl, from inflammation ocurring in the walls of the vagina without any evident cause. What the diseased local and general states are that produce suppression of the menses, we shall afterwards see when on the subject of pseudo-pregnancy. It is sufficient for our present purpose to be aware of the fact, and also, that the very cases in which it occurs are those in which we stand most in need of diagnostic tests, from their resemblance to pregnancy; for instance, ovarian or general dropsy, hydatids of the uterus, enlargement of this organ, chlorosis, dyspepsia, and chronic diseases attended with debility, as phthisis. Nor should we forget that suppression of the menses of itself produces many of the symptoms of pregnancy. It has been supposed that the cessation of these symptoms* about the third or fourth month from the period at which the menses disappeared, whilst the individual regains her health, ought to be looked upon as proving that the suppression depends on pregnancy, inasmuch as that in true pregnancy they generally yield about this time. But when we bear in mind that these symptoms of early pregnancy, as they are termed, occasionally continue throughout almost the whole period of gestation, and that pregnancy may exist without them, we cannot look upon this criterion as generally available, although the observation is certainly a practical one, and merits attention.

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* Belloc, Cours de Medécin Legale.

It is by no means an unfrequent occurrence for a woman to prove pregnant whilst nursing,* when no menstrual discharge may have been observed after her former confinement; and here of course the assistance to be derived from the absence of the menses is of no avail. Although, generally speaking, under these circumstances women shall have some symptoms which might lead them to suspect that they had conceived, such as morning sickness, or deranged stomach, yet in some this either is not observed, or is mistaken; and the first intimation a woman has of her pregnancy under these circumstances is quickening. The suspension that occasionally occurs about the period of the change of life, when the menses become irregular, previous to their ceasing altogether, is not an unfrequent source of embarrassment, and furnishes us with another illustration of the insufficiency of this test as deciding upon impregnation; more particularly so, as the feeling of almost every female which renders her averse to be thought old by others, often operates so powerfully upon herself as to make her believe that which she wishes, and causes her perhaps unintentionally to mislead her medical advisers. It has occurred to me to be acquainted with the particulars of more than one case of this kind, in which both patient and doctor were placed in a somewhat ridiculous dilemma, neither of them escaping without certain insinuations rather derogatory to their judgment. From the

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* I think the evidence connected with menstruation so uncertain, that, as I have before stated, I found my calculations more in the circumstances of quickening. Women are constantly falling pregnant whilst performing the duties of nursing, when they do not menstruate, and should not menstruate.—*Dr. Conquest's Evidence in the House of Lords on the Gardiner Peerage Case. Le Marchant's Rep.*, p. 107.

above considerations, then, we must conclude, that could we arrive at true and accurate information with respect to the occurrence or non-occurrence of *menstruation*, propely so called, it would assist us most materially in our decisions on this subject. When, however, we recollect the difficulty of doing so, where it is the wish of the female to deceive us, either from motives of interest or caprice, as well as the admission of those who place most confidence in this as a test, that a vaginal discharge which may be mistaken for the menses does occasionally occur in pregnancy, together with the fact of the frequent suspension of the menses from other causes, the inference we must draw is, that although suppression of the menses demands much attention, as corroborating the existence of pregnancy, yet it by no means proves it; neither can we pronounce a woman not pregnant because she has a discharge, reputed menstruous, although we ought to be very cautious indeed in pronouncing any woman pregnant who has such discharge.

The occurrence of sympathetic pains and uneasiness in the breasts about the third month after the menstrual cessation, and sometimes at an earlier or later period, is dwelt upon by many as a symptom of pregnancy. This, however, is a circumstance upon which little dependence can be placed, as the connexion between the uterine organs and the mammæ is so strong, that they sympathise in almost all the morbid affections and altered states to which the former are liable. We have a remarkable instance of this in cancer of the uterus, where the sympathetic pain in the breast is sometimes a source of considerable distress; and even in amenorrhœa and dysmenorrhœa the breasts give much uneasiness.

We shall not dwell upon the consideration of the

mediate or indirect sympathies in which the heart and lungs, &c. are engaged; as the symptoms indicative of pregnancy which arise from them are comparatively of rare occurrence. Those which exist between the uterus and the brain, either with or without the intervention of the stomach, are more frequently met with. The most common head symptoms are vertigo, headache, drowsiness, and occasionally, convulsions. There is also not unfrequently observed in the pregnant female a state of great anxiety and apprehension for her safety, and much solicitude for the result of her pregnancy; occasionally also extreme mental irritability is present, rendering her who was wont to be considered amiable and good tempered a torment to herself, and actually shunned and avoided by her friends. Antipathies, vitiated appetites, and desires, or, as they are termed, longings, are also developed in pregnancy, produced by the brain's sympathising with a vitiated state of the stomach, depending upon irritation of the uterus. These appetites are sometimes of so unnatural a character as to border on insanity. Authors appear to have been at considerable pains to collect such cases, many of which are sufficiently absurd and preposterous, as for instance, a longing lady making her breakfast of a baker's shoulder. These symptoms, although observed in pregnancy, are fortunately not very frequently so; neither are they confined to this state, as we have them equally marked in other diseases, and particularly in chlorosis, where they arise from the same cause, uterine irritation; therefore we can expect no great assistance from them in a diagnostic point of view.

Numbness and cramps of the lower extremities have been enumerated as symptoms of pregnancy; but these

may depend upon so many different causes unconnected with it, that it will be obviously unnecessary to dwell upon them here.

Constipation of the bowels also has been mentioned as an evidence of pregnancy, and is very common in this state. It may depend upon sympathy, or on mechanical obstruction to the passage of the fæces by the pressure of the enlarged uterus; but it would be loss of time to dwell upon it, when we consider the variety of causes upon which it may depend remote from pregnancy; and also the fact, that those very diseases which most resemble pregnancy are frequently attended with constipation, either from sympathetic or mechanical causes. The same observation will hold as applied to the reverse state of the bowels, diarrhœa, it having also been instanced as symptomatic of pregnancy.

The state of the bladder has been called into requisition to furnish proofs to elucidate this subject, and strangury, incontinence, and suppression of urine, have been alternately looked upon as symptoms of the existence of pregnancy. In the early months, strangury may occur from sympathy between the uterus and bladder, but it is more frequent in the advanced period of pregnancy, when it is caused by the mechanical pressure of the enlarged uterus. Incontinence of urine, too, sometimes occurs in the latter months, and is more troublesome during sudden involuntary actions of the abdominal muscles, as in coughing or sneezing, especially when the pregnant female is in the erect position.

[Our author speaks of the incontinence of urine as belonging more particularly to the latter months. I have repeatedly seen this as a symptom during the earlier months, second and third months, accompanied with pain in passing water, and a discharge

from the vagina, and many females have from this sign decided that they were pregnant. I have also known it to be mistaken for a gonorrheal discharge, and treated as such.]

However, not only a more certain sign, deduced from the state of the bladder, but also a more dangerous one for the patient when it occurs, which is fortunately but seldom, is suppression or retention of the urine, as it is, if not produced, at least kept up by that displacement of the uterus termed retroversion. This only occurs about the third or fourth month of gestation, when suppression, combined with other symptoms of retroversion, may in such case be looked upon as a strong evidence of the existence of pregnancy at that period.

About the sixteenth week after impregnation, the female is generally aware for the first time* of a motion low in the abdomen, attended by a feeling of agitation, and frequently by syncope or an hysteric paroxysm. This is termed quickening ; and, strange to say, medical men are at variance as to its cause, some asserting that it depends upon change of position of the uterus, now suddenly rising out of the pelvis wherein it had been hitherto lodged, while others, with equal confidence, ascribe it to the first active motion of the child, or at least the first of which the mother is sensible. When we find a fact such as the cause of quickening disputed, and

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* It was erroneously supposed by the older physiologists that the child was first endowed with vitality at this period ; and it will scarcely be accredited when we state, that in spite of common sense, and all the light which modern science has thrown upon the subject, the legislative enactments at present in force with respect to procured abortion are guided by and made conformable to this obsolete and worse than absurd error of our forefathers.—*Vid. Appendix A.*

arguments produced and assertions made in support of each opinion, it ought to occur to us to inquire, whether effects, if not identical, at least in a great degree resembling one another, may not be produced by dissimilar means. That such is the case here there can be no doubt; we ought not, therefore, to agree with those * who say that quickening is solely attributable to the sudden change of position in the uterus, nor with such † as would make it invariably appear to be the first sensation which the mother has of the motion of the child which she has conceived, but rather define it as a sense of the first perceptible motion in the uterine region about the sixteenth week after impregnation, having for its cause either change of position of the uterus, or the motions of the fœtus. Fainting occurs more frequently in those cases of quickening which have the suddenly altered position of the uterus for their cause, than in such as depend solely on the active motion of the child; although the latter may produce the same effects, particularly in irritable females, with their first children, when this sensation is often attended with considerable alarm on the part of the patient. A small quantity of blood is sometimes discharged at the period of quickening, and is looked upon by some as a corroboration of the existence of pregnancy.

When quickening has occurred, the symptoms of early pregnancy already treated of, and which are sometimes so distressing, wear off, the pregnant female being then relieved from a host of evils and sufferings; this may possibly be explained by the change of position of the uterus,

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* Paris and Fontblanque, Med. Juris., vol. i., p. 240.

† Denman's Midwifery, vol. i., p. 140.

which (whether the phenomenon depend upon the first fœtal motion or upon the sudden escape of the uterus) in almost all cases now rises out of the pelvis, and relieves the neighbouring viscera from the pressure which mechanically produced some of the distressing affections in question.

Quickening is earnestly looked forward to by those who are either doubtful as to their being pregnant, or who, being really so, suffer much from the early symptoms attending this state. We have seen that the symptoms already enumerated as indicative of the presence of pregnancy, are rarely all present together, while occasionally there are but few, if any of them. Again, some of them will at times be present together with contradictory symptoms, giving rise to much doubt on the minds both of the patient and her medical adviser. In this state of uncertainty, we are obliged to wait for the period of quickening as the only means to set this point at rest; and now we come to consider whether quickening occurs in every case of pregnancy, and whether it is impossible that the individual may be deceived in this symptom, by mistaking some other movement for it. If we could answer these queries in the affirmative, there would be in every case an end to all doubt of the existence of pregnancy, as we would only have to wait until the period of quickening to be convinced of the fact. Unfortunately, however, every day's experience proves that this symptom is not a less fallible criterion* than several of those already mentioned, as again and again we meet with cases where females not pregnant assert, and with such a semblance of veracity as

* "In some women the motion of quickening is so obscure as not to occasion any distress; and where the ascent of the uterus

could only arise from conviction, that they have experienced this sensation, and that it was attended with the usual symptom of fainting or weakness. It is quite extraordinary how women who have borne several children will thus insist on their having quickened, and the impossibility of their being mistaken after having so frequently experienced the sensation before. These observations do not merely apply to the circumstance of quickening, or the first motion of the child of which the mother only is sensible, but also to the motions which are perceptible more or less in almost every case from this period up to parturition; as I have known women to insist upon their having felt the child moving or kicking within them, not only in cases where there was indubitable proof of the child's death at the time, but also, as mentioned in the case of quickening, where no child was in the uterus.

From whence, then, arises this fallacy? We believe the most frequent cause of it to be the sudden escape of

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is very gradual, it is often not felt at all."—*Paris and Fontblanque, Medical Juris.*, vol. i., p. 240.

"Yet the motion of the child is so obscure in some women, 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 or 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 live for a long time."—*Denman's Midwifery*, p. 130, 6th edit.

"I am aware the circumstance of quickening is not always to be relied on; many old women who are determined to have children when they marry late in life, and many single women who wish not to have children, are very apt to be deceived."—*Dr. Conquest's Evidence on Report of the Proceedings of the House of Lords on the Claims of the Barony of Gardiner, p.* 106, *by Denis Le Marchant.*

a portion of air from one part of the intestines to the other. However, it may depend on other causes also; thus, I have known the pulsation of the aorta impose on females so firm a belief of the presence of a child in the uterus, as to baffle my utmost endeavours by argument to undeceive them. I saw a very remarkable case of this kind in company with Dr. Lee and Mr. Herron. The subject was much emaciated, having laboured for some months under obstinate hysteria, attended with aggravated dyspeptic symptoms, which she ascribed to breeding. On examination, she herself drew my attention to what she termed the quickening movements of the child; this was the aortic pulsation, which could be distinguished by the hand through the integuments; nothing could convince her that she was not pregnant.

The French authors mention spasm of the uterus as another source of fallacy calculated to deceive a woman, and lead her to suppose she had quickened. Some cases have occurred to me that might be referred to this; but whether we might not perhaps ascribe to this cause the motions felt, or supposed to be felt, in nervous or hysterical pseudo-pregnancy, (of which we will hereafter treat), might perhaps admit of some question. However, cases will occur in which the sensation of quickening cannot be referred to any of the above causes, and which can only depend on the effects of imagination, as frequently, on examining the abdomen most carefully in such, both with the hands and with the stethoscope, there could not be observed the slightest motion at the moment it was asserted by the individual that she felt it most distinctly.

Again, may not a woman be pregnant, and arrive at her full time, without quickening, or being sensible of

the motion of the child? Although this is comparatively a rare occurrence, it does occasionally take place. Baudelocque and Levret give instances of it; and I have met with two women who had every other symptom of pregnancy, and yet one of whom assured me she carried two children, and the other, one, to the full period without quickening or feeling the motion of the children.

[Cases of this nature I have not deemed as rare as is generally supposed—for where the fœtus is small and feeble, and much liquor amnii exist, or little liquor amnii, and the fœtus large, much motion may not be perceived; also in hydrocephalic children—one of the cases that I have met with the patient did not perceive the movements of the child, till it was felt kicking against her, after it was born.]

Add to this the possibility of a woman quickening during sleep, and of course the circumstance passing unnoticed. Thus, then, we perceive that quickening may either not occur when a woman is pregnant, or, as is frequently the case, a sensation so exactly resembling it as to be mistaken for it, (and that even by women who have borne many children,) may be and is very frequently experienced. Before concluding this subject, I shall mention a case shewing how completely a woman may be deceived with regard to quickening. In December, 1829, I was consulted by Mrs. M. She had had four children, and was about 39 years of age. She stated herself to be several months pregnant, a fact which, from certain circumstances connected with her case, I thought rather questionable. However, she assured me that she had suffered much from morning sickness on conceiving, and that she had distinctly quickened about two months before seeing me; that the quickening was followed by an inclination to faint, and that she had since observed

the motions of the child daily, a circumstance in which she stoutly affirmed it was impossible for her to be deceived, having experienced these sensations so often in her former pregnancies. This, like the former case, was one of dyspepsia, attended with aortic palpitations; and time has proved that, with all her experience, she was not infallible, as nearly three years have elapsed, and hitherto she has not been confined, and even she herself begins to despair, although she still affirms she must have had something alive in her.

CHAPTER II.

EVIDENCES OF PREGNANCY SENSIBLE TO THE MEDICAL ATTENDANT.

We have in the preceding chapter enumerated the signs which constitute one class of evidences of pregnancy; and it has been seen that those who most strongly advocate their importance, cannot say that any of them are invariably met with in that state; neither can they say that they are not often met with in the absence of impregnation. Besides, the fact of their being arrived at through the statements of the individual supposed pregnant, renders them far from satisfactory, or so deserving of reliance as to prevent our seeking for other more trustworthy evidences.

Our second division will embrace a class of signs, which, from their being cognizable to the scrutiny of the examiner, and not depending upon hearsay testimony, must approach nearer to what we may term demonstrative proofs. This we shall see more distinctly when we come to examine them in detail, when we shall find them not depending, as was generally observed in the former case, upon sympathies more or less remote, but most frequently being essentially and physically caused or produced by that which we wish to detect, namely, the fœtus itself.

To facilitate as much as possible the investigation of these symptoms which are actually cognizable by the medical attendant, they may be divided into three classes; the tangible, or those which come within the range

of a manual examination; the visible, or those which are exposed immediately to our view; and the audible, or those more recently discovered, and to detect which we are obliged to have recourse to auscultation.

Under the head of evidences of pregnancy sensible to the touch, we shall consider the alterations in size, form, and position of the uterus and the other organs of generation, as ascertained by manual examination; also the motions of the fœtus in utero, whether active or passive, which are communicated to the hand of the examiner.

The first in importance of these, from the attention which it engrosses, and the weight which has been attached to it by authors, is the vaginal examination, or, as the French term it, *le toucher*. In making this we have two points to attend to, the state of the uterus, and that of the vagina; but our particular attention is to be directed to the former. The best and most delicate position to place our patient in is on her left side on the bed, with the hips close to the edge of it; then, having smeared the index finger on the right hand with oil, to introduce it within the vagina, pressing against its side. If the person whom we examine be a virgin, we shall find this not unattended with difficulty, as the canal is in most cases contracted, and any attempt to force the finger into it produces considerable pain. When the hymen is perfect, so doing, without destroying this membrane, is almost impossible; in some it is more perfect and complete than in others; indeed, it occasionally closes almost entirely the vaginal passage. The absence of this membrane is not now, as was formerly the case, looked upon as a proof of the want of virginity; as there are cases in which it is scarcely perceptible at a very early age, when it could not have been destroyed; and

also because, even where it has been perfect, it may have been destroyed in various other ways without connexion of the sexes causing its rupture. Its absence, therefore, proves nothing with regard to pregnancy, as it cannot even inform us with any certainty whether the individual may have had sexual intercourse or not. On the other hand, is the presence of the hymen to be considered a proof of the absence of pregnancy? or can a hymen remain perfect when once a woman becomes impregnated? At first sight, this might appear impossible? however, facts prove not only the possibility of it, but its having actually occurred. There are even cases on record of females having the hymen, or a portion of it, remaining at the time of their labour;* two such cases have occurred to myself; and when we meet with a case of this sort, there is in general reason to suspect that impregnation has been the effect of one sexual connexion. Perhaps this accounts for the fact of its being oftener met with in seduced females; thus in the two cases which fell under my observation in hospital practice, the persons were of this unfortunate class; it has, however, been sometimes observed in the married state.† The presence of a hymen as a supposed proof of virginity is now so well known, that precautions are taken by the destroyers of virgin innocence, and even by females themselves, to avoid injuring it in the act of coition, under the impression, first, that it leaves them as perfectly virgins as before, and secondly, that it prevents the possibility of

* See Case of perfect hymen met with in a woman taken in labour, by G. Q. Tucker, M. D.—*Merriman's Synopsis*, p. 218. Also, Instituzioni di Medicina Forense di G. Tortosa, vol. i. p. 61; and Bulletin de la Societè Medicale d'Emulation, 1819.—*Dr. Champion.*

† Vide Mauriceau.

their becoming pregnant. We have, however, abundant proof of the incorrectness of these suppositions.

A remarkable case of this kind occurred to me in March, 1830. A very respectable man, servant in Mr. B.'s family, waited upon me in company with his niece, an interesting and innocent looking girl of about twenty-two years of age. He stated that his mistress was anxious to take her as her waiting-maid, but, as an apothecary, who had lately prescribed for the girl in a bad state of health, pronounced her pregnant, he brought her to me to ascertain the fact, or rather to disprove it, for of her innocence he seemed perfectly satisfied. On questioning the girl, at first, in her apparent innocence, she seemed quite amused with the imputation, asking me, with the greatest *naiveté*, whether she could have become so in her sleep; on persisting in my inquiries, however, she denied in a solemn manner the most remote possibility of such being the case, and that with such seeming absence of guile, as caused me to doubt whether her character had not been unjustly called in question. This idea was heightened when I could discover no abdominal enlargement, or sensible change in her breasts, and on her denying her having had any sickness of stomach; she admitted that her menses had not appeared for three months. What struck me, however, as very curious, was, that, on my proposing a vaginal examination, in place of its being objected to, as it almost always is, and that with extreme obstinacy, by delicate-minded females, and particularly by such as are unmarried, she acceded to it with alacrity, and appeared almost to seek it; the reason of this soon became obvious enough, as on my endeavouring to insinuate the finger within the vagina, it was completely stopped by

the most perfect hymen that ever came under my observation, and every attempt to proceed with the examination, and get the finger up to the uterus, was attended with such distress and irritation, as to oblige me to desist. Auscultation was now had recourse to, and the fœtal heart's action and placental souffle (evidences of pregnancy of which we shall treat hereafter) were detected. On my informing her that I had quite satisfied myself of her being pregnant, she still persisted in her denial, and laid great stress on the circumstance of her parts being perfect and uninjured. I now perceived the drift of her conduct in submitting so willingly to the examination, and that the girl herself, from this circumstance, was confident that she could not be pregnant. However, she was soon undeceived in this respect, and at length confessed that a married man had once had connexion with her, but that he had taken precautions to avoid injuring her, and assured her, whilst she remained perfect in this respect, she could not become pregnant, a fact which she implicitly believed. In this they were both deceived, as she was delivered in the Lying-in-Hospital on the 24th of August, 1831, of a full grown female infant.

In further conducting the vaginal examination, we are to ascertain the state of the uterus, or whether it has undergone those changes in form, structure, and position, which indicate its being impregnated. To render the information to be obtained in this way available, it will be incumbent upon us to be conversant with the form and feel of this organ in the virgin and the unimpregnated state.

In the virgin, the neck of the uterus (which is the part that must principally demand our attention) is

fleshy, firm, and hard to the feel, of a projecting papillary form, measuring about two-thirds of an inch in length. In the female who has borne children, this part of the uterus, although it never regains its primitive form and structure, approaches so nearly to it in many cases, that it would be next to impossible, on a vaginal examination, to pronounce whether the individual had ever borne children ; and even when removed from the body, the doing so would be attended often with much difficulty. At the same time, cases are often met with in which the neck of the uterus remains after child-birth broad, short, and flabby, with the os gaping, and never regains its original form. This is more particularly observed where a woman has borne a number of children, and that in quick succession.

After the act of impregnation, the orifice of the uterus, which before gaped, is sealed up by a peculiar glue, or adhesive matter. According to Levret, its two lips now form an equal plane, whereas heretofore the anterior one was prolonged downwards below the posterior. Stein states, that the orifice, which had been of a triangular form, now becomes circular. Granting the accuracy of these observations, the difficulty of ascertaining, with certainty, such nice distinctions, precludes in a great measure their general practical application. We must therefore look for some less equivocal changes.

In the first months, the volume and weight of the uterus increasing, the neck is pressed somewhat deeper into the vagina, which renders it apparently more prominent. (See *Plate I. Fig.* 1, which represents the uterus of a woman about three months pregnant.) This arises merely from its being more accessible to the finger on examination; afterwards, as the uterus rises out

of the pelvis, the neck is raised up out of our reach, giving the idea of a shortening, by this change of position. The neck and os are also said to be sensibly softer to the feel soon after impregnation. There is really little change in the length of the neck until after the fifth month, when it begins to shorten; it now feels much softer, and the body of the uterus, where it joins the neck, becomes somewhat developed. The neck is sensible shorter and broader in the sixth month; more so in the seventh; in the eighth there is very little neck in general remaining; and at the period of delivery it is nearly obliterated,* scarcely a vestige of the once prominent neck being perceptible; meanwhile, the developement of the fundus and body of the uterus has been proceeding in proportion.

[As very little has been said by our author respecting the progressive enlargement during the earlier months of the uterus, and as it is usually considered by all writers on midwifery that the uterus is confined to the pelvic cavity, and has even descended lower, though Roederer asserts that "after the third month the uterus projects above the pelvis," I shall endeavour to elucidate, as far as I am capable this point, from the second month of utero gestation till its completion, and the difference that exists between the primiparæ and the female who has borne children. During the first two months, the volume of the uterus increases in size, its fundus particularly, and by this increase gravitates to the posterior part of the pelvis, (sacrum,) and consequently throws the os uteri nearly against the pubes, hence changing the relation of its axis, and bringing the os uteri nearly within reach of the finger, and as the anterior portion of the vagina is shorter than the posterior, the finger has a shorter space to travel to reach it. It is this nearness to the vulva, with its increased size, that has been considered as a descent or prolapsus of the uterus, which has been

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* See Gooch on Diseases of Women, pp. 211-12.

fullv and clearly shown by Madam Lachapelle, and the lengthened appearance of the neck is only apparent; this lengthening is therefore not real. I was particularly struck with the correctness of this opinion, in a case that, prior to pregnancy. on examination discovered the neck not a quarter of an inch long, but when pregnancy ensued, was to the feel one inch. The truth, therefore, is, that the uterus suffers no prolapsus at any period of gestation, but is more increased in size, elevated, and altered in its axis, and as further evidence will show, that at the end of the third month, the uterus is about changing its axis, and presents the os uteri high up and behind, instead of anteriorly and near the pubes. This is satisfactorily accounted for, when we remember that the small intestines have continued to rest upon the fundus, and preventing it from rising, but the gradual increase of its fundus, with the gradual expansion of the broad ligament shortening it, and the intestines confined by the mesentery to the spine, permits, at this period, the uterus to be freed from the weight of the intestines, and to rise up to the brim of the pelvis, and sometimes above it, thus changing its axis completely.

In drawing a distinction between a primiparæ and multiparæ, our chief study must be directed to the circular feel of the os uteri, the changes it has undergone, or is undergoing from the third month to the ninth, and also after delivery. As our author has not added this difference, and conceiving it would be of essential value, in our determining upon it as a sign of pregnancy or after delivery, I have considered it of importance to introduce it.

The neck of the uterus in a primiparæ has at its extremity, in its centre, a small transversal, frequently round opening. This is the external orifice. It is closed, and sometimes cannot be felt; but when touched resembles the feel of a small dimple. The anterior lip appears thicker than the posterior, and longer, (though this is not truly the case, but is owing to its position.) The neck and lips are smooth and soft, the feeling solid, and has no fissure. In multiparæ, the neck does not present the same aspect. It is shorter, broader, irregular in its shape, especially on the left side, feeling as if it was nipped off, hard here and there; the lips are thickened, the anterior more than the posterior, and the external orifice or mouth is opened, so that the pulp of the finger can be introduced sometimes half way up. This description has some

exceptions, for it may remain without any change, and appear like a primiparæ (though rarely,) and an instance of this kind, I have seen where the female has had ten children. Having drawn this comparison, we can more easily pass to the difference between a primiparæ during pregnancy, and one who has had infants.

Third Month.—In a primiparæ, the transverse orifice (it is however sometimes circular) becomes circular, regular in its form and closed by a plug of tough gelatinous substance which is thrown out by the glands of the cervix; its mouth is smooth, has no cicatrices, the lips are on the same level. (The anterior lip has been considered as being longer than the posterior, and hence undergoes shortening at this period; this however is chiefly observed in multiparæ.) The whole of the neck is about an inch, having a velvety feel, and a circular dimple at its extremity, and does not admit the finger. The fourchette perfect and not torn. In multiparæ the orifice is also round, but it is irregular, uneven, and presents cicatrices, and particularly at the left, feeling as if cut off, (this point being generally that part of the neck which bears the greatest pressure of the head of the child, and suffering the greatest laceration.) It is opened sometimes, and permits the end of the finger slightly. The neck is larger, shorter, and softer, and feels bathed sometimes in its secretion. The perineum is short and thick, and feels torn.

Fourth Month.—The difference in the changes of the neck, and orifice of the uterus is not much greater, but at this period, the relation of the uterus to the axis of the pelvis is changed, and the os uteri, which was perceptible low down, will be felt higher up, and nearer the sacrum, the fundus anteriorly near the pubis and one inch above it.

It is at this period that Ballottement is generally performed, and it will be perceived that if the finger, as is generally believed to be placed, (and is directed) upon the neck, how much more difficult the descent of the embryo will be felt, than when the finger is placed upon the superior portion of the vagina, and the inferior region of the uterus. By the representation of the plate it will be seen to be more than twice the thickness. How much greater the uncertainty, and how much more easily will the movement of the embryo be perceived through this last method?

Fifth Month.—The fundus of the uterus is elevated within one inch and a half of the umbilicus, and of a spheroid shape. The neck in the primiparæ higher, inclined to the left and behind, and the vaginal portion of the neck slightly diminished, though at the expense of the vagina. (Hohl.) The portion between the vagina and the internal neck of the uterus, has not undergone any change. Its orifice still closed, only softer. The end of the finger can be partly introduced. (Busch, Jorg.)

In the multiparæ the neck is shorter, softer, orifice irregular, and allows the finger to be introduced half of the first phalanx, sometimes more. (Busch.)

Sixth Month.—In the primiparæ the vaginal portion grows softer and shorter. (Hohl.) The orifice expands more and the finger may sometimes enter the orifice, though this is rare. In multiparæ the finger penetrates half the length of the neck, and may sometimes pass to the internal orifice. (Kilian, Busch, Jorg.)

The fundus of the uterus has passed the umbilicus, and is half an inch above it.

Seventh Month.—In the primiparæ the finger can be introduced through one half in the neck, which is now placed higher up, and reduced in size one-half inch, and is diminished at the expense of the vaginal portion alone—which has become larger, and has only a few lines in the primiparæ. (Hohl, Nagele.)

In multiparæ the finger can be introduced to the interval orifice, in which it may engage, (Kilian,) and may enter it if she has had children,—the vaginal portion is nearly effaced. The fundus at this period is two inches above the umbilicus, and becomes ovoid.

Eighth Month.—The vaginal portion has been shown to undergo every month a change in its form, and width and consistence—becoming shorter and wider—(Hohl)—though the part above the vagina remains without any change. At the 8th month, in the primiparæ, the neck (vaginal portion) is almost completely effaced, still a few lines remain. (Schwarzer.) There is also great difficulty sometimes to reach the neck owing to its antiversion. The finger can be passed to the internal orifice, and is soft.

In multiparæ the vaginal orifice is soft, and is even with the sides of the vagina. The finger can be introduced so as to feel the head of the child. (Schwarzer, Busch.) The fundus is four inches higher, and the uterus of an ovoid shape.

Ninth Month.—In the primiparæ the internal orifice still preserves a few lines, feeling like a circular depression in the inferior and posterior part of the uterus. (Jorg, Schwarger.) Still a few lines remain of the vaginal portion and will only be effaced during the first pains of labour. In multiparæ the neck is completely effaced, the finger can feel the membranes of the child, and the part of the child which presents ; though sometimes the neck, at the end of pregnancy, is more bulky than in the unimpregnated state. The fundus has ascended very little or no higher. (Fuygel, Kilian, Bursch.)

This view of the changes of the os uteri, as being more characteristic of pregnancy, through its stage, is not in consonance with the generally received opinion of the profession in this country at the present day, and as taught, and is the reverse of the opinions of Baudelocque, Osiander, and Dewees, and others. This explanation, nevertheless, does not always obtain, for it must be conceded, that there are instances, though rarely, and more especially in primiparæ where the dilatation may and sometimes does commence from the inferior segment of the uterus, and extends outwardly. We must not either permit ourselves to be deceived by the anterior portion of the vagina, and sometimes the posterior, being attached low down, and giving the appearance as though there were no neck, when a careful examination made by raising up the walls of the vagina will discover the firm but slightly developed cervix. Our author has justly remarked, that the neck of the uterus will, in some cases, at the completion of pregnancy, be nearly as long as at the sixth, and Dubois has reported lately a case where it had undergone no change at the commencement of labour. These, however, are exceptions to the general rule, and do not militate against it. Respecting the circular appearance of the cervix uteri being considered as one of the evidences of pregnancy, (Stein,) I could not agree with the current opinion, as numerous vaginal examinations of pregnancy, at the earliest periods and the termination of utero gestation, have been exhibited to my class, when the transverse opening was noticed and sometimes triangular, in primiparæ, especially, though the feel was circular ; and reversely the circular appearance of the os uteri has been seen in the unimpregnated uterus, where no affection of the cervix uteri

existed, or discharge was issuing from the body of the uterus to alter its character.

After Delivery.—A few hours after labour the vagina and uterus are still greatly relaxed and dilated, and the contraction gradually taking place; when, on the fourth day, the internal mouth is still opened, and the finger can be passed some distance into the uterus; soft and purse like; the anterior lip feeling thicker than the posterior. Eighth day—the anterior lip can be felt larger than the posterior, and gradually becoming of its former form. The finger still passes into the internal ring. On the twelfth day, the finger cannot be introduced, the neck having more consistence and shape. On the sixteenth day, the finger is only admitted half the distance, the internal ring closed. On the twenty-first, the end only admitted, feeling still soft, fissured and the left nodulated, and still quite large. I have, however, seen two cases, where they were well formed and closed on the sixteenth day.]

Now, although the above is the description of the changes that usually take place in the neck and body of the uterus, yet these changes are by no means implicitly undergone in all cases, as in some "the neck is found as long in the eighth month as it is in others at the sixth;"* and, on the other hand, "it is as much altered at the fourth month in some women, as in others at the sixth."† Again, cases will occasionally be met with in the seventh and eighth months, and even in women in labour at the end of the ninth month, in which the neck of the uterus may be found unobliterated, and projecting a considerable way into the vagina; this is particularly observed in women with their first children.

The development or enlargement of the body of the uterus must also demand our attention. In the unim-

* Smellie's Midwifery, vol. i. p. 185.

† Especially in those who have had several children, in whom the neck yields more readily than in first pregnancies.—*Gooch*, p. 214.

pregnated state, if the finger of the examiner be pressed up between the os uteri and the pubis, it meets with, at least, no solid resistance: the bladder and soft parts here yield to his pressure, and if the pelvis be shallow and the patient thin, the fingers of the left hand, pressed firmly down into the pelvis from above, behind the pubis, may be even distinguished by the finger of the right hand introduced into the vagina. Not so, however, in the impregnated female; as here the body of the uterus, becoming enlarged, fills up this space, and the finger, on being introduced, meets with the firm resisting tumour or enlarged body of the uterus. Of course, the more advanced pregnancy becomes, the more distinct shall this sign be. We shall be assisted in this examination by pressing the left hand on the tumour, if any be observed, in the pelvis or abdomen, thus pushing down the uterus within our reach, and ascertaining how far moving the tumour above will alter the situation of that felt in the vagina, and particularly the neck of the uterus, or communicate the sensation of its being the motion of the same body above and below; and also what effect moving the tumour and neck below shall produce on that felt above. Now, although this may afford us some assistance in our investigation, it cannot be exactly conceded with Dr. Gooch, that by this means "the practitioner becomes *certain* that the tumour which is felt through the walls of the abdomen is the same as that which is felt through the vagina, the most satisfactory proof that it is an enlarged uterus."* The fact is, that in diseased enlargements of the appendages of the uterus or of the neighbouring viscera, such, for instance, as diseased

* Diseases of Women, p. 215.

ovary or distention of the fallopian tube, the alternate motion of the uterus and tumour above and within the pelvis will often produce the corresponding motions alluded to. I recollect perfectly meeting with a case of extra-uterine conception, and one of ovarian dropsy, in which the uterus was displaced, having its fundus pressed downwards towards the pubis ; and both of these cases were pronounced by men of experience, who relied principally upon this symptom, as cases of ordinary pregnancy. However, admitting even that by these means we have ascertained it to be an enlarged uterus, may not this organ be enlarged from a variety of causes independent of pregnancy ? May it not be tubercular ? contain hydatids, water, air, mole, or even polypous growth ?

There is a method of distinguishing the enlargement of the uterus from pregnancy, which will be available in many cases, and is well deserving of our attention, more particularly as it is less liable to deception, and goes more directly to prove the presence of what we seek, namely, a child in the uterus, than any signs as yet spoken of. This is the passive motion of the child produced by tilting it upwards, with the finger suddenly pushed against the anterior part of the uterus between the *os uteri* and pubis ; when, whether the child be alive or dead, provided it be moveable and sufficiently bulky to communicate the sensation, we shall observe it to rise from the finger, floating in the liquor amnii, and again descend with a slight shock, resting on the spot from whence it was dislodged, and communicating an impulse to the finger. This sign is detected most distinctly when the head of the child is situated beneath ; and it is with the head the finger most frequently comes

in contact. The period of pregnancy which answers best for the application of this test is from the fifth to the seventh month inclusive, as at an earlier or later period the child is either too large or too small to communicate the shock, and admit of the facility of motion necessary to produce it. In many cases it is impossible to produce this passive motion of the child; this may arise from narrowness of the vagina the child being fixed, or situated high up in the uterus, so as to render it difficult to reach it with the finger in the manner pointed out. Although this passive motion of the child, or, as the French term it, *abattement*, is a sign of considerable importance, we must even in it guard against deception. The case most likely to deceive us by a resemblance to the *abattement* would be one of ascites combined with abdominal tumour, particularly if this were moveable; such, for instance, as fatty tumour of the mesentery, or tumours attached to any of the floating viscera.

Thus, then, we may perceive that the *tactus eruditus*, as it may be with every justice termed, in vaginal examination, is by no means easily attained; and independent of the difficulties here enumerated, there are others which shall present themselves to the mind of every one who has been obliged to have frequent recourse to this unpleasant operation, such are depth and contraction of the parts, extreme irritability of the individual examined, the pain often experienced, and the absolute impossibility sometimes of prevailing upon delicate-minded or irritable females to submit to what they look upon as an indecent and revolting ordeal. Besides, with respect to the practitioner himself, he will find, that to arrive at accurate conclusions by this means requires

no trifling experience upon his part; and even with the advantage of this, he will not be quite free from the possibility of deception.

Abdominal enlargement, if not the most certain, is at least the most familiar evidence of pregnancy, and, when at a sufficiently advanced stage, invariably accompanies this state. Until after the third or fourth month, and oftentimes later, the uterus does not rise out of the pelvis, and of course produces no abdominal enlargement. It may appear opposed to this, that some females, immediately after conception, become full and distended in the abdominal and pelvic regions; if we inquire into the cause of this, however, we shall generally find that it depends upon alterations in dress, as many females think it proper to loosen their stays, and make their dress in general more easy about their persons at this time; the effect of this change will be relaxation and fulness of the integuments, and often a collection of air in the intestines, and of consequence abdominal distention. In the early months, the uterus falls rather lower, as we have seen, into the pelvis, often producing a flattened or empty appearance in the lower part of the abdomen, which has even attracted so much attention as to have given rise to the poetic French proverb—

"En ventre plat, enfant il y a."

In the third month the uterus is still in the pelvis. (See *Plate I. Fig. I.*) About the fourth month, sooner or later, according to the circumstances already dwelt upon, the fundus of the uterus is to be observed emerging from this cavity, and rising over the pubis. From thence to the sixth month it enlarges progressively, and may be felt between the pubis and umbilicus,

the abdomen previous to this time usually becoming tense and rounded, and that to a greater extent than one would have reason to expect from the additional bulk of the uterus. The fundus of the uterus generally arrives at the umbilicus about the end of the sixth month; in the seventh, it gets about two inches above this point, (see *Plate IV.*:) in the eighth, it gets into the epigastric region, and approaching to the scrobiculus cordis in the ninth month, (see *Plate VI.*), it falls somewhat lower down a little previous to labour.

The spinal column prevents the uterus keeping an exactly central position; it will therefore be found to exhibit a greater bulk at one side or the other, according as the child is more placed to the right or left side.

Whilst the progressive enlargement of the uterus in the order above mentioned merits our strict attention in cases of doubtful pregnancy, we ought to be aware that under certain circumstances this order is liable to variations. The pelvis, for instance, being much under or over the standard size, will cause the uterus to rise earlier or later into the abdomen. Again, the parietes of the abdomen being very tense and unyielding, may render the ascent of the uterus into the abdomen apparently more early; while, on the contrary, where there is an extreme degree of relaxation in these parts, as in women who have borne a number of children, the uterus does not rise so early, but may lie lower in the abdomen, the tumour projecting in some cases directly forward, or even hanging down over the pubis.

I met once with a very remarkable case of the latter description in a woman who had had a number of children; when in labour of her second child, hernia took place at the umbilicus, which gradually increased in ex-

tent with each child she carried, until at length the impregnated uterus made its way completely out of the abdomen, and became suspended over the pubis. I saw her at the expiration of the ninth month when carrying her twelfth child, when the pendulous tumour corresponded with that represented in the plate.

Do we meet with any cases in which there occurs a progressive enlargement or development in the abdomen, exactly corresponding in progress and degree with that observed in pregnancy? We certainly do meet with cases in which a defined tumour or fulness is observed, first in the pelvis, and then rising gradually out of this and proceeding upwards, as does the impregnated womb; ovarian dropsy, for instance; yet, if we watch these narrowly, we shall, in general, find them proceed at a slower or sometimes at a quicker rate than the impregnated uterus does, while in some we shall observe an irregularity of development, from its proceeding rapidly for a time, and then becoming slower, or altogether suspended. The progress of the suspected tumour, then, it is of importance to be acquainted with, when pregnancy is to be detected; but it requires to be watched a considerable time before it can enable us to arrive at any decision.

The form and nature of the tumour also demand our attention. That produced by the impregnated uterus is in the early months circumscribed, and of rather a globular form, which, when pregnancy is more advanced, approaches to an ovate, becoming narrower from above downwards; and the tumour then often exhibits projections and inequalities to the touch, produced by the limbs and other prominences of the fœtus, with interspaces, affording a yielding sensation, caused by the uterus distended with the liquor amnii at these parts.

It requires pregnancy to be well advanced ere the parts of the child can in this way be distinguished through the uterus and integuments; and even then it is not always practicable. Where there is much fatty deposit in the integuments, it is often impossible. When it can be done, however, it furnishes us with an additional sign of some importance. Yet individuals have been deceived in this sign; and I have known it confidently asserted that the limbs of the child could be distinctly felt, in a case of fatty ovarian tumour, in which there certainly was considerable inequality of surface. Again, in extra-uterine fœtation this sign is even more distinct than in ordinary uterine pregnancy, a circumstance that we ought to be prepared for. To avoid deception* in cases where there is an increase of volume in the abdomen, we must submit our patient to a careful manual examination. The best means of doing this is to place her lying on her back in a bed, with her knees drawn up so as to relax the integuments; then, spreading both hands over the

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*L'Augmentation du volume du ventre, qui est le signe le plus sensible pour le vulgaire, n'est pas moins sujette a induire en erreur que les autres signes, si on la considère isolement. Nous devons remarquer a cet egard, que ce signe, qui d'ailleurs n'est sensible qu'a la fin du troisieme mois, l'est naturellement tres peu chez certaines femmes jusqu'a une epoque fort avancée; soit parce que l'embonpoint de quelques-unes peut masquer l'enflure qui est due a la grossesse, et porter obstacle aux observations qui dependent du tact sur le diverses regions de l'abdomen, soit parce que les bassins sont quelque-fois figurés de maniere a contenir la matrice déjà beaucoup dilatée, sans qu'elle s'élève au-dessus du pubis. Il est en outre certaines femmes qui voulant cacher leur grossesse, font si bien, soit en se serrant fortement, soit par une démarche etudièe, ou par l'arrangement de leurs vetements, qu 'elles parviennent souvent, comme j'en ai connu, a faire plusieurs enfans sans que le public s'en soit douté.—*Foderé Med. Leg.*, t. i. p. 442.

abdomen, to cause her suddenly to expire, as by coughing or sighing, when we may succeed in distinguishing a circumscribed, spherical tumour, rising out of the pelvis, which, without having recourse to this plan, might have escaped us, particularly at an early stage. We may in this way conclude it to be the uterus: and if along with this we can distinguish the parts of the child, our proofs are more satisfactory; this, however, we cannot always do, and may be deceived in the uterus, which, we have seen, may be distended from a variety of other causes, or morbidly enlarged. From these facts, then, the conclusions we must arrive at on this subject are, that in the early months this sign is of no avail, as then the size of the abdomen is not increased. That in the advanced stages of pregnancy it is always increased, although from peculiarity of conformation, habits, or dress, this increase is much more apparent in some than in others: that when the limbs of the child can be distinguished, the nature of the tumour is quite evident, although even in this there is a possibility of deception: and there are several diseases, some of them those most likely to be confounded with pregnancy, in which there is an abdominal tumour, in many respects resembling that of pregnancy. Therefore, the most we can say for this sign is, that pregnancy never occurs, at least in an advanced stage, without abdominal distention, although the latter frequently occurs without pregnancy; or, in other words, that the want of this sign is a negative proof of the absence of pregnancy in the advanced stage, whilst its presence is but an equivocal symptom of the existence of this state.

Percussion, by its rendering us acquainted with the consistence of bodies concealed beneath the surface, may

be serviceable in investigating pregnancy. In order to be acquainted with the sounds we expect to meet with in our examination, we ought to be conversant with those produced by striking gently with the tips of the fingers substances corresponding in texture and constancy with the parts we wish to detect. If we strike in this way gently upon the cheek,* having previously inflated the mouth, we shall perceive a very sensible difference between the sensation felt and sound emitted here and those observed on percussing the soft or fleshy part of the thigh, or the calf of the leg, the former giving us at once the idea of our having struck upon a soft bag distended with air, whilst from the latter is emitted an obtuse dull sound, indicating the substance underneath to be solid but soft. Again, let us observe how different is the sensation felt and what a very peculiar sound is produced by striking the cranium, or the superficial part of the tibia, or, or as it is vulgarly called, the shin; and what a contrast this bears to both the others, the feel and sound here informing us that a dense, dry, and hard substance has been struck. These distinctions we must become acquainted with, they are abundantly obvious and will strike the most superficial observer. In the unimpregnated female, and in the impregnated, in the early months, percussion produces the first mentioned sensation and sound, which is more or less tympanitic over the greater part of the abdomen according to the quantity of air contained in the bowels. There is also to be met with a mortification of this tympanitic sound, depending upon the co-existence of fluid with air in the bowels: this sound Piorry terms *humorique*, it is most frequently met with in the region of the stomach.

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*Piorry de la Percussion, Paris, 1828.

As the uterus rises out of the pelvis, we have a sensation and sound, in addition to the tympanitic, confined to a surface immediately over this organ, and resembling in a more or less modified degree those mentioned as produced on striking the calf of the leg or thigh. They are at first circumscribed, being only perceptible above the pubis; however, as the uterus enlarges, the extent over which they are perceptible increases, whilst that of those described as tympanitic proportionably diminishes. In the advanced months, the feel and sound mentioned as produced by percussing a dry dense substance become perceptible, and are observed more distinctly the nearer the pregnancy is to the full period: we generally can produce them by striking the most inferior part of the uterine tumour, just above the pubis, where the head of the fœtus, which produces the phenomena in question, is most frequently situated. They are sometimes more perceptible on the right, at others on the left side, according as the head is placed; neither are they always confined to the lower part of the tumour, but may be detected at its upper part when the head is situated there, as in breech or feet presentations. We may not unfrequently distinguish the head by a manual examination through the integuments and uterus; thus corroborating the evidence we arrive at by percussion.

It is not to be expected that we shall always find the above phenomena so distinct in their characters in abdominal explorations, as are those emitted on percussing the cheek, the calf of the leg, and the shin. However, the nearness of their approach in character to these will serve to indicate pretty accurately the nature of the subjacent structure. In advanced pregnancy, then, we are to bear in mind that all the phenomena above mentioned

will be met with; the tympanitic at the superior and lateral parts of the abdominal tumour, corresponding to the situation of the bowels underneath, which, in pregnancy, almost surround the margins of the uterine tumour; the dull and soft, over the uterine tumour generally, modified to a certain extent at the parts of the uterus containing fluid; and the dense and dry (sec), where the head of the fœtus or the prominent bones come in contact with the walls of the uterus, which is frequently at the inferior part of the abdominal tumour. In a diagnostic point of view, these phenomena, when perceived accurately in the situations above mentioned, will corroborate the other evidences of pregnancy; at the same time, as tumours of different degrees of consistence and varying structure may afford sensations and emit sounds on percussion, to a certain extent resembling those described, the evidence derived by this means must be received with caution.

Of the tangible signs of pregnancy, those depending upon the motions of the fœtus are not the least in importance. Certain motions of the child have been elsewhere considered, such as were sensible to the individual herself, and also those ascertained on a vaginal examination. Those ascertainable by the medical attendant, through the abdominal parietes, now demand our attention.

The motion of the child, thus observed, may be either active or passive; the first can only occur when the child is alive, and capable of inherent vital action: the latter may be produced, whether the child be alive or dead, by any cause capable of altering its situation in the uterus; such as change of position on the part of the fe-

male, the effect of the child's own gravity, or external force so applied as to displace it.

For the purpose of ascertaining the active motions of the child, the female must be placed on her back, the shoulders and upper part of the trunk being somewhat raised, and the legs drawn up, so as to relax as much as possible the abdominal muscles. The hands of the examiner are then to be spread over the uterine tumour, (if such be perceptible,) and a slight pressure made with the tips of the fingers. In this way a sudden jerking motion may be perceived at some part of the tumour produced by the change in position of one or more of the extremities of the fœtus, and evidently the effect of muscular action. This will be stronger or weaker in proportion to the age and energy of the fœtus and the space the limb has to pass through before coming in contact with the walls of the uterus. On these accounts, they will of course be more easily distinguished in advanced than in early pregnancy.

When it is impossible to succeed, by the means above mentioned, in detecting the active motions of the fœtus, dipping the hands in very cold water, and suddenly applying them as already explained, may enable us to do so. Both methods will, however, often fail, and we shall not be able to detect them by any means. Upon what depends this apathy or slowness, on the part of some fœtuses, to be affected by a stimulus which appears to have so marked an influence in exciting the muscular motions of others, it is difficult to say. Of the fact, however, every day's experience may convince us. If the child were dead, or even delicate or weakly, it could easily be explained; but this apathy and absence of active motion is to be observed in cases where there is

abundant proof, by other means, not only of the fœtus being alive, but also perfectly healthy.

Now, although the active motion of the child, as perceived by the medical attendant, is, for obvious reasons, more to be relied on than the sensation of quickening or child's motions, as perceived by the female herself, yet it is even possible to be mistaken as to the movements of a fœtus by an examination through the abdomen; and we have known of such cases in the hands of experienced practitioners. This mistake may depend on the same sources of deception as in the case of a female herself, namely, the sudden passage of a portion of air from one part of the intestine to another, on spasmodic action of the abdominal muscles, of the uterus itself, or of certain fibres of either. Even the pulsation of the aorta, particularly if there be any irregularity in it, might, on a hasty examination, lead us astray.

The passive motion of the fœtus *in utero*, which is by the French authors termed *ballottement*, depends, as has been stated, upon external causes acting mechanically upon it; and in a few cases its own gravity, upon the parent changing her posture, can produce it; when it moves like an inert mass within the cavity of the uterus, the motion becoming sensible to the examiner by the impulse communicated on the child's falling against the sides of this organ. The size of the uterus, which is for wise reasons much larger than the fœtus, and its distention by the liquor amnii, account for the facility of motion possessed by the latter, which we might at first suppose fixed in its position.

To detect this, we may place the individual in the position adopted in the last examination; and applying the fingers of each hand spread out against the lateral

parts of the abdominal tumour, suddenly press upon it, first at the one side and then at the other, observing whether any impulse be conveyed to the fingers by these alternate movements. The impulse observed is very peculiar, and one which, when once experienced, we are not likely to forget. It is that of a solid body falling against the side of a membranous bag containing a quantity of fluid in which it is partially suspended. Let us suppose a foot-ball knocked gently from side to side in an ox bladder filled with water, and we have the sensation exactly. This sign, like the *abattement*, (or sensation produced by the tilting up of the child with the finger in the vagina,) is most easily detected after the fifth and up to the seventh month. Before the fifth, although, from the great disproportion existing between the fœtus and liquor amnii, the facility of motion is greater, yet the smaller bulk of the fœtus, at this early period, renders the impulse less distinct; besides, from the distention of the uterus with the fluid, the fœtus cannot be dislodged by the efforts of the examiner; neither is the uterus sufficiently high in the abdomen, in many cases, to admit of an examination. Again, its size, as compared to that of the uterus, renders the child after the seventh month less easily moved; although in some cases, where there is a plentiful secretion of liquor amnii, its passive motions may be observed easily in the eighth month, and in some even up to the full period.

We might at first expect that we could with ease detect this sign in every pregnancy after the fifth month; this, however, is not the case, it being in some instances extremely difficult, in others quite impossible to do so. The uterus being scantily supplied with liquor amnii, so as not to admit the motion of the child necessary

to produce the impulse, is one very evident cause for this. Great tention of the abdominal integuments, by binding back the uterus against the spine, may also prevent our detecting or producing the passive motion. Extreme abdominal distention from air in the bowels, fluid in the cavity, or cellular tissue of the integuments, or even much fatty deposit in this part, may produce the same effect.

A sensation in some respects resembling *ballottement* may be produced independent of pregnancy; and a case of this kind once occurred to me, the real nature of which it was at first a difficult matter to distinguish. It was one of ovarian solidification and enlargement, complicated with abdominal dropsy. The tumour being moveable, an impulse resembling that conveyed in pregnancy, by the motion of the fœtus in the liquor amnii, was produced, which, on a superficial examination, might have appeared conclusive; on a closer investigation, however, no circumscribed uterine cavity could be detected within the abdominal parietes, to which the motions of this moveable body were confined, the enlarged ovary, on the contrary, coming into immediate contact with the walls of the abdomen. To form a just diagnosis in cases of this kind, it requires some accuracy of discrimination; but with proper precautions, where it is applicable, *ballottement* may be esteemed a test of considerable value.

This passive motion of the child in the womb has been looked upon by many, when it occurs from its gravity, or is the effect of change of posture on the part of the mother, as one of the most conclusive evidences that it is dead; with what justice we shall afterwards inquire.

The inferences we must draw, then, from the tangible evidences of pregnancy depending upon the motions of the child, are, that they are among the most important signs at present relied upon; although, even in the assistance to be derived from them, we are not free from the possibility of error. Their depending upon physical changes in the being we wish to detect, as well as being sensible to the perception of the medical attendant himself, and often producible by him at pleasure, very much enhance their value in a diagnostic point of view.

CHAPTER III.

VISIBLE EVIDENCES OF PREGNANCY.

UNDER the denomination visible evidences are included those which (as the name sufficiently indicates) we can detect by sight. The changes which the breasts undergo we may consider first in importance, more particularly as they have been by some insisted upon as the least equivocal evidences, and worthy of much reliance. They consist in an increase in size and sensibility of these organs, a distention of their veins, and a development of the nipples and surrounding follicles, with the formation of the areola, and the secretion of a serous or milky fluid. These phenomena do not all constantly occur, neither is the period of their occurrence invariable, some of those which generally appear about the third month being occasionally earlier and often not shewing themselves until immediately before labour.

The changes which occur in the breasts in pregnancy are the effects of sympathy with the uterus. Of the strong reciprocal sympathy that exists between the uterus and mammæ, every day's experience must sufficiently convince us. This sympathetic connexion is not, however, confined to the pregnant state; how frequently do we observe patients labouring under cancer or other malignant or painful affections of the breast, complain of shooting pains in the region of the uterus? and again, how often do we observe not only in organic but frequently in functional derangement of the uterus, as in the case of simple suppression or retention of the menses, enlarge-

ment and sensibility of the breasts? We therefore cannot be too guarded in forming an opinion from the state of the breasts, as the connexion between them and the uterus is so intimate, that the one can scarcely be affected independently of the other. At that period of life when the menses are altogether ceasing, women often flatter and deceive themselves with the idea that they are becoming pregnant; and in such the breasts almost invariably sympathize with the uterus. Where there is a tendency to fatty deposition, the breasts will become much developed, thus adding to the deception.

The formation of the areola or dark circle round the nipple has been much relied on by some as an indication of pregnancy; and Dr. Hunter is said to have placed such confidence in it, that he on one occasion pronounced a female subject, in the dissecting room, pregnant upon this single sign, although the hymen was perfect; and his opinion, on dissection, proved correct.* On the other hand, Dr. Denman, with all his practical opportunities and acute powers of discrimination, has arrived at a very different estimate of its value. After stating the areola to be the effect of the previous enlargement and alteration of the breasts, and that it may be produced by any cause capable of effecting an alteration in their state resembling that which they assume in pregnancy, he says, "the areola is therefore formed in many of the complaints which resemble pregnancy, and though generally, not invariably, in pregnant women."† Dr. Gooch, who appears to place in the areola its full share of confidence, says, that it rarely depends on other causes than pregnancy, and that generally it may be

* See Lowder's MS. Lectures. † See Denman's Midwifery.

looked upon as a sign that the patient is, or has been, pregnant; he, however, says, "I saw two young and newly married women, within two days, who had made preparation for lying in, and who were not pregnant. In both, the areola was dark, though (if their history is to be trusted) they had never had children."* With regard to the areola, the conclusion we must arrive at is, that although it is not unworthy of our attention, taken with other symptoms, particularly in first pregnancy, yet, from the frequency of its occurrence in cases where pregnancy did not exist, and its absence in cases where it did, without strong corroborating proofs at least, we can place little confidence in it. The complexion of the individual has a vast deal to do with its production; and we will often observe it very distinctly marked in virgins of a dark appearance, whilst in pregnant women of fair complexion no trace of it will be visible, even when they are advanced in this state. Again, where it has been once well marked in consequence of one or more pregnancies, it seldom or never disappears entirely; and on this account, in cases of married women, it must be acknowledged as a test far from positive in its nature.

[Respecting the test of pregnancy by the areola, much discrepancy of opinion exists among accoucheurs, as to the value of this sign, some regarding it as characteristic, and others attaching but little importance to it. Dr. Hamilton relies chiefly upon the turgescence of the areola, and, according to him, it was observed only in those who were pregnant. Dr. Montgomery, whose observations are acknowledged to be the best presented to the profession on this subject, relies more "on the development of the little glandular follicles, and the moisture around the areola, and that the alteration of colour is by no means the circumstance most observable; though he remarks, that pregnancy may exist and the

* Gooch, p. 205.

areola remain deficient in at least one of its essential characters, and that too in its colour." We do not conceive, that, during the latter months of pregnancy, and after the fifth there will be much difficulty in the greater number of cases, where an opinion may not from this sign be inferred that pregnancy exists ; but can we form any decided opinion during the earlier months? can we discriminate between cases of dysmenorrhea, uterine tumours, pretended amenorrhea, and pregnancy, by this sign? and how far is its influence of value? For the last few years, I have endeavoured to draw a distinction between these cases, and I must confess without much encouragement. The comparison has been frequently instituted where there were assembled eight or ten cases of uterine affections, pretended amenorrhea, pregnancy, and some with their menses upon them. The cases of dysmenorrhea, and uterine affections, were characterized by a marked areola moist, the papillæ and nipple prominent, and the cases of pregnancy presented the areola of a dark colour, no papillæ, but moist at the base, and nipple elevated. Lately a case in which there had been eczema of the nipple was presented for examination to the class, with the appearance of a moist areola, (though no papillæ were present,) and nipple elevated, so as to present an appearance more like the cases of pregnancy, where no papillæ were present, and to create the impression that the patient was pregnant. She was unmarried, and had her menses a few days since. I have, in numerous instances, exhibited to the young gentlemen, cases of pregnancy, where auscultation has discovered the fœtal heart, and in one case, where the patient did not consider herself pregnant, though she had been married one and a half years, and had not felt the movements of the fœtus, the uterine souffle and the fœtal pulsation were clearly marked, and a slight areola, but no papillæ, though moist at the base of the elevated nipple. Her menses had been arrested about four months. This case is interesting, as proving that the fœtal heart can be heard before the patient has felt the movements of the child, and at the sixteenth week, and where a very small areola existed, and no papillæ, or turgescence. One of the darkest brown areola, of an inch in diameter, and the nipple not sunken, I ever beheld, was in an unmarried female, who had her menses upon her. If there be any signs respecting the areola, that could be more uniformly

relied upon than others, I should be disposed to look upon the inflated, moist areola, and especially at the base of the erect, reddish-brown nipple. From these observations, I could not therefore place so much confidence in the colour of the areola, its turgescence and enlarged papillæ, as is given to it; if I were permitted to draw a comparison, I should think that probably one half of the cases of pregnancy, only presents the turgescence of Hamilton, and the elevated papillæ of Montgomery, for there have been so many instances presented of uterine affections, and especially dysmenorrhea, where the changes and appearance of the breast have so perfectly resembled pregnancy, and on the other hand, many cases of pretended amenorrhea, where pregnancy existed, and its signs were wanting, or so imperfectly developed in their prominent points, that, as a sign taken "per se," I believe it cannot, and especially in the earlier months, be much trusted to; but as a co-existing sign of pregnancy, it is of great value.

In the earlier months, the difference in the areola that exists between the primiparæ, and the female who has had children, is, that in the female who has been pregnant, the dry, rather wrinkled appearance of the areola at the end of the first month becomes moister, if the papillæ existed, they become increased in size, and the nipple moist generally; and especially if the areola is placed upon the stretch, the moisture becomes more evident, shewing that the separation of the scurf, which has existed upon it, is taking place, and the colour of the areola, its moisture, the erection of the nipple at the second month, is as evident, as it is in the primiparæ at the fourth month.

The secretion of fluid, whether serous or milky, in the breasts, is still more fallacious as a test of pregnancy, and, like the areola, may be produced by a variety of causes quite independent of this state. Mere titillation or friction of the breasts or nipples may produce a secretion in the gland: it is not unfrequently observed in infants; and I met with an old midwife, of sixty-five years of age, who could at pleasure extract milk, or a fluid resembling it, from her breasts. This I

have seen her do, and she assured me she was in the habit of suckling her grand-children. Virgins have often secreted milk ; and even men have undertaken the office of wet nurses, instances of which are mentioned by Humboldt, in his Personal Narrative, and by the Bishop of Cork in the Phil. Trans. for 1741, where he gives an account of a man who, on the death of his wife, succeeded in suckling and rearing his child.

Of the changes in form which the abdomen undergoes in the state of pregnancy, we have elsewhere treated. There are, however, two matters connected with these changes which have been enumerated as evidences of pregnancy, and of which we can have ocular proof ; the development or emerging of the umbilicus, and the cracked or fissured appearance observed in the abdominal integuments. To the first of these Dr. Denman attaches considerable importance, and states that we have the umbilicus constantly emerging, throughout the progress of pregnancy, until it comes on a level with the integuments of the abdomen. Unfortunately, however, we find the same change taking place in some cases of ascites. Mahon says that he has frequently met with cases of this kind, and such have occurred to myself. The uterine tumour, by extending the abdominal integuments more than the skin can conveniently admit of, will sometimes produce an inflamatory action in it, attended with a yielding of the cuticle and a weeping of lymph. The cutis vera will also occasionally give way, the cuticle remaining uninjured ; and the skin then assumes a curious fissured appearance, a lesion which I have met with in a case of enlarged ovary. As these changes may occur in any state of extreme distention of the abdomen, being merely the effect of mechanical stretching, and as

their occurrence is by no means general in pregnancy, it is evident that no great reliance can be reposed on them.

The state of the countenance and appearance of the skin have also been called into requisition as evidencing conception and pregnancy. The eyes of the female who has conceived are described as assuming a hollowed, languishing appearance, and wanting their usual lustre, whilst a dark circle surrounds them. The countenance is said to assume in some a sunken, hollow, and wasted look, whilst the skin may be covered with freckles or dark coloured spots; in others, it is said, the countenance may become suffused, exhibiting evidences of determination to the head; or eruptions on the face and body may occur. These affections, although they are occasionally met with as symptomatic of pregnancy, can scarcely be looked upon as evidences of this state, as well from its frequently occurring without them, as from their being very commonly met with in the absence of pregnancy, and that, too, in those very cases which will afford us most embarrassment, such as stomachic and uterine derangement, accompanied, as we so frequently find them, with suppressed or altered menstruation, and gastric irritation, and often distention.

Juandice has also been enrolled amongst the signs of pregnancy. When it occurs in the advanced period of gestation, it is said to depend upon pressure of the uterus on the gall duct; but it is sometimes met with in the early periods, and must then depend on the state of the alimentary canal and liver; the same cause, it is evident, may produce it in any period of pregnancy. It is at all events so rare an accompaniment to gestation, that it, as well as several of the other signs enumerated, scarcely merits

our attention as such. When we want proofs of the existence of a natural phenomenon like pregnancy, any assistance we can derive from so fortuitous and rare an occurrence as that of jaundice, can afford us very unsatisfactory and doubtful data, indeed, on which to ground our opinion.

Swelling and œdema of the lower extremities, sometimes extending to the groins, vulva, and lower part of the abdomen, have been looked upon as evidencing pregnancy, and certainly not unfrequently occur in this state, more particularly in debilitated females, or those in the lower ranks, who are obliged to be very much in the erect posture, attending to laborious occupations. Still, if we consider how frequently they occur in dropsy of the abdomen, both general and encysted, in organic disease and enlargement of the abdominal, thoracic, and pelvic viscera, as well as in functional diseases of the uterus, attended by suppression of the menses, and even in cases of extreme debility, we shall at once pronounce them unworthy of confidence.

A varicose state of the veins of the leg occasionally occurs in pregnancy, and is looked upon as symptomatic of this state. Its inutility in this respect will appear evident when we consider in how small a proportion of pregnant women it is met with, and that it may occur either as an idiopathic affection from disease of the veins, or as the effect of a variety of other causes, which, like pregnancy, prevent the free return of blood from the lower extremities. The same observations precisely will apply to hæmorrhoids, which have also, and with as little justice, been reckoned amongst the signs of pregnancy.

A chemical test has lately been proposed by M. Nauche,* in which he states that pregnancy may always be detected by "allowing the urine of pregnant women or nurses to stand for some time, say from thirty to forty hours, when a deposit takes place of white, flaky, pulverulent grumous matter, being the caseum or peculiar principle of the milk formed in the breasts during gestation."

[The credit of this discovery cannot be entirely conceded to M. Nauche, as it has been shown that Savanovola laid claim to it in 1486, and it has been partially noticed by Avicenna and others. Since the promulgation of this test of pregnancy by M. Nauche, Dr. Golding Bird has given his attention to the subject, followed by the researches of M. Equisier and M. Tanchon of Paris, Mr. Letherby of London, and Dr. Stark of Edinburgh. Much interesting matter, as corroborative of this sign, has been given by these gentlemen, still, it has little reliance reposed on it as a sign "per se;" in truth, by many it is denied in toto. It was my intention to have given publicity to my investigations on this point, but I was anticipated by Dr. E. Kane, of Philadelphia, who has given a very valuable paper on this subject, (Amer. Jour. Med. Science. July, 1842,) and shall now merely bear my testimony respecting it.

The urine which is taken from a pregnant female, during the morning, is usually of a pale yellow colour, and slightly milky in appearance, and when exposed to the air, during the first day or after, there begins to appear a cottony looking cloud, and from this a flocculent whitish matter is deposited at the bottom of the fluid, and from this, from the second to the fifth day, we perceive small opaque bodies rise from the bottom to the top of the fluid—and gradually collects to form a pellicle, which has been called kiestine—of a whitish opaline colour, and might aptly be compared to the greasy scum which covers the surface of fat broth, and, when seized by its edges, may be removed sometimes wholly. The pellicle remains in this state, varying from two to five days;

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* See Lancet for August 27, 1831.

it separates into small figures, and the urine becomes of a muddy colour, minute opaque bodies detach themselves from its surface, and sink to the bottom of the vessel. This peculiar appearance has been described by Avicenna, as " Sicut grana ascendentia et descendentia," and which Dr. Stark, of Edinburgh, considers as a substance " sui generis," and, from his experiments, has concluded that it is a new substance, and terms it gravidine, from gravidus, big with young, as occurring during the state of pregnancy.

The number I have examined has been fully 200. Of this number a minute has been kept of 165. Pregnant 125. Varying from the 3d week to the 4th month, 80 ; from this to the completion of the term, 45. After delivery, the next day, 10. During nursing, from the 4th day to the 8th month, 20. Pregnant, while nursing at the 4th month, 2. Dysmenorrhea, 4. Uterine tumours, 2. Ovarian tumours, 2. Chronic inflammation with dysmenorrhea, 2.

The earliest period I have noticed it was at three weeks in two cases, and this was calculated from the time the urine was taken till the commencement of labour, which was eight months after. The lady had been married three years, and been perfectly regular during this time, and never went over three days. They were both at first only suspected to be so. Every month, for three months, the urine was examined, and each month the test was observed. Some of the cases did not give the test on the first trial, but have during the second and third. Why this occurred, I cannot account for, as care was taken that the room should be of a proper temperature, seventy degrees, and also tried in small wine glasses, which are preferable to vials, as generally they have remained for days without forming any pellicle, but when exposed in an open vessel, would exhibit it in its usual time. I have known it to remain two weeks without giving any pellicle or deposit, but when placed in a room of sixty-eight or seventy degrees, would show its true character.

There is a discrepancy of opinion, respecting the smell resembling old cheese, some, that it did not appear (with few exceptions,) to give any but the ordinary ammoniacal smell, and others, that it resembled the smell of old cheese. Some of the cases were well marked, but many others exhibited nothing more than

urine which could be retained some time. I should not consider it as invariable. The cloud-like appearance has been frequently noticed in healthy urine, and sometimes as if milk had been added, and has formed a pellicle on the top. The most perfect specimen of pellicle and cloud-like appearance which were noticed, were in two cases of dysmenorrhea; in two cases of uterine disease, and one case in particular of hemorrhagic congestion, with considerable enlargement of the uterus; where nausea, abdominal enlargement, areola with elevated papillæ, and secretion of milk from mammæ existed, a perfect pellicle and a deposit was formed at the usual time. No pregnancy existed in this case, as I was in attendance on this female for several months after. In a second case of chronic inflammation of the uterus, spinal disease and dysmenorrhea, the same circumstance was noticed.

The distinction I am disposed to draw between pregnant urine, and non pregnant urine (though as the two last cases would seem to militate not only against it, but as a test) is, that in non-pregnant women, the pellicle is of a thicker nature, does not form so quickly, collects into a mouldy mass, does not give at the proper time, (two to three or four days after the pellicle is formed) a deposit of an opaque nature, which gradually settles at the bottom, and which Dr. Stark calls "gravidine." I have repeatedly tried the tests recommended by Dr. Stark, and can corroborate their accuracy, but I should be disposed to consider with Dr. Griffiths of London, that the deposit was lithate of ammonia. From these examinations, and adding the number of cases of the above named gentlemen, there will have been examined five hundred cases, and from this number four hundred and fifty gave the test of pregnancy. A question very rationally arises, and which is frequently asked, is it of any value? From the number of cases adduced, I should conceive there could not be a question, but that it is a sign of considerable value, and especially, I think the earliest sign that can be tested, though liable to the restrictions and exceptions which will ever belong to all the signs of pregnancy, and could not be considered as a positive or certain sign.]

Fully alive to the benefits that would result in practice from having a certain test regulated by chemical laws, the able assistance of Mr. Kane was obtained, and

a variety of specimens of urine submitted to examination, when the conclusions arrived at on this subject were—

That a white flocculent precipitate, similar to that described, subsided spontaneously after twenty-four hours, not only from the urine of pregnant women, but also in equally great quantity from that of a virgin ætat. 14, and that of a woman nursing for two months.

That in all the cases of pregnancy the urine was found to contain a small quantity of *albumen** in its uncoagulated state, although this was not observed in the urine of unimpregnated females contemporaneously examined.

From these facts the inferences we deduced were, that the spontaneous deposit could afford no assistance whatever in detecting pregnancy; and that as to the albumen, its validity as a test would be rendered very questionable by the frequency of its appearance as the effect of diet, eating unleavened bread, for instance, as well as of certain states of diseases, such as dropsy, steatomatous deposits, &c., exactly the cases in which the want of an accurate test is experienced. We are informed by Mr. Waller, in his edition of Denman, p. 171, that M. Pereira had, upon examination, also satisfied himself of the insufficiency of M. Nauche's test.

[Respecting the peculiar bluish or purplish tinge of the vagina, upon which M. Jacquemier has called the attention of the profession during the earlier months, I cannot give a positive opinion, though numerous cases of pregnancy at the earlier months have been examined. M. Jacquemier has stated that between 4500 and

* It is scarcely necessary to state, that the solution of the bichloride of mercury affords by much the most delicate test for this, a few drops of it throwing down a white flaky precipitate.

5000 females have been examined by him in the La Force prison, and in no instance has he been mistaken. This is corroborated by Parent Duchatelet. I regret I cannot bear my testimony to the correctness of this observation. In some the appearance has been very evident, but in many there did not appear any change between those who were pregnant, and the unimpregnated, though they were examined at the same time. In some cases of chronic inflammation of the uterus, and congestion of the neck, both the neck and the vagina presented this appearance, and I have specially noticed it in the syphilitic patients, which class M. Jacquemier has principally examined; and M. Jacquemier himself affirms that the vaginal membrane may acquire a darker colour than usual from other causes than pregnancy. What, then, is the difference? During the latter months of gestation, I have frequently seen it, but there appears sufficient reason why this should take place at this time, for the uterus is enlarged, and pressing upon the principal venous vessels which supply the vagina, creating a stasis of blood. It has been particularly noticed by Mr. Cruickshank during the rutting season. From dioptrism the signs of pregnancy cannot derive much aid, independent of the difficulties attending its being tested.]

CHAPTER IV.

AUDIBLE EVIDENCES OF PREGNANCY.

Having now enumerated those symptoms hitherto confided in as evidences of pregnancy, it must at least be admitted, that there is no deficiency in number, whatever conclusion may be arrived at with regard to their quality; and yet several others might have been added; but, as they would merit our attention even less than many of those already mentioned, they have been omitted. Of the foregoing symptoms, there is scarcely one on which even the most conversant with the subject can so far rely in all cases as to say, I am convinced, from the presence or absence of this or that sign, that a woman is, or is not, pregnant. There may appear exceptions to this rule, such as the active or passive motions of the child; but even in these we may be deceived; neither can they always be observed when pregnancy is present. The inference we must therefore draw, is, that the means at present in general use, when there is difficulty or uncertainty with regard to pregnancy, are often insufficient to detect, or to enable us to pronounce upon this state; and that our embarrassment, so far from being diminished, is rather increased by the number and variety of what are denominated the *signs of pregnancy*. No one, therefore, can question the importance of having, in cases of this kind, a limited number of distinct and demonstrable evidences (strictly so called) to depend upon, such as could be detected with facility, and which it would be impossible to counterfeit, in place of leaving

it, as it is at present, to the result of inference drawn from innumerable, indefinite, and often fortuitous circumstances, many of them individually insignificant, and worthy of our attention only when taken collectively. The audible evidences which we are now to consider, if they do not enable us to arrive at this desirable object, shall at least assist us much in doing so; and when taken in conjunction with a few of the leading symptoms already dwelt upon, we shall by their assistance, it is confidently anticipated, be enabled to pronounce, in almost every case, with pretty great certainty, provided the pregnancy be sufficiently advanced. It is but justice to auscultation, as a means of diagnosis, to add, that this conclusion has not been arrived at hastily, nor without testing it extensively, as well in the author's own practice as in that of other practitioners, where its efficacy has been frequently proved in cases the most perplexing and embarrassing in their nature.

The individual whose claim is established as the first to call the attention of the profession to auscultation, as a means of diagnosis in the puerperal state, is M. Maior,* of Geneva. He detected the fœtal heart's action through the abdominal parietes, by applying the ear to the abdomen of a female in an advanced state of pregnancy. Here, however, his discovery stopped; nor did he seem to have been aware of the extent of benefit to be derived from a knowledge of this important fact; so, at least, we have a right to infer from his neglecting to prosecute it further.

Dr. Kergaradec,† who appears to have been quite un-

* Bibliotheque Universelle, vol. ix. p. 248.

† Memoire sur l'Auscultation appliquée a l'Etude de la Grossesse, &c., par M. J. A. Lejumeau de Kergaradec, D. M. P., Paris, 1822.

acquainted with Maior's previous discovery, accidentally arrived at a knowledge of the same fact. Perceiving the importance of it, with a praiseworthy spirit of investigation, he followed up the inquiry, and further discovered a simple pulsation, accompanied by a peculiar sound resembling the *souffle* observed in certain diseases of the heart, which he supposed to denote the place of attachment of the placenta to the interior surface of the uterus. He established M. Maior's discovery of the fœtal pulsation, and by repeated observations ascertained that this, as well as the *souffle*, could be heard at a much earlier period than that mentioned by Maior.

Before entering upon the separate consideration of these phenomena, there are certain circumstances to be attended to. When auscultation is had recourse to, the person examining may either apply the ear directly to the abdomen, or make use of the instrument recommended by Laennec in diseases of the chest (the stethoscope.) The first is termed immediate, the second mediate auscultation. Each of these methods will offer their advantages and objections, and we shall occasionally succeed with the one better than the other, according to circumstances. However, *cæteris paribus*, we may state this to be the fact, that our success will in general be greatest with the means we have been most in the habit of adopting. M. Fodera* asserts, in combating the use of the stethoscope, that in general the same sounds can be heard much more distinctly by the naked ear than with that instrument, and that the *souffle*, or blowing sound, can be heard in this way when it is not at all perceptible through the stethoscope. Siebold †

* Majendie, Journal de Physiologie, tom. ii. p. 116.

† Abbildungen aus dem Gesammtgebiete der Theoretisch, praktischen geburtshülfe, &c. Von Ed. Casp. Jac. Von Siebold. Berlin, 1829.

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goes still farther in his opposition to this instrument, which he calls the "hearing trumpet," asserting, that, notwithstanding all the pains he took, and the frequent experiments he made, he could not hear any thing with it, a fate he shared with many other accoucheurs, who were not more fortunate than he was in their attempts; while, on the contrary, he heard at once with the naked ear as well the double beat as the whizzing sound of the simple pulsation. Where the phenomenon we wish to explore is confined to a small circumscribed spot, more particularly if there be other sounds in its neighbourhood likely to drown it by their force, or be confounded with it, we shall generally succeed better with the stethoscope; on which account it is always preferable to use it in searching for the fœtal pulsation, particularly when the placental sound is observed in the same neighbourhood. In the early months, when the placenta is proportionably so much more developed than the fœtus, we can, by applying the stethoscope and varying its position, frequently recognize the pulsation of the latter, where, from the confusion produced by the extent of surface covered by the head, and the impossibility of applying the ear to a particular part, we could not otherwise have succeeded. The tympanitic sound produced by the passage of air through the intestines in the early periods of pregnancy is likely to cause more confusion when we explore the abdomen with the naked ear. At the full period of gestation, and more so when labour is somewhat advanced, the situation of the fœtal pulsation is so low, often, indeed, immediately above the ramus of the pubis, as to render any attempt to discover it with the naked ear, if not altogether impracticable, at least extremely difficult and inconvenient. In exploring for

the placental *souffle*, although Fodera says you can hear it more distinctly with the naked ear, we have seldom or never met with a case in which it could be heard with the naked ear that it could not also be heard quite as distinctly with the stethoscope ; and cases frequently occurred to us where, from its situation and existence at a small spot only, it was impossible to detect the sound by the naked ear, when it was sufficiently distinct with the intervention of the stethoscope. Mediate auscultation, then, appears preferable, as well from motives of delicacy, and its being less objectionable to the patient, as from our being able not only to arrive, in general, at as accurate conclusions by it, (when once habituated to it,) but also, in particular cases, to detect some of the phenomena by this means at a time when we could not by immediate auscultation. However, although mediate auscultation is recommended in preference, it is not meant to do so to the exclusion of the other method, as cases will occur in which we may reap advantage from having recourse to both.

Whilst on the subject of the application of the ear to the abdomen, it may be well to mention, that, before attending to auscultation, I had frequently been in the habit of applying my cheek to the abdomen in cases of doubtful pregnancy, to endeavour to detect the motions of the child, and have often succeeded in observing them in this way when I could not by the hand. This method was long since recommended by Wrisberg, and we are at a loss to say why it has not been received into general use, as its efficacy is quite apparent.

[The motions of the child can frequently be felt when the ear is applied over the hypogastra—when a sort of frolement is per-

ceived, which I have sometimes noticed before the female has felt the motions of the child.]

It has, no doubt, been objected to by some on the score of delicacy; but the very persons who object to it on this ground are in the habit of both practising and recommending the indiscriminate employment of vaginal examination, between which and this method, a comparison on the score of delicacy cannot for a moment hold. It is not easy to explain why we should arrive at more accurate conclusions in this way, than merely by the use of the hand; possibly, the weight of the head being irksome to the fœtus, induces it to struggle as it were to free itself from the pressure, by which means it imparts to us, as well through the sense of touch in so delicate a part as the cheek, as through the ear, its slightest motions, which might have escaped our observation on the application of the hand. However, the principal advantage we derive from this means of exploring seems to be, that, by allowing the head to rest for a sufficient length of time on the abdomen, the abdominal muscles are not, in the mere resting of the head on them, stimulated to contraction, as they are in a manual examination; on the contrary, they become fatigued, and being (as we may express it) taken off their guard, they relax and yield, allowing the head to sink more and more into the abdomen; until at length, when there is no gravid uterus in the way, we may often succeed in pressing the cheek upon the vertebral column, thus convincing ourselves of the absence of pregnancy at least in an advanced stage. This method is particularly serviceable in cases of reputed or mistaken pregnancy, supposed to be in the latter months, and where the patient, wishing to deceive her medical attendant, throws the

abdominal muscles into a peculiar action, imparting to the hand the sensation of the presence of real pregnancy. This method is also calculated to assist us much in cases of a collection of air or water in the abdomen, and most of all, when we meet with extremely irritable females, who cannot allow the hand to come in contact with the abdomen without the muscles being thrown into immediate and violent involuntary action, which is kept up as long as such examination is continued. It must be observed as a general rule, although, indeed, the motives requiring this caution are of so obvious a nature as to render adverting to it almost unnecessary, that in every case, where we explore the abdomen to discover the fœtal and other phenomena by mediate or immediate auscultation, or where we apply our cheek to observe the motions of the child, we must interpose a fold of linen, which does not in the slightest degree interfere with the communication of the sounds. The plan we are generally in the habit of adopting is to examine the patient lying on her back on a bed, with a sheet thrown over the abdomen; we may sometimes detect the phenomenon through the patient's clothes while she stands erect: however, from the attrition of these causing confusion, perhaps we shall find the former method preferable in most cases, and certainly so in the early months.

As the first indication of pregnancy afforded by auscultation is the *souffle*,* we shall commence with the consideration of that phenomenon.

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* Kergaradec terms the sound *battemens simples avec souffle ;* M. De Lens, in his additional observations appended to Kergaradec's memoir, *pulsations placentaires.* The latter denomination, though involving an hypothesis which is disputed, has at least the merit of being shorter than the other. The term *souffle* is shorter still, and

If we examine, either with the naked ear or the stethoscope, the abdomen of the pregnant woman, we shall (provided the pregnancy be sufficiently advanced, observe a peculiar blowing or hissing sound. This sound is to be met with in almost every case, and is observed at different parts of the uterine tumour. It does not always exhibit exactly the same characters; yet these are sufficiently striking to render it recognizable in almost every case. It assumes the different varieties which Laennec describes under the term *bellows' sound*, namely, the bellows' sound, properly so called, likened by that author to the continuous murmur, similar to that of the sea, familiarly exemplified by the application of a large shell to the ear; the rasping or sawing sound, which is occasionally found so exactly imitated as to lead the listener to imagine an artisan at work quite close to him; and the musical or hissing sound, so well described by the same author. A sound, resembling the cooing of a dove, is sometimes observable, but this is comparatively rare. A more frequent peculiarity to be noticed, is, a strange drone resembling that of a bagpipe accompanying the sound, but yet without interfering with it. The most constant form we meet with, however, is a combination of the bellows or sawing with the hissing sound, commencing with one of the former, and terminating with the latter; and this is in general so protracted, that the last *souffle* is audible when the subsequent one commences.

These sounds are, from the distention of the uterus, and consequent facility of examination, easily detected

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when once defined, equally intelligible. In the author's paper in the fifth volume of the Dublin Hospital Reports, it is printed *soufflet* throughout, from an error in the transcription.

in advanced pregnancy; and although not so loud or sonorous in the earlier stages, yet to the practised ear they become equally distinct. None of the above mentioned varieties are peculiar to particular stages of pregnancy, being detected indifferently in them all. The extent of surface over which the sound is observable, varies much according to circumstances; in some it is confined to a small circumscribed spot, in others it is audible over a greater surface, perhaps two or three inches square; and in a few it is to be met with over the greater part of the uterine tumour, although there is in many cases one spot in particular, perhaps not larger than the end of the instrument, where the sound is vastly more distinct and sonorous than elsewhere. The *souffle* is most frequently found in the lateral and inferior parts of the uterus, but it may have its seat in any part of it; and it must be added, that cases will occur, although, if proper precautions be had recourse to, very rarely, where we shall not be able to detect it. The cause producing the sounds in question requires explanation, with a view to which, we must briefly inquire into the nature of the vascular structure and circulation of the uterus.

The ovum of the human being is, on its descent into the uterus, unendowed with those inherent conditions necessary for its development and the growth of the fœtus, which birds, amphibious animals, and some fishes, in so remarkable a degree possess. It is therefore necessary that there should exist a connexion between it and the mother: upon this relation must depend its arriving at maturity; and the cessation of this not only checks its further growth, but actually puts a period to its existence. This consideration explains the necessity first, of an external organ capable of connecting the

embryo with the mother; and, secondly, of an internal conformation adapted to this external organ, and possessing structural peculiarities necessary for its temporary existence.

The organ most essential for the growth of the embryo, by the vascular connexion which it sustains between this and the parent, is the chorion, which varies in different animals in its means of effecting this object, existing either in the form of a vascular membrane, with a villous collection of vessels on its surface, and corresponding villi on the uterus, as we see in the *solipeda*, and more distinctly in the *swine*, assuming a cotyledonous form, as observed in the cup-like bodies of the ruminantia; or expanding into the most perfect form of placenta, as exemplified in the human subject. In the human ovum during the first weeks of impregnation, we find a number of very delicate vessels running on the whole outer surface of the chorion, and exhibiting a flocculent and vascular appearance; after which period, these vessels are observed to extend over a surface relatively smaller as the pregnancy becomes more advanced. In the second month, this general flocculent vascularity having diminished much in the extent of surface over which it was observable, the decidua, or uterine membrane which covers it externally, becomes united to the floating extremities of its vessels, and by such union at this vascular part the placenta is formed.

The placenta, having been thus formed, bears a greater proportion in size to the fœtus and uterus in the early than in the latter months of gestation. In the second month it extends over a space nearly equal to one half the surface of the inner wall of the uterus; in the third, it continues to decrease in extent, but evidently

increase in thickness, and becomes more compact in structure ; and, in the last month, it covers but about one-fourth of the inner wall of the uterus. It is generally of an irregularly circular, but occasionally of a slightly oval figure, subject, however, to variations.

We shall now find a peculiarity of structure in that part of the uterus to which the placenta was attached: and with this we have more to do. For this purpose, let us examine the uterus of a woman who has died undelivered, in advanced pregnancy; or, as this is not easily obtained, let us take that of a woman recently delivered, which will answer equally well. We shall find at some part of the inner wall of the organ a raised uneven patch, smaller or larger as it is more or less perfectly contracted. On closer inspection, we shall discover this to consist of a number of projecting extremities of vessels, some filled with grumous clot, others gaping and empty. This is the portion of the uterus to which the placenta had been attached, and these the mouths of the vessels by which the peculiar connexion between the uterus and placenta was sustained. Let us now make a section of the uterus, and observe what a difference of structure exists between that part where the placenta was attached and the remainder. The placental portion, as we may designate it, appears to consist of a congeries of vessels, tortuous, ramifying, and expanding into cells or sinuses, whilst the remaining part exhibits the parenchymatous structure of this organ, with merely occasional vessels interspersed. This placental or extremely vascular structure is confined to a circumscribed portion, changing, not gradually, but abruptly, into the ordinary uterine texture. In the neighbourhood of the ligaments, at the lateral parts of the uterus, we shall also find a more full distribution of

vessels, even when the placenta is not attached there, as the principal vessels which connect the uterus with the maternal system pass into it at those points.

This distribution of the uterine vessels, then, we must bear in mind, as upon the transmission of the blood through the arteries of that part of the uterus to which the placenta is attached the phenomenon in question, the *souffle*, principally depends. We say *principally*, because it appears that it may also be produced by the passage of the blood through the arteries at the lateral part of the uterus above alluded to, without the placenta's being attached directly to that part. In a paper published by the author in the fifth volume of the Dublin Hospital Reports, the production of the sound in question was ascribed to the passage of the blood through the placental part of the uterus, as in every case then examined by him the placenta was found attached to the spot in which the sound had been heard. However the similarity of structure there alluded to might have led him to expect a similar phenomenon at the lateral part of the uterus also, not having observed such at the time, he abstained from putting forth any views unsupported by facts or experiment; further observation, however, since satisfied him that the sound may be produced in certain cases in the arteries at the lateral part of the uterus also, although the placenta is not actually attached to this part.

Lest the explanation here given of the cause of the *souffle* should appear a matter of assumption, the facts, observations, and experiments which led to it shall be briefly adverted to.

The placental sound is present in pregnant women only while the uterine circulation is connected with that

of the placenta, and ceases when the vessels which serve to sustain this connexion are no longer pervious; a fact which we can ascertain by examining a woman shortly before parturition, when we may observe this phenomenon in full energy; and again, when the uterus is empty and perfectly contracted after delivery, or when, the fœtus having died *in utero*, a complete obstruction in this system of vessels is produced, in which cases not the slightest vestige of the phenomenon can be discovered.

The sound is distinctly periodical, alternating with intervals of cessation, and corresponding in every case with the mother's pulse at the wrist, with which it is synchronous.

It is always heard either in that part of the uterus to which the placenta is or has been attached, or, as already mentioned in the lateral parts of the uterus where the distribution of vessels so resembles that in the placental part of this organ. These facts we have repeatedly proved by manual examination, when it has become necessary to introduce the hand into the uterus to remove the placenta, as well as by ocular demonstration after death.

The resemblance which exists between the vascular structure in the uterus, above described, and that observed in aneurism by anastomosis, where a similar phenomenon occurs, as well as the circumstance of this sound's existing in the cow,* an animal whose utero-placental structure, as we have already seen, approaches near to that of man, go a considerable length in proof of its dependence on the above cause.

Add to the above, the anatomical structure of the uterus, as already explained, so peculiar and unlike any

* The cow is the only animal in which the author has succeeded in detecting the *souffle*.

other natural structure of the body, the further consideration of which we shall presently enter upon, when we come to consider how this phenomenon is more immediately produced.

To avoid unnecessary repetition, the cases by which these facts were proved are here omitted, as we shall instance a sufficient number in the sequel. Of their accuracy, however, every individual engaged in midwifery practice can easily satisfy himself. Granting, then, their correctness, we may justly conclude, that they prove the dependence of this phenomenon, first, on the *transmission of blood;* secondly, on this blood being transmitted *through arterial*, not venous, tubes; and, lastly, on these tubes being situated *in the uterus as described.*

It could not possibly owe its existence to the passage of blood through the arterial system of the fœtus, the placenta as connected with this, or the umbilical arteries, as the periodic impulse existing in the circulation of the blood through these nearly doubles in frequency that of the phenomenon in question, or the pulse at the wrist of the mother in ordinary cases; and, independent of this circumstance, the passage of blood through them exhibits distinct indications. With less reason could it be supposed to depend on the passage of blood through venous tubes, either of the mother or fœtus, the umbilical vein, or veins of the placenta, as in all these the motion is that of a continuous stream devoid of any periodic impulse.

Dr. Haüs,* speaking of this sound, says, "It cannot

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* Die Auscultation in Bezug auf Schwangerschaft, von Dr. C. I. Haüs, p. 51. Würzburg, 1823.

be in the uterine arteries, else why the intermission? Why, too, is it often perceptible in the whole uterus?" In another part of his work, he states as his opinion, that the phenomenon in question has its seat in the aorta or iliac arteries, and supposes that altering the position of the child would remove it.

In answer to these arguments, it is merely necessary to state, that as to the intermission, the same objection would hold against the supposition that the *souffle* is produced in the aorta or iliac arteries. Again, how does he explain the fact of the sound's being heard in the part of the uterine tumour corresponding to where the placenta is attached, and ceasing when this system of vessels becomes impervious, or the uterus contracted? As to the fact of its being heard over the whole uterus, if this gentleman had sufficiently inquired into the matter, he would have found that it is rarely if ever perceptible over the whole of that organ, although it is often met with over a greater or less extent of its anterior wall; and in such cases he might have detected the placenta attached there: also, where the sound could not be detected, he might have found it attached posteriorly. Further, had he in such cases attended to the position of his patient, and examined minutely and carefully in the lumbar and iliac regions, he would have been less frequently disappointed in his attempts to detect it than he appears by his own account to have been.

The explanation he would substitute, is, that the sound has its seat in the aorta, or iliac arteries; how, he does not attempt to explain, but forms this conclusion because *he thinks* that altering the position of the child would remove it. Why then did he not put this to the test of experiment, if it appear so simple a matter as he

would lead one to suppose? We can only state, that this has been tried by us repeatedly without its being attended, even in one instance, with the result he anticipates. But why should this sound be present in the aorta or iliac arteries in pregnancy? Is it that there is, on Laennec's principle, a spasm of the main trunks, and consequently, a narrowing of these in the very case, of all others, which requires the freest transmission of blood, where a new system of vessels has been rapidly developed, and must necessarily be supplied with this fluid? Or is it that the pressure of the uterine tumour narrows the passage, and produces the sound spoken of? This latter would appear to offer some explanation of the circumstance, on the principle in question; but, let us ask, why have we not a *souffle* invariably produced in other cases of abdominal or pelvic enlargement as well as in pregnancy, where the pressure on the large vessels is equally great? Again, why is not the sound in pregnancy always confined to the seat of one or other of the vessels spoken of? Why should the sound in question change or cease on the death of the fœtus, and consequent obstruction of the utero-placental vessels? Why should it be present when the uterus is relaxed, and the vessels pervious, and, on the contrary, disappear when that organ is contracted and low in the pelvis, when its unyielding firmness and solidity must cause its pressure on the vessels to be greater? These considerations, with the facts already stated, tend to establish the position of the sound's being produced in the uterine vessels as described; but the actual manner in which the phenomenon is produced in these does not, from the obscurity of the investigation, admit of being so demonstrably explained.

The manner in which the *souffle*, when situated in the other arteries of the body, is produced, does not as yet appear to have been quite agreed upon. Laennec, after discussing the subject at considerable length, arrives at the conclusion that it depends upon spasm. Dr. Corrigan ascribes the phenomenon to the currents produced by the passage of blood from a narrow orifice into a wider tube. It certainly appears more reasonable to explain what we may, with propriety, at least in the instance of placental *souffle*, term a constant phenomenon, upon the principle of fixed physical causes, than that of spasm, which we can only term a casual and changing vital operation; but besides this, Dr. Corrigan's views would rather appear to be corroborated by the phenomenon in question. Let us bear in mind the difference that exists between the virgin and the pregnant uterus. That, in the latter, a new system of vessels becomes rapidly developed, capable of furnishing with the means of growth a new being, and the appendages peculiar to it. The organ which heretofore received merely a sufficiency of blood to sustain its own vitality, and admit of a slight periodic discharge, in consequence of the alteration in size which has taken place, and as well the comparative increase in the vessels already existing as the development of new ones, now receives a quantity of blood, bearing a very large proportion to that circulating in the rest of the system, while the great vessels supplying this organ do not appear sensibly altered in size. With this view of the circulation we can find no difficulty in admitting, that between this system of vessels and the main trunks supplying it, a disproportion in calibre exists If we take into consideration with this the peculiar distribution of the vessels of the uterus at the placental part,

and the free anastomosis which takes place here and in the lateral parts, the vessels meeting and converging there, and that a comparatively small stream is now rushing from one or two arteries into an extensive system of tubes, the aggregate calibre of which is infinitely greater than that of the vessel or vessels from which it flows; the inference of Dr. Corrigan with regard to *bruit de soufflet* generally, may with every justice be drawn, namely, "that the motion (of the blood) is that of a current; the sides of the arteries, instead of being acted upon by a body of fluid moving forward almost as a solid mass, receive the impulse of a stream whose particles are in motion with different degrees of velocity."* The existence of the sound here, beyond the point where the artery is comparatively narrow, tends, as in Dr. Corrigan's experiments, to prove its dependence upon the above causes. However, the explanation of the manner in which the sound is actually produced, although it undoubtedly merits our attention, is not in point of fact a matter of much importance as far as we have to do with it. It is quite sufficient for our purpose to be aware, that *it is* produced, and *where* it is produced; as to the manner of its production, therefore, we need not cavil.

It is necessary to mention to those unacquainted with stethoscopic phenomena, that, in their examination for the *souffle*, they might, without sufficient attention, be led astray by other sounds, either from the resemblance they bear to this, or the effect they have in concealing it. The respiratory murmur is sometimes conducted from the lungs across the thoracic to the abdominal

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*Lancet, vol. ii. N, S., p. 1.

parietes, and may embarrass, but can scarcely deceive us, if we be acquainted with or prepared to expect it. The sonorous *râle* resembles somewhat the placental sound, and is occasionally conducted over the abdomen in the same way as the respiratory murmur. We can invariably distinguish this by its corresponding in frequency with the respiration as calculated by the heaving of the chest, whilst the *souffle* is synchronous with the pulse at the wrist, or, in other words, we ought, generally speaking, to count three placental sounds for one respiratory or sonorous *râle*. By attending to this rule, unless the respiration be very rapid indeed, it can scarcely lead us astay: but, independent of the difference of the sound which those conversant with it can at once detect, if any doubt exist, tracing it along the abdomen will in these cases set the point at rest, as when it depends upon respiration, it becomes more and more distinct as we approach the chest, and on arriving there, its respiratory character is quite apparent.

Were we merely satisfied with hearing a rustling sound without examining it, or attending to its accurate periodic recurrence and relation to the pulse, we might possibly be led astray by the intestinal murmur, or noise produced by the passage of wind from one portion of the intestines into another. We should, therefore, in all our examinations for this phenomenon, keep the ear steadily applied for some minutes, and at the same time feeling the pulse at the wrist, observe whether the sound we hear correspond with it.

Bruit de soufflet, occurring in the abdominal aorta or its great branches, stimulates the placental sound more than any of those mentioned; and in distinguishing this the pulse will afford us no assistance, both being syn-

chronous with the heart's action. Fortunately, such cases are rare, and although we have frequently intentionally produced *bruit de soufflet*, by pressing the end of the instrument on the aorta or iliac arteries, yet, amongst the number of patients examined whilst attending to this subject, we have met with but one case likely to be confounded with pregnancy; where a sound resembling the placental *souffle*, from a morbid cause, was observable. The case alluded to was one of considerably enlarged liver, the pressure from which appeared to have this effect; but here the sound was confined to a small spot immediately over the aorta.

[An interesting case a short time since came under our notice, in a young unmarried female, where the blowing, rasping sound was audible throughout the whole body, and extended down to the knees. The sound was heard out of the trajet of the principal vessels, and on the most solid parts, differing from the opinion of Naegele that "these sounds are transmitted along the intestinal tube filled with gas." This female had never menstruated, though eighteen years of age, and there was no enlargement of the uterus; the sound was considered as resulting from a diseased state of the aorta, either in its valves or arch. The maximum of sound was on the middle of the posterior part of the left side of the chest. The heart was not enlarged, and her pulse ranged from 110 to 125. Had there been an enlarged uterus, and the examination been made, it might from the brewing sound have been considered as one of pregnancy, unless a careful examination of the pulse, and its steady sound had been noticed.—This case several gentlemen have seen.]

We shall be enabled to distinguish *bruit de soufflet* when it so occurs, or arises either from aneurism, hemorrhage, hysteria, or nervous states of the system, by its concomitant symptoms; and in the latter cases, to use the words of Laennec, "when the bellows' sound exists in the aorta, particularly the ventral portion of it, there

is always a marked state of disorder in the nervous system, viz., agitation and anxiety, faintings more or less complete, and produced by the slightest causes, and an habitually quick pulse."* In addition to these, it may be mentioned, that the *souffle* in pregnancy is heard indifferently over the abdomen, and is not as in the other cases, confined to the immediate seat of one of the large arteries. Further, the nature of the sounds, to persons conversant with them, becomes in general distinct and easily recognized.

From the sound produced by the pressure of a tumour or of the instrument, the placental *souffle* can in general be distinguished, by its remaining when such pressure is removed, (as by raising the tumour with the hand, or altering the position of the patient), and observing, as in the former case, whether it be merely confined to the situation of a large artery, or audible over a more extended space.

[Since the publication of our author, numerous and important inquiries have been made in Germany and France, and presented to the profession.

The most prominent of these are, first, M. Bouillaud's, who attributes the brewing sound to the compression the aorta, iliac and hypogastric arteries receives from the enlarged uterus. Second, M. Dubois's, who has called attention to the analogy between the uterine sound, and that produced by varix aneurysmaticus and terms it uterine sound. Third, Dr. Hohl, who approves of this view, but carries it further, and considers the existence of the placenta uterina fully proved, and that it is not by anastomosis, but by cells. M. Naegele has placed it in the uterine arteries. Each of these several opinions has its advocates. M. Dubois appears to receive the sanction of the greater part of the profession. M. Bouillaud's views appear to be more special than solid. And

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* Laennec, by Forbes, 2d Ed. p. 698.

in answer to some of the arguments alleged against his views, remarks "that it is quite possible that the arteries just mentioned are not uniformly compressed at the right or left side, and that these may consequently give a sound of blowing on one side, whilst the others do not, and that there are cases where we hear distinctly the sound of blowing on both sides 'of the uterus at once.'" And M. Jacquemier advocating these views adds, "that the developed uterus is generally tilted from one side to the other; it is a moveable body, which may alter its relation to the iliac and hypogastric arteries, almost indefinitely, and above all subject these arteries incessantly to various degrees of pressure." Should this be carried out, we might expect to find the blowing sound most generally on the right side, as the right lateral obliquity generally obtains, whereas the uterine sound has been usually ascertained to be on the left, directly therefore opposed to this view. The aorta and iliac vessels, it is true, may be compressed by the even and globular enlarged uterus, and especially at the fifth month and to the full term of utero gestation, and will receive an impetus from those vessels; but can the uterus, when it is elevated only to the brim of the pelvis, still in its cavity produce much, if any compression on these vessels, (there is no special time stated by M. Bouillaud,) and before it has increased so much in size as to fill up this cavity?

When we look at the position of the uterus then, at the end of the third month, its special relation to the axis of the pelvis, its antiversion, its fundus even with, sometimes slightly above the brim of the pelvis, its size; it seems that these vessels could not suffer by any pressure from it, and it will be recollected that our author has heard it at ten weeks, and it has been heard by myself at the eleventh, frequently at the twelfth week. I cannot therefore perceive, that the solution of the question by M. Bouillaud is fairly tenable. On the other hand, when we look at the peculiar character of the uterus at this early period, the third month, that its vessels have increased in size, become more numerous, that the chorion with its tufted radicles has commenced to form the future placenta, that they are beginning to disappear from the lower portion of the ovum, that its vessels are gradually increasing, becoming more and more numerous, tortuous and dilated, and congregated into a point, and eventually the placenta is formed, and that

the blowing sound is most extensively heard at that point, corresponding to the insertion of this vascular organ.

The souffle then cannot at this early period, as I conceive, be justly attributed to the pressure upon the arteries, nor to the transmission of blood through the placenta, for at this time there is no placenta, but is more satisfactorily accounted for through the uterine circulation ; hence the true brewing sound is only heard when the uterus puts on the appearance like an erectile tissue, and as a further evidence of this, its return after the child is born, and the contraction which has resulted after delivery, is gradually passing off, and it increases again in size to near the sixth month, when its spungy parietes, are filled with blood, a souffle is heard, differing from the whiffing, whizzing, circumscribed blowing sound that was heard prior to the birth of the child, being more diffused, low and soft, and may be heard for some time after, till it has again resumed its position in the cavity of the pelvis. It may, however, should the contraction not be perfect, be heard soon after delivery, but it is generally twenty-four hours before it is a second time audible.

It has been conceded, that " abdominal tumours, foreign to the development of a product of conception have several times given rise to this sound ; it evidently follows that the perceptions of pulsations combined with blowing, cannot establish a certain diagnosis " The sound has been noticed more particularly in fibrous tumours. The distinction we would draw, from several cases that came under our notice, where they were very large, and one in particular, which reached above the umbilicus, of a form that corresponded to gestation at this time, in an unmarried female, who has since become married,—is the following :

In fibrous tumours it is generally constant ; in pregnancy intermittent. In the first, it pervades the whole ; not changeable, observed at any time an examination is made ; has no maximum sound, steady and diffused ; not highly developed, seldom or never heard through several thicknesses of clothing.

In pregnancy it is intermittent—has a fixed seat, circumscribed, and generally heard on the left side ; now highly developed, now so feeble as scarcely to be audible, at other times musical, and is frequently heard through five or six thicknesses of clothing; sometimes perceptible over a larger space.

In fibrous tumours it disappears when the position of the female is altered. In pregnancy it persists in whatever position the female may be placed. This difference, we think, establishes two kinds of sounds; the one resulting from any tumours large enough to compress the arteries—the second from the uterine arterial circulation. The intermittent blowing sound, which has been urged as an objection to its being located in the uterine circulation or placenta, might, with as much propriety, be adduced against the fœtal circulation, as this cannot at all times be audible ; on the contrary, I should look upon it as one of the many arguments in its favour.

In several cases of ovarian tumours, which have been noticed, there was no blowing sound, except in two of them, and these were excessively large, one having seven cysts, the other twelve distinct cysts ; the brewing sound was only heard in those cysts that were large and well filled with fluid, and was continuous and very loud. In the first case it was heard in a large cyst at the umbilicus, and in one in the left groin, the sound being interrupted by the other cysts. There could not possibly be any error in diagnosing the brewing sound in these cases from pregnancy, as the sound not only has its maximum in one point of the abdomen, but two, and sometimes three, and is continuous.]

Of the practical benefits to be derived from a knowledge of the placental *souffle*, the most important is the assistance which it will afford us in the detection of pregnancy, when taken either singly, or in conjunction with the fœtal heart's action, to be afterwards treated of. When this sound is perceptible, together with that of the fœtal heart, the evidence of pregnancy is complete. When, on the other hand, the *souffle* cannot be discovered on repeated examination, and the fœtal heart's action is perceptible, there is reason to conclude, that the placenta is attached to the posterior wall of the uterus. This, however, is a rare occurrence: and when we do not succeed in our examination at the anterior part of the abdomen, if we cause the patient to alter her po-

sition, and explore the iliac and lumbar regions of either side, close to the ilium, and back towards the spine, we shall very seldom, indeed, fail in hearing it. We have already seen that intermissions will occur in this phenomenon; upon what cause depending it is difficult to say. Kergaradec endeavoured to explain them by change of position assumed by the fœtus. In such cases, the cessation of the sound is not permanent; therefore by repeating our examination, we shall succeed at another time in discovering it. Uterine contraction suspends it, in most cases completely, whilst this organ is in action; in some, it converts it, during the pain, into an abrupt sound or pulsation; the former are the cases in which we have most frequently observed this omission to occur.

Where we can with facility ascertain the action of the fœtal heart, as in the advanced stages of pregnancy, discovering the placental sound, although it is satisfactory as an additional diagnostic, does not become an object of the same importance as in the earlier stages, when the heart's action, being weaker, frequently eludes our observation: it also assists us when the uterus contains a dead child, cases often most perplexing in their nature, from the contradictory symptoms that co-exist. Pronouncing decidedly in cases of doubtful pregnancy, before the period of quickening, has always been looked upon by practical men as a hazardous undertaking: and although it is not meant to say, that we shall now, with the assistance of auscultation, be enabled to pronounce with certainty in every case before this period; we with confidence state, that, where we detect a placental *souffle*, which in the great majority of cases is practicable at a considerably earlier period, that phenomenon, in conjunction with the other symptoms, will tend to

strengthen the opinion of the presence of this state. The co-existence of the fœtal pulsation with the *souffle* of course decides the question ; but with regard to the latter, taken separately, we shall even go so far as to say, that were all the symptoms of pregnancy absent, and this sound could be distinctly perceptible, we should at least withhold our opinion until a sufficient time had elapsed to place the matter beyond a doubt. In proof of the correctness of this statement, one or two cases may be adduced.

I was sent for one morning by a lady, who came over clandestinely from the sister kingdom. The statement she gave me was as follows. She had for some months been in the habit of receiving the attention of a gentleman to whom she had formed an attachment ; but unfortunately fell a victim to her father's caprice, who, after countenancing this attachment, suddenly withdrew his consent to their union, and insisted on her marrying an individual of his own selection. Ten weeks had elapsed from the time of her first giving way to illicit intercourse, when she consulted me ; during which two monthly periods had passed without the usual menstrual discharge : and ten days before my seeing her, in consequence of some active exertion, a discharge of blood took place from the vagina, which lasted for a few days. Her father urged her compliance with his wishes ; and she, dreading to enter the marriage state whilst there was a possibility of her being pregnant, consulted a medical man of eminence, who, after the usual investigation, pronounced that such was not the case. Impressed, however, with a painful foreboding of the true nature of her state, although she had no further symptoms of pregnancy than that already mentioned, she

determined on obtaining further advice; and, under a pretence of visiting a friend in the country, came over to Dublin. On the most accurate examination, I could ascertain no further grounds for suspicion than the presence of a remarkably distinct *souffle*, which was discoverable on pressing the end of the instrument in the pubic region over the uterus. Relying on this, I gave her to suppose that there was a strong likelihood of her being pregnant, although I could not actually pronounce such to be the case. The result fully justified the confidence reposed in this, as a means of diagnosis, for, exactly nine months from the period when she calculated, she gave birth to a child.

The following case was kindly furnished me by my friend Dr. Hans Irvine. " In the spring of 1831, I was consulted by a young lady, under circumstances peculiarly delicate and distressing; the particulars of which, for obvious reasons, I must beg to decline relating. Suffice it to say, that the future prospects of this young female depended upon her immediately knowing whether she was pregnant or not. She informed me that for several months past she had indulged in an illicit intercourse; the absence of the menstrual discharge for the two last periods, together with a deranged state of the stomach, and some other of the premonitory symptoms of pregnancy, caused her much uneasiness, and she wished me if possible to satisfy her as to her state. Although the symptoms she mentioned were suspicious, still, as accuracy was in this case a matter of so much moment, I was anxious to take every means capable of solving the difficulty. As I did not wish to press for a vaginal examination, I had recourse to the stethoscope, as the most likely means of assisting me; having been already per-

fectly satisfied of its utility as a means of diagnosis in such cases; not, however, at so early a period as the present case portended to be. Although, at my second examination, I clearly detected a *souffle* on applying the stethoscope in the region of the uterus, yet, under the circumstances of the case, I withheld my opinion, and it was not until after repeated trials with this instrument, that I ventured with much diffidence, to pronounce her pregnant. At this time she could have been only ten or twelve weeks in that situation. Shortly afterwards I went to the Continent, and lost sight of the case, but upon making inquiries, on my return, I found that my confidence in this means of diagnosis was not misplaced, for the lady was confined at the expiration of nine months from the time she calculated."

We have not succeeded in detecting the placental sound in any case until after the second month from impregnation; but have frequently done so in the tenth, eleventh, and twelfth weeks.

August 15th, 1829. A woman named Devereux, who had been under my care in labour eighteen months before, called to consult me for a slight attack of pneumonia. She mentioned that her menses had not appeared for the last two months: I therefore examined her with the stethoscope, and detected clearly the placental *souffle*, although no uterine tumour was observable. Dr. Collins, who also examined her, expressed his astonishment at its distinctness at that early period. I gave this woman reason to suppose it possible that she was pregnant, of which she had not the slightest anticipation. However, the accuracy of the diagnosis was attested by her coming into hospital on the 7th March, 1830, in labour, and being delivered of a living child

the day following, exactly twenty-nine weeks from the period at which he had examined her.

To this it may be objected, that this woman went beyond forty weeks, as the birth of the child was the only means of calculating the period of impregnation; but several cases could be adduced in which it was detected at an equally early period, in all of which it is not likely the mothers should have carried their children beyond the natural time.

There could be no difficulty in multiplying cases where we have succeeded in detecting pregnancy by the assistance of the *souffle;* we shall however restrict ourselves at present to one or two, in which, from the difficulty in detecting the fœtal heart, that phenomenon was of particular importance in ascertaining the existence of this state; and as their nature was such, that forming an erroneous judgment upon them might have been attended with the worst possible consequences, in a practical point of view, they the more demand our attention.

Dr. Mollan desired my attendance to examine a patient of his labouring under insanity. She was married, and had been living with her husband about three months before our seeing her, since when, no menstrual discharge had been observed. No further evidence of pregnancy could be arrived at, and the patient was so unmanageable, as to prevent our ascertaining any thing by a vaginal examination; with much difficulty she was kept quiet long enough, to allow the stethoscope to be applied. When the *souffle* was distinguished in the uterine region, but no tumour could be detected; we explained, that it was impossible to give a decided opinion upon this single symptom; but that the impression on

our minds was, that she was pregnant at a very ear.y stage; Dr. M. regulated his treatment accordingly, and I three months afterwards learned from him, that there was no doubt of the pregnancy, as he and Dr. Hanna then distinctly detected the fœtal heart and the motions of the child.

February, 1830, I was requested by my friend Mr. Dwyer, at that time attending the Lying-in Hospital, to see with him a case of dropsy; he added, he had some reason to suppose the woman pregnant, but could not quite satisfy himself on the subject. I therefore visited her in company with this gentleman and Dr. Whitestone. Her abdomen was enormously distended, and fluctuation very evident: the extremities and lower part of her body were œdomatous. She stated, that she had been attacked with general dropsical symptoms, preceded by extreme debility, whilst nursing her last child, about a year and a half previously; but had experienced no local distress. She had been living with her husband during this time. Her menstrual discharge had been irregular, being absent for several months at a time, and again returning: she had not observed it at all since August last; she did not quicken, as had been usual in her former pregnancies, but thought that she had lately observed something like an obscure motion of a child. Nothing satisfactory could be ascertained from a vaginal examination, in consequence of the extremely swollen state of the parts; neither could the most accurate abdominal examination with the hand enable us to detect any resemblance to an enlarged uterus. The conclusion, therefore, arrived at was, that with the ordinary means it would be impossible to pronounce this woman pregnant. Recourse was then had to the stethoscope,

when the placental *souffle*, full and distinct, was without difficulty observed by all extending high up on the right side of the abdomen: the fœtal pulsation, although it could not then, was afterwards discovered remarkably small and obscure. At times this could not be heard, from the distance at which it lay from the surface; both the cavity of the abdomen, and, as it afterwards appeared, the uterus being distended with an immense quantity of fluid. The placental sound, on the contrary, from the parietes of the uterus approaching so much nearer the surface was quite audible, and continued so throughout. As it was in contemplation to perform paracentesis, Dr. Collins and Dr. Hutton were requested to see her; they also satisfied themselves as to the phenomenon above stated.

She was afterwards brought into the Lying-in Hospital; where, in consequence of the extreme difficulty of breathing and exhaustion which set in, it was deemed expedient by Dr. Collins, in consultation with Drs. Labatt and Colles, that premature labour should be induced, which was carried into effect by rupturing the membranes, the os uteri having at this time become accessible, and shewing some inclination to dilate. She was delivered in twelve hours of a living child, at about the seventh month, which survived its birth forty-eight hours. The mischief which might have arisen from ignorance of the real nature of such cases as this and the preceding is self evident, and requires no comment.

[During labour the changes which the uterine sound undergoes is remarkable; upon the coming on of a pain, there is a short whizzing sound ensues, which becomes greatly modified, from being of a resonant character, and seeming to strike through the instrument, gradually becoming weaker and weaker, and is com-

pletely lost sometimes. It is more aptly compared to the sound that is produced, when the ice is undergoing expansion, on an excessively cold day. These sounds are more easily perceived in the inguinal region, as the contraction which takes place, is the greatest at the fundus, precluding the circulation from entering freely into the vessels, but on the passing off of the contraction it is perceived to gradually return, and assume (if the time permits between another pain) its usual character, if not, and the contraction continues steadily and very powerful, the uterine sound may be inaudible during this part of the labour till the child is born.

Having so far dwelt upon the placental *souffle* as a test of pregnancy, it must be evident that it is not intended to attach more weight to it, as such, than experience should warrant; as, although fully convinced of the benefits to be derived from it, in a diagnostic point of view, yet we are well aware, that, like all other diagnostic means, even those most relied upon, there are some difficulties to be encountered in its universal application. We find by every day's experience, that reputed discoveries demanding the attention of the public carry conviction with them, and gain permanent character, exactly in an inverse ratio to the degree of confidence and unqualified terms of recommendation, whether mistaken or exaggerated, with which they have been set forth. The object, therefore, of every man who wishes not only the advancement of science generally, but also the adoption of the views or improvements (if they really be such) which he more particularly recommends, should be to keep strictly within the bounds of moderation, stating nothing he does not know on the subject, and every thing he does; and while he clearly distinguishes in his statements between facts and opinions, to abstain from

obtruding on the public views insufficiently matured, and unsupported by proof and experience.

Considering the *souffle* as an evidence of pregnancy, in an abstract point of view, we should be inclined to inquire what ought more strongly to verify the opinion we arrive at on this subject, or afford us more assistance in our investigation, than a phenomenon produced by the passage of blood through the vessels constituting the connexion between the parent and the embryo; on the supply of vital fluid through which, however mysterious that connexion may appear, the actual existence of the latter as an embryo, its development as a fœtus, and maturity as a child, depend?

If the preceding conclusions be admitted, with regard to the placental *souffle,* what an important addition shall we have to our diagnostic evidence, in the test of which we are next about to treat, namely, the fœtal heart's action, as communicated to us through the abdominal parietes. And here we may with every justice ask, what can possibly guide us with more accuracy in our search after a fœtus in utero than the first and last sensible evidence we have of its material existence, namely, the circulation, as proved by the action of that organ, which has been so poetically described by our illustrious countryman, Harvey, as the "*primum vivens, ultimum moriens?*"

In exploring with the stethoscope the abdomen of a woman at the full period of pregnancy, whose child is alive, we shall detect over a surface, more or less extensive according to the position of the child, and disposition of the fœtal and maternal organs, a pulsatory sound generally much more rapid than the pulse of the mother, and exhibiting the characteristic marks of a distinct and

independent circulation. It may at first appear a matter not very credible, that the motions of so small and apparently feeble an organ as the fœtal heart, should be distinctly recognizable through the parietes of the abdomen; and more particularly so when we bear in mind the confined space over which the action of the heart is perceptible in the adult. If we reason thus from analogy, we shall find ourselves deceived, as the fœtal heart's action is quite different in this respect. The best method to satisfy ourselves of this, is to take a new-born infant, and apply the stethoscope carefully to it, examining the extent of surface over which the heart's action is audible. We shall find that it is so, quite distinctly, at the right scapula, and of course all over the chest; and on pressing the arms of the child against its chest, and applying the stethoscope on the arm, we shall be able to detect it always plain on the left, and generally on the right arm; in some cases it extends down the back to the loins, and even to the buttocks, and occasionally is perceptible over a considerable part of the abdominal surface. The part, however, in which we hear it most distinct, is, of course, the cardiac region; and the character which it exhibits is that of a quick double pulsation, a miniature imitation of the adult heart, proportionally smaller, and wanting in a great measure its impulse, but clear, quick, and abrupt, offering as distinct a double pulsation, and possessed of characters rendering it almost as easy of discrimination as that of the adult.

The reasons of the greater extent of pulsation in the fœtal heart than in the adult are obvious enough. The chest is comparatively much smaller, the state of the lungs not requiring its development. The heart is con-

siderably larger, and its chambers of greater capacity in relation to the thickness of their walls; and we know that, as Laennec expresses it, "the extent of the heart's pulsation is in the direct ratio of its thinness and weakness, and consequently, inversely, as to its thickness and strength;" and this applies more to the ventricles. The lungs of the fœtus, also, compressed and carneous, from their solidity, serve to conduct and transmit the sound much better than if they were distended with air, as solid bodies are the best conductors of sound. We have familiar examples of this in solidification of the lungs, whether hepatized, as in pneumonia, or much compressed by effusion into the chest, in both of which cases the sound of the heart is transmitted more distinctly and extensively. The thymous gland may also no doubt, assist in this respect. The sounds emitted by the contraction of the heart, and passage of the blood into the auricles and ventricles, when the pulse is above seventy or eighty, are difficult to discriminate from each other, even in the adult subject, more particularly when the walls of the ventricle become thin from disease; but when the pulse is so quick as in the fœtus, this becomes impossible, unless in a few cases. In the fœtal heart, then, from the above causes, we find little if any impulse, but the sound of the pulsation audible over a much greater range than in that of the adult; this we should be prepared to expect, when we recollect that the degree of impulse is directly opposed to the extent of the pulsation. The walls of both ventricles are in every case nearly of equal thickness and capacity in the fœtus and new-born infant, the disproportion takes place subsequently. This may possibly be explained on the well-known law in physiology, that a muscle

becomes developed in proportion to the degree of force and action it is called upon to exert, and *vice versa :* until the closing of the arterial duct, the right ventricle has to assist the left in accomplishing its task, namely, the propelling the blood through the whole system; whereas, afterwards, this entirely devolves on the left ventricle, whilst the exertions of the right are merely necessary to propel the blood through the pulmonic circulation.

It has been elsewhere mentioned, that M. Maior, of Geneva, on applying his ear to the abdomen of a pregnant female, first detected a sound of a double pulsatory character, which he justly attributed to the fœtal heart's action. Repeated observations have since proved the correctness of his supposition; and it is now a well established fact, that this sound is to be recognized after a certain period in almost every case of pregnancy. In saying this we do not mean to assert, that there are not some who may oppose this statement, and even deny the utility of auscultation in midwifery generally. One gentleman * lately informed the profession, that, after paying a great deal of attention to the subject, he was unable to detect the fœtal heart, and that the only time he ever thought he could do so he was deceived. There can be but one of two deductions drawn from this statement, either that it is impossible to detect the heart of the fœtus in utero, because he could not detect it, and consequently, that all those who have stated they could do so have stated what was not a fact, or that the gentleman who made this assertion was himself incapable of

* Dr. Johnson, Dublin Journal of Medical and Chemical Science for July, 1833.

detecting it, although others were. The highly respectable author * of a late edition of Denman also questions the utility of auscultation as a test of pregnancy, stating that he is not inclined to place much value in it; and yet in the next sentence he says, "it might probably be brought usefully into practice to assist in forming a judgment respecting the life of the child when the use of instruments is required." We submit that this gentleman's latter observation either completely controverts his former, or that he must possess some subtilty of discrimination beyond our comprehension; as, if the evidence afforded by auscultation be available in pronouncing on the child's life or death, we have yet to learn why it should not be so in pronouncing upon its existence or presence, unless, indeed, we were determined to shut our ears in the latter case. It may appear strange our saying so, but it is a matter of regret to us, that auscultation in midwifery has not met with more opposition, as the more it meets with, the more it will attract the attention of the profession, which is all that is required to establish its utility.

The fœtal pulsation is much more frequent than the maternal pulse, its ordinary proportion of beats, or rather double beats, being about 130 or 140 in the minute; however, it is not necessarily observed to beat always at this rate, being sometimes much slower, and sometimes considerably more rapid. This variation may depend upon a variety of inherent vital causes in the fœtus, a divination of which, from their nature, is necessarily beyond our reach. It may occasionally be observed to vary, becoming suddenly more or less frequent, and

* Mr. Waller, p. 171.

then returning to its natural state without any apparent reason. An obvious explanation, however, is muscular action on the part of the fœtus; and we shall very generally observe the pulsation of the fœtal heart increased in frequency after such. The external cause, which we shall find most frequently to operate on the fœtal circulation, is uterine action, particularly when long continued, as in labour. This we shall afterwards have occasion to refer to. But there is nothing more striking, however we may attempt to explain it, than the effect which certain impressions, whether mental or bodily, made upon the patient, appear to communicate to the fœtus. Sudden fear or joy, I have observed, when the circulation of the mother has been affected by them, to produce a very decided, although not always corresponding, effect upon the fœtal pulse; hemorrhage, and even copious venesection, produces a similar state. We shall select one or two out of many cases of this kind which have occurred, and from these it will be seen, that although a very remarkable connexion or influence, whether vascular or sympathetic, does exist between them, yet no very decided rules would appear to hold as to its nature:—

Mrs. —— was taken in labour whilst suffering under a severe attack of croup. When I saw her, her breathing was very difficult and stridulous, pulse 140, and she showed great febrile excitement, which was much increased by her labour. Anxious to know in this case what effect the hurried circulation of the mother would produce upon the fœtus in utero, I applied the stethoscope for that purpose, and with much difficulty detected the fœtal heart's action at a point midway between the umbilicus and right anterior spine of the ilium, extremely weak and indistinct, and beating, as nearly as could be

calculated, from 190 to 200 in the minute. This patient was delivered, about half an hour after exploring her abdomen, of a weak, small, and very delicate female child, at about the eighth month; the pulsations of its heart, when examined after birth, were extremely feeble, and about 180 in a minute.

January 16th, 1830. A woman came into the Lying-in Hospital, in labour of her second child. On visiting her at two o'clock, A. M., she was found to be suffering from an acute attack of pleuritis, with great general irritation and difficulty of breathing; her pulse was hard and full, and as frequent as 140 in the minute. On applying the stethoscope to the abdomen, the fœtal heart's action was perceptible over a considerable space of it, extending across the whole hypogastric into the inferior part of the umbilical and lumbar regions, beating about *one hundred and eighty* in the minute.

The placental *souffle* was only audible at a small spot, in the left inguinal region, corresponding in frequency to the maternal pulse at the wrist. Having determined on bleeding the patient, I was anxious to observe what effect the sudden removal of blood would produce on the fœtal circulation. When about eighteen ounces were abstracted, the mother's pulse became softer and more frequent, beating *one hundred and fifty* in the minute; and now the fœtal heart's action also appeared full and strong, and came down to *one hundred and fifty*. The blood continued to flow, but not in so full a stream as I could have wished; however, this could not be remedied, as the gentleman who operated found considerable difficulty in opening a vein. She experienced no relief from the pain and difficulty of breathing, until upwards of twenty ounces were removed, when, although deli-

quium was not produced, yet the maternal pulse was much affected, rising to *one hundred and seventy*, but devoid of all that inflammatory character which it before evinced, being soft and weak. The arm was now tied up, and on applying the stethoscope again, to examine the fœtal heart, it was found very sensibly altered indeed, still quite distinct, and only beating *ninety-two* in the minute. Having kept my ear applied to the cylinder for some minutes, during which time the patient was very low, although she had no actual syncope, I observed the fœtal pulsation to vary, one minute being *ninety-two*, next rising to *one hundred*, and again to *one hundred and twenty;* and in this way it ranged for some minutes, until the patient had fully recovered from the effects of the bleeding, when her pulse descended to about *one hundred and thirty*, that of the fœtus ascending to *one hundred and thirty-five*. It now continued between this and one hundred. The number of beats varying every two or three minutes, for half an hour, when it *ceased altogether*. At 9 P. M. the woman was delivered of a dead child, exhibiting a livid discoloration of the skin, like that of an individual drowned or hanged. Here, then, we have not only a change of character in the fœtal circulation, produced by affecting that of the mother, but we have an actual change in frequency; as there was a temporary diminution of frequency, to the amount, at one time, of eighty-eight beats in the minute, or very nearly one half, and a permanent lowering of it, to the amount of forty-five beats; just one-fourth in the minute.

The conclusions we would deduce from the proceding cases are, first, that there is a very sensible influence or sympathy between the maternal and fœtal circulations,

and that, whether we are or not able to trace any direct communication between them; and secondly, that the result of their connexion or sympathy is not necessarily a proportionate correspondency in frequency of the pulse. Perhaps the removal of the blood from the mother may act, not exactly by the want of a due supply of it to the placenta, but either by the absence or the want of the renewal of that part of it which is necessary to excite the brain and heart of the fœtus to healthy actions and sympathies; the result of which may be either an altered or irregular action, perceptible to our senses, in the latter organ. Thus, it may either act sedatively upon it, excite it to inordinate action, or lessen it in force and frequency. In this way, therefore, may we attempt to explain the death of the fœtus in utero, in cases where the mother has had profuse hemorrhage; as it has been proved by Reuss (Observationes novæ circa Struct. Vasor. in Placenta Humana,) not to depend upon want of due supply of blood in the fœtus, the heart and vessels of the latter having been found gorged with blood, in a case where the mother had died of hemorrhage at the seventh month, after having been drained, as it were, of the last drop.

These facts were strikingly exemplified, in the case of Mary Donelly, a patient who came into the Lying-in Hospital, in labour, on the 16th March, 1830. She had been suffering from hemorrhage for some hours previous to her admission, and I was in consequence called to see her. On making a vaginal examination, the os uteri and external parts were found partially dilated; the head presented at the brim of the pelvis, and, on insinuating the finger within the uterus, a portion of the placenta could be felt separated from the posterior part of the

neck of this organ; explaining the cause of the hemorrhage. She stated, on inquiry, that she had felt the motions of the child within the last few minutes. On applying the stethoscope, the placental sound could be distinguished at the left side, stretching into the iliac region, about 100 in the minute: the fœtal heart's action was observable below, but near the umbilicus; it was feeble, and 108 in the minute.

The hemorrhage having continued for an hour, so as to reduce the patient considerably, while the state of the parts did not admit of delivery, the abdomen was again explored, when the fœtal heart was observed extremely feeble and fluttering, beating 88 in the minute. The pulse of the mother was now 110. Just at this moment the child was felt moving violently, or rather convulsively, both by the patient and myself. These motions were repeated four or five times in the course of a few minutes, and then ceased altogether, after which the fœtal pulsation could not, upon the closest examination, be detected. The placental sound still continued audible, but became altered and abrupt in the character. The evident inference in this case was, that the child had died from the effects of the hemorrhage, and that the change in the pulse, and convulsive motions observed, were the forerunners of its dissolution. I mentioned this to the pupils who were present with me whilst making the examination, at the same time expressing my conviction that the child would be born dead. In about three hours afterwards, the patient was delivered of a large female child, dead, but exhibiting every appearance of recent vitality, and of having lately been in the perfect discharge of its functions. It was examined six hours afterwards, when the heart and great vessels were found

loaded with dark blood, and the sinuses and vessels of the brain similarly circumstanced.

Although loss of blood, was upon the authority of Hippocrates,* long looked upon as a certain means of destroying the fœtus in utero, and even venesection frequently had recourse to, with a view to procure abortion, yet the observations of Mauriceau,* Dr. Rush,† and others, go to prove, that blood may be abstracted from the mother to a very great extent, without destruction, or even injury occuring to the fœtus. To the truth of the latter position, as a general statement, every man's experience must bear testimony. Yet that loss of blood proves detrimental to the life of the fœtus in particular states of the maternal constitution, where for instance there is much irritation or debility, there can be as little question. And this is by no means confined to accidental discharges of blood from the vagina : it has occurred to us to meet with several cases, where there was evident reason to conclude, that the life of the fœtus was sacrificed to the too free or injudicious use of the lancet upon the parent. It is not meant from this to object to the practice of detracting blood in pregnancy, a practice in many cases not only serviceable, but absolutely necessary, to afford a chance of life either to the mother or child ; as, even supposing the influence of the disease not to extend to the child, a fact which the preceding observations tend strongly to disprove, that of her death certainly must. It remains for us, however, to consider, whether, after detracting a certain quantity of blood, in the cases alluded to, where it becomes necessary to

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* Hippoc. sec. 5. chapter 31. † Capuron, p. 307.
‡ Med. Obs. and Inquiries, vol. iii. p. 302.

reduce the force of the circulation still farther, other means may not be had recourse to for this purpose, which, whilst they should be unattended with the objection specified, with regard to depletion, would prove equally efficacious in accomplishing the object had in view. That the judicious adiministration of tartar emetic will, in a great proportion of such cases, succeed in effecting these desirable objects, the recorded opinion of others and our own experience fully justifies us in stating.

[The observations of our author on this point do not seem to correspond with the opinions of Dr. Hohl, M. Dubois, M. Nagele, and Dr. Kilian. M. Nagele asserts, "that even when serious hemorrhages have taken place, the fœtal pulsations continue independent of the mother, and very recently, in an instance where, up to the eighth month, hemorrhage set in regularly every fourteen days, the fœtal heart's action was found at all times equally strong and frequent;" it would not, however, be denied, that large losses of blood might sacrifice the child; M. Kilian states, "that nothing which affects the mother affects the pulsation of the child," and Dr. Hohl, "in one case of cholera, with the sinking or complete cessation of the radial pulse, the placentary murmur was found rather increased than diminished in distinctness, and no change in the fœtal pulse was perceptible;" and we have met with the case of a lady, who was subject to severe attacks of nervous syncope, where the pulse could not be counted, and the action of the heart resembled the noise produced in a flour mill when the grain is sifted, and which continued for several hours, still the pulsations of the fœtal heart remained unaffected. It is with diffidence that we dissent from our author who has, in these three cases, given, as I conceive, a fair representation of the state of suffering that the child was undergoing, and "in articulo mortis in utero," and not from the effects of the sympathy that he supposed existed between the mother and child. (For further remarks to ascertain when the child is "in articulo mortis in utero," refer to the section on the life and death of the fœtus.)

The fœtal pulsation is in some cases much stronger and more distinct than in others. In some, it is even said to have been heard by the mother herself. D'Outrepont* met with a woman who had borne five children, and who assured him, that in the last months of her pregnancy, she had not only felt the pulsation of their hearts, by means of a slight double beat in the abdomen, but even heard it as often as she happened to be alone, and in a tranquil frame of mind, with every thing around her quiet; particularly during many summer nights in which she was not able to sleep, and when the abdomen was covered only with a piece of linen. It is more probable, in our opinion, that this was the maternal aorta. We observed the fœtal pulsation assume a singular character in two or three cases, namely, a metallic resonance, much resembling the *tintement metallique*, or sound perceived in cases of empyema, with fistulous communication of the lungs. To what this is owing, I am at a loss to say. Probably from its always being detected in the right iliac region, it may depend upon the conveyance of the pulsatile sound along the cæcum, distended with air and fluid fæces. That such is actually the cause of it, I can not state with confidence; the number of cases in which it was met with, being so few, as not to afford sufficient opportunity for an accurate conclusion on the subject.

[I have not met with an instance of this nature, but M. Dubois has once, and M. Caseaux has exhibited it twice at his clinic.]

The extent over which the fœtal heart's action is audible, varies according to circumstances. It is generally

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* Die Auscultation Bezugauf Schwangerschaft. Von Dr. C. J. Haus, Wurzburg, 1823.

to be met with over a surface of about three or four inches square, and rather in the inferior part of the abdomen, sometimes more at one side than the other, at other times in the centre, and extending completely across the urerine tumour. In advanced pregnancy, we shall frequently meet with it most distinct at a point midway between the umbilicus, and the anterior superior spine of the ilium. It is sometimes observed in this spot in early pregnancy, sometimes more over the pubis, and, what is strange, it is not unfrequently detected much higher in the abdomen, nearer the umbilicus, at this period. The position of the fœtus has considerable influence in rendering the sound audible in one or other part of the abdomen. As the region of the heart of the child approaches more to the parietes, so will the sound be more audible, and *vice versa ;* for this reason, when the head of the child is placed at the inferior part of the uterus, as is most frequently the case, we must expect to find the fœtal heart, by exploring the lower part of the abdominal tumour ; when the head is placed superiorly, we shall be obliged to seek for it at a part of the uterus nearer its fundus. Let us now bear in mind the usual position of the child *in utero*, namely, the head resting at the brim of the pelvis, the occiput at the os uteri, and the chin pressed against the chest. The child, thus adapting itself best to the parts of the mother, lies with its limbs doubled upon its abdomen, its arms across the chest, the back towards one side of the mother, and of course its limbs and front towards the other, thus bringing its shoulder and side forwards: however, this position generally varies a little, allowing more or less of the chest or back to come in contact with the anterior part of the abdomen. It will be evi-

dent, then, in the position of the child which we have described as the most frequent, namely, where the shoulder or part of the back comes obliquely in contact with the walls of the abdomen, that we shall not find the pulsation at the central, but rather at the antero-lateral part of the abdomen, it being apparent a little to the right or left of the median line, over the ramus of the pubis, according to the side at which the child is placed: we can easily understand, that it is a matter of facility to detect the fœtal heart in the right iliac region, when the child is situated with its left side towards the abdominal parietes at this part, (See *Fig.* 1.) It might, at first sight, appear next to impossible, that, in the position of the child, in which its left side isapplied to the back of the mother, and, consequently, its right side is in contact with the abdominal parietes, (See *Fig.* 2,) we should be able to distinguish the fœtal heart at all; so great a depth of parts intervening. We shall, however, easily perceive the fallacy of such a conclusion, ifwe bear in mind the facts mentioned, pages 103-104, whilst treating of the fœtal heart, as well as the circumstance of the greater size and capacity of the right auricle in it, and its consequent position, thus being more to right side than in the adult, and further, that on these accounts the action of the heart in a new-born infant is distinctly perceptible at the right scapula; and that the sound is even perceived on the application of the stethoscope to the right arm pressed upon the chest. Although then the position represented in *Fig.* 2. may render the sound less distinct than that in *Fig.* 1, it does not necessarily prevent our hearing it, as it is conveyed with sufficient distinctness through the intervening parts; and when any difficulty attends our de-

tecting it, we may remove it by exploring the postero-lateral part of the tumour in the iliac and lumbar regions ; by which means we come more immediately in contact with the chest, nearer the fœtal cardiac region, and generally detect it with facility. From this description, although it is to be understood that the fœtal pulsation is generally perceptible at one or other side, between the anterior superior spine of the ilium and the umbilicus, according to the position of the child, which varies ; yet it is also sometimes to be detected at both sides, and even in the centre ; either from the pulse being conducted along the solid parts and integuments, or from the position of the fœtus or that of the funis.

Where the liquor amnii is in very great quantity, and the uterus much distended, the child shall not in general approach so near to the abdominal parietes ; consequently the sound will be less distinct. The comparative greater quantity of liquor amnii in the early months is, therefore, one reason why the sound is then less easily detected. From the fifth to the ninth month, the growth of the fœtus bearing an increased ratio to the animal fluid, the heart's action becomes by degrees more distinct. The height in the abdomen at which the fœtal heart is heard, varies to a certain extent also, as the uterus is situated higher or lower, and this must depend, a good deal, on the greater or less yielding of the parietes. On this account, we generally observe it higher in first than in after pregnancies.

Although we have in a few cases detected this sound even before the expiration of the fourth month, it will not, in the majority, be possible, until a later period ; and in those cases where it can be detected about this time,

it is sometimes so delicate and feeble as to render it necessary for the individual exploring, to have an ear well trained to stethoscopic sounds. In general, therefore, we may look upon it, that this phenomenon is not to be detected until after the period of quickening; when the uterus has arisen out of the pelvis, and allows of our coming more immediately in contact with that part of it where the embryo is contained.

[The fœtal pulsation at this early period has been noticed, and most generally in primiparæ; frequently I have heard it before the female supposed she was pregnant; within the last few weeks three cases have presented themselves, where their own calculation could not make it over seventeen weeks, calculating from the day after they had their catamenia. It cannot seem singular, that the fœtal heart, even at the eighteenth week, should not be heard distinctly, when we remember the intra-uterine life is small, the fœtus low down, and slightly above the pubis, the great relative quantity of amniotic fluid, and the mobility of the position of the fœtus, must occasion much difficulty in hearing it.]

The longer we delay our examination, therefore, we shall find the greater facility in detecting this sign, and of course be enabled to decide with more certainty. At the fourth month, it frequently requires not only close attention, but considerable perseverance to detect the fœtal heart; and at this period it has occurred to us to examine patients, whom there was strong reason to suppose pregnant, and after spending a considerable time in endeavouring to detect this sound, we have been on the point of giving up the search as hopeless, when it has been suddenly discovered in the identical spot, that had before perhaps been explored without success. In one or two cases it has been impossible to find the fœtal heart at a first examination, even in the fifth month,

although the placental sound was quite distinct; and again, in the course of a few days, it has been detected with facility in the same patient. The only explanation that can be offered for this is, the change of position of the fœtus, which at this early period, bears comparatively a less proportion to the size of the uterus distended by its liquor amnii, than at a more advanced stage of gestation, and, consequently, can more easily change its posture in the uterine cavity. From the period of quickening, however, the fœtal heart's action increases daily in strength, and becomes more easily detected; the quantity of liquor amnii being now also less in proportion to the size of the uterus, allows of the child's coming more immediately in contact with the walls of this organ, which constitutes a better medium for conducting sound than the fluid. The extent of surface over which the heart's action is audible also increases in the same proportion, being, when first detected in the early months merely confined to a small point, or very circumscribed space, in many cases not larger than the extremity of the instrument. About the seventh month, it is found higher up in the abdomen, sometimes within a short space of the umbilicus. Towards the full period, however, this sound is often audible over a surface equal to more than one half of the uterine tumour. The most general situation of it at this time is, as mentioned, the lower part of the abdomen, or that space bounded by the pelvis below, and above, by a line drawn across the abdomen, about an inch beneath the umbilicus. At some part of this space, often over the whole of it, the fœtal pulsation is to be detected. The sound, when audible here, is not always confined to this part of the uterus: as we have occasionally detected a fœtal pulsation at

different parts of the uterus, in the same case; and in some a second pulsation is audible even at its fundus, but this is caused by the funis, in those cases where the position of the child is such, as to preclude the possibility of hearing the heart's action at that part of the tumour.

From what has preceded, it will scarcely be deemed necessary to state here, that the presence of the fœtal heart's action may be looked upon as a convincing evidence of pregnancy, and one as nearly demonstrative as it is possible, under the circumstances, to arrive at. The facility and certainty of its detection, at least after a certain stage of pregnancy, renders it an evidence available to us, almost in all cases, and particularly in those where great accuracy in diagnosis is required. Further, on the score of delicacy, as well as accuracy, it may be looked upon as a vast acquisition to the accoucheur, inasmuch as he may arrive at often much more accurate conclusions, by merely applying the stethoscope, and detecting the fœtal heart, than he could possibly expect to do by the assistance of a vaginal examination, which is, to many females, particularly those who are unmarried, not only objectionable, but often so revolting as not to be submitted to. Again, in concealed pregnancy, we may by this means often acquire a knowledge of the true nature of the case, before the female is even aware of our suspecting her.

Its great recommendation, however, to every thinking mind, must be the certain and sensible information, which from its very nature it necessarily imparts. The advantages derivable from it as a test of pregnancy, are so palpable, as to render illustrative cases in proof of its efficacy, in this respect, almost superfluous. A host of these could, if necessary, be adduced. We shall, how-

ever, give one or two, more to contrast it with the means heretofore relied on, than to prove its capability of indicating pregnancy, as the simple application of the stethoscope to any pregnant woman would suffice for this purpose.

September 18th, 1832, I was requested by Dr. Mollan to examine with him, a lunatic patient under his care. She was a married woman. For some months before our seeing her, her menses had not appeared. This circumstance excited a suspicion that she might be pregnant; a fact which it was of importance to ascertain, as well with a view to treatment, as to the obvious precautions necessary to have recourse to under such circumstances. She was so perfectly deranged in intellect, that the usual means of arriving at information, through the individual's own statements, were quite unavailable; and so uncontrollable was she, that a vaginal examination was out of the question. The stethoscope was applied, and in an instant the question was decided, as a fœtal heart's action was distinctly perceptible, both to Dr. Mollan and myself. The motions of the fœtus were also distinguishable in the same way. This woman was some months afterwards delivered of a full-grown child. Had the medical attendant in this or similar cases, from ignorance of the existence of pregnancy, had recourse to treatment calculated to restore the menstrual secretion, what might not have been the result? and yet it is the course that would in all likelihood have been adopted by an incautious practitioner.

The following case, furnished by Dr. Breen, affords a satisfactory proof of the decided information obtained by this evidence. This case, from the presence of a pe-

riodic discharge resembling menstruation, was rendered still more complicated.

"Mrs. W., mother of two living children, in the third month of her late pregnancy, had considerable hemorrhagic discharge per vaginam, attended with severe pain in the back. These symptoms ceased in a few days, by the observance of strict quiet, joined with the use of the ordinary remedies. She was similarly affected, at intervals of about four weeks, for three successive periods. Between the second and third of these periods, she said she began to feel the motion of the child. After the fourth return, though she declared her unabated confidence in the accuracy of her sensation, as to the movement of the child, I thought it advisable to institute a more strict investigation. On an examination per vaginam, the cervix uteri was not so altered as to remove my doubts, and the "ballottement" of the French writers never afforded me such undoubted evidence of pregnancy, as a reader of their works might be led to expect. I carefully applied the stethoscope, and distinctly heard the pulsations of the fœtal heart, which fully satisfied me as to my patient's state. She carried the child until about the seventh month, when labour came on, and an infant but very recently dead was born. The recovery was tolerably favourable."

The author was requested by Dr. Whitestone to see a patient, with him, whose case was involved in obscurity. She was then living with her husband, was suffering from derangement of stomach, and had menstruated, but irregularly. Her breasts were not larger than natural, and devoid of areola. There was a fulness observable in the uterine region, but its true nature could not be ascertained, either by an abdominal or vaginal examina-

tion. The conclusion arrived at here, was, that by the ordinary means in use, it would be impossible to pronounce with certainty upon the nature of this patient's case. The stethoscope was applied, and a fœtal heart immediately detected, beating one hundred and thirty-five in the minute. This patient was made acquainted with her state, which she had not even suspected, as she had been impressed with the idea, that she laboured under some alarming disease. Dr. Whitestone informed me he attended her in labour five months afterwards. Here, then, was a case in which all the means ordinarily relied upon failed in giving any information; and the simple and momentary application of the stethoscope to the abdomen, set the point immediately at rest, relieving the minds of both patient and doctors, and indicating the line of treatment proper to be pursued under the circumstances.

In the following case, reported by Doctor Haüs, as occurring in the Lying-in Hospital in Würzburg, accoucheurs will recognize one of by no means unfrequent occurrence. "N. N. was brought on the 14th December, by the police, to the Lying-in Hospital of this town, as there were some well-founded doubts as to her being pregnant. She was addicted to a very disorderly course of life, and was well known to be very cunning. It was, therefore, natural to suppose that she had alleged pregnancy, merely as a pretext to escape punishment. By her own account, she had felt the motions of the child at the right side very strongly, for the last six weeks, and was in her seventh month; her breasts were tolerably swollen. On external examination, I found the abdomen singularly distended; the whole of the pubic region was shaped as in persons not

pregnant, while on the other hand the distention reached very high up, indeed, almost above the lowest ribs. We could not feel any fluctuation, neither were the abdominal parietes, which were very flaccid, colder than usual, but the reverse. There was no circumscribed hardness to be felt in the region of the uterus, nor were any parts of the child perceptible; there seemed to be some of the omentum and intestines, between the uterus and surface of the abdomen, and the navel was not distended. On internal examination, we found the vagina secreting a great deal of mucus, the external parts wide asunder, and the vaginal portion of the uterus inaccessible on account of its excessively high situation. She was considered by some not to be pregnant, and by others, among whom was Dr. D'Outrepont, to be so. It was left to be decided by auscultation. I made the woman stretch herself on a bed, and ordered the strictest silence to be observed around me. I then made the abdomen tense on the left side, by pressing on the right, and after some time heard the *double beat* between the navel and the left ramus of the pubis, but so indistinctly, that I could not count it; I was, however, convinced that it was really there, and that I was not deceived. I did not hear the single at all: I declared the woman to be positively pregnant. On the 26th of January she came again into hospital, and the medical attendants there satisfied themselves, both by external and internal examination, that she was really pregnant. It was ascertained that the head presented; but the os uteri was still inaccessible. The womb now presented a circumscribed hardness, and the navel was tolerably stretched, but there were still intestines to be felt between the uterus and anterior wall of the abdomen. I heard the *double*

pulsation, indistinctly as before, in the umbilical region. I was not able to make out the single."*

The author is indebted for the following case to his friend Dr. Byrne, Physician to the University. "Mary M., ætat. thirty-four, married, of a pale, leucophlegmatic appearance, the mother of three children, of bad health for the last nine months; had no child for the last three years; catamenia irregular for the same period, both as to quantity and time of appearance. Has been much distressed in mind of late, by a tumour rising out of the pelvis into the hypogastrium, as she cannot satisfy herself with regard to its nature. The physician under whose care she was, had an accoucheur to examine her *per vaginam*, before my seeing her; who pronounced the case to be one of a tumour, about the size of the clenched fist, growing from the superior fundus of the uterus, and involving the fallopian tubes, and ovaries: he further condemned it as *cancerous*, from a supposed nodulated feel, when examined through the parietes of the abdomen. The treatment usual in cases of cancer had been resorted to, but without any good effect. On May 29th, 1830, I examined her, being requested to do so, in order to make myself acquainted with the feel of cancerous tumours growing in this situation. Her present symptoms are, occasional sickness of stomach, pains about the loins, appetite bad, tongue clean, bowels free, pulse quick, weak, and small: the catamenia have been suspended for five or six months. The tumour is soft, elastic, and circumscribed, without pain on pressure, and occupying the pelvis and lower part of the abdomen. I can find no nodules on relaxing the abdominal muscles

* Eilfte Beobachtung, p. 34.

in the usual way; but ascertained that when these were in a contracted state, as in the sitting posture, such a sensation was communicated to the hand in a slight degree. On applying the stethoscope immediately below the umbilicus, I heard a masked murmur, very different from the borborygmus of the intestines: on changing to the right side, on the same plane, the placental murmur was tolerably distinct, but this sound singly was not sufficient to make me pronounce on the nature of the *tumour*. On removing the instrument to the opposite side, I heard the *fœtal heart* pulsating one hundred and forty in the minute, whilst the mother's pulse was only ninety. This I pointed out to an accoucheur present, who had previously examined her, without coming to any satisfactory conclusion. We therefore, without hesitation, informed her that she was pregnant; on which glad tidings I have seldom seen more joy depicted in the countenance of any individual. This poor woman was delivered of a healthy child about two months afterwards."

It will occur to us that in advanced pregnancy, particularly in the last month, the nature of the case is so obvious from the ordinary symptoms, that the assistance of any new means of diagnosis will be unnecessary. Although this, as a general statement, may be admitted, cases will occur, even here, where the stethoscopic evidences may be of the utmost importance in enabling us to arrive at accurate conclusions. We have heard of instances, and upon undoubted authority, in which even experienced practitioners have only had their doubts as to the existence of pregnancy solved by the birth of a child; and some, where the true nature of the case was not suspected, until ocular proof was furnished of the

fact. In ordinary practice, however, a case will sometimes present to us, in which, even in the last month, pronouncing decidedly upon the existence of pregnancy is difficult. A case of this nature occurred some time since in the wife of the coachman to one of our most experienced midwifery practitioners in this city, Dr. Breen; this woman was upwards of 50 years of age, when her menstrual discharge ceased, and her abdomen became gradually enlarged. At the time of our seeing her, her feet were much swollen, there was considerable difficulty of respiration, with severe cough, and scanty secretion of urine. Under these circumstances, it was agreed by Dr. Breen and myself, that it was next to impossible to pronounce decidedly, whether she was or was not pregnant; when the stethoscope was applied, and the mystery solved in a moment by the detection of the fœtal heart. This woman was delivered very shortly afterwards of a full grown, living child.

Comment upon the foregoing cases is unnecessary: they of themselves sufficiently indicate the importance of this sign as a mode of detecting pregnancy, where other means had failed, and even in some, led to erroneous practice. We regret to be obliged to say, that more than one or two cases have come under our notice, where the discovery of their true nature has been caused by such mistakes in practice, as placed the professional attendant in any thing but an enviable situation.

Having said so much with regard to the presence of the fœtal pulsation as a proof of pregnancy, it will occur to us to ask how far we are to calculate upon its absence in a negative point of view in testing that state? The absence of the fœtal pulsation, then, it may be said, although it does not in itself absolutely warrant us in

pronouncing a female free from pregnancy, yet, taken in conjunction with other symptoms, will corroborate our views in this respect. The reasons why we cannot depend exclusively on the want of this sound as a proof of the non-existence of pregnancy are sufficiently obvious. We must be aware, for instance, that when the fœtus is dead, it will of necessity cease; and this very fact we shall find in the sequel a matter of much consequence, when we wish to ascertain whether the child be dead; as in cases of tedious labour, where the use of instruments must be had recourse to to effect the delivery. In the very early months of pregnancy also, we have seen that this sound may be absent, or rather, that we may not be able to detect it; therefore, the not detecting it before the period at which quickening should have occurred, and in some cases even until some time afterwards, would not warrant us in pronouncing decidedly that a female is not pregnant.

The position of the child, as it may alter the situation of the fœtal heart, should be attended to in exploring in these cases of doubt; and we ought not therefore to rest satisfied with merely examining the lower part of the abdomen, where we usually detect it, but must search carefully over every part of the uterine tumour, as we may discover it towards the fundus, or at its lateral part. By adopting these precautions, then, we shall, with considerable certainty, be enabled to pronounce in most cases of doubtful pregnancy, and even in those at present looked upon as involved in the greatest obscurity, from the contradictory symptoms which are present.

The auscultatory signs, and particularly the fœtal heart, not depending for their production upon any remote, altered, or morbid operation or sympathy, are di-

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rectly and physically produced by that which we wish to detect, namely, the child itself, and ought naturally to be looked upon as conclusive in their nature, and free from all those considerations which may cause us to waver in exercising our judgment. We have elsewhere stated, that certain objections had been urged against auscultation, grounded upon assertions as to its insufficiency as a diagnostic agent. Now, the question at issue is not one of opinion or requiring authority, abundance of which could be adduced to establish it. It is simply as to a matter of fact, that any individual, who will be at the trouble to examine, can satisfy himself of. Under these circumstances, we deem argument or authorities almost unnecessary, and having directed the attention of the profession to what we have observed, merely call upon them to observe for themselves, leaving the test to its own merits for their permanent adoption or rejection. We would only put them on their guard, that they may not fall into the error of the acute magistrate who acquitted the prisoner proved guilty of theft upon the testimony of an eye witness, because he produced an individual who swore *he had not seen* him commit the theft. We feel no degree of astonishment that there should be dissentient voices raised against the application of auscultation to pregnancy, as however valuable any discovery or improvement in science may be, or however palpably self-apparent its utility may appear to those who have candidly and without prejudice estimated its merits, still there will ever be some persons ready to oppose any thing new. Whether this arises from their not understanding it, as is very frequently the case, from their depending upon their own reasoning on the subject, which is not always the most infallible, in pre-

ference to investigation and experiment; upon their hurried, imperfect, and ill-directed trials, where their own want of expertness, or natural absence of discrimination, is set down to dishonesty on the part of those opposed in opinion to them, or upon the not uncommon motive of aversion to all innovation, it is a matter of little consequence: the effect of such opposition is beneficial in one respect, it draws the attention of the profession to the subject, and if the innovation possess any merits, these are inquired into.

We candidly confess, that on first turning our own attention to this subject, and before we had sufficiently prosecuted it to be able to detect accurately the stethoscopic phenomena, *we* were sceptical also; and had we then trusted ourselves to *publish* our opinion for the edification of the profession, we should have certainly questioned its general application, if we had not altogether denied its utility. Further investigation brought the conviction to our minds, that, what we ascribed to imperfection on the part of this as a diagnostic means, really proceeded from our own ignorance and want of expertness in detecting the phenomena. It behoves us then, in searching for truth, to bear in mind the distinctions between the imperfection of an art and the incapability of those who practise it.

In saying so much, however, it is not meant to assert that certain difficulties may not present themselves to us, in forming our decisions with regard to the presence or absence of even this apparently so palpable sign (the fœtal pulsation.) Although such are very rare, they do undoubtedly occur. It shall be our endeavour now to state the obstacles and difficulties which present themselves in the application of this in a diagnostic point of

view, as freely as we have stated the advantages to be derived from it in this respect.

The possible sources of deception in exploring for the fœtal pulsation, are, the likelihood of its being confounded with the pulsation of the iliac arteries, or abdominal aorta of the mother, or these being mistaken for it; their situation, comparative frequency, and the double character of the fœtal pulsation, will however, serve to distinguish them in almost all cases. But a difficulty may occur in discriminating, when the maternal pulse is very much increased, or the fœtal heart's action, as is sometimes, although very rarely, the case, very much diminished in frequency. A case of the former occurred (Nov. 22d, 1829,) in a woman who came into the Lying-in Hospital in labour of her first child. On applying the stethoscope, the fœtal heart's action was distinctly perceptible extending across the pubic and iliac regions, but particularly so on the left side, beating thirty-eight in the quarter minute, and exhibiting its double pulsatory character. The placental *souffle* was discoverable towards the right side and fundus of the uterine tumour, whilst all over the fundus there was distinctly observable a pulsation beating exactly thirty-two in the quarter minute. This might easily have been mistaken for the fœtal heart, from its frequency, and its corresponding so nearly with the sound heard over the pubis, which exhibited the characters of the true fœtal heart; however, on feeling the patient's pulse, it was found thirty-two in the quarter minute; the placental *souffle* corresponded with it. The stethoscope was then applied in the epigastric region, above the uterine tumour, and a strong aortic pulsation was there detected, which could be traced extending itself along the uterus; its pulsations were

distinctly perceptible even at some distance from the region of the aorta, conducted by the solid body of the child *in utero*. This pulsation wanted the double character of the fœtal heart's action, and exhibited a strong impulse, raising the instrument at each stroke, as is generally observed in the aortic pulsation. Did we trust solely to the frequency, without attending to the other characteristic marks insisted upon, an erroneous conclusion might be arrived at in this or other cases, where a mistake might be a matter of more consequence. A case of aortic pulsation, where pregnancy was simulated by dyspepsia, is given in another part of this treatise. In it, the impulse was so remarkable as to attract the attention of the patient herself, who ascribed it to the motions of the child in her womb. Her pulse was not above one hundred, therefore there was little likelihood of any mistake occurring; and at all events, the impulse was so violent as to point out at once the true nature of the case.

The pulsation of the maternal arteries may further afford us some embarrassment, by rendering the fœtal heart inaudible from their greater sound and impulse; but this is not likely to interfere with us, unless when the pregnancy is at a very early stage, and the heart's action extremely feeble. We may meet with it particularly in first children, and when our patient is examined lying on her back, as in this case, the parietes of the abdomen press back the uterine tumour upon the aorta. Change of posture, and endeavouring to remove the pressure of the uterine tumour as much as possible from the artery which emits the pulsation, as by drawing the uterus a little to one side with the hand, will in general relieve us from this inconvenience. The extension of

the maternal heart's action, particularly where the circulation is much quickened, may become another source of fallacy in exploring for the fœtal heart; and this, from its greater similarity in possessing the double beat, requires our utmost caution to discriminate. We have known the maternal heart's action to extend a considerable way over the abdomen, in cases where there did not appear to be any symptoms of dilatation, thinning of its walls, or other disease, and therefore can offer no explanation of the fact. The existence of the sound in this, as well as in the other cases mentioned, at the fundus of the uterus, ought to excite our suspicions as to the cause; and if we find it synchronous with the mother's pulse, and becoming more audible as we trace it extending from the fundus of the uterus into the maternal cardiac region; these circumstances, together with its possessing the impulse and double beat, leave us little room for hesitation in pronouncing it the maternal and not the fœtal heart or aorta.

Mary —— came into the Lying-in Hospital in labour. I saw her in company with Dr Darley; the os uteri was slightly dilated, and the membranes unruptured; she was only in her seventh month of pregnancy. On applying the stethoscope, the true fœtal circulation was no where observed, although there were some circumstances which, with a person not paying attention to the distinctions heretofore insisted upon, might have led to error. The placental sound was heard in this patient to the left side, about three inches from the ramus of the pubis; but it partook more of the character of a pulsation than of the usual *souffle.* On applying the stethoscope to the superior part of the uterine tumour, a distinct double pulsation was observable, beating one hundred and twenty

in the minute; however, on feeling the patient's pulse at the wrist, it was found one hundred and twenty also, and synchronous with the pulsation in the uterine tumour. On examining the latter a little more closely, it was found to be the extension of the maternal heart's action, conveyed along the integuments by continuity of surface, and was to be traced distinctly from between the fifth and seventh ribs on the left side, extending on the abdomen, and becoming less distinct in proportion to its distance from the region of the heart, until it was lost altogether just above the umbilicus. The above patient was delivered in a few hours after examining her; the child was dead, and exhibited what are ordinarily termed marks of putrescency.

[M. Dubois relates the following, which is of interest on this point: "A young woman, in whom the menses had ceased for five months and a half, applied for admission at the Maternité, under the supposition that she was pregnant; the size of the abdomen corresponded with the date of the cessation of her menses, and she assured him she felt the child move. In about a month after, Dubois auscultated her, and found a double pulsation, varying from 128 to 130 strokes, at the lower part of the abdomen, on the left side. Happening, shortly afterwards, to feel her pulse, he was astonished to find it beating at precisely the same rate; on repeating his auscultation, he discovered that these double pulsations became more and more distinct as he approached the epigastrium, and that it was impossible not to recognise their real source; the sound extended over the whole abdomen, and at its lower portion was so feeble, as to be easily mistaken for the sound of a fœtal heart; upon making a careful examination, per vaginam, it proved she was not pregnant.

I shall avail myself of this opportunity to state, that M. Nagele, and confirmed by M. Carriere, have remarked that the pulsations of the child, under certain circumstances, exhibits only one sound, and this has been noticed especially at the fundus of the uterus. This, however, will require confirmation, as a diffused sound is

frequently produced likened to a single sound from the posterior lumbar position of the fœtus ; the great quantity of water, the interposition of intestine gases between the uterus and the abdominal parietes, and other circumstances, which might lead one to mistake the sound.]

The action of the abdominal muscles, or the contractions of the uterus, if the patient we examine be in labour, may embarrass us. The sound met with here we can easily render ourselves familiar with, by placing our ear to a stethoscope applied over the biceps muscle thrown into action. It resembles that caused by the rolling of carriages at a distance.

[The sound of the fœtal pulsations, before the membranes have ruptured, do not undergo much, if any, change, but after the membranes have broken, and the liquor amnii has escaped, and particularly if there should be an excess of it, the pulsations become more distinct, and audible over a smaller extent. Should the pains not be very strong, though protrusive, still the pulsations do not exhibit much change, but when powerful and expulsive, and but short intervals of repose exist between the pains, they become sensibly diminished, and sometimes inaudible, and can be perceived gradually assuming their natural tone, when the same course is pursued, till the child is in the inferior strait, when they may also be frequently heard. I have not experienced much difficulty in the examination during the contraction, when the stethoscope is used gently.]

To prevent the inconveniences arising from this, we must endeavour to relax the muscles as much as possible, and to keep our patient perfectly quiet. This is more likely to interfere with us in examining patients in tedious labours, where it is an object with us to ascertain if the child be alive or dead. In such cases, we must take care to watch for the interval of a pain, and then make good use of our time, as, when the pains

are frequent, we often find there is little enough time to satisfy ourselves. An occasional cause of embarrassment, and which is particularly observable in females of an irritable, or, as it is called, a nervous habit, is a general tremour arising from timidity. This tremour is sometimes so strong as to approach to a regular rigour; at other times it is very trifling, and merely confined to the abdominal muscles. This last is by no means unfrequent, and may be produced by a dread of examination. The method to obviate this, is by explaining its harmlessness, not to allow any fear or dread to exist in the patient's mind with regard to the application of the instrument, and to endeavour to keep her mind otherwise engaged whilst it is applied.

The pulsation of the temporal arteries of the individual making the examination, particularly if he be obliged to stoop, or if he has previously been taking exercise, may embarrass and even deceive him; against this it is necessary to guard particularly, by taking care that the instrument does not press upon this part. This is easily done, by adapting the end which is to be applied to the ear to whatever form the operator finds most convenient, and even, if necessary, by removing a small portion of the expanded part of the instrument, so as to prevent the possibility of its pressing on the artery, which is much more superficial in some individuals than in others.

The funis of the human subject consists of one* large vein, which conducts the blood from the placenta to

* In ruminants and some other species, the funis consists of two veins and two arteries; in the horse the same conformation prevails as in man.—*Casus*, p. 384.

the umbilicus of the fœtus; two* arteries, which conduct the blood from the iliac arteries of the fœtus, through the umbilicus to the placenta. A quantity of gelatinous matter, contained in cells, gives it consistence, and to a certain extent prevents the bad effects of pressure, which would occur either from the position of the fœtus, or the funis becoming knotted or prolapsed. Over its proper cellular membrane or elongation of the chorion, there is also to be found a reflexion of the amnion. The fœtus is at first attached by its abdomen, véry closely, to the part of the uterus where the placenta afterwards developes itself, with scarcely any intervening funis. This organ, however, gradually extends itself until at the time of birth, when it is generally about two feet long,† and about five or six lines in thickness; in the early month it is flat, but afterwards it assumes a more rounded form.

The vessels of the placenta and chorion have in no animal so long a funis as in man. In some of the *carnivora* and *rodentia*, the vessels of the cord divide immediately on clearing the umbilicus, as in the ovum of birds, and, in the very early period of conception, in the human ovum.

The funis, then, conducts the blood from the fœtus to the placenta, propelled along it by the conjoint actions

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* Cet ordre n'est cependant pas immuable, puis qu'on n'a trouvè qu'une seule artere dans plusieurs cordons.—*Baudelocque*, vol. i. p. 165.

† Maygrier, p. 116, mentions a case where the funis was five feet, and another where it was six feet long. The author lately attended a patient in whom the breech of the child presented, and from the extreme shortness of the funis (which did not exceed eight inches) it separated from the placenta, on the shoulders of the child being expelled.

of the ventricles; the right propelling it through the ductus arteriosus, at the same moment that the left forces it through the aorta, their united action being required for the purpose of driving forward the great aortal column, and overcoming any resistance that might be offered by the length of the funis and its ramifying branches in the placenta; the blood in the umbilical arteries, circulated through them by the action of the fœtal heart, passes, as does all blood under the immediate influence of the heart's action, by periodic impulse, corresponding to the systole and diastole of that organ. This is very obvious in the funis, and imparts that pulsation so perceptible in prolapsus of it, and which continues for some time after the birth of the child. That this pulsation depends solely upon the umbilical arteries, and not, as some have erroneously supposed, on the umbilical vein, may be proved by simply observing for a moment how the blood flows on cutting the funis, leaving it untied. After the expulsion of the child, and whilst the circulation continues, we perceive the blood flowing from both the umbilical arteries in the fœtal portion with distinct periodic jerks, corresponding to the action of the child's heart, whilst the blood of the umbilical vein flows in a continuous stream, and quite devoid of pulsation. Thus, then, we have a constant transmission of blood through the umbilical arteries, along the funis, accompanied by a distinct pulsation, corresponding to that of the fœtal heart, existing as long as the circulation of the fœtus in utero continues, and ceasing with it. This pulsation of the funis can, in particular positions of it in the uterus, be observed on applying the *stethoscope* externally. It is particularly observable when a portion of it intervenes between the anterior wall of the uterus

and some prominent part of the child's body, as the back, pelvis, or one of the limbs. It is scarcely necessary to state that here we have a pulsation equal in frequency to that of the fœtal heart.

In some cases, where the uterus and parietes of the abdomen were extremely thin, I have been able to distinguish the funis by the touch, externally, and felt it rolling distinctly under my finger; and then, on applying the stethoscope, its pulsations have been discoverable, remarkably strong; and on making pressure with the finger for a moment on that part of the funis which passed towards the umbilicus of the child, I have been able to render the pulsation less and less distinct, and, even on making the pressure sufficiently strong. to check it altogether. A consideration of this fact would lead us to conclude, that accidental pressure on the funis may be an occasional, if not a frequent, cause of the death of the fœtus, since, had one of the patients, in whom I observed this peculiarity, leaned with her abdomen pressing sufficiently long against any projection, such as a table, she might very unwittingly have destroyed her offspring. The funis exhibits another phenomenon which, on my first paying attention to obstetric auscultation, it embarrassed me a good deal to find a rational explanation of, namely, a *souffle*, which is occasionally met with distinct from that of the placenta, and differing in character as well as situation. It is heard generally at a point of the uterus quite distinct from the placental *souffle ;* is weaker and shorter in its duration, wanting, in a great measure the very protracted sibilous or hissing sound existing in so marked a degree in the other, and corresponds in frequency, not with the pulse at the wrist of the mother, but with the fœtal pulsation, or the action

of the child's heart. Having first observed this, which we shall call the *funic souffle*, in two cases of hemorrhage, I was led to believe that it must be in some way dependent on the hemorrhagic state; but further experience convinced me that it was not so, generally, however it might depend upon this cause in individual cases. This was further proved by my afterwards meeting, in cases of hemorrhage, with the funic pulsation devoid of the *souffle*; and the frequent occurrence of the latter in cases where no hemorrhage was present. In addition to this, I was able to produce it in some cases myself where it had not previously existed. The conclusion eventually arrived at with regard to this phenomenon, the accuracy of which, the repeated cases observed, and experiments made on the subject, clearly demonstrate, is, that it depends on the passage of blood through arterial tubes, in a similar manner as in the case of the placental *souffle*, to wit, the transmission of the blood through a part of the umbilical arteries, where a narrowing of their tubes exists, from whatever cause, (as the pressure of a limb or part of the child, knotting of the funis, or external pressure,) thus forming currents at this particular part, and giving rise to the phenomenon in the manner explained while treating of the placental *souffle*.

It was mentioned above that this *souffle* in the funis could in some cases be produced at pleasure. To effect this, it is requisite that the funis should either be in contact with the anterior wall of the uterus, or if not so, that it should be resting against some prominent part of the child, and within the control of the operator, so that by making a moderate degree of pressure with the stethoscope, the wall of the uterus can be brought into con-

tact with the funis. A sufficient degree of pressure can be made by keeping the ear firmly applied to the stethoscope, so as to narrow the canal of the vessels slightly, without checking the flow of blood through them. This requires a good deal of caution, as, if the pressure be too great, although the blood may still be transmitted, yet the phenomenon does not exhibit itself. We see this in the experiment of applying the stethoscope to any artery, say the brachial, where, if we apply a proper degree of pressure, we can produce a *souffle* ; but if the pressure be carried too far, it ceases, although the blood is still transmitted through the vessel, as proved by the pulsation beyond the point of pressure. Whether the *souffle* may have depended in those cases of hæmorrhage in which we observed it, upon the cause above mentioned, namely, the mechanical or organic obstruction, or upon a similar cause to that, on which it depends in the adult subject, where there exists an hemorrhagic state of the system, namely, a spasmodic narrowing of the arteries, may perhaps admit of some question ; but be that as it may, we are inclined to consider the most frequent cause of it to be that which has been already explained. To those who do not grant to the umbilical vessels the possession or individual vitality or contractility, the dependence of this phenomenon on a spasmodic or inherent narrowing of them may appear impossible. However, if we admit the accuracy of Hunter's, Lobstein's, and Osiander's experiments on this subject, we cannot deny them this property.*

* If Professor Chaussieur has not been deceived in his reported discovery of nervous filaments in the umbilical cord, there may be some reason to believe in the possibility of spasmodic narrowing of the umbilical vessels producing this *souffle*.

In illustration of these remarks on the pulsation and *souffle* in the funis, it may be necessary to instance one or two of the many cases which led us to arrive at the above conclusions.

November 16, 1829, I saw, in company with Mr. O'Rourke, Anna Burke, ætat. 26, in labour of her first child; she had then been for twenty-four hours in that state. The stethoscope was applied to discover if the child were alive. I found the fœtal heart over the pubis, and somewhat to the left side, exhibiting its usual pulsatory character, but no *souffle*. At a point higher up, between the left ramus of the pubis and the umbilicus, there was observable a *souffle* or whizzing pulsatory sound corresponding in frequency with the fœtal heart's action observed below, which beat forty in the quarter minute. The funis was to be felt here through the abdominal parietes and uterus, coiled upon itself. On applying the stethoscope near this, a pulsation, but without *souffle*, was distinguishable, which corresponded in frequency with the fœtal heart also, but wanted its peculiar characteristic marks. The placental *souffle* was perceptible towards the fundus of the uterus, and rather to the left side, corresponding with the maternal pulse, which beat ninety-eight in the minute. This woman was delivered two hours afterwards of a living boy; the child's heart was explored with the stethoscope immediately on its birth, but no *souffle* was perceptible.

Visited Mrs. —— in an advanced stage of pregnancy; on applying the hand to the abdomen, the integuments were found to be remarkably thin, and the limbs were distinctly to be felt through them. Midway between the navel and pubis, the funis could easily be distinguished, prominent, rolling under the finger, and

pulsating; it appeared to be kept in contact with the inner surface of the uterus by being suspended over a limb of the child, and thus pressed between it and the uterus. The pulsation, on the stethoscope's being applied, amounted to one hundred and forty in the minute, corresponding in frequency with the fœtal heart, which was distinctly perceptible in the left iliac region over the ramus of the pubis, and also on the right side, but less distinct. The placental *souffle* was perceptible at the right side, stretching from the neck up towards the fundus of the uterus, emitting eighty sounds in the minute, which corresponded with the maternal pulse at the wrist. What was particularly worthy of attention, however, in this case was the remarkably superficial position of the funis, which rendered its detection by the stethoscope a matter of great facility, and even enabled it to produce a pulsation, which on careful examination, was perceptible to the touch. Having fixed the funis against the limb of the child, between the finger and thumb of the left hand, I made a gentle pressure with the fore-finger of the right hand on the cord, keeping my ear applied to the stethoscope, the other end of which was fixed over the funis, at a point nearer its insertion into the placenta. The pulsation, which, up to the moment of my making this pressure was remarkably strong and distinct, became converted into a *souffle*, and on increasing the pressure it immediately ceased, recommencing the moment I discontinued it. I then removed the stethoscope to the spot where I had discovered the heart's pulsation, and repeated the experiment as above. The action of the heart at first became laboured, but fuller, afterwards it became fluttering and indistinct; and not judging it safe to continue the pressure any longer, lest the

child should suffer, I removed it, when the action became regular as before, but somewhat quicker. I had previously placed the stethoscope over the part where the placental *souffle* was observed, but without perceiving any change when pressure was made on the funis as above.

October 15th, 1829. Bridget Poole, ætat. 25, admitted into the Lying in Hospital in labour of her second child. Os uteri little dilated, membranes unruptured, the head presenting through them. The placental *souffle* ninety in the minute, observable at the left side stretching towards the back. The fœtal heart one hundred and thirty-five in the minute, observable at the left side also. Immediately above the ramus of the pubis (about two inches,) at a spot to the left, nearer the fundus, was perceptible a distinct *souffle*, corresponding in frequency with the fœtal heart. On making pressure with the finger at a point above the spot where it was heard, this could be caused to cease, indicating evidently that this sound arose from the funis, which must have been placed between the uterus and some part of the child's body. My friend, Dr. Cumming, now of Armagh, observed this *souffle* with me; and Dr. Darley, quite unaware of my having detected it in the above case, called my attention to it a short time afterwards. This woman was delivered a few hours afterwards of a living child, and the midwife who attended her in her delivery informed me, that the funis was round the body of the child, near the pelvis.

[Dr. Haüs considers it impossible to hear the pulsations of the cord in utero, and Dr. Hohl has endeavoured to support the views of Haüs, and remarks, "that the funis cannot be heard to pulsate within the uterus, since no body is present there which might serve

to conduct the sound;" and Mr. Dubois, in his treatise, confounded it with the pulsation of the fœtal heart, believing that it was produced by the mingling of the blood from the pulmonary artery with that of the aorta.

Two cases of the funic souffle have come under the Editor's notice; one of the cases was first noticed by the female, who was anxious to know "what it was that she could roll around the abdomen with so much ease;" in both the cord was distinctly felt, (the cases not being further advanced than the sixth and seventh months,) and the circulation could be arrested in the cord by the fingers. The cord was removed over the breech of the child, and when born, did not pass round the child's neck or body. The souffle was soft, regular, and resembled the brewing sound in chlorosis, and differing from the peculiar whizzing, whiffing sound in the uterine circulation. There can, therefore, be no difficulty in discriminating the funic from the uterine souffle, after the remarks of our author, and I can easily conceive that the death of the child might occur by pressure made on the cord too long, as, for instance, a child held by the mother across the abdomen, or any heavy substance pressing against it.]

CHAPTER V.

COMPOUND PREGNANCY.

When more than one child is contained in the uterus, the pregnancy is designated compound.

The occurrence of twins is not very unfrequent; that of triplets is vastly more rare; and there are on record cases wherein four, five, and even more children were produced at a birth. Much has been expected from auscultation in detecting compound pregnancy, and considerable importance attached to it in this respect. To these views we cannot altogether subscribe, deeming it more a matter of curiosity than one likely to be attended with much practical benefit in the investigation.

The occurrence of more than two children at a birth happens so rarely,* that we are in such cases precluded from observing the signs peculiar to them during pregnancy: our remarks shall, therefore, be restricted to what has been observed in twin cases, where we have had sufficient opportunity of examination.

The insufficiency of the ordinary signs of twins, as enumerated by authors, is generally admitted; and the most expert accoucheurs confess themselves unable to

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* In Ireland, where, judging from the proportion of twin cases, (about one in every sixty births,) we may look upon the prolific powers of the inhabitants equal to, if not surpassing, those of the inhabitants of either England, France, or Germany: the average proportion of the occurrence of three or four children at a birth, is, according to the registry of the Dublin Lying-in Hospital, only one in five thousand.

pronounce upon the presence of two or more children by their assistance. Those generally mentioned are the greater size and early development of the abdominal tumour; the flattened appearance which it assumes, and its divisional line; inequalities on its surface, peculiar sensations, and a feeling of great weight and distention in the abdomen, together with œdematous extremities. The motions of the children being felt in different parts of the uterus is insisted upon by some, whilst others say that these are little or scarcely at all perceptible, from the bulk of the children so filling up the uterine cavity as to prevent their moving. It is also said that women carrying two or more children do not go to their full time, and that their labour is slow in its progress.

However, all these signs are seldom available, and are liable to produce deceptions, of which we have abundant proof. The most likely method to enable us to detect the existence of twins is a manual examination of the tumour, when we shall find the *ballottement*, or passive motion, much less, and often not at all evident; but we shall sometimes succeed in moving one child in the uterus by gently pressing on it, whilst we observe another bulky body remain stationary. In this way, with a little tact in accustoming ourselves to the feel of the child through the integuments and uterus, we may possibly discover a second child. Ascertaining by external percussion and examination the tumour caused by the head of the child, and then seeking for another such, may assist us in finding twins. The fœtal pulsation will, however, furnish us with more assistance; and although in some cases it may lead us into error, in others it furnishes us with such satisfactory proofs of the existence of two children as amount to actual demonstration.

When it is audible over a greater extent of surface than natural, and particularly, if it be detected at two points of the uterine tumour distinct, and at a distance from each other, there is strong reason to suspect two children. From what has been said, however, while treating of the fœtal heart and funis, it will be recollected, that this may occur under certain circumstances when there is but one child in the uterus; what then is to guide us? The sounds being heard at each point to indicate the characters observed in the immediate vicinity of the heart, and the pulsations heard not corresponding in time and frequency. A case will best illustrate our meaning.

A woman came into the hospital in her first pregnancy, with slight symptoms of labour; our attention was directed to this case, as, on examining the abdomen with the hand, it certainly appeared larger than usual with one child; and, on a closer examination, two solid tumours were distinguishable, conceived to be the heads of distinct children, one over the pubis, the other situated rather to the right side, and near the fundus. The stethoscope being applied, the fœtal heart's action was distinctly perceptible at the left side, particularly between the crest of the left ilium and the navel, and extending up that side, pulsating one hundred and thirty in the minute; whilst at the right side, and above the umbilicus, there was also observable the action of a fœtal heart, which appeared so distinct as to convince us that it must have been communicated by the heart of another child situated underneath that spot. (See *Plate IV. Fig.* 1.) The pulsations here were one hundred and forty-five in the minute. The placental *souffle* was perceptible and very loud at both sides of the uterus, stretching

rather more forward towards the anterior wall on the right side. The sound of the fœtal heart extended towards the navel from each of the above spots, but of course less distinctly; and there was a spot at the centre where it was not perceptible. Under these circumstances, the woman was pronounced pregnant of twins. The prognosis proved correct, as she was delivered soon after of two children, the first presenting with the head, the second with the breech.

We are not aware of any practical advantages we should gain from a knowledge of the presence of two or more children previous to the occurrence of labour; and so far from its being of importance for the mother to know that she is carrying twins or triplets, even were we aware of the fact previously, we should be highly culpable in informing her of it, as it would create uneasiness in her mind, at the certainty of undergoing, as it were, a double delivery; besides which, women are very well aware that twin labours are more dangerous than simple ones.

It is not meant here to advocate the principle of our not endeavouring to extend our knowledge on any subject, although there should not appear at the moment any ostensible object in doing so, as we do not know when the information arrived at in our investigations may be available; besides, the subject in question is, at all events, an interesting one.

Although several cases such as the above could be adduced, it is not to be concluded that we shall always, when twins are present, experience the same facility in detecting them.

In the first place, in twin cases, although there will be two fœtal hearts, yet they may either exactly corres-

pond, or so nearly approach in frequency as to deprive us of the assistance derived from their comparison in this respect, which is certainly the most important criterion. Again, we may be led into supposing twins to be present by the momentary change not uncommonly observed to occur in the frequency of the fœtal heart, and from this circumstance conclude that there are two when there is in reality but one child in the womb. One fœtus also may be so situated in the womb as to retain the region of the heart at such a distance from the surface as to render the peculiar marks of the heart's immediate vicinity little if at all observable.

The evidences of twins from the placental *souffle* are even less satisfactory. It is generally in such cases to be heard over a greater extent of surface: this may either be continuous, or if the placentæ be distinct and separated, it may be heard at distant parts of the uterine tumour. This we have, however, observed to occur in ordinary cases of simple pregnancy. We mentioned, while treating of the placental sound, that although generally audible over a considerable extent, yet that it was usually observable more sonorous and distinct at some one spot. Now, in twin cases two such sonorous spots may be observed; but this does not invariably hold. From these facts it will be evident, that even with the assistance of the stethoscope, and in the most expert hands, there will be a liability to error on this subject, although certain cases may occur in which the proofs of the existence of twins, by the assistance of auscultation, are quite palpable.*

* The author has, by the assistance of the stethoscope, frequently pronounced with accuracy upon the number of kittens a cat, or of

[There is great uncertaintv in the diagnosis of twins, and it is considered requisite that two should auscult at the same time, and should two fœtal pulsations be audible, there could be no doubt that there existed twins in utero. There, however, would be a probability, if one heart is found pulsating in the left inguinal region, and a second in the right hypogastrium, beating the same in frequency and strength, or if there should be a strong pulsation in the left side and a feeble pulsation in the right, and each of these cases having an intermediate space free from sound, (though M. Nagele and M. Dubois consider that both hearts are perfectly synchronous,) or thirdly, if the pulsations are developed very strongly on either side. The fœtal pulsation, after the waters are discharged, will become more evident, when the diagnosis may more easily be determined. But, as our author justly remarks, in simple twin cases "there can be no advantage gained previous to the delivery, or during the delivery of the first child," but will be of essential value in the cases he has stated.]

Auscultation will afford us very essential service in twin cases in another point of view: where, for instance, one child has come away, and it is a matter of doubt whether a second remain in the uterus. It sometimes, although rarely, happens that the second child shall in this way remain, not merely for hours, but for days, and even weeks. We find cases recorded in which it has remained for ten days,* seventeen days, and even for a longer period. If we admit the accuracy of many of the cases upon which the doctrine of superfœtation is sup-

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pups a bitch, would produce. It it even a matter of greater facility to pronounce, from the distinct position of the fœtuses in such cases, than it is in the human subject.

* Hist. de L'Acad. des Sciences, 1751, p. 107. Dr. Ryan mentions a case to which a medical friend of his was called. This patient travelled thirty miles after the birth of her child; and as she complained much of swelling of the abdomen, an examination was instituted, when another child was found.—*Lond. Med. & Surg. Journal*, July, 1829.

ported, we shall find that the second child has been carried for a period of several months* after the expulsion of the first.

A case may be met with in practice, which, from its unfrequency and peculiarity, is likely to embarrass the medical attendant much. A woman shall be attacked with abortion, and a fœtus of perhaps three or four months' standing be expelled, which, may either be alive, or exhibit appearances of having been dead for some time; and the mother, in place of losing the symptoms of pregnancy, shall have them continuing, and her abdomen gradually increasing in size; and perhaps in four or five months more, shall give birth to a full grown living child.†

Although such a case is rare, it is as well to be prepared for it; and if any suspicion should arise in our mind of the presence of a second child, we should examine carefully for it. The stethoscope will offer us

* De Boset. in Verhandingen nitgegeeven dour de Hollandsche Maatschappy, der Wetenschapen te Haarlem, xii. App. No. 6. See Dr. Maton's case, in which three months elapsed between the births, both children being born alive, and living for some days.—*Med. Trans.* vol. iv. art. 12.

† See Chapman's case, Med. Chirurg. Tran., vol. ix. p. 195. Madame D——, de Saint Germain en Large, âgée d'environ trente-neuf ans, enceinte de quatre mois et demi, fit subitement une fausse couche. Ayant pris toutes les précautions Sui cet état exigeait, elle fut fort surprize de de ne point voir reparaitre sés règles; son ventre augmentant de volume, elle pensa qu'un second enfant etait resté dans son sein, et qu'il continuait des'y devellopper. Son accoucheur lui ayant assuré qu'elle n'etais pas, et qu'elle ne pouvait pas etre restée enceinte, la pauvre dame demeura persuadée qu'elle etait affectée d'une maladie tres grave; mais heureusement elle en fut guérie environ quatre mois et demi apres son avortement, en mettant au monde un garçon bien portant, qui a aujourd'hui quinze ans.—*M. Boivin*, p. 426.

considerable advantages here, as by its assistance we may arrive at the true nature of the case, without subjecting our patient to a painful examination, which would produce such irritation, as to insure the discharge of the second fœtus, an event that might possibly be prevented. It is more usual to meet with cases in which one fœtus has died at an early period, and been retained in the uterus until the other has arrived at maturity, when both are expelled together.

A case which still more frequently presents itself to the accoucheur, and one sometimes attended with considerable embarrassment, is that, in which apparently a second child continues in the uterus, after delivery is completed. If the attendant be present with his patient throughout her labour, and during the expulsion of the child, there is much less likelihood of deception in this respect, as he has an opportunity of feeling the uterus in its state of contraction, while the surrounding parts are soft and relaxed, and if any suspicion of a second child exist, the introducing his hand then sets the point at rest. When a certain time has elapsed, however, and that pressure on the abdomen and bandaging have been neglected, the intestines become often rapidly distended with air, and the abdomen almost as much enlarged as it was previous to the expulsion of the child; the motion of the flatus imparting to the patient the idea of the movement of a second child.

A case of this kind occurred in the person of a publican's wife, who called upon me seven weeks after her confinement: she had been attended by an ignorant midwife, who paid no attention to pressure or bandaging, and the abdomen became even more distended after, than it was before delivery. On a careful stethoscopic ex-

amination, none of the phenomena of pregnancy could be discovered, and a distinct intestinal murmur with borborygmus was observable over the whole abdomen, which was quite tympanitic on percussion, and emitted the *son humorique* in some parts, particularly in the epigastric region. The distention was so perfect that nothing could be ascertained by a manual examination of the tumour; however, the other indications were so clear that a vaginal examination was not had recourse to. The attempt to persuade this woman, that she did not carry another child was perfectly useless, as, according to her own statement, she distinctly felt its motions. She was speedily relieved of her burden, by the free administration of castor oil, and oil of turpentine, which produced copious windy and feculent evacuations. The application of the bandage, which was gradually tightened, assisted much in reducing the abdomen to its natural size. The bandage, in such cases, cannot be too strictly attended to; and that, not merely immediately after delivery, but as long as the unnatural distention remains.

Where the abdominal distention merely depends upon wind in the bowels, as in the case mentioned, the difficulty in the diagnosis is not very considerable: and in addition to the above signs, we must bear in mind that the distention does not usually continue from the period of delivery, some time being required to allow of the flatus being collected in sufficient quantity to distend the abdomen to such a degree; if, therefore, we have been with our patient at this time, such a mistake is not likely to occur. The abdominal distention may, however, depend upon other causes, as for instance, enlargement of the uterus itself, which is sometimes so considerable, as to cause it to fill up the greater part of the

abdomen. It is looked upon as a criterion between this state of *atony*, if we may so call it, of the uterus, and distention depending upon the presence of a child, that in the former, the uterus never rises above the umbilicus, while in the latter it does. In distention of the uterus in a minor degree, this criterion will undoubtedly assist us: but there are some cases of it to be met with in which this organ fills, as we already mentioned, the greater part of the abdomen, and yet contains no child. In such, however, it is very likely to be attended with hemorrhage, either internal or external.

This inordinate distention of the uterus after delivery may occur either before or after the expulsion of the placenta; and in the former case, it may depend upon a collection of false waters. Mr. Dunn* of Pilkington, mentions a case of this kind, in which, after sitting by his patient for four hours, expecting the expulsion of a second child, he at length ruptured as he thought the membranes of that which remained, when a free discharge of waters took place, and on introducing his hand into the uterus, he found nothing but the placenta of the child that had been expelled. In cases where there is a possibility of a child remaining in the uterus, we ought to be very cautious indeed how we meddle with the placenta of the child expelled, before perfectly satisfying ourselves on this point. There is a case mentioned by Dr. Ingleby,† in which the removal of the placentæ of the two first children, in a case of triplets, (the practitioner being ignorant that a third child remained in the uterus,) nearly deprived the patient of existence, from the copious flooding that ensued.

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* Med. Chirurg. Trans. vol. x. p. 396.

† On Uterine Hemorrhage, p. 174.

Where dropsy has co-existed with pregnancy, the abdominal distention, although considerably diminished by the birth of a child, might still so far remain, as to sanction the idea of the uterus containing another child: fluctuation, together with the absence of the evidences of pregnancy, will decide the point. Ovarian and other abdominal tumours may also deceive us in cases of this nature. When there are fair grounds for supposing that another child is contained in the uterus, and we cannot, by the means mentioned, arrive at a satisfactory conclusion on the subject, we are not only justified in introducing the hand into the uterus, but actually called on to do so, particularly if we be with our patients at the time of their delivery, or see them immediately after. We would, however, most distinctly object to the method sometimes adopted, of endeavouring to force the hand into the uterus after a lapse of many hours or days from delivery. If any information can be obtained by a *vaginal* examination, the latter is unobjectionable; but forcing the hand into the uterus under such circumstances is highly reprehensible, and almost impossible to accomplish without injury to our patients. The particulars of a case of this nature, furnished to me by my friend Mr. Dwyer, are here subjoined.

July 17th, 1830, I was called to see a woman named Collins, labouring under symptoms of an inflammatory nature in the abdomen. On examination, I found a tumour occupying the umbilical and right lumbar regions, which appeared to be continuous with another that extended into the right iliac. She described the origin and progress of them as follows. Four years last January, (about one month after her confinement,) she perceived in the right lumbar region, two lumps apparently

connected; the larger one was at first the size of an egg, but gradually increased during a pregnancy which she subsequently contracted. She could distinctly feel the tumours while carrying her child. When labour came on, in consequence of a preternatural presentation, the assistance of a practitioner of some celebrity was required, who delivered her by turning the child. About nine hours after her delivery, this gentleman again saw her, and feeling the tumours in the abdomen, concluded, that the patient had been pregnant of twins, and that there was still one child remaining in the womb. He, in consequence of this opinion, forced his hand into the uterus, giving the patient excruciating pain; she stated, that she at this moment distinctly felt the tumours dislodged from their situation, and observed them ever after situated lower in the abdomen. Of course there was no child in the uterus; but the effect of this ill-judged and violent operation was, an immediate attack of inflammation in the abdominal cavity, repeated attacks of which she has since suffered from. In fact, she attributes (and I fear with too much justice,) the continued ill health under which she has laboured for the last three years, to this gentleman's treatment. Mr. Dwyer adds: had the stethoscope been applied in this case, it must be evident to the unprejudiced, that this poor woman would in all likelihood have been saved a considerable deal of actual suffering; whilst the practitioner would at least have avoided risking his character by a doubtful, and as it turned out, an incorrect prognosis.

It may be well to mention here a curious phenomenon observed by the author with regard to the fœtus in the uterus, namely, its power of breathing and crying in this position. This is a circumstance, the possibility of

which, we confess we should more than question, had we not undoubted proof of the fact, as the following case will testify.

I was called up one night by an intelligent pupil in the hospital, who informed me, that a very strange sound was observed to come from a patient in labour, resembling exactly the whine of a child.

On going into the labour ward, I found the nurses and pupils surrounding a patient's couch with out-stretched necks, listening with greatest intensity and amazement; and on approaching within about six feet of the bed, I distinctly heard a low moaning whine, resembling the faint and painful cry of a delicate seven months' child; this became more distinct the nearer I approached the patient, and there could be no doubt whatever, that it came from the abdomen of the woman on the couch, however produced. Still sceptical, I applied the stethoscope, when the fact was proved beyond a doubt. as not only the cry mentioned, but the laboured respiration of the fœtus was perfectly audible. A vaginal examination was instituted, and the head was found presenting, but high in the pelvis. The parts were only partially dilated, although the membranes were ruptured. and the waters had drained off shortly before. This woman was not delivered for four hours, and the above phenomena were observed by several of the pupils, up to the time of the child's birth. This patient's name was Morell, the date of her delivery the 2d of December, 1830.

This case not only establishes a curious, we had almost said incredible fact, but in a medico-legal point of view, is of some importance, and shews in a striking manner the futility of some of the tests most depended on in child murder.

[Dr. Marinus, of Brussels, has collected together the particulars of a number of cases, in which this occurrence of the infant has been heard to cry before birth, and which was read in a memoir before the society of Medical and Physical Sciences of that city.

Dr. Lodes (Annales de la Societé de Medicine de Saræ, 1837,) has related a case where the vagitus was heard, but the child was born dead; on dissection, the whole of the right lung, and the upper lobe of the left one, were found to be dilated with air, the lower lobe of the left lung being still impervious to it.

The phenomena of uterine vagitus being once admitted, we are necessarily led to believe the child can, under certain circumstances, breathe in the uterus. The act of respiration may take place before the child is born, and the child may die, which has thus breathed before it is born. The circumstance, therefore, of part only of the lungs being found dilated with air, may possibly be a presumptive post-mortem appearance in favour of intra-uterine respiration having taken place. If such may be the case, a powerful argument may be drawn against the phenomena exhibited by the lungs in cases of suspected infanticide. The possibility, however, of its occurring should induce caution to be exercised in all our decisions, whenever the character and life of a fellow mortal are involved. It may occur when the head of the child, the membranes having burst, and the os uteri being well dilated, rests at the inlet of the pelvis, or has descended, more or less, completely into its cavity, whether it be the face, occiput, or side of the head that presents, or when the head is already in the vagina, engaged at the vulva, or fairly protruded beyond it, while the rest of the child is still in the cavity of the uterus; or when, in cases of foot, knees, or breech presentations, the head remains engaged in the vagina, the body being born.]

CHAPTER VI.

COMPLICATED PREGNANCY.

The pregnant state may co-exist, in the same individual, with some morbid condition, which, from its either concealing or resembling pregnancy, or appearing incompatible with it, is calculated to lead us into error, or at least render our diagnosis attended with considerable difficulty. Such morbid condition may either exist within the uterus, or external to it. When the first is the case, or that there is any thing within the pregnant uterus which is calculated to render our diagnosis difficult, the French authors apply to it the term *grossesse compliquée :* it appears to us, however, that this term should be applied more extensively, and ought also to include those cases in which a morbid state of the parts exists, external to the uterus, and which, being combined with pregnancy, is likely to create a difficulty in our diagnosis. It is here applied in this more extended sense. The complications which depend upon morbid states of the uterus itself, are those cases wherein we find pregnancy combined with dropsy of that organ, hydated growths contained within it, a tympanitic state of it, polypous growths, and moles, or false conceptions, as they are termed : of all these, the most frequent is the dropsical state.

Where the secretion of the liquor amnii is increased in an inordinate degree, the fluid may also be collected

without the amnion, between the membranes; and such a collection may, as we know, escape without labour being induced. When the fluid collects within the amnion in very inordinate quantity, the child often does not live beyond the sixth or seventh month, or is very weak and feeble. It is most frequently observed to occur in cases where a venereal taint exists in the constitution of one or both parents. How are we to explain the cause of this hydropic collection in the amnion? Is it, that, upon the death or feeble state of the fœtus, the circulation in it, becoming from venereal taint, or some other cause, languid and weak, a portion of the utero-fœtal blood, which should in the healthy state of the fœtus have gone to nourish it, may now be determined to the amnion, which taking on an increased action, in many respects resembling that which we observe in cases of dropsy in serous cavities, an inordinate quantity of this fluid is secreted? To some it may appear that congestion would afford a better explanation; and they might ascribe it to a want of action in the absorbents, from the loaded state of the vessels, or to atony, depending on the same cause, namely, the laboured circulation in the fœtus: nor is it at all impossible that such may be the case. Again, it might be ascribed to a cause distinct from all these, namely, infiltration, occurring after the death of the fœtus, or while it is dying, when this membrane is more or less deprived of the vitality it had enjoyed. A similar phenomenon is observed in certain effusions into the serous cavities, which take place either immediately before or after death. Where the fluid collected within the uterus exists in a considerable quantity, it may give rise to the idea of ascites being present, more particularly, if the

symptoms of pregnancy are at all equivocal: extreme abdominal distention, together with fluctuation, while the motions of the child are either not perceived, or rendered so obscure, as to create a doubt as to their occurrence, will tend to produce this error. We should, however, in cases of this nature, note carefully, whether the distention is circumscribed, or, as in ascites, occupies the abdomen generally; at the same time observing, whether the fluctuation exists without or within the circumscribed tumour; if the latter, we may conclude that it arises from an undue quantity of liquor amnii, and that the distention is within the uterus. This would be more likely to be confounded with ovarian dropsy, as the fluctuation, when observed here, is obscure and circumscribed also. Here, as in the other case, we must call in to our assistance the general symptoms of pregnancy, endeavouring, if possible, to detect the stethoscopic* signs; and if the fœtus be alive, whatever difficulty there may be in detecting the pulsation of the fœtal heart, from the distention of the uterus, and consequent distance of the former from its surface, yet the placental sound ought to be as loud as in ordinary cases, the uterine walls and those of the abdomen being in contact. If from the death of the fœtus, the stethoscopic sounds should be inaudible, we must then endeavour to feel its passive motion, through the abdominal integuments, and also by tilting up the uterus with the finger, introduced within the vagina. By this means, be the distention of the uterus ever so great, if the head of the child lie downwards, and the pregnancy be sufficiently advanced, we may feel the shock produced by the fœtus falling

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* See case reported, page 99.

by its own gravity against the most dependent part of the uterine cavity.

Pregnancy may be rendered complicated by the presence of a portion of air, along with the child, in the uterus. Mauriceau mentions such cases, (Obser. cv. T. ii. p. 87 :) but they are very rare in their occurrence. We have met with cases in which air was expelled by the uterus with considerable force, during the expulsion of the child or placenta, and this particularly in tedious labours ; but here it may have collected during the progress of the labour ; either by air being admitted from without, or from the decomposition which the discharges at this time underwent. The proof of air being collected within the uterus, during pregnancy, must be rather obscure ; along with the circumscribed distention, caused by uterine enlargement, we may expect to find a sonorousness on percussion, as the air would of course rise to the superior part of the cavity : perhaps also a sound similar to that produced in the chest by hippocratic succussion. On this subject, however, we cannot speak with confidence, not having examined any such case before labour.

Intra-uterine hydated growth occasionally co-exists with pregnancy, and continues to increase with the progressive development of the ovum. But hydatids occur more frequently in cases where the ovum has been blighted ; whether as the consequence or cause of the blight, it is difficult to determine. We have lately met with three cases of this kind, in which quantities of hydatids were expelled : in one case, the female calculated she was five months pregnant, in the other two cases, seven months each, and in none did the fœtus appear to have exceeded the second or third month.

The smallest fœtus we have ever met that could be distinguished satisfactorily as such, with the naked eye, was in a case seen in the year 1826, with the late Dr. Pentland. The fœtus was detected in the centre of an hydatid mass discharged from the uterus, the patient supposing herself to have aborted about the sixth month: the discharge was attended with a most alarming hemorrhage. The preparation is now in the collection of Dr. Collins, Master of the Lying in Hospital. We cannot, it will be readily imagined, adduce any signs that shall afford us actual information of the uterus containing hydatids. The same observation will hold with regard to moles, or bodies exhibiting a fleshy appearance, which may also co-exist with pregnancy.— In such cases, we can only suspect what is the actual state of the case with regard to these adventitious productions; while with the assistance of the ordinary symptoms of gestation, and auscultation, if it be available, we may form a pretty accurate conclusion as to the presence or absence of pregnancy.

The uterus itself may have taken on a morbid condition, either before the occurrence of impregnation, or during the course of pregnancy. Dr. C. M. Clarke* reports a case of this kind, considered by him as carcinoma, in which the cervix of the uterus, in a woman aged forty, was very much thickened, and had begun to ulcerate, attended with profuse discharge of mucus, and pain in the lower part of the abdomen, during the latter part of her pregnancy. This case proved fatal a few days after delivery, in consequence of the violence done to the diseased part during labour. Now, such a case

* On Diseases of Females, *Pt. I.* p. 113.

as this was calculated to deceive one very much, as unless the symptoms of pregnancy had been very conclusive indeed, most persons would have rested satisfied in pronouncing it cancer of the uterus, with diseased enlargement, and would never have thought of pregnancy co-existing with it. A case of this kind occurred to the author some months since, in a woman with her fourth child, but who had been some years a widow before the birth of her last: she recovered the immediate effects of her confinement, but the disease has since rapidly gained ground upon her. Dr. Lanbries, a Bavarian physician, gives two cases in a late number of the *Journal für Geburtshülfe*, in which conception took place, although the individuals were suffering from cancer of the uterus. In one, the neck of the uterus was in a state of carcinoma, and yet the child was carried to the full time. In the other case, however, according to this gentleman, the disease had proceeded to the ulcerative stage before impregnation took place. This woman miscarried at the end of the third month; and on her death, which occurred immediately after, an opportunity was afforded of ascertaining by examination the nature of the disease. Cauliflower excrescence of the uterus is by no means incompatible with pregnancy: we have met with several such cases in which the first notice taken of the disease was on examining the patient in her labour.

The morbid state of the parts without the uterus, which, existing along with pregnancy, may give rise to a difficulty in determining on the presence or absence of this state, or which, in other words, will render pregnancy complicated, are to be considered, either as solid, fluid, or gaseous adventitious productions, occurring

within the abdominal parietes. As we shall treat more at large of the individual nature of these, when on the subject of pseudo-pregnancy, it will not be necessary at present to do more than enumerate them, as explanatory of the cases to be adduced. Solid growths then consist either of pelvic or abdominal tumours, which may be connected with the viscera or the integuments. The most frequent of these, no doubt, are the ovarian. The principal difficulty in detecting pregnancy, when co-existing with tumours or enlarged visceral growths, will be in the early stages, before the uterus emerges from the pelvis; and it requires much care and attention to decide at that period. We must trace a divisional line or separation, if such can be found, and examine carefully by the vagina: attending to the history of the patient, the situation in which the tumour first appeared, and the direction in which it extended itself, will be of importance. We must further ascertain whether the tumour be moveable or fixed, what sounds are emitted on percussion, the length of time it has existed, the rapidity of its growth, and above all, what stethoscopic phenomena are observable. By these means we shall generally arrive at a solution of these difficult, and properly termed complicated cases. The following will be found an instructive instance of this kind. Honor M'Keon, ætat. 38, married for six years, has had no child, but about four years ago miscarried at the fourth month: called 5th January, 1830, to consult me about a tumour in her right iliac region, which, although not painful, caused her considerable uneasiness from its situation. It first appeared about the beginning of the October preceding, since which time it has been gradually increasing in size: her menses ceased about the time she first observed

it. She has had a constant leucorrhœa for the last four years, which still continues. On examining her abdomen, a tumour was distinctly perceptible in the right iliac region, hard and uneven, about the size of a goose egg, and very moveable; there was a fulness to the left of this, which appeared somewhat like the distended uterus, and which was quite unconnected with the tumour in the right side. On questioning her as to the possibility of her being pregnant, she seemed never even to have suspected it, or to have had any of the signs usually attending this state, farther than the cessation of the menses, which she very naturally concluded, might have been connected with the tumour in the right side, never having herself observed the fulness in the left, which was general, and, therefore, more likely to escape her notice. She states, that she is, and has been in constant intercourse with her husband ever since her marriage. As the case appeared one involved in considerable mystery, I begged my friend Dr. Collins to see this patient with me, which he did; and after a patient examination of the tumour, exploring the os uteri, and learning the history of the symptoms, as above related, the conclusion we both arrived at was, that, with the ordinary means of diagnosis, no person could say with certainty whether she was or was not pregnant, although it might be conjectured that such was the case. Recourse was therefore had to auscultation, as a means of solving the difficulty, when, to our great satisfaction, we heard the fœtal heart's action at the centre of the fulness on the left side, which we had conjectured to be the distended uterus, and also could perceive the *souffle*, loud and sonorous, all over that side of the abdomen. Saw her again 3d of March,

The tumours are painful and much larger, and higher in the abdomen; she states, that a few days after the last examination, she quickened, since which time she has frequently felt the motion of the child. The uterine tumour now extends to the umbilicus, and the motions of the child may be felt. She was delivered early in July, when a tumour, which appeared to be the diseased ovary, was distinctly perceptible, and remained, giving her little uneasiness afterwards. This case also presents us with an example of the fœtal heart's being detected before the period of quickening.

When the pregnant state is complicated with tympanitis, it is often marked by an enormous general distention of the abdomen; which keeps the integuments so much on the stretch, as to render any abdominal examination, with a view to detecting the uterus, (particularly in the early stage of pregnancy) quite useless. One of its most distinctive marks is the variance of the degree of distention. The patient usually states, that the swelling is much greater at certain times of the day than at others; generally some time after eating, or in the evening. Percussion will elicit a sonorous noise, resembling that obtained by striking an inflated bladder; and this we shall find general over the abdomen, unless at the lower part, where, if the uterus be sufficiently enlarged to rise above the pelvis, the sound elicited will be dull. On applying the stethoscope in these cases, we shall have the intestinal murmur more or less strong over the abdomen; and occasional puffs caused by air passing from one part of the gut to another with considerable force, often giving the idea of its passing up the tube of the instrument. To satisfy ourselves, however, of the presence of pregnancy in these cases, it will be necessa-

ry previous to examining them, to administer two or three doses of warm purgative medicine, with a view to reduce the distended state of the intestines; and such practice we would recommend in every case of this nature, before we pronounce decidedly, even with the assistance of the stethoscope, that the individual is, or is not pregnant. The purgative we have been in the habit of ordering in these cases is, the oil and turpentine draught, and with the happiest effects, particularly if, some hours before administering it, we give a few grains of calomel, combined either with a small quantity of colocynth pill or jalap. This draught appears particularly serviceable in these cases of flatulency, causing the copious and speedy expulsion of the flatus. It does not answer, however, to make our stethoscopic examinations for the signs of pregnancy, while it is operating; for the sound emitted by the intestinal murmur is so loud, as possibly to mask or interfere with the phenomena we are in search of. It is better therefore, to defer this until afterwards, when the abdomen being well emptied of the flatus, and the integuments flaccid, we shall be enabled to bring the instrument into more immediate contact with the distended uterus, if such be present, and thus succeed in our investigation. We shall also now be able to satisfy ourselves much better, by a manual examination, whether the uterus be distended. It is astonishing, the facility with which we may detect pregnancy, in apparently most complicated cases, by adopting these precautions before our examinations. A case of pregnancy, rendered complicated by tympanitic distention, is here subjoined. Nov. 1829, Mrs. —— desired my attendance in her approaching confinement; she had been under the treatment of an

intelligent medical friend, some time before, for peritonitis; who informed me, that he looked upon her as at, or near, her full time, having satisfied himself of her being pregnant upwards of three months previously. She did not appear to be farther advanced than about the seventh month; which circumstance, together with the fact she stated, of her having menstruated so late as the second of September, rendered it likely that she had miscalculated her time, and led to further inquiries. She stated, that she was married on the 17th of November, 1828, and had been in bad health for some time afterwards, on recovering from which, she had suffered from sickness of stomach; that she quickened on the 22d of May, and had since frequently felt the motions of the child, and had done so the evening previous to her consulting me. From all those circumstances, as well as that of her being of an irritable habit, and not admitting of a satisfactory manual examination of the abdomen, the stethoscope was applied; when neither the fœtal circulation, nor the placental *souffle*, could be discovered, but a diffused intestinal sound was audible all over the abdomen, which was quite sonorous on percussion. A vaginal examination was then made, when the neck of the uterus was to be felt elongated, protruding into the vagina, and very little enlarged. She was now informed that she must have miscalculated, and assured that she could not be more than two months pregnant, if so much. It was quite evident that the tumidity here was caused by wind. She herself mentioned, that at different times in the day she observed a sensible change in the size of the abdomen. This patient was again visited, in company with Dr. Collins, about two months afterwards, and on inquiry it was found, that the men-

ses had not since appeared. She stated, that she felt the motions of the child: her belly, though still tympanitic, was smaller than on my last seeing her, which she ascribed to the medicine taken, causing a free discharge of wind. On examining the abdomen, a solid fulness emitting a dull sound on percussion, was observed in the uterine region, which did not before exist. This was proved to be the distended uterus, as on its being examined by Dr. Collins and myself with the stethoscope, a distinct *souffle* was detected, extending over a small space of the tumour, about two inches square, at the right side, and the fœtal heart, extremely small and weak, was discoverable at the right side also. This patient really quickened a few days afterwards, and was delivered on the twelfth of June following.

Ascites is occasionally to be met with, combined with pregnancy. Where the female has conceived in the progress of the disease, or after it has been fully formed, the pregnancy may escape our notice, and a want of knowledge of the circumstance may be attended, as will be readily imagined, with the worst possible consequences. In chronic ascites, females have been known to bear a number* of children without any great inconvenience, farther than the extreme distention caused by the enormous fluid and solid mass contained within the walls of the abdomen. In general, however, the termination of this complication of pregnancy, is by no means so fortunate; as patients so circumstanced seldom survive their delivery, more than a few days, or weeks *at farthest.* When pregnancy occurs in the course of ascites,

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* See Baker's cases, Med. Trans. Col. Phys. London, vol. ii. p. 257.

the patient, if her menstrual discharge does not return at the usual period, naturally ascribes this to the effects of the disease, and never conjectures herself pregnant: possibly the motion of the child at the period of quickening may first cause her to suspect her true state, and to satisfy herself on the subject, the opinion of a medical attendant is required. Having made the necessary inquiries as to the suppression of the menses, morning sickness, quickening, &c., he must endeavour to satisfy himself of the enlargement of the uterus. If the hydropic effusion be considerable, and the walls of the abdomen much distended, this is not only difficult to effect by manual examination, but sometimes altogether impossible, even at an advanced stage of the pregnancy: by care he may, however, detect *a circumscribed* tumour over the pubis, which may be recognized as the uterus: where we cannot distinguish this, we shall on percussion find, if the uterus be sufficiently enlarged, a dulness at that part where it approaches the integuments, and a want of the fluctuation which exists throughout the rest of the abdomen. Passing the finger into the vagina, we shall gain still further information, as we may find the uterus enlarged, and the neck developed, or we may distinguish the *ballottement.* All these means shall, however, occasionally fail in satisfying us; and even supposing we ascertain so much, as that there is an enlarged body in the pelvis, we cannot always with certainty say that it is the uterus, nor if we even can, are we enabled to pronounce beyond a doubt, that it contains a child. Mr. Dwyer's case, given at page 99, was one exactly of this kind; and when every other means had failed in furnishing us with information, as to the presence of pregnancy, auscultation afforded the most satisfactory

evidence of the fact. Ascites is occasionally consequent to pregnancy, and then it usually commences about the third month after impregnation: here, we shall have the general abdominal enlargement, progressing and increasing with that of the uterine tumour. Where the former is not very rapid, we shall be able to distinguish the uterine tumour, rising out of the pelvis, so as to enable us to pronounce upon the patient's state, before the general enlargement has arrived at such a height as to interfere with our diagnosis. The reverse may, however, take place, where the effusion comes on suddenly, or when we do not see the patient until the ascites has arrived at some height. It may appear almost superfluous to insist on the necessity that exists for our being enabled to pronounce with certainty and accuracy our diagnosis in these cases of complicated pregnancy. Precision here becomes a matter of the utmost importance, not merely from the effect which any inaccuracy will have upon the mind of our patient, or upon our own professional character, but because it leads to the worst possible consequences in practice. For instance, did we treat our patient with repeated drastic purgatives, or other active remedies, for ascites, without regard to her being pregnant, what must we not expect; or did we carelessly force the trocar into the integuments, while the enlarged uterus was behind them, what is more likely than, (as has before now occurred), that we should drive this instrument into it: whereas, had we been aware of the existence of pregnancy, properly directed treatment might have succeeded in saving both the mother and offspring; and even tapping, in judicious hands, had recourse to with good effect.

We should be aware that pregnancy may be mistaken

for certain diseased states, such as dropsy, visceral enlargement, &c., as well as they for it. There is a case reported by Sir A. Cooper, where the pregnant abdomen was attempted to be tapped by an ignorant practitioner. Lowder mentions a somewhat similar case in his lectures, in which pregnancy was rendered complicated by the flattening and extending upwards of the bladder; a circumstance which sometimes occurs in advanced pregnancy, in consequence of the accumulation of urine in this organ, now prevented by the enlarged uterus from extending backwards. In the case alluded to, the practitioner, finding the fluctuation evident in the abdomen, pronounced it one of dropsy, and tapped. Death of course was the consequence, and on examination, the trocar was found to have penetrated both walls of the bladder, and to have passed through the uterus into the head of the child.

We cannot, therefore, be too cautious in arriving at conclusions in these cases; and while a doubt at all exists upon our minds, as to their true nature, no line of treatment that may be attended with hazardous or questionable results, should be had recourse to. However, it is hoped, that by attending to the points of discrimination here insisted upon, we shall in most cases arrive at an accurate knowledge of their nature.

CHAPTER VI.

PSEUDO-PREGNANCY.

Pseudo-pregnancy, or, as the French authors term it, *grossesse appurente ou fausse*, may be defined as that state in which, from the presence of certain of the symptoms attendant on pregnancy, or from the woman's own statement, whether mistaken or intentionally deceptive, a female may be supposed pregnant when she is not so.

This curious simulation of nature's most essential operation, reproduction, is not confined to the human species. It has been observed also in animals. Fodere gives cases in which it occurred in the bitch, the cat, and the cow. In these, all the symptoms of pregnancy were present; and even the supplemental functions were so perfectly called into action by this mistaken sympathy, that some of them had milk secreted, with which although disappointed in their hopes of an offspring of their own, they were enabled to suckle the young of others.

Authors have divided false pregnancy into that which is the product of an imperfect conception, and that which is independent of conception, occurring where no previous sexual connexion could have existed. The fallacy of such a division is self-evident, as are the mischiefs which might be produced by assuming this state to depend, in any case, without sufficient grounds, upon sexual connexion.

Much that has been said when treating of the symp-

toms of uterine pregnancy would be now applicable; but as it is an object to avoid unnecessary repetition, we must refer to what has preceded, and merely mention here the different forms of pseudo-pregnancy, the causes upon which they depend, and the means of distinction, as far as we are acquainted, between them, adding a few cases illustrative of these points. As general rules, highly worthy of our attention, we may state, that, in our diagnosis, we should not be influenced in pronouncing upon the existence or absence of pregnancy by an opinion formed upon a hasty or superficial examination, when one or two of the reputed signs, at present looked upon as most trustworthy, offer themselves to our notice; as we shall find, upon a careful investigation, that many of the symptoms upon which we most relied may depend upon a variety of causes, having no connexion whatever with that state. We should also receive the accounts of the patients in all those doubtful cases as very questionable evidence, and never to be relied upon in forming our diagnosis, unless corroborated by other proofs, as clearly and satisfactorily as the nature of the case will admit. The accounts of friends are generally as little to be depended on. We are, therefore, to seek in every case for proofs, obvious to ourselves, and of which we can become satisfied by personal examination.

What renders it even more difficult to pronounce in pseudo-pregnancy than in true pregnancy, is, that the proofs upon which we rely in the former are principally negative with regard to the facts, whilst the reverse is the case with the latter. The positive proofs of pseudo-pregnancy are those depending on states which are either distinct from, or incompatible with pregnancy, and are

afforded by the natural, altered, or morbid state of the abdominal and pelvic viscera.

To simplify our views on this subject, we shall consider it under the heads, first of actual pseudo-pregnancy, or pseudo-pregnancy, properly so called, having for its cause either organic changes of structure, such as visceral enlargements, which, from their bulk, and the mechanical and sympathetic effects they produce, resemble pregnancy; or functional alteration, whether of cessation or action, in the generative organs, and such as sympathise with them, and which, from their usually attending upon or co-existing with pregnancy, are looked upon as symptomatic of that state: secondly, nervous pseudo-pregnancy, owing its existence to the individual's own state of mind, to which she is herself the principal dupe: and, lastly, premeditated pseudo-pregnancy, a state merely feigned for sinister purposes, and with a view to deceive others.

The frequent mistakes that occur between ascites and pregnancy are so proverbial, that dwelling upon the likelihood of such is quite unnecessary; we shall, therefore, at once proceed to the diagnosis. In ascites, the swelling appears general over the abdomen; and the gradual development of the latter is not, as we see in early pregnancy or uterine enlargements, confined to the space over the pubis, nor does it commence, as in ovarian enlargements, in the right or left iliac region; but is, on the contrary observed in the form of a general swelling over the whole abdomen; it is soft to the touch, wanting the solid and consistent feel observed in pregnancy, and diseased uterine, and sometimes ovarian structures. Add to this, the sense of fluctuation which will be more or less evident, according to circumstances, such as the degree of

distention, thickness of integuments, position of patient, full or empty state of the bowels, &c., butwhich can scarcely fail to be detected provided proper precautions be adopted. The history of the case must be inquired into, and whether the abdominal enlargement was ushered in with the symptoms of hepatic, cardiac, or other visceral disease. If evident proofs of such exist, they will tend much to elucidate the real nature of the case. We must, however, recollect that pregnancy is also occasionally accompanied with dropsy, and dropsy followed by pregnancy ; so that the fact of the existence of dropsy being satisfactorily established, is far from warranting us in pronouncing the absence of pregnancy. When general distress, pale, attenuated countenance, debility, thirst, scanty urine, abdominal enlargement, and œdematous effusion into the limbs, or some part of the trunk, are present, together with fluctuation, we can find little difficulty in pronouncing the case as dropsy. Ascertaining so much, (whether it is or is not combined with pregnancy), is of great importance with regard to treatment; as we are to recollect, that the presence or absence of pregnancy, where dropsy is found to exist, although it ought certainly to influence us in the treatment had recourse to, should not prohibit our attending strictly to the latter, with a view to its cure. When, however, dropsy depends on pregnancy, as it occasionally does, we can attempt little more than palliative treatment, while the cause producing it is still in existence. Partial dropsy or œdema of the extremities, is, however, a more frequent accompaniment of pregnancy than ascites, which is comparatively rare in its occurrence. In our investigations of dropsical patients, where pregnancy is suspected, we will of course attend as well to the symptoms

indicating pregnancy, as those indicating dropsy; parti cularly the suppression of the menses, the state of the breasts, quickening, and the stethoscopic signs. The menses cannot, however, in these cases be relied on with even as much faith as in ordinary cases: as, if the dropsy depend upon constitutional debility, or extensive visceral disease, it is obvious, the effect of such may extend to the uterus, and interfere with its functions. Protrusion of the umbilicus has had much stress laid upon it by some authors as a sign of pregnancy; but we must bear in mind that it may protrude in the same way, in ascites. The stethoscopic assistance afforded in cases of pure ascites is principally negative. The intestinal murmur will be always heard at the superior part of the abdomen, the intestines, from containing air, rising by their lesser gravity to this part: for the same reason, whatever position the individual may assume, a tympanitic sound will also be perceptible on percussing the superior part of the abdominal tumour. We cannot be too cautious in our diagnosis, where a doubt at all exists in these cases; as every day's experience proves the mischievous practice occurring from mistaking pregnancy for dropsy, or *vice versa*, and the not being able to detect them both when they co-exist. Suffice it to allude to the case already mentioned, as reported by Sir A. Cooper in his lectures, where a pregnant woman had the trocar actually driven into the abdomen. The author himself knew a case where a similiar* line of practice was within a few hours of being had recourse to, but fortunately the woman gave birth to a boy, in time to

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* See also Dr. Haughton's case, referred to by Dr. Waller in his edition of Denman's Midwifery, p, 166.

save her from the operation. We could also mention more than one case of ascites, where curative means were neglected until the chances of success to be derived were either much impaired, or altogether lost, under the impression that pregnancy and not dropsy was present.

[Four cases of this nature have within the last two years fallen within my observation, and in each of them, though the fluctuation was very evident, both the uterine and fœtal circulation were perceptible from the fifth month to the completion of the term of gestation, and the fœtal pulsation was feeble in all of them. In a fifth case, where no uterine or fœtal pulsation was audible, and no symptom by which we could place any positive reliance upon, except the arrest of the menses for five months, and before a positive opinion should be given, the patient miscarried of a fœtus of four months, which must have remained in utero nearly one month.]

Tympanitis is perhaps of all others, that state which most frequently simulates pregnancy. It is commonly met with in females somewhat advanced in life, and who, from their habits of living and diet, are subject to have air collecting in the intestines. In females of the lower orders, particularly in this country, whose principal food consists of potatoes, cabbage, and occasionally broths, this state of the bowels is very frequent. It is commonly accompanied with water brash, which is mistaken for morning sickness ; and this is looked upon as a corroborative proof of pregnancy. The parietes of the abdomen are more or less distended, tense and sonorous, on percussion. On drawing up the limbs, relaxing the abdominal muscles, and making steady pressure with the hand or head resting on them, for some time, the parietes will yield, and the spine may often be pressed upon, if not with the hand or head, with the end of the stethoscope. An intestinal murmur will be heard over

the abdomen generally, with occasional puffs of wind, which appear to pass up the tube of the instrument. This arises from the sudden escape of air, passing from one portion of the gut into another. In these cases, we often get unsatisfactory statements with regard to the menstrual secretion, and as the affection is met with most frequently at that period of life, when this discharge is on the wane, this circumstance may also tend to lead us astray. The best plan to adopt when a case of this nature presents itself to us, is to get the bowels freely acted upon by some warm and active purgative, so as to induce them to expel the flatus. The form of medicine which we shall find most efficacious, is a combination of castor oil and turpentine, in doses of six drachms or one ounce of each; and by repeating it twice or thrice at intervals, we shall seldom fail to empty the bowels thoroughly. It may be necessary to have recourse to the vaginal examination in these cases, and the state of the uterus will then afford us some assistance. Baudelocque gives a case in which Levret and Larry were deceived by tympanitis. It was attended with sickness, enlargement of the breasts, and gradual development of the belly: the formation of an areola and secretion of milk, and even the supposed motion of the child. At the expiration of nine months the patient was even taken ill with violent pains, every thing prepared as for delivery, and Baudelocque called in. After a time colic exhibited itself, which was followed, in place of the birth of the child, by the expulsion of a great quantity of air by the anus, and the falling of the belly. The following case is selected out of many similar ones which occurred to the author.

Mrs. ———, of a full habit, desired me to give her

my opinion whether she was pregnant. She has been married for two years, but has had no family. Her abdomen has been gradually increasing in size for the last nine months, and appears now sufficiently distended for a woman at the full period of pregnancy. Her menstrual discharge is irregular, and the breasts much swollen and tense. States, that she quickened some months ago, when she fainted, and shortly afterwards observed the motions of a child, which she has frequently felt since: has even experienced considerable uneasiness, particularly at night, from them. Some weeks since, she had the opinion of a medical gentleman of some eminence, who, on her expressing doubts of her being pregnant, told her, "Madam, you are just as surely pregnant as that I am not." Since then, she consulted Dr. Collins, who expressed a very contrary opinion, and gave her to understand, that her swelling and other appearances of pregnancy depended upon *wind.* With these conflicting opinions pressing on her mind, she subsequently called on me to pronounce as to her state; at the same time informing me, that whatever opinion might be expressed, no human being could convince her that there was not something alive and moving within her. On examining the abdomen most attentively, it was impossible to say, from the extreme distention of its walls, whether it did or did not contain an enlarged uterus. The vaginal examination was little more satisfactory, as I could scarcely feel the os uteri with the extremity of the finger, there was such a depth of the parts, and she was so irritable under examination. Recourse was had to auscultation and percussion: by the assistance of the former, nought but a diffused intestinal murmur, with the puffing and borborygmus,

could be distinguished; while on percussion, so decidedly a tympanitic sound was emitted, as to leave no room to doubt of the cause of the swelling and other symptoms The oil and turpentine draught was ordered for her, but she was prohibited by her husband from taking it for some time, lest, as she stated, the child should be injured. However she did, eventually; and the consequence was, that the bowels were freely acted on, flatus and fæces expelled in considerable quantity, and all the symptoms of pregnancy vanished.

Enlargements of the abdominal viscera, as the liver, spleen, or omentum, and even tumours in the integuments, &c., may be mistaken for pregnancy, from the distention they produce. In such cases, we must be guided by the manner in which the tumour appeared, whether it did not show itself first at some part of the abdomen remote from the region of the uterus; then, tracing it carefully with the hand to its connexion or fixed point, observe whether we cannot pass the hand between it and the brim of the pelvis; and also ascertain by the vagina whether the uterus is developed. The presence of the symptoms which usually accompany each of these cases, together with the absence of the stethoscopic and other evidences of pregnancy most relied on, will decide the point. It is possible that a sound may be discovered in a case of this kind, produced by the pressure of the diseased viscus upon the aorta, or other large artery, which might be confounded with the placental *souffle;* we should therefore be prepared for such an occurrence. An instance of it was mentioned when treating of that phenomenon. The pulsation of the abdominal aorta, which may be rendered sensible to the patient by the pressure of these tumours,

occasionally imposes upon her, and induces her to ascribe it to the motion of the child.

Diseased states of the ovary are also occasionally mistaken for pregnancy; and dropsy of this organ most frequently. Valentin published a case* of this kind that occurred at Paris in 1718; the demoiselle Famin having had charge of pregnancy and child murder erroneously instituted against her, while, at the time, she was merely labouring under ovarian dropsy. Dr. Gooch,† on the other hand, mentions the case of a pregnant woman who was taken to the operation-room of a well known hospital, for the purpose of being tapped as labouring under ovarian dropsy: fortunately, however, she was remanded for further examination, and before the operation day brought forth a child.

The dropsical tumour of the ovary is distinguished by its commencing at one side, and rising and extending across the abdomen. It is unattended with the general symptoms of dropsy met with in ascites, but an obscure fluctuation is to be distinguished in it, when the fluid it contains is not too dense or thick in consistence, as it sometimes is. It may also be detected by the vaginal examination; and here, together with fluctuation, we shall frequently observe more or less displacement of the uterus, which is either pressed down by the superincumbent ovary, or tilted to one or other side, the os uteri being pushed in an opposite direction. The period of its continuance, and the state of the uterine functions, must be attended to. The other diseased states which the ovary takes on may likewise simulate pregnancy;

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* See Paris, vol. i. p. 238.

† Gooch on Diseases of Women, p. 238.

but the symptoms mentioned above as characteristic of ovarian dropsy shall (with the exception of the fluctuation) hold in them also. The solid enlargement of the ovary can be traced with the hand, and, on introducing the finger of the right hand into the vagina, so as to touch the os uteri, and moving the tumour from side to side with the left pressed on the abdomen, we may succeed, unless when the connexion between the tumour and uterus is very close, in moving the former, without displacing, at least to any extent, the latter, and *vice versa*. When this can be done, we have reason to suspect that the abdominal tumour is not caused by the increased uterus; the want of enlargement of the os uteri and the neck, will also assist us. We have elsewhere mentioned that the pressure of such tumours on the aorta or large vessels may give rise to a pulsation, which will be set down as the motion of the child. A *souffle* may in the same way be produced; therefore, we must be cautious, as was stated in treating of abdominal tumours, to ascertain upon what cause it depends. We must change the position of our patient, and remove the pressure of the tumour by raising it gently from the vessel, and not resting any weight upon the part; and then if the *souffle* disappears, and is produced again when the pressure is re-applied, we can have little doubt that it is caused by it, and is not the placental *souffle*, as change of position and gradual pressure have no effect upon the latter.

Percussion will in these cases afford us different sounds, according to the greater or less degree of density and solidity of the tumour. In those which are soft and pulpy in their texture, the sound will be dull and obscure; again, when the tumour is firm or cartila-

ginous, as in the tuberculated and schirrous states of the ovary, the sound will be more sharp and dry, or as the French term it "sec."

Diseased states of the uterus itself, whether occurring as primary or symptomatic affections, have again and again given rise to the imputation of pregnancy; and we shall occasionally find the distinction between them, not only difficult, but, particularly when they are of short standing, almost impossible to mark out. This will be obvious, when we recollect that several of the very signs, both local and constitutional, which we before dwelt upon as symptomatic of pregnancy, are either of necessity present, as symptoms, or actually constitute the essence of the disease or altered state which is confounded with pregnancy.

In the first place, we shall treat of the alterations which the function of menstruation undergoes. This secretion may be retained, that is, not appear, as it ought to do, at the period of puberty; it may be suppressed or prevented returning as usual after it has been established; or it may be checked whilst it is actually flowing: it may on the other hand be present in a great or inordinate quantity. The first or the second state, but particularly the second, is that which will most frequently be mistaken for pregnancy. Retention and suppression of the menses, either exist as idiopathic diseases, depending entirely on the state of the uterus itself, or they may be symptomatic of other diseases: under either circumstances, they may induce other altered or morbid states of the system generally, or of distinct organs, which tend to add to the difficulties of diagnosis. This capability of assuming individual disease or altered action which the uterus possesses, as well as the strong sym-

pathetic connexion existing between it and the other parts of the frame, we have elsewhere treated of, in illustrating the symptoms of pregnancy; therefore, we need insist no further upon them at present, than to mention, that this reciprocal connexion is just as evident when pregnancy is absent, as present.

In retention of the menses, when that peculiar assemblage of symptoms, termed chlorosis, has occurred, pregnancy has been more than once suspected. When chlorosis is well marked, and the skin assumes that peculiar colour which has given rise to the name, we can have little difficulty in recognizing it; this form, however, is not often met with. Burns justly remarks this, and states, that "in suppression and retention, we have very often a combination of a clear complexion, and even some degree of floridity, with a general debility of the system, as well as the particular organs."* Thus, then, this obstruction may depend on a peculiar diseased state of the function of the uterus, without any evident organic alteration; upon organic alteration of the uterus; or it may depend symptomatically on diseased states of the system, as extreme debility, or plethora. Again, we have it in cases of dropsy, of organic visceral disease, consumption, dyspepsia, and acute or chronic inflammatory attacks.

The symptoms consequent on retained menses are an altered expression of the countenance, dark ring under the eyes, which are dull, pallid colour of the skin, sickness of stomach, and depraved appetite, pain in the loins, and sense of fulness and weight in the pelvis, slow state of the bowels, and often pain, and distention of the

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* Burns' Midwifery, p. 252.

breasts, with darkened areola, and tumid abdomen. The distinction here will become a matter of great difficulty and, often, time alone will enable us to decide. If, however, the uterus remains unaltered in size, as ascertained both by abdominal and vaginal examination ; if there be evidences of other diseased states, to which the obstruction may be referred, and that no stethoscopic evidences of pregnancy exist, provided the symptoms have continued long enough, to warrant our expecting to meet with these; and if the symptoms still persist after the individual either supposes she has, or, according to her own calculation, ought to have quickened, particularly if a corresponding development of the uterus does not occur ; then we may fairly pronounce the case one of pseudo-pregnancy. A case of suppressed menses is here given, in which not only pregnancy, but actual labour was pronounced to be present.

Catherine ——, ætat. 18, an unmarried girl, was sent into the Lying-in Hospital by the directions of an eminent surgeon in the city, by whom she was pronounced pregnant, and in active labour. On paying the evening visit to the labour ward, our attention was attracted by the vociferations of this patient, and the apparent violence of her labour, in which she outvied all the patients in the ward, several of whom were near being delivered at that moment. On pressing the hand over the abdomen, it appeared distended and tense, but the limbs, or body of the child could not be distinguished through the parietes. This circumstance excited some suspicion; and on making a vaginal examination, the os uteri was felt high, and placed so nearly beyond reach, that we could not with certainty pronounce as to its enlargement. The stethoscope was now applied, when no placental or

fœtal sound could be any where detected, but the intestinal murmur was evident over every part of the abdomen. On resting my cheek on the parietes, and allowing it to remain there for some time, as the abdominal muscles were in violent spasmodic action, they became gradually fatigued and relaxed, and the spine was distinctly perceptible without any uterine tumour intervening. After purging this patient freely, a copious menstrual discharge set in, which, with a free evacuation of fæces and wind from the bowels, reduced her abdomen to its natural state, and left not a vestige of pregnancy. The account this girl gave of herself was, that her menses had ceased for some months, since when she had been subject to constipated bowels and occasional sickness of stomach; that she had suffered from slight attacks of abdominal pain with spasm, at each return of the period when her menses should have appeared, but that these symptoms had set in with such violence the day before her admission, as to lead those about her to suspect that she was in labour, an opinion which, as we have seen, was corroborated by the medical gentleman who saw her. This spasmodic action of the muscles, attended with abdominal pain, in a great degree resembling aggravated colic, is by no means an unfrequent accompaniment of amenorrhœa, as several such cases have occurred to me. This possibly may have been the cause of loss of character, in more than one instance. Free purging, with the hip-bath, and in very aggravated cases the use of the lancet, is the practice we have had recourse to. In the case of a maid-servant, seen some months since, the details are almost identical with those just mentioned, and there was considerable difficulty in convincing the girl's mistress that she was not in labour, when this

spasm and pain set in; more particularly, as she had previously a strong suspicion of the girl's being pregnant, from the amenorrhœa and sickness of the stomach under which she suffered. The treatment of this case was the same as the last, and with the same results.

Retention of the menses may depend on mechanical obstruction; such as imperforate hymen, adhesion of the walls of the vagina, or formation of false membranes in that canal. In such cases, together with the retention, we may have some of those symptoms already mentioned as accompanying this state. Fulness and increase of bulk will be observed in the uterine region, arising from the menstrual or lochial discharge collected above the point of obstruction: constant weight in the pelvis, and bearing down efforts shall also be present, and at the return of the menstrual period these efforts may assume very much the character of labour. The vaginal examination is, therefore, to be carefully instituted; neglect of this has more than once been the cause of much protracted suffering to the female so circumstanced. Pseudo-pregnancy is by no means unfrequently caused by the cessation of the menses at the period of life when they naturally stop altogether: this, indeed, is so common, and mistakes in regard to it have so frequently, to our own knowledge, occurred, that we are now in the habit of lending a very suspicious ear to females advanced in life, who report themselves pregnant. The menses do not always cease entirely in such cases; and although we may be led to conclude they have done so, yet, on inquiring particularly, we shall in all likelihood find that they have been absent for some months, and appeared again, perhaps in smaller, possibly in greater quantity than natural. In certain cases, however, they cease en-

tirely. Along with this, some individuals suffer from dyspeptic symptoms, attended with tumid abdomen and collection of wind in the bowels; in others, obesity sets in rapidly, and the breasts and abdomen become full and distended by adipose deposit; whilst in a few, dropsical symptoms occur. For all these occurrences we must be prepared, and form our diagnosis by the means already insisted upon as applicable to each case. Neither are we always to conclude, that because a woman is advanced in life, she cannot be pregnant; as females will sometimes prove with child, at a period when such is very little to be expected. We have known several women bear children about the fiftieth year, and one so late as her fifty-second year. Such an occurrence is certainly rare: but females, occasionally, after ceasing to do so for several years, again become pregnant, and bear a child, or perhaps miscarry, just before the change of life. If we are cautious of being led into error by pronouncing pregnancy to exist in these doubtful cases, we must be equally so in denying it, or questioning its possibility without sufficient grounds; as nothing more offends the dignity and *amour propre* of females, and particularly those advanced in life, than to have their capabilities in this respect called in question.

Menorrhagia has not unfrequently been mistaken for abortion; and the character of pure and respectable females has suffered in consequence of ignorance, or of hastiness in forming an opinion without sufficiently examining the discharge. What has principally given rise to this, has been the expulsion of a portion of clotted blood, bearing more or less resemblance to an ovum. We should, therefore, when there is a question of this nature to be decided, always carefully examine the sub-

stance thus discharged, and observe whether it contains a fœtus or membranes in the centre. When the abortion occurs at so early a period, that the fœtus escapes our notice, we shall always find the smooth membranous bag or cyst formed by the chorion and amnion, which is quite different from the rough and shreddy membranous laminæ, that the coagulated blood usually forms in mere menorrhagia or hemorrhage. We must also be careful not to confound with abortion that form of dysmenorrhœa, in which an organized membrane* is expelled from the uterus, and which is often attended with expulsive pains resembling labour. There is a much greater resemblance between this membrane and an ovum, than in the first mentioned case, as it assumes a triangular form, and its inner surface is sometimes smooth, and appears as if it contained a fluid, while its outer surface is rough and uneven; it is also attended with a sanguineous or lochial discharge.

When a doubt exists in our mind in cases of this nature, we should always construe matters in the most charitable manner; and in the case of unmarried females, we ought not to venture to throw out even a hint of our suspicions, unless we have the clearest proof of their correctness. If we neglect this precaution, we shall in fact be liable to sacrifice the character of an innocent female to the imperfection of science, or even possibly to our own ignorance.

The tuberculated and other structural enlargements to which the uterus is liable, have occasionally been mistaken for pregnancy. Their existence is to be ascertained by careful vaginal and abdominal examination,

* See Morgagni.

and by percussion; when the change of structure which this organ undergoes, becoming enlarged, dense, and sometimes nodulated and irregular, will serve to distinguish them. Particular attention should also be paid to the history of their appearance and growth, which is generally much slower and more gradual than that of pregnancy. In the early stages of these morbid developments, or when active growth is going on in them, they may be attended with pain; but the principal inconvenience is the mechanical or sympathetic irritation they produce. There is generally pain in the back, with leucorrhea and dyspeptic symptoms. The menses may or may not be suppressed. The disease is usually confined to the body* or fundus,† the cervix and os being in general healthy, although they may be somewhat more developed than in the natural state. If obscurity or difficulty should attend the discrimination between these cases and pregnancy, the period of quickening, and the absence of stethoscopic phenomena, will decide. In some instances, this enlargement takes place to an enormous extent, and the uterus rapidly rises higher into the abdomen, cases which are most likely to be mistaken for pregnancy: whilst in others it may remain with very little development for many years, or even throughout a long life, giving little distress or inconvenience. This disease is likely to be confounded with ovarian tumour: but the vaginal examination may inform us whether the tumour felt in the abdomen forms part of the uterus or not, and whether this organ is itself developed, or displaced, as it sometimes is, by the enlargement of the tumour anterior-

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* Carl Wenzel, über die Krankheiten des Uterus.—*Eilfte Tafel.*

† Wenzel.—*Siebente Tafel.*

ly or posteriorly. The diseased uterus is generally harder, occupies more the middle of the hypogastric region, and is less moveable from above, than the diseased ovary. In the former the menstruous secretion is more likely to be interfered with than in the latter.

The next class of diseases which we shall consider under the head of pseudo-pregnancy, consists of those which depend upon development or growth of any kind within the cavity of the uterus: and, as much resemblance must necessarily exist between these and true pregnancy, considerable attention is required to distinguish them from it.

The principal are moles, hydatids, hydrometra, or ascites uterinus, tympanites uterinus, accumulation of blood, and polypous growths; in all of which we shall, of course, have enlargement of the uterus; however, with regard to the enlargement, we shall generally observe, that its progression is by no means so regular as in pregnancy. In most of those, it becomes rapidly developed in the first, second, or third month, and afterwards increases very slowly, or perhaps ceases altogether. In moles this is particularly remarkable, the uterus in the second month after their formation being sometimes observed as large as in the fifth month of pregnancy, although the other symptoms may be exactly those of impregnation, namely, sickness and vomiting, depraved appetite, distention and enlargement of the breasts, with discoloured areola, &c. From the circumstances, it will be seen, that great difficulty must be experienced in deciding in cases of this kind in the early months: fortunately, however, nature speedily clears up the doubts, as, in the majority of cases, the mole is expelled within the first three or four months. Its expulsion is generally attend-

ed with hemorrhage, which may cause it to be mistaken for abortion. It may in some cases continue in the uterus for six or nine months, or even a much longer time.

Under the denomination of mole, have been included, first, those solid fleshy or fibrous masses that appear to be produced by coagulated blood, which becomes more or less organized from remaining in the uterus, where it increases in size, and appears often to be connected with the walls of this organ; and secondly, blighted ova, which, on the death of the fœtus, remain in the uterus, becoming coated with coagula, and if they here remain long, the fœtus becomes withered, decayed, or disorganized. This blight may occur to the embryo at so early a period, as to leave no trace of the fœtus having ever existed, while the membranes and what would have been the placenta may continue increasing for some time. Of this form of abortion, as it may be termed, rather than mole, several cases have occurred to us: indeed it may with more propriety be termed an imperfect conception, than a case of pseudo-pregnancy.

Some authors have improperly classed polypi under the head of moles; that first described appears to be the true mole, and is what we have at present to deal with. It was long supposed, that these moles, as they were generally observed to occur in married women, were the effects of imperfect conception; but this does not now seem to be admitted; that they occur most frequently in married women, there is not a doubt; but it is equally certain, that they have been observed in unmarried females, where no sexual connexion could have taken place.

When the mole remains in the uterus after the usual time of quickening, its development proceeds more slowly

than before, its growth in the after months being the converse of what it is in pregnancy. The bulk of the uterus now appears much too small for the period of gestation supposing the individual pregnant. The os uteri is closed in these cases, until the expulsive action sets in; although in some of them there is an occasional discharge of blood. There is generally a sense of weight, and often pain, in the region of the pelvis, and extending to the thighs, together with a frequent inclination to make water. The vaginal examination indicates something to be contained in the uterus, but it appears solid, and imparts no sensation of *ballottement;* neither is the *abattement* perceptible. These signs, then, with the absence of the stethoscopic phenomena, must be our guides. The character of the most correct and exemplary females has occasionally been aspersed and slandered from moles being mistaken for abortion, an error that has arisen as well from the symptoms attending their growth as those attending their discharge. It is to be feared that those evils, in place of being prevented, have been but too often caused or sanctioned by the medical attendant, who, either from his not sufficiently investigating the nature of the substance discharged, or his ignorance of the similarity that exists in such cases, has hastily pronounced females pregnant, who never even had any intercourse with the other sex. These substances it was mentioned were at one time supposed to be the effect of sexual intercourse, and looked upon as altered, imperfect, or false conceptions; in the same way as the teeth, hair, bones, and other animal growth, sometimes found in diseased ovaria, were considered as the remnants or parts of an imperfect conception. However, more recent pathological investigations have satisfactorily

proved, that both may be produced without sexual intercourse, and are to be found in virgins in the strictest sense of the word. A case strongly illustrative of the deception which a mole may give rise to when mistaken for pregnancy, will be found, p. 143, in a singular old book, (Historia Naturalis Molarum Uteri, auctore J. B. Lamzweerde, Lugd. Batav., 1686.)

Hydatid growths not very unfrequently become developed in the uterus, and give rise to many of the symptoms usually looked upon as those of pregnancy; so much so, that all the cases that have come under our notice were cases of reputed pregnancy. One cause that may lead to this, is, that hydatids almost always occur in married females, and are often combined with pregnancy, in which case the ovum is generally blighted. They do, however, occur sometimes, although very rarely, in virgins. The hydatid growths in question consist in a collection of vesicles attached to one another, or to the uterus, by pedicles; and although they do not generally collect in any very large quantity, yet the uterus has been known in some cases to be distended with them nearly as much as at the full period of pregnancy. Their growth may be gradual, or it may occur very rapidly; and when the latter happens, the development of the uterus not corresponding with the supposed period of pregnancy, may cause a suspicion as to the true nature of the case. The symptoms are, however, those very usually looked upon as attendant on pregnancy. Together with suspension of the menses, uterine enlargement, and pelvic pains and fulness, the breasts are often developed and painful, and the stomach sometimes becomes affected. Some females have even felt a sensation in the region of the uterus, which has been mistaken for the motions of the

child; depending, perhaps, upon the movement of the hydatids upon one another during the change of position of the individual. Littre even states that a peculiar sound (*bruit semblable au gazouellement*) has been observed in these cases. The uterus generally acts to expel the hydatids about the third or fourth month after their formation; but they occasionally remain much longer, in some cases even to the sixth or ninth month; more or less hemorrhage usually precedes and accompanies their discharge. We have known the hemorrhage sometimes continue for several days, or even weeks, before their expulsion, and occasionally to be so violent and protracted as to be attended with much danger to the patient, and require manual interference to effect the removal of the hydatids, and to excite the contraction of the uterus. Although the menses may be strictly said to cease in almost all cases of uterine hydatids, yet a watery fluid, somewhat tinged with blood, is often observed to be discharged from the vagina at irregular intervals during the progress of their growth: this has, no doubt, been mistaken for a menstruous discharge.

A quantity of watery fluid is sometimes collected in the uterine cavity; but this is a disease so seldom met with in practice, that we do not seem to be in possession of certain knowledge of its true nature, so as to be able to pronounce whether it is merely a modification of hydatid growth, the uterus containing, as it were, one large hydatid, or whether it is, like other dropsical effusions, a secretion from its inner surface. It is only when occurring unconnected with pregnancy that this watery collection in the uterus is rare, an inordinate quantity being not unfrequently met with when the ovum becomes blighted, particularly in syphilitic constitutions. The enlargement of

the uterus, with circumscribed fluctuation, more or less obscure, and the absence of the stethoscopic and other phenomena indicating the existence of a fœtus, are the only signs that can avail us here, as suppression of menses and development of the breasts, &c. can afford us no assistance.

A remarkable case of this rare disease occurred in the year 1825, in the person of a confidential attendant of Lady ——, whom I was desired to see by the late Dr. Evory. She was reported to be in a very dangerous state, from a labour of nearly three days' continuance, which had not then terminated. I found her exhibiting all the appearance of a woman worn out with long continued and unavailing labour, her pains recurring at irregular intervals, and she herself much exhausted by the force and exertion used when they were present. Having passed my hand over the abdomen, it did not give the idea of that of a woman in tedious labour, as, although it was certainly very much distended, fully as much so as that of a pregnant female at the ninth month, yet the body or limbs of the child could not be dicovered. The swelling was circumscribed like that of an enlarged uterus, and an obscure fluctuation was observed. On examining by the vagina, the os uteri was found undilated, but the neck evidently developed; and fluctuation was perceptible here, although, on tilting up the uterus, no *abattement* could be distinguished. This patient's limbs had been slightly œdematous a short time before, but the œdema had disappeared. I directed her to be put into a warm bath, and gave her some calomel and jalap, which operated in a couple of hours. Whilst she was straining at stool, a sudden discharge of a reddish coloured watery fluid poured from the vagina; and,

on introducing my finger shortly after, I found the os uteri very slightly gaping, and the fluid passing freely from the opening. The uterus felt flabby for some time, but afterwards contracted and descended into the pelvis. No solid substance whatever came away, although a discharge somewhat resembling the lochia kept up for some days. Foderè mentions a somewhat similar case. (vol. i. p. 476), in which a young woman was accused of infanticide from this cause.

Tympanites of the uterus may either consist in an accumulating secretion of air, with gradual enlargement of the uterus, which is the true tympanites uterinus, and that most likely to be confounded with pregnancy, or a mere collection of air in small quantity, and repeated discharge of it with a sensible noise, and this perhaps occurring several times in the course of the day. This last is more properly termed *flatus* of the uterus; it is a very rare disease, but is mentioned by authors as one that we may confound with pregnancy. Levret gives an example of this kind, in which a woman thought herself pregnant, and on her using the bath by his directions, a quantity of air escaped. The symptoms which indicate this disease are, the tympanitic sound on percussion over the uterus, which is of course enlarged, the rapidity of this enlargement, the want of the solid feel of the organ, and the sensation of lightness on tilting it up with the finger in the vagina. A sudden escape of air from the vagina, with a diminution in the size of the uterus, sets the matter at rest. It occurs generally in females who are irregular either in the quantity or quality of their menstrual discharge, and in whom there is more or less uterine debility or derangement; it is perhaps most frequently observed in those about thirty-

five or forty years of age, when the menses are becoming less regular. Symptoms of cachexy generally accompany it.

Judging merely from the popular symptoms of pregnancy, we should find it a matter next to impossible to distinguish certain of these intra-uterine growths from that state: even with the assistance of the means pointed out, we shall not always find it so easy a task as we might imagine to decide; and, although we may ascertain the existence or absence of pregnancy, the arriving at a knowledge of the actual morbid collection within the uterus will not, during the progress of the disease, be always possible. Nature, however, does not generally keep us long in suspense, as the uterus in such cases generally empties itself early, appearing to have an inherent disinclination to allow of the purpose for which it was formed being perverted for any length of time, although it may admit of a temporary misappropriation. The way in which we in general first meet with these cases, is being called on to attend our patients in supposed miscarriages or premature confinements, when the actual discharge of these preternatural growths is not unfrequently the first knowledge had of their being in existence.

Of all the varieties of pseudo-pregnancy we meet with, none is so difficult to manage as that peculiar one which depends upon the mind or imagination of the individual herself. This may exist without any one of the symptoms termed those of pregnancy, or some one of them may either co-exist with, or occur during its progress. In such cases, the conviction of their pregnancy is often so obstinately implanted in the minds of our patients, that no arguments, reasonings, or proofs, how-

ever demonstrative to the contrary, will even shake, much less succeed in altering their opinion. In fact, however rational these individuals may be upon other subjects, their extreme obstinacy on this, together with the facility they possess of reconciling every contradictory, absurd, and even impossible view, in support of their imaginary state, has often induced us to look upon the disease as a peculiar form of monomania. Individuals who labour under it will often suppose themselves pregnant much beyond the usual time of carrying a child; some shall run to the twelfth, thirteenth, or fourteenth month, in daily expectation of their labour; others will continue for years in this way; and others shall even have regular labour pains, and apparently go through the different stages of parturition, suffering quite as much as if actual labour were present; but the mountain shall not have even a mouse to exhibit as the result of its exertions. A case of this description will perhaps prove interesting. Mary Connor, ætat. 32, who has had two children, the last nearly nine years since, supposes herself pregnant, in which state she has been according to her idea for the last seven years. She has no symptom whatever of pregnancy, not even enlargement of the abdomen; she says she quickened at the fourth month, since which she has constantly felt the motions of the child up to the present period. States that, at the expiration of nine months from the time at which she became pregnant, symptoms of labour set in, which lasted for three days, and went off again; that at the expiration of eighteen months, she was again attacked with labour, and so on every nine months until within the last two years. Her menstrual discharge has continued to occur regularly every third week since the

nursing of her last child. She called on me for the purpose of being delivered by instruments, for which she is very anxious, as she says there is no chance of her being delivered without them. My endeavours to convince her that she was not pregnant were of no avail, as she preferred a similar request to another practitioner, who afterwards informed me of it. There has been elsewhere mentioned a case of this nature, visited in company with Dr. Lee and Mr. Herron, in which the patient was confident of her being pregnant for at least nine months, although there was not the slightest abdominal distention; but she suffered much from hysteria, attended with dyspeptic symptoms. These patients are generally persons of hysteric habits, and certain of the symptoms usual in that state shall be met with in them. In some cases there is suppression or irregularity of the menses, and even fulness or enlargement of the uterus, depraved appetite, swelling of the breasts, and abdominal distention; sometimes even motions observed in the abdomen, which may be caused either by flatulence* or by the aortic pulsation. The latter class of symptoms constitutes what the French authors† term *nervous false*

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* Gooch, speaking of that form of spurious pregnancy in which there is a torpid state of the uterus, with perhaps suppression of menses, and flatulent state of the intestines; although, he says, it is most liable to occur about the fiftieth year, when the omentum and parietes of the abdomen often grow very fat, forming what Dr. Baillie called "a double chin in the belly," yet adds, that he has met with similar cases in young women. And, speaking of its occurrence in single women, who had been secretly incurring the risk of pregnancy, he says, it is probable that in these cases the puzzling assemblage of symptoms was the result rather of *mental agitation* than of sexual intercourse.—*Gooch on Women*, p. 225-6.

† Baudelocque speaks of having met with upwards of twenty cases of it, some of which continued for many years. See also a memoir published on this subject by M. Gerard, of Lyons.

pregnancy. It will be seen, however, that these forms have been already treated of, and that the form which we treat of under this head is that having for its cause more a false mental impression than any organic or functional change on the part of our patient.

An interesting case of nervous pregnancy, related by M. Vars in the first number of the Gazette de Santé for the year 1824 may be here given: Mary Gibaud seemingly became pregnant shortly after her marriage, having previously been in good health. The menses stopped, morning sickness occurred, the abdomen became distended, and the motions of the fœtus felt, or believed so. Labour set in at the expiration of the ninth month, which continued for thirty-six hours. The midwife in attendance called in an eminent surgeon, and when he came, finding the patient fainting from hemorrhage, he set about delivering her, but to his astonishment found the uterus unimpregnated. The labour returned, and continued violent, when he bled her with relief to the symptoms. At the interval of a month the nausea and vomiting again commenced, and the usual symptoms of pregnancy continuing for nine months, she was again apparently taken in labour, and was relieved by the natural and artificial loss of blood as before. In this way she went on for upwards of twenty years, going regularly through the forms and sufferings of pregnancy and labour every ten months, throughout all which time her breasts were full of milk. She was seen by several professors of the different universities, and was even tapped for supposed dropsy at the Hospital of Angouleme, but no fluid escaped. On her death, which occurred in consequence of inflammation of the brain, she was examined, and every organ in

the abdomen was found perfectly natural ; there was a quantity of fat, however, deposited in the omentum.*

The rules already laid down will suffice to enable us to detect cases of pregnancy depending upon the imagination, the nature of which, generally speaking, is obvious enough. The difficulty is in persuading the individual that she is not pregnant ; and it must be confessed, that, in almost every case of the kind we have met with, our efforts in this respect were unavailing. These infatuated individuals will go round from practitioner to practitioner, receiving the same opinion from all, and still persisting in their own views of their case. It was suggested lately in a case of this kind, in consultation with two medical friends, when every attempt to convince the patient that she was not pregnant had failed, to try the effect of a mock operation, and, by exhibiting to her a fœtus, to lead her to suppose she had been delivered ; however, circumstances connected with this case rendered the doing so inadmissible. Under certain circumstances, having recourse to such an expedient might be perfectly justifiable, and save the patient an immensity of anxiety and consequent ill health. There is a constant impression on the minds of such persons that their state is very alarming ; and they will make the most pathetic appeals to their doctors to deliver them at any risk, and to use instruments, or to adopt any other means they may deem necessary for that purpose.

The last form of pseudo-pregnancy we have to treat of is that which is simulated for sinister purposes by the individual, and with a view to deceive those about her. In this case every possible difficulty will be thrown

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* See Johnston's Med. Chirurg. Journ., Sept. 1824.

in the way of arriving at the truth ; therefore, no statement whatever of the patient is to be relied upon, unless so far as their contradictory and irreconcileable accounts expose the deception. If we attempt an abdominal examination, the breath is held in, and the diaphragm forced down, at the same time that the abdominal muscles are brought into action, thus rendering any attempts to arrive at the state of the parts in the abdominal cavity, at least whilst this effort is kept up, quite unavailing. If a vaginal examination be proposed, this is either objected to, or if permitted, the limbs are kept stretched out and pressed together, by which means the parts are so narrowed as to be almost impervious, whilst any attempt to pass up the finger into the vagina is met by a sudden exertion or receding on the part of the female, which renders a satisfactory vaginal examination almost impossible. Such individuals will say that they have not menstruated for months. They will dwell upon their sufferings by morning sickness, and aver that the motions of the child are not only distinct, but oftentimes most distressing. They often describe the symptoms, however, as occurring at the wrong periods, and thus excite our suspicions. They may, for instance, describe quickening as having occurred, according to their own calculation, in the first or second months of their pregnancy, while morning sickness did not set in until the advanced stage. Subterfuges of all descriptions will be had recourse to under such circumstances, and detecting them often requires as much knowledge of human nature as of practical midwifery on the part of the accoucheur.

This deception is often had recourse to for the purpose of extortion by females of dissolute character, and not unfrequently married women, and even those mov-

ing in a respectable sphere so far forget themselves, as thus, either from motives of caprice, for the purpose of gratifying their vanity, or the perhaps less culpable one of regaining estranged affections, to have recourse to this dishonest method of imposing upon the partners of their bosom.

A case of this nature occurred in Mrs. ——, a lady about fifty years of age, who consulted me several times within the last two years for symptoms of pregnancy, and even sent for me twice, giving her husband to understand that she was taken in labour. That this lady endeavoured to deceive both her husband and myself there could be no doubt, and with her husband she has so far succeeded, as he still looks forward with patient confidence to an addition to his family, in spite of my assurances to the contrary. What renders this case the more remarkable, is, that the lady has already given birth to fifteen children.

A case is subjoined in which it was attempted to carry the deception still farther. I was requested to see the wife of a coachman some time since, who was reported to be in tedious labour. On going into her room, I was quite deafened by her vociferation, which continued without intermission. On proceeding to examine her, it was soon ascertained that she had not only no labour, but no symptom of pregnancy, although the midwife in attendance assured me that she felt the head in the passage. Several circumstances, but particularly, their anxiety to dispense with my examination, led me to suspect that the case was one of imposition, and not a mistake on the part of either patient or midwife, an opinion with which they were soon made acquinted, when the secret transpired. The woman informed me that

she had been for some years married without having any family, in consequence of which her husband's attentions had been rather upon the wane, and his affections had shewn a strong inclination to plant themselves in a more fruitful soil, in the person of a paramour who had borne him a child. The injured wife deemed it a fair expedient to endeavour to regain her wandering lord, by counterfeiting pregnancy, all the stages of which she had regularly passed through up to labour. Her object at present was to endeavour to impose a belief upon him that her child was dead born, and she besought me most pathetically to join in the deception, and tell her husband that I had delivered her of a dead child with instruments, which was to have been so disfigured by the operation as not to be seen even by the father, but to be buried immediately. I cannot easily forget this woman's surprise on being informed, that much as her motives were appreciated, I felt disgusted with her duplicity, and begged to excuse myself from taking any part in the imposition she proposed practising. She managed, however, to put her husband out of my way, and I am ignorant how the matter terminated between them.

The greater number of cases of simulated pregnancy that we have met with have been of the preceding kind; and very delicate cases they are to manage. When the doctor acts an honest part, and states openly what his opinion is, that he should meet with very little thanks on the part of the lady who wishes to impose upon him, he would naturally expect; but he is little prepared for similiar treatment on the part of her cajoled husband. The fact is, that *he* often is the more irritated of the two at finding the matter called in question, and the re-

sult is, that the doctor is often dismissed in digrace, and pronounced as quite ignorant of his profession.

In some of these simulated cases, certain symptoms of pregnancy may be so well feigned as even to deceive the medical attendant; and this is the more possible, if either such an altered or morbid state should co-exist as could not be assumed by the individual; for instance abdominal or mammary development.

A very celebrated case of this kind occurred some years since in Joanna Southcott,* who, at the age of sixty-four, held forth to the world hopes of the birth of the promised Shiloh. She had ceased to menstruate for upwards of fifteen years, suffered from sickness of stomach and depraved appetite, her abdomen and breasts became developed, and she stated she felt the movements of a child. These symptoms deceived Dr. Reece† and Dr. Adams, as well as many other medical men who examined her, Dr. Reece even supposing that he felt the motions of the child. Dr. John Sims, with his characteristic discrimination, at once detected the imposition, and publicly‡ pronounced her not pregnant; and her death, which occurred shortly afterwards, afforded an opportunity of verifying the accuracy of his opinion by dissection, when it appeared that the uterus contained no fœtus,‖ but was actually smaller than it is usually observed in the virgin state. The omentum and integuments were loaded with fat; but, according to Dr. Reece, it would

* Gooch on Women, p. 231.

† See statement of last illness and death of Mrs. Southcott, by Richard Reece, M. D.

‡ See his letter in the Morning Chronicle, for Sept. 3d.

‖ Case of Joanna Southcott, by P. Matthias, Surgeon and Apothecary.

appear that the tumour, mistaken for the impregnated uterus, was the bladder, the prophetess having acquired the power of retaining her urine for a long time for the purpose of producing the swelling in question. Dr. Reece ascribes the apparent motions of the fœtus to a power she had acquired of moving quickly the abdominal muscles. The vomiting had for its cause gall stones, a number of which were found in the gall bladder. It should have been mentioned that she refused to permit of a vaginal examination, urging, as an excuse, that her warning spirit had desired her not to submit to it. When her end approached, Dr. Reece, having some idea of performing the cæsarean operation, asked her whether, if apoplexy should supervene, he should not perform an operation to save the life of the child. This she also refused to submit to, a circumstance pretty clearly proving that she was fully aware of the deceit she practised.

The greatest inducement, however, held out to the practice of this deception, is in convicted females, who simulate pregnancy, and urge it as a plea in bar of execution; the spirit of our law, at least ostensibly, disallowing the guilt of the mother to involve her innocent offspring in its punishment, defers the execution of a female, quick with child, until after her delivery. Here then, the importance of arriving at accurate conclusions is abundantly manifest; to prevent in the first place, the evasion of justice, and in the second, the destruction of innocent life through ignorance. The deferring of execution, even though a convict prove not to be pregnant, is not a matter of very great consequence, and where a doubt exists in favour of pregnancy, it is but right and proper to allow time to disprove it; inasmuch as, deciding in this way does not involve escape from, but the delay of

punishment. Cases in which the plea of pregnancy has been resorted to, merely to delay execution, are by no means of unfrequent occurrence, as we might naturally expect. A case occurred in Limerick, in March, 1831, for an accurate account of the particulars of which the author is indebted to Dr. Franklin, who was called in to pronounce upon its true nature. "March 16th, 1831, Margaret Mackessy, ætat. 35, wife of Edward Mackessy of Aharoulk, was tried before the Honourable Baron Pennefather, for the wilful murder of Mary Mackessy, her mother-in-law. It was a case of circumstantial evidence. The principal witness for the prosecution was Honora Mackessy, a little girl of eleven years of age, the niece of the prisoner's husband. The ill-fated woman was, after a most patient and deeply interesting trial, found guilty of the crime, without the least hesitation, by the jury: and the learned Baron sentenced her for execution on the succeeding Saturday, and her body for dissection. After sentence was pronounced by the judge, the unfortunate woman pleaded pregnancy. and his lordship directed, that a practitioner of midwifery should be at once procured, when I was sent for, and directed by the court to examine the convict; his lordship, at the same time, laying down as the law, that *pregnancy alone* without *quickening* of the *child*, would not be sufficient ground for staying the execution, and directing me to examine minutely as to both these points. The convict was removed from the dock to a room adjoining the court, where I examined her. She admitted to me, that she had been suckling a child to within a month or six weeks of her being sent to prison. That she had menstruated once after she weaned the child, and that from the time she had so

menstruated, to the day of her conviction, it was near two months.

"This was merely her own assertion; but although I minutely questioned and examined her on the signs and symptoms of pregnancy, she refused to give the required answers, and merely contented herself with the assertion, that for two months she had not menstruated; but at the same time she admitted she had not quickened. Although I gave her the benefit of her assertion, still upon a careful examination of the abdomen, I was clearly satisfied that she had not quickened. She was then re-conducted to the dock, and after being sworn, I was examined by Baron Pennefather; when I stated my opinion to be, that though the convict might be young with child, which was very doubtful, as it was supported solely by her own declaration, that I was of opinion she had not quickened; and further added, that this opinion as to quickening was confirmed by the admission of the convict herself. Under these circumstances the Baron did not stay her sentence, and she was executed on the 19th. I waited with much anxiety the result of the *post mortem* examination, which was conducted the same day at the County Infirmary, in presence of six professional gentlemen, when it was ascertained beyond all doubt, that she was not pregnant."

This, which is by no means a very uncommon case, we look upon as interesting in many points of view. In the first place, it exemplifies, in a very marked degree, the necessity for extreme accuracy of diagnosis as regards pregnancy; and that, not merely as to its existence, but, as to the period at which it exists. In the second it illustrates how little reliance is to be placed in

the patient's own statements, and the difficulty of arriving at any decided information from an individual whose object may be to deceive the medical attendant; and lastly, it clearly and explicitly points out the practical application of a law, which must be pronounced, by every man capable of forming an opinion, as a blot upon our statute book: a law by which justice is sacrificed at the shrine of ignorance, and even the out-stretched arm of mercy is paralized by the leaden touch of obsolete and obstinately adhered to error.* In the preceding case, the presiding judge distinctly and unequivocally laid down the maxim of British law to be, that a child in the *fifteenth week* of its fœtal existence, is to be deprived of life for its mother's crime, whilst a child in the *sixteenth*† is to be protected from such an unjust and unmerited fate!!! We have already, whilst on the subject of procured abortion, pointed out the injustice of the legal enactments, founded upon the mistaken and exploded idea of quickening being the commencement of life in the fœtus. We cannot refrain from again alluding to the matter here, and raising our feeble voice against the obstinate and unrelenting perseverance in such culpable injustice, to so interesting and helpless a class of our species.

We have seen, that in the case of alleged pregnancy in

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* Here again the law of the land is at variance with what we conceive to be the law of nature; and it is at variance with itself, for it is a strange anomaly, that by the law of real property, an infant *in ventre sa mere* may take an estate from the moment of its conception, and yet be hanged four months afterwards for the crime of its mother. See note to p. 141, Med. Juris. by J. A. Paris, M.D. and F. S. M. Fonblanque, Esq.

† Calculating this as the period of quickening.

bar of execution, it is an object to pronounce accurately, in order to prevent interference with justice. It is, however, always better to lean to the supposition that pregnancy does exist, when we are at all in doubt on the subject. In the one case there is only a delay of merited punishment, in the other there is an irremediable act of injustice done to a helpless and unoffending creature. In the following cases the preceding principle was acted upon, and the result of both shews with what praiseworthy and judicious determination.

We are indebted for the notes of this interesting case to the eminent counsel for the prosecution, John Martley, Esq., K. C.

"On the 29th of January, 1830, a woman named Catherine Smith, was committed to the jail of the County of Carlow, for the murder of her husband, perpetrated immediately before her commitment. She had several children by him, and at the time the murder was committed, she was forty years of age. But passion 'mutinied in the matron's bones,' and, having seduced a boy of about 19 years of age into a criminal intercourse with her, she instigated him to murder her husband; affording another illustration of the truth of Milton's juxta-position, 'lust hard by hate.' They waylaid him on his return home one evening, and left him, as they supposed, dead; but he was found alive next morning by one of his little children, (who was produced on trial as a witness against her mother,) and brought home to his own house, where he lived for about a week longer. During that time his wife and her paramour made two other attempts to put an end to him, one by strangulation, the other by poison, the latter of which succeeded. She was tried at Carlow on the 19th

of March, 1830, before the Chief Justice of the King's Bench and found guilty; and then pleaded pregnancy; and a jury of matrons was empanelled to try the truth of her plea." Dr. Porter of Carlow, who was also directed to examine this woman, in company with Dr. Byrne, has kindly transmitted to the author the following particulars: "As well as I can recollect, the unfortunate woman, Smith, whom the late Dr. Byrne and I were called on to examine, could not have been more than from six to nine weeks* pregnant, although she stated herself to have been longer, and that she had quickened, an assertion which we attributed to her anxiety to defer her execution. We examined her most carefully with the stethoscope, and could not detect any evidence of pregnancy; and I recollect, I was particular in directing Dr. Byrne's attention to the fact, related to me by the late Surgeon Gregory, that you† had discovered it so early as the sixth or seventh week by means of the stethoscope. The grounds on which we formed an opinion of her being pregnant, rested on the uterus feeling weightier and larger than in the unimpregnated state, by examination through the vagina. But aware that other causes might produce such a state, we agreed, for difference of opinion (between Dr. B. and myself) there was none, that it would be unsafe to swear on the

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* According to this calculation, Smith must have become pregnant immediately before her committal, and was consequently delivered before the expiration of the ninth month.

† Dr. Porter must have been misinformed on this subject by Mr. Gregory, as the author distinctly stated in his paper, published in the 5th vol. of the Dublin Hospital reports, that the earliest period at which he had detected pregnancy by the stethoscope, was in the tenth week, and even then, only by the placental souffle, the fœtal heart's action not being discoverable until the period of quickening.

subject, and, therefore, concluded it better that she should get the benefit of a supposed doubt. In this the Chief Justice fully agreed." Dr. Porter adds, "but so *absurd* and *ludicrous* a group as the jury of matrons, I never witnessed, brought together to decide upon so intricate a subject; a subject which not one of them knew one particle about. What else could be expected? Some of them were *unmarried*, and not one of them ever attended a lying-in case during her life. In fact, it was one scene of confusion."

Mr. Martley's statement goes on to say, "she (Smith) was accordingly respited, and was delivered in prison on the 10th of September, 1830, of a male child, and on the 22d of October following she died in jail." The circumstance connected with their sudden demise was singular, as we have been informed by Mr. Rawson, Surgeon to the Carlow Infirmary, that on the day of her death she was walking about the jail yard, and on passing the gallows, asked what it was; on being told, she became very ill, and died that night. Mr. Martley continues, "an inquest was held on the following day, and the jury found that she came by her death by the visitation of God. Her accomplice and paramour, whose name was John Stiles, pleaded guilty to the indictment against him, and was transported for life." So ends this "strange eventful history."

This case, quite as forcibly as the last, exhibits the futility of quickening as the symptom, upon which is to depend the protraction of execution. Here we have the convict asserting that she had quickened, whilst the medical men are of opinion she had not; although they admit the fact of her pregnancy. We have already seen, while treating of quickening, that it is a symptom

only arrived at through the individual's own statement; therefore, strictly speaking, if this law were literally adhered to, the deferring her execution would rest with the convict herself. The only way in which medical men can arrive at the fact, being, in addition to the convict's statement, from the consideration of concomitant symptoms, in which they are by no means free from the possibility of deception. The learned Chief Justice, however, decided in the manner conformable with common sense and humanity, holding in view more the spirit than the crude, we had almost said, mischievous letter of the law. There is another circumstance which this case clearly points out, namely, the highly objectional and absurd system of our present law as regards the "jury of matrons."

Let us call to mind the difficulty of the question upon which a set of ignorant, inexperienced, and illiterate women, are under these circumstances called on to decide: women often unmarried, and selected from the very dregs of society, persons usually collected within the precincts of the court,* where females of good character and respectability are unlikely to be found. But even suppose that the original intention of the law was adhered to, and that discreet matrons, or even women who had made midwifery their pursuit, were invariably selected for this purpose, can any man, who has had an opportunity of judging of this class of persons, say that they are qualified to form accurate conclusions on the subject. We have seen, in the preceding pages, the difficulties which often impede medical men from arriving at certain knowledge, even with all the light that science, experience, and superior information can throw upon it. Why then should the dispensers of our law,

* Med. Gazette, April 6, 1833.

however deficient it may be in letter, persist in administering it, with such a total disregard to its spirit, and to the rights of humanity? That it is deficient in the letter, and calls loudly for correction, as well in this as in other points with which we have had to do, are facts too notorious to question. Why, then, will not the bench in all cases assume that discretionary power which they possess of carrying its spirit and design into execution, and suspend the judicial balance with an equal hand, affording to the innocent and helpless fœtus that protection, of which crude enactments, founded upon error, would deprive it?

In the preceding case, Mr. Rawson informs us, "that the jury of matrons could give no opinion on the subject, some of them considering she was, others that she was not with child." We have already seen what opinion Dr. Porter formed of them, and he appears to have had a fair opportunity of judging. A case occurred in Norwich so lately as March, 1833, which is even more illustrative of the points here insisted upon, than that which has preceded, as in it, had it not been for the prompt and highly praiseworthy interference of the three most eminent practitioners in that city, a scene of a deeper die than that recorded by Mauriceau, as occurring in 1666, in Paris, would have been re-acted in 1833, in our own enlightened country. The attention of the public was called to this case in the Medical Gazette for the 6th of last April, in which was published the memorial of the medical gentlemen alluded to, together with some editorial remarks on the case. To this convincing article we must beg to refer our readers, and we shall merely say, that on reading it we were at loss whether most to admire the humanity and decision that prompted Surgeons Scott, Crosse, and Johnson, to the

judicious and praiseworthy line of conduct pursued by them, or the clear, perspicuous, and convincing observations of the talented writer of the article in question.

The case was one in which a woman, named Mary Wright was indicted before Baron Bolland, at the Norwich Assizes, March 3d, 1833, for poisoning her husband. She was clearly found guilty of the crime, although an unavailing effort to prove her insane at the time of committing it, was made. The prisoner's counsel put in a plea of pregnancy in bar of execution, which the judge directed the sheriff to summon a jury of matrons to investigate. Twelve married women were found; and after being sworn, were directed to try whether the prisoner was pregnant with a *quick* child. After an hour's investigation, they returned a verdict that she was *not quick with child.* The woman was, of course, ordered for execution on the Monday following. Under these circumstances, Surgeons Scott, Crosse, and Johnson, fully alive to the absurd, although legal method, adopted to ascertain an extremely difficult point of diagnosis, and one involving the life of an individual in its accuracy, voluntarily waited upon the convict in the jail on the morning following, and having, to use the words of my friend Mr. Scott, the eminent partner of the late celebrated Dr. Rigby, "completely *stultified the verdict* of the twelve discreet matrons," and satisfied themselves, that she was not only pregnant, but quick with child, they forwarded immediately to the judge of Assize the following document, duly attested, and with their respective signatures appended.

NORWICH COUNTY JAIL,
Saturday, quarter before 9, A. M., March 23, 1833.

To the Hon. Sir Wm. Bolland, Knt., Baron of the Exchequer, the following representation respectfully showeth:

"That we, the undersigned, are surgeons and accoucheurs of considerable experience in the practice of midwifery, and have repeatedly examined females in different stages of pregnancy.

"That we have this morning strictly examined Mary Wright, a prisoner, *sentenced to be executed* on Monday next, for the murder of her husband; and found her between five and six months gone in pregnancy.

"That in an apparently vigorous and healthy woman like the prisoner, and where the size of the body has regularly increased during pregnancy, we should feel ourselves bound to believe the fœtus living, unless we found some signs of its being dead.

"That in the prisoner, Mary Wright, we find no signs of a dead fœtus; but on the contrary, have positive evidence of its being at this time living.

"That we do verily believe the said prisoner is above five months advanced in pregnancy, and carries in utero a living fœtus.

"That in a case of such a nature, we desire, without delay, to submit our statement to your lordship; and if the verdict of the jury of matrons, yesterday given, that the prisoner, Mary Wright, was *not quick with child*, deprive the said prisoner of a reprieve until delivery *ex necessitate legis*, we humbly entreat your lordship to respite the execution of the said Mary Wright until she be delivered."

Of course Baron Bolland paid the attention to this document it merited, and the woman was reprieved until after her delivery.

The following letter, transmitted to us within the last few days, renders unnecessary any further comment upon our part, either with a view to point out the imper-

fection of the law in its present form, or to eulogize the conduct of those individuals, who, in so prompt and effectual manner, turned their practical information to the most gratifying account, that of preserving a life on the point of being sacrificed to ignorance and misrule.

NORWICH, 17th July, 1833.

"SIR,—Wishing to give you a brief and authentic document respecting Mary Wright, in whose case you have taken an interest, we beg to offer you the following account, in addition to the petition and certificate presented by us to the judge of Assize, and published in the number of the Medical Gazette for the 6th of April last.

"The positive evidence we gained of a living fœtus being in utero, was obtained by our feeling, by means of the hand applied upon the abdomen, the distinct movements of the child against the walls of the uterus; and, having gained this evidence, we did not persevere in the use of the stethoscope for a more minute investigation.

"We expressed our opinion, that the said prisoner was *between* five and six months gone in pregnancy, and we positively stated, in the printed petition and certificate before alluded to, our conviction that she was *above* five months advanced in that condition. The result has verified most exactly our statement.

"After a tedious and lingering labour, during which each of us was in attendance, the said Mary Wright was safely delivered of a large, healthy, living female child, on Thursday last, the 11th inst. and is now going on interruptedly towards recovery, awaiting her fatal sentence.

Signed, PAGE N SCOTT, Surg. to County Jail.
JOHN GREEN CROSSE, Surgeon to the Norfolk and Norwich Hospital.

J. Godwin Johnson, Asst. Surgeon to
the Norfolk and Norwich Hospital.

To Dr. Evory Kennedy, 2, Rutland Square, Dublin.

So much for the jury of matrons : let us in the name of common sense, and for the sake of humanity, see no more of it. Where a decision of this nature is to be arrived at, let at least a fair chance be afforded of obtaining accurate conclusions, by submitting the female to the examination of men who have made the subject their study, and who require all the assistance that experience and science can afford them to enable them to judge correctly.*

The last case in which premeditated pseudo-pregnancy may come under our notice, is, where this deception is resorted to for the purpose of imposition in civil cases, with a view, for instance, to prevent property passing to the next heir. The heir is, however, provided with a remedy, which, although it has not of late years been much resorted to, yet is still within his reach ; it is that of obtaining the issue of a writ, "*de venture inspiciendo*"† for the purpose of inquiring into the truth of the plea.

The case of La Roche was one in which an individual, by will, gave a sum of money to be laid out in land, and settled on A. (who was an extravagant person) for life, remainder to his first son in tail male, remainder to his daughter in tail general, remainder to a charity. A. married a woman of an ill reputation, and dying soon after, the wife pretended to be with child ; whereupon

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* See Appendix, note [*a*].

† This writ is granted not only to an heir-at-law, but to a device, whether for life, or in tail, or in fee. *Ex parte* Bateman, at the Rolls, 16th December, 1784. *Ex parte* Bellet, at the Rolls, 20th December, 1784. (z). *Ex parte* Brown, in Cha. Trin. Term, 1792, (y).

the Master of the Rolls, in order to preserve the charity from any false and supposititious child, decreed the Master to appoint two midwives, who should resort to the widow, search her, and see whether she was with child or not, and attend at the birth; afterwards, there being an attendance on the Master in relation to this cause, the widow, perceiving the matter would be discovered, voluntarily came before the Master, and declared that she was not with child, by which means the right of the money was preserved to the charity. (Case quoted by the Attorney-General before Lord Chancellor King, 2 Eq. Ca. Ab. 780).

The writ "*de ventre inspiciendo*" was, upon the application of the next heir, in such cases as the preceding, issued to the sheriff, who summoned a jury to try the truth of the reputed pregnant female's plea and, if the investigation was followed by a verdict, means were taken to prevent male access until the period of pregnancy had expired, when if the plea was unfounded, the heir was entitled to demand immediate possession of the fief (forty weeks, according to Britton, being the longest time for which the woman could be confined under the writ, illegitimacy of the child being the inevitable result of its birth being protracted after that time;) and among the older lawgivers, severe penalties were even inflicted if the individual was not pregnant. For further information on this subject, see Appendix, letter B., which contains observations upon the writ "de ventre inspiciendo," by John Smith, esq., Barrister at Law, whose name will be esteemed a sufficient guarantee of their accuracy.

CHAPTER VIII.

INQUIRY INTO THE PROOFS OF THE LIFE AND DEATH OF THE FŒTUS IN UTERO.

THE child in the womb is not exempt from the common fate of mankind, but may cease to live at any period of its embryotic existence, from the moment of its production to that of its birth. Its vital integrity is not merely subject to those inherent, morbid, and mortal changes and influences to which it must yield in common with the independent being: but if, from its situation, it is free from the effect of many direct external impressions and influences to which the adult is obnoxious, still it is subject to these indirectly through the mother; and from its dependence upon, and close sympathy with her, must suffer from a variety of influences not strictly its own, but which are peculiar to its state of existence. Its death may be produced in a great variety of ways; diseases of various kinds may attack it, either such as are specific, and may be communicated originally by one or both parents, as veneral disease, scrofula, small-pox,* or such as may be termed idiopathic, and are not traceable to any morbid change in the parent, as inflammations

* There is a curious case on record in which the fœtus was affected with ague, and suffered from rigors, perceptible both to the mother and others during the fit. The mother also laboured under the disease; but the striking part of the case was, that its periodic recurrence was different in the parent and fœtus.

attacking vital or other organs, or imperfections of development, locally or generally. These imperfections may either be in the fœtus itself, or in the organ which constitutes its connexion with the parent. Mechanical causes may also injure or destroy it; such, for instance, as separation of the placenta, or knotting of the funis, or pressure upon this, preventing the circulation of blood through it. External injuries, as blows, falls, &c., may produce the same effect. When to these we add diseases of various kinds to which the mother is liable, and even strong mental impressions, as fear, joy, grief, &c., to which she may be subjected, and above all the difficulties attending parturition ; it must be a matter of some surprise to us that so great a proportion of children survive all these trials, and succeed in arriving at maturity.

A fœtus, then, may die at any time throughout the period of intra-uterine existence, or it may die during its passage into the world, or, as it is usually termed, during labour.

As it may be important to arrive at certain knowledge of the life or death of the fœtus at either of these periods, and as the indicatory signs are to a certain extent distinct in each, we shall consider them separately, commencing with the first.

It may be asked, of what consequence is it to ascertain whether the child be alive or dead during the course of pregnancy? It appears formerly to have been the practice, as soon as a child was supposed dead in the womb, to resort to means to cause its removal or expulsion, merely from a dread of the bad consequences likely to ensue from allowing it to remain in the uterus ; no reference whatever being had to the then state of the mother. The necessity for this interference was appa-

rently strengthened by the impression which also prevailed, that a dead child (wanting the power of motion possessed by a living one, and essential to its natural birth) could not be brought forth without assistance. This practice has, however, long been exploded, as we would naturally expect, the necessity for it being founded upon erroneous data; as it is justly remarked by Denman, that "no fact is more clearly proved than that a dead child may remain in the uterus inoffensively for several weeks before the accession of labour, and be then expelled in a manner perfectly natural." As far, then, as a knowledge of the fact goes, with a view to the removal of the child before labour has set in naturally, our being aware of its death would be a matter of little importance, as interference with that view is, at least in ordinary cases, quite inadmissible.

How, then, does diagnosis become a matter of importance in these cases? Let us suppose a female to have been affected with the ordinary symptoms of pregnancy, that we are consulted, and pronounce her pregnant, having, perhaps even applied the stethoscope and heard the heart's action and *souffle.* The child's motion now ceases to be felt, the abdomen, in place of enlarging, may fall, and the symptoms of pregnancy either to a great extent cease, or appear held in abeyance, while the mother's health, generally, may become deranged. We are again consulted, and the impression on our minds may be that the child is dead. Will it not be an object with us to be able to arrive at an accurate knowledge of this fact, as well to satisfy our own minds, and that of friends, as to direct the treatment of our patient? Now, such a case as this is one of very common occurrence, indeed. Were we, under such circumstances,

ignorant of the child's death, we might treat our patient by bleeding and other depletion, keeping her for weeks confined, and during all this time submitting her to the ordeal usual in these cases, a line of treatment which would in all likelihood materially injure her health, whilst it would be quite impossible to accomplish the object had in view by it, her giving birth to a living child.

Again, a female (judging from certain symptoms with which most women are familiar, but which we shall afterwards find are by no means infallible) shall arrive at the conclusion in her own mind that her child is dead within her, when such is by no means the case. We are applied to either to corroborate her suspicion, or to undeceive her. Now it is certainly true, that it is not necessary we should tell her that the child is dead, if such be the case, as it may render her despondent, and do her serious injury. It is a very satisfactory matter, however, to be able to tell a patient confidently, and with a clear conscience, that her child is alive when she supposes it dead. Whether we inform our patient or not of the true nature of these cases, the friends are naturally solicitous to be acquainted with the facts ; and as there is no motive for deceiving them, if our diagnosis afterwards shall prove erroneous, our characters will suffer. It requires some ingenuity, on the part of the doctor, to prevent his being set down as ignorant, if he refuses to give a decided answer in these cases, every one expecting him to be able to say whether a child in the womb be dead or alive.

It may to the medical jurist become a matter of even more importance, to arrive at accurate information on the subject of the child's life or death during the progress of pregnancy. A case illustrative of this fact occurred to the author about three years since, when assistant to the

Lying-in Hospital. A woman, in the seventh month of pregnancy, was sent to that institution from the police-office, to be examined whether her child was, as she asserted, killed in her womb by certain blows and other injuries inflicted upon her by a female with whom she had a scuffle. She described very accurately all the reputed proofs of the child's death as being present. When, however, the stethoscope was applied, the fœtal heart's action was distinctly audible, and our announcement of the child's being alive dissipated all her hopes of legal vengeance, as she appeared to calculate upon hanging her antagonist at least. The prisoner, who was immediately dismissed, might, in the absence of this test, have been subject to a vexatious prosecution or imprisonment; and if the child had died subsequently, its death having no connexion whatever with the assault, she might possibly have been unjustly punished.

Treating of the signs of the death of the child, before or during delivery, Mr. Beck* says, that "this subject may be agitated in civil cases, where the succession to an inheritance is questioned; or in criminal ones, as where a pregnant woman is maltreated, and her offspring is supposed to have died from the injury. It is, however, of the greatest importance, from its bearing on the two great medico-legal subjects of abortion and infanticide."

Other cases may also occur, in which it will be an object to be able to pronounce accurately on this subject during pregnancy: we shall not at present dwell upon these, but proceed to analyze the means by which we ascertain the fact.

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* Med. Jurisp., p. 108. See also Ryan's Midwifery, p. 299.

We shall consider these evidences under the heads maternal, or those confined to the parent, and fœtal, or those depending more exclusively upon the child.

And first, let us inquire from what popular maternal signs we conclude the child to be alive in the womb.

The mother should (with the exception of the inconveniences consequent upon pregnancy) enjoy good general health and spirits. Her breasts should be full, distended, and contain milk, according to the period of pregnancy; the abdomen should also appear full and tense, and progressively enlarging.

To indicate its death, the reverse states should be present; her general health should be deranged, she should become debilitated, low and desponding, or, as it is generally termed, nervous; the breasts should become flaccid, and milk disappear, whilst the abdomen should lose its tense and rounded appearance, the tumour falling lower down, and hanging from side to side, its progressive enlargement not only ceasing, but the tumour in some cases actually appearing from the above changes to become smaller. The umbilicus, which had been prominent, is said to recede, and the abdomen to become colder to the sensations of the individual herself, as well as feel so to the touch of the examiner. The countenance is said to appear sunken and wasted, the eyes to assume a lack lustre appearance, while the breath becomes fœtid, and the individual is subject to a sense of coldness amounting to shivering, or occasional rigors. Let us, however, consider these matters more in detail; and first, as to the general health of the individual. Many females have borne dead children, without evincing the slightest appearance of ill health or bad spirits up to the moment of their confinement, when the first intimation

they have had of their doing so was the child's coming dead to the world; and yet it may have ceased to live for weeks or months before. Again, those symptoms of general derangement of health and spirit, relied upon as evidencing the child's death, are present in many females who bring forth living and healthy children. Now, although flaccidity of the breasts, which had been previously tense and full, might give rise to a reasonable suspicion of the child's death; yet, let it be remembered, that in some females the breasts do not become distended until advanced pregnancy, and that we shall occasionally meet with women, who, even at the period of delivery, have no more fulness of these organs than is to be observed in girls before the period of puberty. Neither is the want of secretion of milk of any consequence whatever, as many females have no milk secreted until after their confinement. Denman's opinion of the assistance to be derived from the breasts under these circumstances, is, "that their state must be uncertain, and any judgment founded on such indications extremely liable to error."*

The changes which the abdomen undergoes are also equivocal. Its progressive enlargement may in some cases proceed even after the death of the child, as when hydatids co-exist with pregnancy; or it may, as we have seen, become distended, and continue to increase from causes quite unconnected with pregnancy, as collections of air, water, tumours, &c. Again, although the subsidence of the tumour may depend upon the death of the fœtus, yet this is one of the natural changes that in all cases precedes labour; therefore, if depended on,

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* Denman's Midwifery, vol. ii. p. 179.

would, in advanced pregnancy, lead us into error. In early pregnancy, of course, as we have no abdominal tumour, this sign can afford us no assistance. The falling of the uterine tumour from side to side in the abdomen is the popular sign of all others the most depended upon, and perhaps merits least of all to be so. We have repeatedly known females make themselves miserable with the idea that their children were dead, because of their having observed this phenomenon, and who, to their great astonishment, at the expiration of their pregnancy have given birth to healthy, living children. Now, although this falling of the uterus or child within it, from side to side, is occasionally observed in cases of dead children, yet we have elsewhere treated of exactly a similar phenomenon, *ballottement*, as one of the most ordinary evidences of pregnancy, and which has no connexion whatever with the life or death of the child, being merely a mechanical change of posture depending either upon gravitaton, or external force applied to the fœtus *in utero*. It is obvious, therefore, that this is little, if at all, to be depended on. The sensation of coldness in the abdomen is also a very popular proof of the death of the child in the womb: from the connexion that appears to exist between coldness and death, the inference is drawn that a dead child must be colder than a living one, and, consequently, impart a sensation of coldness. Denman justly remarks on this subject, that, " 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.

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* Denman's Midwifery, vol. ii. p. 179.

The principle being fallacious, the inference must often mislead, and a child is often 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, adding, "little stress is to be placed on this sign alone, but when accompanied with others, it may increase our suspicions of the state of the child." Denman speaks of there usually being one violent shivering at the instant of the death of the fœtus. Although we have in a few cases ascertained, that this sign did attend what, we had reason to suppose, the period of the death of the fœtus, yet it is apprehended, that it does not so commonly occur as this able author's statement would lead us to infer; neither would it be possible, in many cases, to trace the connexion between its occurrence and the child's death. Upon how many other causes also may rigors depend, having no reference whatever to the child? As to the sensation of coldness said to be felt on examining the abdomen with the hand, this we believe to be of no avail, as we have not only tried to detect this with the hand, in cases where there was undoubted proof of the child's death, but have again and again applied the thermometer to the abdomen in such, and without detecting the slightest sensible difference. With regard to the other changes and morbid states, dwelt upon as evidencing the death of the fœtus, such as the sunken countenance, and dim eye, nausea, headache, fœtid breath, and so forth, these have been so often met with, depending upon a variety of other causes when the child was alive, and women so often carry dead children who exhibit none of them, that it is obvious

we can place little or no dependence, either upon their absence as proving the vitality, or their presence, the death of the fœtus. We have thus seen how little is to be learned from the maternal evidences of the life or death of the fœtus. Let us now inquire into those afforded more immediately by the fœtus itself.

The fœtal evidence which has been heretofore principally dwelt upon as proving its life, has been its motion. In the abstract we may certainly say, that when a child moves, it lives, and when it is dead, it ceases to move ; but are we not liable to deception with regard to the motion of the child ? We have known many women fancy they felt the motions of a child, not only where there was undoubted proof of the child's being dead and motionless, but when no child at all was contained in the uterus. The passage of air through the bowels, the action of the abdominal muscles, spasm of the uterus, aortic pulsation, or even hysteria,* may give rise to this deception. On the other hand, although the child does not move when dead, yet the want of the motions in it can by no means be regarded as a proof of its death. Some women† never experience either quickening or the motions of the child throughout their whole pregnancy ; others have ceased for a time to feel the motions of the child, and consequently, inferred it to be dead, a prog-

* Les femmes hystériques peuvent, au contraire, éprouver des mouvemens assez ressemblans à ceux d'un enfant pour leur en imposer, et même à l'accoucheur qui, pour porter son jugement, se bornerait à l'application de la main sur l'abdomen.—*Traite D'Accouchemens*, par M. Gardien, t. iii. p 3.

† L'absence de mouvemens ne prouve pas que l'enfant est mort. En traitant de toucher, j'ai fait observer que le mouvemens ponvaient n'être pas perçus par la femme pendant le cours de la grossesse, quoique l'enfant fût bien portant.—*Gardien*, t. iii. p. 3.

nosis which the sequal has in a great many cases proved erroneous. The fœtus may cease to move, yet continue in other respects healthy, may be weak or debilitated for a time, and yet live and survive its birth. These considerations, then, must satisfy us how little reliance is to be placed on this circumstance. Smellie says, that "he delivered many women of strong and lively children, after they were fully possessed with a notion that they were dead, because they felt no motion at the time of labour." See Smellie's Cases, vol. ii. p. 54.

We shall here instance a case, strongly illustrative of the insufficiency of the signs already dwelt upon, in affording us satisfactory information on the subject in question. June 3d, 1830, I was requested by Dr. Hutton to visit a young woman named Lock, who was advanced in pregnancy, and supposed her child dead. She had been married on the 9th of November preceding, and had not since menstruated. She had suffered from morning sickness, and her abdomen had been gradually enlarging, until within the last three weeks, when it became, as she stated, flaccid, and something weighty was to be felt falling from side to side in it. She had never either quickened, or felt the motions of the child; and now complained much of a feeling of coldness in the abdomen, with general debility, and as she expressed it, heart sickness. Her breasts appeared small, scarcely at all distended, and devoid of milk; but she stated them to have been larger and fuller until latterly. Under these circumstances, the patient and her mother naturally concluded the child to be dead. On applying the hand to the abdomen, no motion was to be felt, but the stethoscopic evidences indicated that the child was alive, a fact which, (to the great astonishment of the patient and her

friends), was attested by the birth of a living child, within six weeks from the period of examination. Several similar cases could be adduced, as well as cases in which females supposed they experienced the motions of the child, and asserted, that it exhibited the usual evidences of its vitality, at the very moment there existed undoubted proofs of its death. A case of the latter kind presented itself in Mrs. ———, who had been three years married, during which time she had had three dead children, with none of which she went beyond the seventh month. This she ascribed to a venereal affection under which her husband was labouring when she married him, and which he communicated to her. She was examined by me on the first of February. 1830, when she stated herself to be about six months and a fortnight pregnant, and exhibited every appearance of carrying a living child ; a fact which was corroborated by the stethoscope. She was again seen by me, in company with Dr. Whitestone, on the 12th of February, when she still exhibited all the ordinary appearances of carrying a living child: her breasts were full and distended, and she could press out some milky fluid from them, her general health and spirits were good, the abdomen was tense and full, nor did she experience any sensation of weight, or falling from side to side in it. She stated, that she was confident the child was alive and well, as she had felt its motions on that morning. These could not, however, be detected by us, neither could the stethoscope furnish us with any evidence of its vitality. This woman was delivered within four and twenty hours of a dead child, the funis of which was quite putrid, and the vessels filled with thickened black blood : the child

altogether evincing evident marks of having been dead for a considerable time in the uterus.

The preceding cases have shewn us the futility of the symptoms commonly relied on. Let us now examine the evidences of the life or death of the fœtus, afforded by auscultation, in pregnancy.

The vitality of the fœtus will of course imply the validity of the connexion between it and the mother, consequently, we may expect to find the phenomenon depending upon this (the souffle) in its natural state as long as the child lives. That it will also imply the presence of the fœtal circulation, it is scarcely necessary to state.

When, therefore, we can detect a distinct fœtal heart, with or without the placental sound, there can be no question whatever of the child being alive. The situation in which these are to be detected will vary, according to the circumstances already enumerated, in treating of these phenomena as evidences of pregnancy. The cautions there dwelt upon to avoid deception, will equally apply in exploring for our present purpose.

We shall now give a few cases illustrative of the efficacy of these signs in forming a diagnosis on the child's vitality.

December 26th, 1828, I was consulted by Mrs. Martin, the wife of a provision merchant, living in Upper Exchange Street, who was in the ninth month of her pregnancy. She expressed herself much alarmed at the supposed death of her child, the active motion of which she had not felt for the last six weeks, having been in the habit of observing it daily up to that period. She had some uterine hemorrhage about three weeks since, which continued for a few days. Says, she feels the passive

motion of the child, which she describes as a heavy weight rolling from side to side in her abdomen, on change of posture. On applying the hand, previously dipped in cold water, no active motion of the child could be excited, but the *ballottement* was evident enough. The stethoscope was applied, and the souffle detected, strong and sonorous, at the left side, and rather to the anterior part of the fundus of the uterus ; equalling in frequency the pulse at the wrist, which was 160 in the minute ; its frequency depending on the alarm this patient experienced at the application of the instrument. The fœtal heart was detected just above the ramus of the pubis, on the left side, pulsating 144 in the minute. This patient's delight may be easily conceived, on learning that her child was still alive. It was, however, of but short duration, as although she was delivered on the 24th of January following, of a living child, it only survived its birth a few days.

February 12th, 1830, Dr Whitestone and myself examined Susan Showel, the wife of a soldier in the Coldstream guards. She stated, that she had already given birth to six dead and putrid children, none of them exceeding the eighth month. Denied her husband or herself ever having, to her knowledge, suffered from venereal affection. Is very urgent to know whether her present child is alive, a circumstance she will scarcely allow herself to hope, never having yet borne a living child, and not having felt the motions of this one for some time. We could learn nothing satisfactory from the evidences usually relied upon, but detected a full and sonorous souffle on the right side, and the fœtal pulsation very distinct at the left, and extending completely across the lower part of the abdominal tumour.

This woman was delivered in the Lying-in Hospital of a living child shortly afterwards, rather to the astonishment of the pupils, who received the prognosis, of a living child's being born, with great hesitation; naturally enough inferring, from the number of dead children this woman had already given birth to, that venereal taint was the cause, and that this one also would be dead.

The preceding are taken from a number of similar cases, clearly illustrating the utility of auscultation in pronouncing the child to be alive in utero. Let us now see how far it will assist us in indicating the death of the fœtus. And here we must repeat a remark which we have made elsewhere, that the positive evidence afforded by the existence of any sensible sign, must be *cæteris paribus*, more satisfactory than the negative evidence deduced from the absence or want of such phenomenon. Therefore, cautious as we ought to be in the former case, we must be doubly so in the latter; lest we might erroneously infer, that the phenomenon did not exist, merely because we could not detect it.

What then, let us inquire, are the symptoms indicating the death of the fœtus? We have already dwelt upon those generally received, it now remains for us to consider such as are afforded by auscultation. These may be generally pronounced to be the absence or cessation of the fœtal heart's action, together with the absence or alteration of the placental sound. These positions must be received with certain restrictions and explanations, which we shall now enter upon. In the first place, then, we would by no means wish it to be inferred, that with every man, however unpractised in auscultation, the above signs would suffice: for instance, we have known of individuals stating, that they never could satisfy them-

selves that the fœtal heart was audible, previous to the birth of the child. It is needless to state, that the stethoscope, not conveying to such the sound of the fœtal heart or *souffle*, would afford less than questionable data on which to infer the child's death. We feel no astonishment whatever at the outcry such persons raise against auscultation in these cases. Nay, we even give them every credit for conscientiously discharging an important duty, in putting upon their guard persons equally *acute* in their perceptions with themselves; and preventing their being led into the commission of rash errors, which would prove no doubt very fatal in practice; as, did it become general amongst a class of practitioners, who never could detect the fœtal heart, before delivery, to infer, from the absence of the fœtal pulsation, that the child was dead, and regulate their practice, as it is dreaded, accordingly; it requires but little logical reasoning to infer, that in many cases the life of the child would be unnecessarily sacrificed.

We, therefore, join most heartily with these cautious and discerning practitioners, and request all those who never could succeed in detecting the fœtal heart, to place no confidence whatever in its absence as a sign of the child's death. Having arranged this important matter, let it be understood, that whatever observations we now make, are addressed to those who *have* been fortunate enough to succeed in detecting the fœtal heart. Seriously speaking, however, we do look upon it, that to pronounce upon the death of the fœtus ought not to be attempted, unless by those who have paid sufficient attention to auscultation in midwifery. Where it becomes an object with us, to form an opinion in these cases, it is better that we should examine our patient occasionally,

if possible, during the child's life, and satisfy ourselves of the presence of the heart's action and *souffle;* then, when we come to examine after the child's death, our conclusions will be the more easily and satisfactorily arrived at. This, however, is not always possible, and it is less likely to be so in the cases we are at present treating of, than in cases of labour. We must therefore, be the more slow in arriving at conclusions. As a general rule we would say, that in no case are we justified in pronouncing the child to be dead upon one examination. We must repeat it again and again, before we form our conclusion. Did we neglect this precaution, particularly in the early months of pregnancy, when the child's heart is so weak, and placed perhaps at a distance from the point of examination, with a quantity of liquor amnii surrounding it, it is very likely, indeed, that it might escape our observation. Change of position on the part of the fœtus, which is so likely also at this period, may influence our succeeding or failing in hearing it at different times.

Every part of the abdominal tumour must be explored again and again without discovering the fœtal pulsation, before we are justified in inferring its death. The indication derived from the fœtus of its death we then deem to be the want of the heart's action, when the patient has been examined carefully, according to the preceding rules, always provided the pregnancy be sufficiently advanced to warrant our detecting this sign without difficulty. It will now be asked, does not the placental sound also cease on the child's death, and will not its cessation assist us in arriving at an accurate diagnosis in these cases? The answer is, that, in the majority of cases, when the fœtus is dead, this sound also ceases,

inasmuch as the vessels, in which it was produced, now become impervious to blood. This is not invariably the case, however, as in some the vessels still continue pervious to a certain extent, the blood continuing to pass through the uterine arteries at the placental and lateral part into the various sinuses and veins. Neither does the sound invariably* cease, as we might be led to conclude from Laennec's statement on the authority of Dr. Ollivry, even after delivery, and on the separation and expulsion of the placenta; but, provided the uterine arteries in which it was produced continue pervious to blood, in consequence of imperfect contraction of the uterus, a *souffle* may still remain. The sound emitted in both these cases, however, differs from that observed where the utero-fœtal circulation continues unimpaired. It is observed to be more abrupt, of shorter continuance, wanting its protracted terminating whiz, and generally confined to a circumscribed spot. In some cases it is even little more than a pulsation, such as is observed on applying the instrument over one of the large arteries.

When the placental sound continues after the birth of the child, the uterus is imperfectly contracted; and in an inverse ratio to the degree of contraction will be the extent of calibre of these vessels pervious to blood, and, consequently, the intensity of sound arising from its transmission. In this state of incomplete contraction,

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* In the article "Auscultation," (Cyclopædia of Practical Med.), written by Dr. Forbes, certain views put forward by the author on this subject were unintentionally misrepresented, and others misappropriated; however, as Dr. Forbes has himself in so fair and candid a manner admitted and corrected these errors in a note appended to the article "Pregnancy," (Part xvii. p. 485 of the above work), we deem it unnecessary to enter farther into the matter here.

there is an actual closing up of the smaller vessels, or obstruction to the passage of blood through them, whilst there is a diminution of calibre in the larger ones, by which means is lessened the quantity of blood transmitted, and the number of conduits it has to pervade, and of course the intensity of the phenomenon depending on these. Again, the perfect contraction of the uterus so completely compresses the system of vessels, as to render them impervious, and thus the cause (the circulation) being removed, the *souffle* ceases. A similar effect, but somewhat differently produced, is observed in the case of dead children. There the circulation may be either altogether or partially obstructed, without the uterine contraction, and consequently, either a total cessation or an alteration of the sound be the result. Cases illustrating these varieties in degree of contraction and obstruction in the utero-placental circulation, and their connexion with the phenomena of hemorrhage and after-pains, in both which cases a more or less modified *souffle* is occasionally observed, have been given in the author's paper alluded to in the fifth volume of the Dublin Hospital Reports; they are not therefore here repeated. Cases occasionally occur, however, in which the utero-placental circulation appears to be kept up very freely for some time after the death of the fœtus; and whilst this is the case, the *souffle* neither ceases, nor is it observed so completely altered in its character.

[Dr. Hohl differs from our author, and has stated that the uterine sound ceases after the death of the child; one case in particular, which may be adduced in support of an opposite opinion, and we think, corroborated by the fact that in many cases of premature births, the placenta has retained its connection to the uterus some time after the expulsion of the fœtus.

A. M. had secondary syphilis, and, as she supposed, five months advanced in gestation; on examination, the uterine souffle was easily detected on the left side, and the fœtal heart on the right, though very feeble; one week after this the same phenomenon occurred, but on the third visit, a week after the last, the heart was not perceived, but the souffle was; supposing that the difficulty, in not hearing the fœtal pulsation, was owing to my haste in the examination, when the fourth time she presented herself at the same interval of time, no fœtal pulsation was audible, and the souffle being of a weak character, inclined me to the opinion the child was dead. Three weeks after this the patient returned, and informed me she had miscarried, a few days after the fourth visit, so that the child might have been dead sixty days when the last souffle was heard. M. Nagele says this sound continues for some time after the death of the child in utero, and that it does not suffer much change in its strength, and that, when the fœtus, "together with the membranes and the umbilical cord were far advanced in decomposition, in which, too, even the membranous covering of the placenta was green, and easily torn, while that organ itself was of a bright red colour, and presented no trace of having lost its vitality."

An exceedingly interesting case, recorded by Samuel Hare, Esq., where there was a thick fœtid, slimy, greenish discharge, rolling from side to side of a dead heavy weight, a sensation of coldness and numbness down the left side, shivering, languor, and debility, and something like pieces of flesh passed from the female, and from which symptoms four physicians had decided that the child was dead, and had been dead for some time; when, on the 15th of October, after a natural labour, a fine, strong, healthy child was born. Auscultation had not been resorted to in this case, for if it had, such a serious mistake could not have been made. (Prov. Med. Journal, Mar. 5, 1842.)

If we examine the placenta in such, we shall generally find at least its maternal portion loaded with fluid blood, even although the fœtus may afford proofs of its having been dead for some time. That which constitutes the most perfect *souffle* is the free and unobstructed

transmission of blood through the uterine vessels. The integrity of the placento-fœtal circulation, although it insures the most perfect *souffle*, would only appear to do so by the placenta's promoting the action of the uterine arteries, as a very free and natural *souffle* is to be observed in cases of hemorrhage into the uterus, after the expulsion of the placenta, and when this organ could of course have no effect in its production.

We elsewhere mentioned that the placental sound in a very few cases could not be detected, and also, that it sometimes, after having been heard, ceased for a period. In a few cases, we have even observed the *souffle* to assume the pulsatile character, although the child was alive, but this is mostly during uterine action.

From all these considerations, then, it will be seen that any assistance we obtain from this phenomenon, in forming an opinion as to the death of the child, must be received with great caution, and only as corroborating the indications afforded by the fœtal heart; and this we deem the more necessary to impress upon the minds of our readers, as we were, through some misapprehension, supposed formerly to have put forth the changes observed in the *souffle* as constituting, in themselves, a sufficient test upon which to decide on the child's death, than which nothing could have been further from our intention.

We shall now instance a few of those cases in which the fœtus was, by stethoscopic assistance, pronounced dead during pregnancy.

Feb. 12, 1830. The wife of a coach-maker, about eight months pregnant, called upon me, being alarmed at the supposed death of her child. She had frequently felt its motions up to the fortnight preceding, but not

since. Experienced no other symptoms of the child's death. Is in perfect health, her breasts full and tense. Dr. Whitestone assisted me in examining her with the stethoscope, and upon repeated investigation, neither of us could detect the fœtal heart, but an abrupt and circumscribed pulsatile *souffle* was observable low down and at the right side. This woman was delivered of a dead, shrivelled, and putrid child, three days after our examining her.

Sept. 2, 1830. I was called to see Mrs. ——— in Mecklenburg-street, who was suffering from deranged digestion. Suspecting pregnancy in this case, the stethoscope was applied, when a distinct fœtal heart and *souffle* were detected, and to her great astonishment I pronounced her pregnant, a circumstance that she had not the slightest suspicion of. She appeared to be in about the fifth month.

I did not see her again until the 13th of October, when she sent for me in consequence of a discharge of liquor amnii. About ten days previously she had been very much alarmed from her husband having met with a serious accident, since which time she had been complaining. Having placed her in bed, the stethoscope was applied, and upon the strictest scrutiny neither fœtal heart nor *souffle* could be detected. I, therefore, had little doubt of the child's death. She was delivered in the course of the night of a fœtus at about the seventh month, which exhibited all the appearance of having been for some days dead. There was scarcely a drop of blood discharged in this case, the fœto-placental circulation having in all likelihood been obstructed for some time before her confinement.

Many similar cases, observed by the author, could be

here adduced, but it is deemed more satisfactory to give those that have occurred in the practice of others. Dr. W. Stokes, whose acute stethoscopic discrimination is so well known to the professional public, was requested to furnish the author with the result of his observation on this subject, which he was good enough to do in the following letter:—

50, York-street, June 29, 1833.

Dear Sir,

In answer to your inquiries, I beg to inform you, that, on two occasions under my observation the cessation of the sounds of the fœtal heart was followed by the birth of a dead child. Both these cases occurred in the Meath Hospital, during the last epidemic fever, with which disease both the mothers had been attacked, and under which they were labouring at the time of delivery. I regret much that I did not preserve accurate notes of these cases; but I have a distinct recollection, that in both instances we heard the fœtal pulsations for several days, and in one of the patients in a great variety of positions.

In one case, I think for two days before delivery, the sounds could not be detected, and the woman was delivered of a still-born fœtus, apparently between the sixth and seventh month.

In the other case, three days before birth, I gave it as my opinion that the child was dead. This was the case in which we had heard the fœtal heart in such a variety of positions. I think four days elapsed between the cessation of the sounds and the delivery, and the child, which was fully eight months old, was of a very dark livid colour. I have no doubt that, with due precaution, the death of the fœtus in utero can be often dis-

covered by the use of mediate auscultation. * *
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I remain, dear Sir, your very obedient,
WILLIAM STOKES.

To Evory Kennedy, Esq., M.D.

M. Kergaradec* reports the case of a lady who, in the course of the month of September, 1821, was examined by him and Dr. Breheret. She was nearly at her full time, but was suffering very much from disease, and appeared to have only a few hours to live. They detected in this case the placental sound (*les battemens simples avec souffle*,) but it was impossible to find those of the fœtus. Two days after, this poor woman was delivered of an infant nearly putrefied.

M. De Lens† reports the case of a lady he had examined with the stethoscope on the 10th of July, in the seventh month of pregnancy, in whom he detected the fœtal heart, which was remarkably weak. Some days afterwards he discovered the placental sound, also weak. He examined this patient several times again, without detecting the fœtal heart, but once discovered the *souffle*, very feeble, and only perceptible at a small circumscribed spot. This patient was delivered on the 28th of February of an hydrocephalic infant, which had evidently been dead for some time; the placenta, on the contrary, exhibited its natural appearance.

We deem the preceding cases quite satisfactory in illustrating the accuracy of diagnosis to be arrived at by auscultation, in pronouncing upon the life or death of the fœtus, throughout the progress of pregnancy.

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* Op. Cit. p. 13. † Ib. p. 44.

We shall now turn to the consideration of the usual or popular evidences of the life or death of the child *in labour*, as at present relied upon.

If it be a matter of consequence with us to ascertain whether the child be alive or dead during the progress of pregnancy, how much more does* it become so in labour, when an accurate knowledge on this subject is calculated to afford us such assistance in our practice?

There are those, however, who assert, that the power of discrimination in these cases is of no importance. In support of this assertion has been adduced an equivocal expression of Dr. Burns, in which, after stating the insufficiency of the present tests to enable us to pronounce on this subject, he remarks, that this is not much to be regretted, as we do not operate because the child is dead, but because it is impossible for the woman to be otherwise delivered. Now, although we fully admit the force of authority in points involved in doubt and difficulty, we with diffidence submit that the authority of a name, unsupported by more convincing arguments or reasoning, will command but little of our attention when brought into competition with facts substantiated by observation and experience. In the former case, we pin our faith upon the *ipse dixit* of another, who may or may not have sufficiently directed his attention to the subject; in the latter, we examine and judge for ourselves. But let us even suppose ourselves incapable of judging on this subject; if we look to the authority of the most esteemed authors, we shall find the importance they place upon

* Cependant, de tout temps les accoucheurs ont connu que l'etude des phénomènes qui attestent si l'enfant qui vient de naitre est vivant ou mort, mérite la plus grande attention, et n'ont rien négligé pour dissiper ces doutes.—*Gardien*, tom. iii. p. 2.

our being able to pronounce on the life or death of the child during labour.

Dr. Denman, than whom there could not be a more cautious practitioner, remarks, that 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 this operation, which he might otherwise defer.—Vol. ii. p. 177.

Dr. Clarke, (Lond. Prac. of Mid., p. 196,) dwells upon the satisfaction which it is to us to know whether the child is alive or dead. Its due importance is also attached to it by Mauriceau, p. 176; Beck, Med. Jurisp., p. 108; Merriman; Gardien, tom. iii., p. 2; Ould, p. 80; Baudelocque l'Art des Accouchemens, p. 154, and almost all authors who have written systems of midwifery.

Dr. Dewees' opinion, however, is so clear upon this subject, that we cannot avoid quoting it at length; he says, "in many instances it would be highly important to us, did we with certainty know that the child was dead in utero. It would often abridge the sufferings of the poor woman, and sometimes spare the accoucheur many a deep drawn sigh, or even, perhaps, appease a disturbed conscience; but this is a matter of great difficulty, as well as oftentimes of great moment, to decide."—*Dewees' Midwifery*, p. 613.

How frequently have children been destroyed, or dragged mutilated into the world, by the practitioner acting upon the supposition that the child was dead, and having recourse to instruments of destruction,* when, but for

* Many lamentable instances are recorded of infants who have been craniotomized, and yet born alive by the natural passages.—*Ryan's Midwifery*, p. 282. Aussi plusieurs exemples aprennent qu'il

this error in prognosis, the forceps or lever might have been used with safety, and the child's life preserved? On the contrary, how often have practitioners fallen into the opposite error, and had recourse to the forceps or lever, to the imminent risk, nay, in some cases, to the certain destruction, of the parent, with a view to preserve the child's life, when it was already dead. Again, in what a much greater proportion of cases than either of the former has the more cautious practice of trusting to the natural efforts, with a view to preserve the lives of both mother and child, been blindly had recourse to, and in this way, the practitioner vainly sat by the bed-side of his patient for hours, or even days, after its death, expecting the birth of a living child, until at length the life of the mother has also in many cases fallen a sacrifice to this unavailing and mischievous delay, when timely interference might have preserved her, and could have been attended with no injury to the innocent cause of her destruction. It is far from intended in these observations to recommend temerity, or unnecessary interference in midwifery practice. Our rule and guide as to the necessity of interference must, whether the child be alive or dead, be the state of the mother. Yet every practitioner, however strictly he adheres to this rule, must see the advantage to be gained by possessing the knowledge here insisted upon, and admit that, although the state and safety of the mother is his first

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est quelquefois arrivé à des accoucheurs de se tromper sur l'état des enfans, et d'appliquer seur eux des crotchets, parce que des apparences assez bien fondées les portaient à les regarder comme mort, quoique, aprés avoir été arrachés du sein de leur mère, ils aient encore pu agite leurs membres et pousser même des gémissemens.—*Gardien*, tom. iii. p. 2. See also Dublin Med. Trans., N. S., vol. i., p. 54.

consideration, that a period of some, nay, oftentimes many hours, will elapse, in which, were he satisfied of the death of the child, he would not delay a moment in effecting the delivery; and thus the life of many a mother, whose loss creates a chasm in society, might, without detriment to her already lifeless offspring, be preserved.

The causes of the death of a child in labour are various. It is not absolutely necessary that the labour should be tedious or laborious to produce this effect; if the child be so situated that the vital functions are necessarily interfered with for a sufficient length of time, death follows as a matter of course; mal-position of the child and pressure in its passage are the most frequent causes of this. The pressure may be either upon the chest, the head, or the funis. Of these, the most dangerous, because most immediately destructive, is the last; and in this way, many children are destroyed before the true nature of the case is suspected. Where, however, the child is destroyed by pressure upon its chest or head, there is generally a mechanical disproportion between these and the pelvis, or they are not properly adapted to each other. These are generally cases of tedious or laborious labour, and such as may require the assistance of art to complete them. Where there is mal-position, and thus the chest forced in a distorted form into the pelvis, and subject to extreme pressure, or grasped violently by the uterus, then the action of the heart may be so embarrassed as to destroy the child. This, however, is comparatively a rare cause of its death. A much more frequent one is the injury sustained by the head in its passage through the pelvis; as this, when it is violent or long continued, reacts

through the brain upon the heart, and thus destroys the child. It is truly astonishing, however, the degree of pressure the fœtal head will often support before the child is in this way destroyed.

The highly interesting experiments and observations of M. Merat (Dict. des Sciences Medicales, vol. v. p. 452,) will, we conceive, account for this fact. They prove the comparatively more perfect inherent vitality of the heart, the more nearly the animal approaches the state of fœtal existence, and also its decreased dependance on the nervous system. From a number of experiments made by this gentleman on rabbits, the facts he arrived at were, that on the excision of the heart from the body in two animals, one 1 day old, and one 30 days old, the sensibility of the heart in the former continued for fourteen minutes, while that of the latter was only observed for one minute after its excision. He also found, that the gaping (*baillements*) of the heart in the first continued evident for twenty minutes, whilst in the last it continued only for one minute and a third. In addition to this, he observed, that the destruction of the lumbar portion of the spinal marrow, in the first days after birth, did not suffice to arrest the circulation, but that when twenty days or so had elapsed, this almost always arrested it.

The conclusions which we would draw from these interesting facts, are, that the heart's action in the fœtus, and of course the circulation, on the well being of which fœtal existence more immediately depends, are much less under the influence or more independent of the brain and nervous system than are those in the adult or child. And this would appear to be another of those wise and beneficent provisions in our original conforma-

tion, with so many of which the animal structure abounds, as we know how much more precarious would be the life of the young, were a weak system, such as its is, subject to the effect which an acute and susceptible nervous organization would impart. How much frequently would nature, by so gifting it, have frustrated her intentions expressed in the divine law, "increase and multiply," were the circulation in them to be easily checked by the functions of the brain and nervous system being impaired? And even, with this provision, do we not too often observe infants destroyed by the pressure on the head during the process of parturition?

Those mentioned are not, however, the only means by which the death of the child may be produced during labour. Very profuse hemorrhage at this period, separation of the placenta from the uterus before birth of the child, as in cases where this organ is attached to the *os* or *cervix uteri*, convulsions on the part of the mother, and a variety of inherent causes acting on the fœtus itself which are beyond our control, as well as all those causes already dwelt upon as destroying it in the course of pregnancy, may now produce the same effect.

Certain of the symptoms mentioned as evidencing the life or death of the fœtus throughout pregnancy are looked upon as applicable at the time of labour also; these it will be unnecessary to recapitulate here; we shall, therefore, merely briefly notice one or two of them, and pass to those additional ones more immediately relied upon as indicating the state of the child in labour.

The falling of the abdomen from side to side is adduced as a proof of the child's death during labour; but, little as it is to be relied upon in the preceding case,

it is even less so in this, as we now have a fresh cause for deception in this respect.

The waters being evacuated, the uterus contracts* over the body of the child; but the parietes and integuments of the abdomen not always contracting in the same proportion, a motion of the uterus within the abdominal cavity may be permitted, which will be evident on change of position; from this circumstance, then, may erroneously be inferred the child's death.

The active motions of the child in labour are relied upon, and naturally, as proving its life; while from their absence at this period, it is often improperly† supposed to be dead. Now, if it be possible that deception should occur with regard to the motions of the child during pregnancy, it is even more likely to do so in labour, when we have uterine action to lead both the female and the examiner astray.

The contraction of the uterus not merely conceals and prevents our detecting the fœtal movements but, by firmly grasping the child, it may actually preclude its moving at all; and, if the labour be continued sufficiently long, the child, although it still shall live, may suffer so much as to be incapable of motion. Upon the statements of patients themselves, under these circumstances, sometimes very little reliance can be placed, as, to use the words of Denman,‡ "in long and severe labours natural affection may be overcome by present sufferings and distress, and women might conceal their knowledge of the motion of the child from the hope of a more speedy delivery." Be this as it may, every day's

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* Denman's Midwifery, vol. p. 180.

† Smellie's Cases, vol. ii. p. 54. ‡ Vol. ii. p. 182.

experience must satisfy us of the insufficiency of reputed fœtal movements as a test of the life, or their absence, of the death of the child; as, again and again, women are delivered of dead putrid children, who have vehemently asserted that they had felt them move immediately before birth, whilst others bring forth living and healthy children who had as confidently anticipated their death, and denied having felt them move for days, weeks, or even months before.

A very commonly reputed sign of the child's death is the escape of a fœtid discharge, it being inferred that, upon the child's death, putrefaction immediately sets in, producing the discharge and fœtor in question. This, as a general inference, is quite incorrect, as is the position from which it is drawn. Children will remain for weeks and months in the womb without the putrefactive process setting in. It is by no means a very uncommon thing to observe one of the children, in a case of twins, die at an early stage of pregnancy, and remain for months unaffected by any putrefactive change, until the other has arrived at maturity. We feel quite confident that the term putrefaction is much too indiscriminately applied to dead-born children, and that often the changes which we ascribe to this chemical cause are rather the product of morbid or imperfect vital actions. We are led to form this conclusion from having had undoubted evidence of the child's being alive, immediately before birth, in some of those cases pronounced as putrid children; and we even met with one case in which the child was not only born alive, but survived its birth several hours, evincing appearances that by many would have been denominated putrescent. This child had a livid discolouration of the whole body, with extreme

thickening and infiltration of the funis, and a complete denudation of the cuticle to the extent of several square inches from different parts of the surface, and the remainder of it was so easily separable as to be removed by the friction of its clothing, in spite of the greatest caution the nurse could adopt.

The cases in which the altered* or fœtid discharge ascribed to the putrefactive process sets in, are principally those of long continued labour, and in such it is by no means necessary† that the child should be dead to allow of this, as there is then no want of material to admit of the active operation of this chemical change, independent of a dead child. Have we not abundance of animal matter in the accumulated animal and other vitiated secretions of the uterus and vagina at this period, which, with the two great excitements to this process, heat and moisture, admit of the development of a rapid putrefactive fermentation in them, giving rise to the tainted and overcoming effluvia with which the atmosphere of the lying-in chamber is, in cases of tedious labour, so often loaded ?

We shall presently instance cases illustrative of the mischief likely to result from taking this, as well as the other signs mentioned, in evidence of a child's death. In

* 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 of 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 cases been so little changed, as not to raise any suspicion in the minds of very experienced men.—*Denman*, vol. ii. p. 185.

† See Mauriceau's Obs. tom. ii. p. 232. Also, Burns' Mid., p. 464, 8th edit.

the mean time, let us consider some others still held in repute in this respect.

The discharge of meconium pending labour, in cases where the head presents, is dwelt upon by some as proving the death of the child.* But its palpable insufficiency in this respect has been so well pointed out by Dr. Denman,† and indeed must be so obvious to every practical man, that it is deemed unnecessary to dwell upon it here, further than to state, that it merits no confidence whatever, as a proof of the death of the fœtus.

Much reliance is placed by some authors on the state of the fœtal head, or the change which it undergoes during the progress of a labour, as indicating the child's vitality. We know, that when the labour becomes protracted, a swelling takes place in the most prominent or presenting part of the head of the child ; the circulation in this part being impeded by the continued pressure undergone from the uterus, and the pelvis, when infiltration of a limphy, and sometimes even of a sanious fluid takes place to a considerable extent. This occurrence then is very properly looked upon as the effect of a vital action, and the inference deduced from it is, that it is a proof of the child's being alive. Let us, however, examine this matter a little more closely, and see, whether we are warranted, as some would assume, in making this a criterion, by which we may with consi-

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* Mais quand ces eaux ont avec ce couleurs étranges une odeur cadavéreuse comme de chair pourrie, l'enfant pour lors est *vraysemblablement* mort. Je dis *vraysembablement*, et non pas *veritablement;* car quelquefois la mauvaise oudeur et la couleur étrange de ces eaux procedent seulement de la corruption de quelque caillot de sang, comme j'ay dit, et du *meconium* de l'enfant dissou dans ces mêmes eaux —*Ouvres de Mauriceau*, Paris, MDCCXI. t. i. p. 278.

† Vol. ii. p. 185.

derable certainty pronounce on the life or death of the fœtus. Let us recollect, that we are seldom called at an early stage of a tedious labour, to pronounce upon the life or death of a child, but in an advanced stage ; now, the child very rarely dies in early stage, therefore, there is ample time in most cases for the tumour in question to form, before the death of the child. Is it then absorbed afterwards ? certainly not. There is no diminution of bulk, that we are aware of, after the death of the child. Thus we see that the tumour in question is not unfrequently met with when the child is dead. Was the child always dead before labour's setting in, and did this tumour not appear in the progress of the labour, there would be more apparent reason for depending upon this sign, but even then it would be far from infallible, as we occasionally meet with cases of labour, nay, even considerably protracted labour, in which the child is alive, and the head nearly free from tumour. As a criterion generally applicable, then, we must enter our most decided protest against this sign. The head, however, occasionally undergoes other changes, which may afford us more assistance in arriving at the information we require. When the child has been for some time dead, the presenting part of the scalp becomes emphesematous, as is supposed from the effect of putrefaction, and then, on a vaginal examination, a crepitus is observed. This state has not, that we are aware of, been met with unless in dead children, but in them it is not invariably to be detected, nor is it generally observed until a considerable time after the death of the child. The bones of the head also become separated, and apparently hanging loose in the integuments, giving the feel, as it has been aptly enough described, of a bag of shells.

When this change takes place, there can be very little doubt that the child is dead. It is more frequently met with in cases of putrid children, who have been for a length of time dead in the womb; and a similar phenomenon is observed in cases of hydrocephalic children, but in these we have a bag containing a fluid as well as bones, and which has been frequently mistaken for the membranes distended with the liquor amnii. Where we meet with cases in which the crepitating scalp, or the separating and floating bones are observed, taking care that we do not confound them with mere tumour of the cranium, or the ordinary overlapping of the bones so frequently observed in living children, we shall have much assistance in pronouncing on the death of the fœtus. We have already mentioned, that when the child dies in labour, as it requires time to effect these changes, we cannot expect to observe them for some time after its death; so that they cannot become immediately available, as signs of the death of a child occurring in the progress of a tedious or protracted labour, and, did we in all cases await their occurrence, to guide us in our practice, our interference would often prove unavailing indeed. The separation of the cuticle is dwelt upon as affording us assistance in our diagnosis. This, provided we do not confound with it abrasion of the skin, either the effect of long continued pressure, or of this combined with frequent rough manual examinations on the part of the attendant, is a sign worth attending to; at the same time, it is not infallible, as may be learned from the case mentioned in page 257. Where it is observed in dead children, the cuticle separates upon the least touch, and is not the effect of force or violence. The want of pulsation in the fontanelle, dwelt upon by most authors

as a proof of the child's death, is in a practical point of view quite unavailing; the fontanelle is not always to be felt, and when it is, the pulsation is but seldom to be distinguished satisfactorily, although there may be ample proof of the child's being alive. It is stated, that the arm becoming swollen, and purple, from vascular obstruction, in cases of arm presentation, is a proof of the child's being alive. Now it is certainly, as was observed in tumour on the scalp, so far a proof of its vitality, as, that the child must have been alive when the swelling took place, but it is no proof whatever of its continued vitality; the child being even more likely to die after this change, than before it. On the other hand, every practitioner must have met with cases of arm presentation, in which neither lividity nor swelling of the arm occurred, the child being so placed, that the circulation in the limb was little interfered with. By some, a livid discoloration of the arm or other protruding part of the fœtus, with coldness, and appearance of gangrene in it, has been esteemed as a proof of its death. These changes may occur, and do so frequently, and yet the child lives and survives its birth. Vic. D'Azyr mentions a case occurring at Breslaw, strongly illustrative of the futility of this test. It was that of a female in labour, in whom the arm of the infant protruded from the uterus; in consequence of its coldness and lividity, it was pronounced gangrenous, and was amputated. In spite of which mischievous treatment, the infant was born alive *three days* after. Foderê, vol. ii. p. 91. Similar cases are elsewhere recorded.

Rarely, indeed, does it become a matter of much importance with us, pronouncing on the life of the child in arm presentation, unless we see our patients very late

in labour, or mismanage them ; as, the same indication, namely, turning, holds, whether the child be alive or dead ; but, should it be an object with us to ascertain in these cases, we may often arrive at this knowledge, by simply feeling its pulse, pressing the arm slightly up at the moment, and endeavouring to relieve the artery as much as possible from tension, or pressure, and when we cannot succeed in this way, we may sometimes feel the pulsation of the heart, by insinuating the finger along the arm to the chest.

There may be sufficiently accurate proof afforded of the life of the child in breech presentations, by the contraction of the sphincter ani on the insinuated finger ; and, in face presentations, by the action of the tongue or closing of the jaw upon the finger, when we can succeed in introducing it into the mouth. These cases constitute but a small proportion of those, in which, forming an accurate diagnosis is of importance ; and it is a very questionable matter, whether we could even in such, pronounce a child dead from the want or absence of this muscular action, which may possibly depend upon want of excitability to stimulus, whilst the child is still alive, and exhibits other evident proofs of vitality.

The most certain of the signs of the life or death of the fœtus at present relied upon, is undoubtedly the presence or absence of pulsation in the funis, where this is accessible to our examination. It is scarcely necessary to mention, that when the funis pulsates the child is alive, and when the pulsation is absent the child is dead. In saying this, it is not meant to infer, that the funis may not cease to pulsate, and yet the child live, and even be born alive. A temporary cessation or suspension of pulsation in this organ may occur from pressure,

as in labour pains, or from certain positions of the child or funis during delivery, and, on the removal of this, the pulsation may re-commence, and the child live and survive. We are not, therefore, warranted in inferring from the mere absence of pulsation, upon a momentary examination of the funis, that the circulation has altogether stopped in it, but by continuing our examination for some time, and observing whether the cord is subject to pressure, which we can, by changing its position, remove, we are to ascertain accurately, whether the pulsation has ceased altogether, or is merely suspended.

The following case, which occurred four years since, is strongly illustrative of the necessity of attending to this circumstance. I was called to a patient in Britain-street, in advanced labour, with the funis protruding; the face was in the hollow of sacrum, and the external parts not satisfactorily dilated: her pains were insignificant, and producing little effect. The midwife informed me, that there was no pulsation in the funis, which had been protruding for an hour: on examination made during a pain, a fold of the funis was found protruding from the vagina, at its lateral part, and devoid of pulsation. As the pain subsided, I drew the funis backwards towards the sacro-iliac symphisis, and thought I could observe a very indistinct and irregular pulsation; I now applied the stethoscope, and distinguished a slight fœtal pulsation over the pubis. Fortunately, on learning the nature of the case, I had brought the forceps, which were now instantly applied, and the patient delivered of a still-born child, which, with perseverance, was brought to breathe, and is now a living and healthy boy, four years of age. Had I not in this case ascertained by the means mentioned, that the child still lived, I should not

have felt justified in interfering, but supposing the child dead, would have left the case to nature, and five minutes in all likelihood would have decided the child's fate.

The last method of detecting the vitality of the fœtus, is that afforded by auscultation ; and having already dwelt so largely upon this, we shall treat of it here as briefly as possible. Before commencing this subject, let it be distinctly understood, that we are not broaching any new or dangerous doctrine, which may, if acted upon, urge individuals to a rash, unnecessary, or even guilty interference. We are merely drawing attention to an additional diagnostic means, that may assist us in arriving at accurate conclusions on one of the acknowledged most doubtful points in practice, and one, in which the majority of the soundest and most cautious writers and practitioners have agreed, that more accurate information would be a great desideratum. Practitioners in midwifery have been heretofore relying, more or less, in their practice, upon a set of signs confessedly futile and unworthy of dependence : why should they now refuse the assistance to be afforded by a method recommended by such as have had ample proof of its efficacy ? In saying so much, it is scarcely necessary for us to put the young practitioner upon his guard, not to be led to suppose, that the mere fact of his ascertaining the child to be dead in utero, is sufficient cause for interference, or having recourse to destructive instruments. Were this the tenor of our observations, we should deem ourselves as justly meriting every censure that an indignant profession could heap upon us. We equally disclaim the purport of these observations to be, the inducing individuals to withhold that distressing, but unfortunately, occasionally too necessary, interference, which is incom-

patible with the child's safety, when such is our only alternative, merely because we have proof of the child's vitality.

The pronouncing upon the time for interference, and the means of effecting this, have always been looked upon as a trying and embarrassing duty, by even the most experienced accoucheurs; any thing that tends, even in a remote degree, to afford the practitioner further and more satisfactory data to assist him in these painful cases, must be of importance.

[M. le Docteur Bodson, in his memoir to the Academie Royale de Médecine, having for its title, "De l'Auscultation appliquée à la pratique des accoucheurs," not only thinks that it will make the diagnosis easy, and inform us of the life or death of the fœtus, but that we shall be able to judge of the vigour or the fulness of the fœtus, and that the most interesting to study is the sufferance of the fœtus. This author gives as sign of the sufferance of the fœtus, or its being "in articulo mortis," the feebleness and smallness of the pulse, the excessive frequency of the pulsations, the intermittent and irregularity in their rhythm, the complete cessation of the phenomenon during the uterine contraction; and the slowness of its return when the contraction is passing off, giving evidence of the trying and precarious state of the child, and that then it is a positive indication to interfere. and warns the physicians to adopt such measures, as are compatible, to save the infant from the imminent danger that threatens it. It is, however, necessary to bear in mind that the integrity of the intra uterine life will not establish the extra uterine life, and the fœtal pulsations may be at its birth regular and strong, though the child may have suffered a severe labour, still the respiration cannot be established. This, however, is an exception.]

Let us now inquire what are the points to be attended to, in order to arrive at the most accurate information on this subject, by the assistance of auscultation; and first, as to the position in which the fœtal heart's action

will be detected. We would naturally expect, that as the fœtus changes its position, pending and during the progress of a labour, so would the situation of the sound. For some days before labour setting in, it is a well known fact, that the abdominal tumour descends, the uterus falling more into the axis of the inlet to the pelvis, the head of the child resting, at the commencement of labour, directly at the upper pelvic aperture. At this time the action of the child's heart is to be observed generally, most distinctly at the side to which the body is placed, and opposite to that where the limbs are to be felt. It is usually somewhat lower down than during pregnancy, and is often observed to spread completely across the lower part of the abdominal tumour, being occasionally detected at the other side.

When labour sets in, the uterus still descending a little, the pulsation will be lower, and heard over a more or less extensive surface, as the head adapts itself to the different measurements of the pelvis, and the fœtus assumes a more or less oblique position. As the labour advances, the pulsation is observed lower, until at length, in some cases, it is perceptible only at a spot, immediately over the ramis of the pubis. The head now becoming engaged in the lower strait, the face gets into the hollow of the sacrum, when the back of the child comes gradually in contact with the parietes of the abdomen; and now we have the pulsation, although it may have been previously confined entirely to one side, generally extending completely across the pubic, and often heard in each iliac region; where we may observe it even when the head is pressing on the perineum.

This is the state of the case in ordinary pregnancies, where the head presents in its most natural manner,

namely, with the occiput towards the arch of the pubis, the face being towards the sacrum. When the face is turned towards the pubis, we observe nearly the same phenomena. In the latter stages of labour, the pulsation extends in a similar manner over the pubis, the breast in this case applying itself to the abdominal parietes, as we observed the back to do in the former case. When the face is the most depending, or as it is termed, the presenting part, we cannot in general observe the fœtal pulsation so distinctly: at least such was the result in two cases of the kind which we explored. This may depend a good deal on whether it is the mento-sacral, or mento-pubic presentation. In the cases in which we observed it, the chin of the child was towards the sacrum, which caused the body of it to be pressed from the walls of the abdomen against the spine, thus rendering the pulsation less distinct: whether the same circumstance would be observed in the reverse position, is questionable; as in that case, the chest of the child would be pressed against the abdominal parietes, and *from* the spine; thus bringing the child's heart into more immediate contact with the former. In presentations of the vertex, the sound was heard much as when the occiput presented, and generally over rather a greater extent of surface: whether this arose from the position, or that the action of the child's heart was here more laboured, it is difficult to say.

From the cases of arm presentation, which have hitherto been submitted to stethoscopic examination, we should not deem ourselves justified in arriving at any general conclusion, as to the position in which the fœtal heart should, in such, be audible. In cases of breech presentation, the fœtal heart's action is observed

higher up, and according to the state of advancement of labour at the time of applying the stethoscope, above or below the umbilicus. During the progress of pregnancy, and when the breech is resting at the superior strait of the pelvis, the pulsation is generally perceptible above the umbilicus, and at the right or left side according to the child's position. *Plate III. Fig.* 3, will serve to illustrate this fact. In most of the preceding cases, the placenta is attached lower down in the uterus, and its *souffle* is in a considerable proportion audible at one or other side, and not unfrequently at both. We have not the heart's action at the ramus of the pubis in breech presentation, as we have in cases where the head presents; although there is occasionally a pulsation to be met there also. When the breech presents, with the thighs turned towards the sacro iliac symphisis, as is most frequently the case, the phenomenon of the fœtal pulsation is both more distinct, and more extensive; a circumstance which is easily explained, if we consider for one moment the position, which the fœtus then occupies, with regard to the abdomen of the mother. In this position, in proportion as the thighs and belly of the fœtus approach more or less to the sacrum and spine of the mother, will its back come in contact with the abdominal parietes, thus offering a substance well calculated to conduct the heart's action, and in fact, bringing the heart nearer the surface for our detection. In the position we speak of, however, the pulsation of the fœtus is sometimes heard extending from two or three inches above the umbilicus, over the whole of the interior part of the abdomen, inclining to one or the other side, according to the position of the back of the fœtus. In this way it sometimes is to be detected

so low as the pubis, and even in the right or left hypogastric region, where we observe the heart's action in cases of head presentation. It is not throughout this space so distinct in its characters, as it is immediately over the part corresponding to the chest of the child, which is in general near the maternal umbilicus, marked in the figures by a circular point. The sound heard below in these cases, may either depend upon the fœtal heart's action being conducted, as we have seen it may be, along the back of the child to the inferior part of the abdomen, or upon the pulsation of the umbilical cord, which may be here situated. In foot and knee presentations, the same observations will pretty nearly apply, with regard to the situation of the fœtal heart, as in cases where the breech is the most depending part.

It is not here intended to propose auscultation as a substitute for vaginal examination in ascertaining the presenting part in labour, as has been suggested; for, although those very conversant with it might, pretty generally, point out the situation of the heart, yet, however accurate we may be in our stethoscopic investigations, we could not arrive at a certain knowledge in all cases by *its* assistance alone. We have already seen, that the sound of the heart is occasionally communicated to a considerable distance, being conducted along the body of the child: in some it would appear to be conveyed even by the abdominal or uterine parietes. In addition to this, the *funis* also communicates a pulsation, equal in frequency to that of the heart; and whatever the position of the child might be, we cannot at all calculate upon what part of the uterine tumour the funis may be situated in. These considerations, together with the experience resulting from a close inquiry into

this subject, satisfy us, that to those who possess only a moderate acquaintance with the use of the stethoscope, pronouncing upon the position of the child, by means of auscultation, is next to impossible: and that even the most expert may not unfrequently be deceived in their attempts to do so. As it is the touch affords us the most certain and satisfactory indication of the child's position; neither need it be objected to, as not giving notice of the presentation sufficiently early; as every man of experience will admit, that he can, in almost all cases, ascertain without difficulty the presenting part in labour, quite as soon as the doing so is a matter of any consequence.

We must be prepared for certain difficulties in exploring in cases of labour, in addition to those already enumerated, as meeting us in ordinary cases. The effect of uterine contraction is first to convert the *souffle* into a pulsation, and eventually to suspend it altogether, whilst the contraction continues, allowing it gradually to return whilst this subsides. The action of the uterus also generally prevents our hearing the fœtal heart. We can, therefore, learn nothing whatever, if we examine during a pain, or while the uterus is in action. The best plan will be to commence immediately after the subsidence of the pain, by which means we shall have the longer time to conduct our examination before the occurrence of the next: however, the mid time between the termination of the last and the commencement of the subsequent pain is the period at which we shall experience least interruption.

The state of the bladder, as to distention or contraction, will affect the distinctness of the sounds. The bladder, from pressure upon its neck in the progress of

labour, is often prevented emptying itself of its contents, when the secretion of urine proceeding, this organ becomes gradually more and more distended, and consequently rises up between the uterus and parietes at the anterior part of the abdomen, forming a tumour more or less circumscribed. This generally only renders the fœtal heart less distinct, but in some cases it actually prevents its being heard, a circumstance that indicates the necessity of using the catheter before pronouncing on the child's death.

We have elsewhere mentioned the mistakes that may arise from the extension of the maternal heart's action into the abdomen, as well as from the pulsation of the abdominal aorta. They shall be only so far alluded to here as to warn the stethoscopist that the likelihood of mistaking these for the fœtal heart is greater in labour than under ordinary circumstances, as now the maternal pulse will in all likelihood be increased in frequency, and approach more to that of the fœtus. He must therefore, be doubly cautious in examining into the distinctive marks already dwelt upon. The heart of the fœtus, however, is also liable to increase in frequency, particularly in tedious labour, which it sometimes does to a very great extent; occasionally as we have seen, it becomes irregular and slower: this is however, more rare. An inconvenience that meets us in some of these cases, is, the contraction of the uterus and abdominal muscles on our touching the abdomen with our hand or the stethoscope. The best plan here is to continue the application of the instrument or hand to the surface during the pain, by which means it ceases to act as a stimulus, the irritable parts underneath becoming accustomed to the application, when, with a little caution and soothing our

patient, who is generally irritable, we shall succeed in making the examination.

From what has preceded, it will be unnecessary to go more at length into a detail of those circumstances in which auscultation will assist us in labour, we shall therefore restrict ourselves at present to mentioning a few of the many cases in which we have experienced proof of its accuracy, and derived benefit from its use at this period.

November, 1832. I was called to Mrs. ——, King-street, reported for twenty-four hours in labour of her second child, under the care of a midwife. The head was found low in the pelvis, and the external parts well dilated. The pains trifling and inefficient. The midwife informed me that the head had made no advance for the last twelve hours. Under these circumstances, the stethoscope was applied, and the fœtal heart and placental *souffle* both detected; an infusion of the ergot of rye (half a drachm to three ounces of water) was administered, which appeared to excite the uterus to a momentary but imperfect contraction. In half an hour the ergot was repeated, but with as little good effect. Four hours more having elapsed, and the head having made no advance, it was determined to bring it down with the forceps. The stethoscope was again applied, when, upon the most careful examinations, no fœtal heart could be detected, and the *souffle* was observed very circumscribed, abrupt, and altered in its character. The husband of the patient was made acquainted with the fact of the child's death previous to applying the forceps. The operation was performed without difficulty, and a child brought into the world, which could not, with our utmost exertions, be brought to exhibit any signs of life, al-

though it had evidently been alive at no distant period.

[A prevailing opinion among the members of the profession, respecting the ergot sacrificing the life of the child, has been entertained, but grounded more especially on the belief than the positive evidence of the fact. This is one of those many disputed points that the value of auscultation comes in to relieve the doubts, and establish a certainty respecting the point. There are many who ridicule the idea that it has ever sacrificed the life of any child during labour, but " facts are stubborn things," and such is the positive proof I have had of its deleterious effects I will add the following, and I am fully aware there are some who resort to it when the os uteri is not open to the extent of a shilling. What but fatal consequences can result from such a course of practice ? And where auscultation has not been adopted, they have supposed the child was dead before the ergot was resorted to.

Four cases have been especially noticed, where the child was so large, although they had applied themselves in the first and second position to the superior strait of the pelvis, and the pains were active and protrusive, and the pelvis ample, that the child did not engage in the pelvis ; in each of the cases the fœtal pulsation was strong, and carefully noticed ; deeming the cases to be urgent in their character, consultations on three were held, and it was resolved that as the child was living, the ergot should be given (os uteri fully dilated) to bring the child into the cavity of the pelvis, and if no progress was made, to deliver with the forceps ; in two of the cases, after 20 grs. of the ergot was given, twenty minutes after, its peculiar steady, vice-like action was exhibited, the fœtal pulsation was as high as 120, and examined every five minutes, when the following results were noticed : five minutes 120, ten minutes 110, fifteen minutes 100, twenty minutes 80, twenty-five minutes 65, thirty minutes 40, thirty-five minutes no pulsation, and forty minutes no pulsation. The head had made no descent, when it was concluded, from the negative evidence, that the child was dead, and embryotomy was resorted to. The other three cases were the same as this, but a fifth case, where the ergot was given, forced the child into the cavity of the pelvis, and as the pains were gradually ceasing, and the fœtal pulsation becoming intermitting and feeble, the forceps were introduced,

and the child born asphyxiated, and through care was resuscitated.]

October 8th, 1830. Jane M'Nally was admitted into the hospital in labour of her first child. Some hours after her admission the stethoscope was applied, when the fœtal heart was observed distinctly at a point midway between the symphisis pubis, and umbilicus. The placental *souffle* was equally distinct towards the fundus of the uterus at its anterior part. After an interval of twelve hours, the stethoscope was again applied, when the above sounds were still observable. The labour proceeded very slowly, the head resting for a long time in the pelvis, whilst the soft parts were badly dilated. Twenty hours from the commencement of labour matters continued in the same state, and the stethoscope having been again applied, no fœtal heart could be detected; the placental souffle still continued audible, but much less distinct than before. This woman was afterwards repeatedly examined by Dr. Collins, Dr. Darley, Dr. Cummin, and myself, up to the time of her delivery, which was effected by her own efforts in forty-eight hours from her being taken in labour, but no fœtal heart could be detected; the child was therefore pronounced dead, a prognosis which was verified by the birth of a child, which from its appearance was supposed to have been dead for twenty-four or thirty hours. It is more than probable that it died thus early in the labour from obstructed circulation in the funis, as this organ was observed coiled and twisted several times very tightly round its neck.

The following case will illustrate the assistance to be derived from auscultation in selecting the safest method of delivering our patient :—

Judith Cowley was sent into hospital from the county Meath, where she had been attended for some time by two medical gentlemen. The right arm was found livid and swollen, protruding beyond the parts. Matters had been in this state for at least twelve hours before admission. The stethoscope was repeatedly applied, and no fœtal heart could be detected, but an abrupt and weak *souffle* was perceptible at the left side of the uterine tumour. A free opiate was administered, when an attempt having been made to turn, it was met by such resistance on the part of the uterus, which was firmly contracted over the body of the child, as to render the persisting in this means of delivery very hazardous, lest a rupture of this organ should be produced. The stethoscope having indicated the death of the child, there was less reluctance in having recourse to the perforator and crotchet, which was done, and the child was easily brought down, with perfect safety to the mother. This child evinced marks of being dead for some time; the funis was dark, swollen, and filled with stagnant blood.

Catherine Daly, a sickly looking woman, ætat. 20, was admitted into the hospital in labour of her first child. This patient had, as a girl, suffered from scrofulous disease of the bones of the pelvis, which lasted for some years; states that portions of bone were exfoliated from an opening (now cicatrized) at the posterior part of the left os ilium, near its junction with the sacrum. As this case did not promise very well, she was examined with the stethoscope on admission, and the fœtal heart was distinctly observed over the pubes. The placental *souffle* was also perceptible above and to the right. The labour proceeded, and after twenty-six hours, although the soft parts were all sufficiently dilated, and the pains

strong, the head still rested impacted in the upper strait of the pelvis, where it had been for the last eighteen hours. A large tumour had formed upon it, and there was considerable overlapping of the bones, but no fœtid discharge or other of the ordinary symptoms of the child's death, save want of motion, was observable. The head was so firmly locked in the pelvis, which was evidently contracted, that any attempt with the forceps would have been attended with certain injury to the mother. The abdomen was now explored most carefully both by Dr. Collins and myself, and no fœtal heart could be detected; the placental sound was scarcely perceptible, resembling more a pulsation than a *souffle*. The consideration of the head having remained fixed so long, together with the girl's history, and the disease of her pelvis, removed any hope of delivery by the natural efforts; longer delay, with a view to save the child was useless, whilst every hour's continuance of the labour must have added to the chances of destruction with the patient herself. The head was therefore lessened, and the uterus allowed to empty itself of its contents, which it did in the course of an hour. The child appeared to have been dead for several hours. The result of this case proved, that, although we did not await the setting in of those, often irrecoverably, urgent symptoms, dwelt upon by some as absolutely necessary in all cases before force delivery, we had waited quite long enough, as this patient was attacked with peritonitis, which assumed a very acute form, and the treatment necessary to meet it she could ill bear. It was, however, eventually subdued, and she left the hospital quite well. The conviction on the minds of both Dr. Collins and myself was, that her chance of recovery would have been very poor indeed, had delivery been longer delayed.

Margaret Burns consulted me in November, 1831, under the following circumstances: she had had several dead and putrid children in succession, at various intervals between the seventh and eight months of her pregnancies, which she ascribed to a venereal taint in her own and husband's constitution, they having both been attacked since their marriage with copper coloured eruptions, and other syphilitic affections. Having ascertained that this woman was not pregnant, both she and her husband were put freely under the influence of mercury. Since then they have been in perfect health. She conceived in October, 1832, and carried her child up to June 10th, 1833, when she was taken in labour, which lasted for forty-eight hours, and was visited by me, in company with Dr. Murphy. She was very much impressed with the idea that this child also was dead, and was anxious to be force delivered. On examination with the stethoscope, however, the fœtal heart and placental sound were both detected quite distinctly, although there was copious fœtid discharge, and she had not experienced the child's motions for the last twenty-four hours. The labour proceeding more favourably, she was given to understand that her fears were groundless, and that she would soon be delivered of a living child by her own efforts, a prognosis which was very speedily verified. The child was attacked three days after birth with a vivid venereal eruption, which, spread rapidly over the whole surface of the body; but this has been completely removed by administering half grain doses of calomel each night to the infant, whilst the mother drank freely of decoction of sarsaparilla.

March 28th, 1829. Peggy Gallagher, ætat. 34, was admitted into hospital in labour of her third child.

She had been delivered of her first child with the crotchet, and her second had been dead born, after a very protracted labour, from which she had had a bad recovery. On examination, the pelvis appeared contracted and small; the soft parts were found dilated and membranes ruptured. The head was engaged in the pelvis, where it was locked, but the face had not as yet got into the hollow of the sacrum. The bones of the cranium were very much overlapped, the head seemed to have already suffered from pressure, and there was an elongated tumour upon it. It was reported by the female in attendance on this patient before her admission, that she had been for some days in labour, and that matters had been in their present state for the last fourteen hours. The bladder was very much distended, and the catheter being with some difficulty introduced, about three half pints of deeply coloured urine were drawn off. The stethoscope was now applied, and the fœtal pulsation was discovered at the right side, beating 140 in the minute, while the placental sound was heard at a spot immediately over the ramus of the pubis 84 in the minute, (the rate, of course, of the mother's pulse.) After an interval of eight hours, the head was found to have made no advance, but there was considerable heat of the parts. The maternal pulse and *souffle* had risen to 100 in the minute. Tongue furred and dry, flushing, with much heat of skin, and the urine, which was drawn off in small quantity, was tinged with blood. The fœtal heart distinctly perceptible, 150 in the minute. In twelve hours afterwards the head was little, if at all, advanced; a copious and extremely fœted discharge flowed from the vagina, which was perceptible throughout the whole ward. No fœtal motion had

been observed for several hours by the patient. The maternal pulse 120, but full. Tongue dry, with much flushing, and complains of debility. On introducing the catheter, no water could be drawn off. Under all these circumstances, the probabilities of the patient's getting well of herself were very remote indeed, whilst the symptoms, in the opinion of many, were such as would call for immediate delivery. The forceps here were out of the question from the size of the pelvis (the head being as firmly bound as if in a vice,) and there had been no want whatever of uterine action. The perforator was, then, the only alternative, and before having recourse to it, the stethoscope was again applied by Dr. Collins and myself. The fœtal pulsation was still remarkably distinct, although increased in frequency to about 160. The placental sound was also perceptible. Under these circumstances, it was determined to allow nature to exert her energies for some time longer, watching closely the occurrence of any immediately urgent symptom; and in two hours, this poor woman was, to our infinite satisfaction, naturally delivered of a living girl, who did well. The only inconvenience attending the delay being the slough of a portion of the integuments over the parietal bone of the child, the effect of the protracted pressure.

In this case, then, the child was, by the stethoscope, clearly proved to be alive, although the popular symptoms of its death were present; and the result evinced not only the correctness of this means of diagnosis, but its practical utility in assisting us in cases where the necessity for interference admitted of doubt.

Many similar cases could be adduced, where the advantages resulting from auscultation in diagnosis and

treatment, were abundantly exhibited. This subject has been already insisted upon in the author's paper in the fifth vol. of the Dublin Hospital Reports, where the benefits derived from auscultation in labour cases, in that extensive field for observation, the Dublin Lying-in Hospital, were adverted to. Since then, the advantages arising from a continuance in its application in that institution have been shown in a paper written by Dr. Adams, in a late number of the Dublin Journal. If further proof of its utility be necessary, we are permitted by Dr. Collins, the present Master of this extensive charity, to state, that such shall be contained in a clinical report of his seven years' mastership, preparing at present by this gentleman for the press. In adverting to this work, we cannot avoid availing ourselves of this opportunity, of congratulating the profession upon such an acquisition to obstetric literature ; we have seen this laborious work throughout its progress, and confess ourselves at a loss to say, whether it most demands attention from the extent of observation on which it is founded, the strict candour and analytical accuracy with which it has been conducted, or the talent and industry exhibited in its arrangement.

We have heretofore treated of auscultation as a means of pronouncing on the child's vitality before birth. It may, however, be usefully applied for the same purpose in the new born infant. A considerable proportion of children are still born, in whom, although there is no other evidence of vitality, yet, the heart may continue to act, the child not breathing, but retaining, as it were, its fœtal life. It is not perfectly known how long exactly this kind of anomalous vitality may continue; but as long as there is a probability of its doing so, or as long,

in fact, as there is a remote likelihood of our exciting the heart's action, so long are we bound to persist in our endeavours to attain this object.

Can we always, by means of the fingers applied to the region of the child's heart, ascertain accurately whether it still acts? we cannot; inasmuch as we are very likely to be deceived by the pulsation at the tips of our fingers, and the more particularly so, as in these cases we shall generally have been exciting the digital arteries into increased action, by the means adopted to resuscitate the child, such as friction with stimulants, the use of the warm bath, &c. &c. This pulsation then may either drown the fœtal pulse, so as to prevent our detecting it, or it may deceive us, from our mistaking it for the fœtal pulse. There is also another circumstance that renders the information obtained by the touch, as to the heart's action, very unsatisfactory. We elsewhere mentioned, that the impulse of the fœtal heart is comparatively trifling, so much so, that some even deny its having any. Now, if this be the case, where the fœtal circulation is going on naturally, and actively, how much more is it so in the new-born child, before the perfect establishment of respiration, and when, the placental connexion having ceased, the circulation peculiar to fœtal life is at an end. The heart's action is now feeble indeed, nor can we expect sufficient impulse to be conveyed to the finger, to enable us to pronounce whether the heart is still acting. It is more than to be feared, that, through the imperfection of our means of detecting this latent symptom of vitality, attempts to resuscitate still-born children have not unfrequently been abandoned, where there still remained a possibility of establishing life. We have heard of such a case as a child, pronounced dead, having been thrown under the

bed with the soiled linen, and of the horror and astonishment subsequently created by its cries, after it had survived these culpable, although inadvertent attempts, to destroy it, both by omission and commission. Nay, we have heard of still greater horrors occurring from mistakes in this way, but which are too revolting to advert to further. In the stethoscope we have the most delicate test possible whereby to detect the action of the child's heart, and by it, we may with a little practice discover the pulsation, however indistinct.

Again, and again, have we succeeded by its assistance in detecting the action of the heart, when individuals present, depending on the sense of touch, had pronounced the child dead, and asserted, that it exhibited no signs of vitality; and even, in some of these cases, by perseverance, we have eventually succeeded in bringing the child to breathe and live.

The author was some time since informed by the highly talented Dr. M'Intosh, of Edinburgh, that he also had been for some time in the habit of using the stethoscope, to detect the heart's action, in cases of still-born children, and with the happiest results; having by its assistance discovered the heart pulsating in cases, in which, after relying on the usual means, he had judged further endeavours to establish vitality as useless.

[The first, and probably the only case in which auscultation has hitherto been employed in the diagnosis of extra uterine pregnancy, occurred two years ago, in the practice of Drs. Girdwood and Tennant, of Falkirk. There was a large irregular tumour rising high in the abdomen, and between this and a lower tumour, the enlarged uterus, the aorta could be felt. Drs. G. and T. easily discovered the first and higher mass to be formed by a fœtus, by hearing the double pulsations. Professor Simpson was called to

see the case, with the view of the propriety of performing the Cæsarian section, but by the time he arrived the child was dead. The mother died two years afterwards, of an acute cerebral disease, when a full grown fœtus was found in the cavity of the peritoneum.]

We have now instanced a few, out of the many cases in which the efficacy of auscultation has been satisfactorily exhibited to us, and whilst we have pointed out its advantages, we have endeavoured to be candid in our statement of the difficulties attending its use. We are fully aware, that the individual who has at heart the gaining credit for views which he wishes to establish, is not always the person who will throw into relief the difficulties by which these are surrounded; and if he should do so, his friendly notice of the objections often tends rather to strengthen than to weaken his arguments. That such has, or has not been the case in the preceding pages, it is not for us to decide. But this we would say, that difficulties do meet us in auscultation, as a means of diagnosis, and difficulties, that only practice and experience can overcome. We cannot calculate on arriving at a knowledge of this, more than of any other experimental science, by inspiration ; and let it be recollected that there is nothing more likely to bring any science into disrepute, than an attempt to practise it on the part of those, who are ignorant of it. The author has seen this observation verified, as well by others, as by himself, on his first attempting to use the instrument in midwifery practice. We would merely beg, that those who have an opportunity, will give it a fair and impartial trial. As to the result we feel perfectly satisfied. And in conclusion, whilst we by no means assert, that in every individual's

hands it will prove infallible in its indications, we unhesitatingly state, that if its application be properly understood, it will afford us as satisfactory and unerring signs, as any diagnostic means relied on in medical practice.

APPENDIX.

LEGAL NOTES.

[A.]

The cases in which it seems to have been supposed that the criminal law of England renders it of importance to ascertain whether the fœtus in utero has quickened or not, may be divided into two classes. The first consists of offences against the fœtus, that are prohibited by statute; the second includes, only, the instances in which a female convicted of a capital felony pleads, in stay of execution, that she is quick with child. We shall, in this note, mention the parliamentary enactments regulating cases of the first kind, and point out the changes made by those enactments in the common law; and also the variations, which, independent of any statute, have taken place in the common law itself, with regard to offences *against the fœtus* while within the womb.

In the time of Bracton,* the common law included, in the class of homicide, the crime of causing abortion, by committing violence on the person of a pregnant female, or by administering to her any noxious potion. Sir William Blackstone† seems to consider this passage in Bracton as an authority, that such an offence would

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* Bracton, l. 3, c. 4. † 1 B. Com. 129.

have only amounted to manslaughter; but the word "homicidium," it is well known, is the generic term for all those cases in which the death of one man is caused directly by another; and therefore, if a crime be included amongst the class of homicides, the circumstances of each case will determine whether the offence be murder or manslaughter. It has, however, been long settled, that the destruction of the fœtus in utero does not amount to homicide, and that it is merely an aggravated misdemeanor. But while, in this respect, the common law has relaxed its severity, it seems to have extended its provisions, and to have ranked in that class of offences below felony, even attempts to procure abortion. As the law was in the time of Bracton, it seems doubtful whether the same importance was attached to the fact of the fœtus being quick, as that fact is now invested with by statute. The words of Bracton, in the passage alluded to, are, "si puerperium jam formatum vel animatum fuerit, *et maxime si animatum*, facit homicidium," and it does not seem to require a very forced construction, to render this sentence an authority for a position, which we are disposed to consider well founded, viz., that it was sufficient to prove the fœtus *alive* at the time the offence was committed, without showing that it was quick. The popular meaning of the term quick, when applied to the fœtus, was, and perhaps still is, that the fœtus is alive; it having been erroneously supposed, that the movement which the term quicken has been used to designate, was caused by the first impulse of life in the fœtus. We have not been able to discover in the books, any authority confining the cases in which a common law misdemeanor could be committed against the child while in the womb, to those instances in which

the fœtus had quickened.* Lord Coke, indeed,† says, that "if a woman be quick with child, and by a potion or otherwise killeth it in her womb, or if a man beat her, whereby the child dieth in her body, and she is delivered of a dead child, this is a great misprision, and no murder:" but this passage can scarcely be considered as an authority against the position contended for, which seems to be fortified in no small degree, by the form of an indictment preferred in Mich. term 42 Geo. 3, a precedent of which, procured from the Crown Office in London, is to be found in 3 Chitty, C. L. 798. In that precedent, the woman is averred to have been "pregnant and big with child," but there is no averment of her having been *quick* with child. On the whole, therefore, it is submitted, that at common law, the fact of the woman having been quick with child, was not the criterion by which the guilt of the offender was measured, but that if she was pregnant, and the fœtus was alive, that guilt might have amounted to a misdemeanor, although she never had quickened. If we are right in our ideas on this subject, it must be admitted, that in adopting the fact of the quickening of the fœtus, as the distinguishing mark between the degrees of guilt, the legislature has not improved on the common law. In other respects, it is obvious that legislative interference was necessary. The fœtus, before it comes into the world, not having supported an individual existence, cannot, perhaps, *legally* speaking, be considered as a living being ; but the moral feelings of man hesitate to regard the destroyer of the innocent child in the womb, in any other light than as

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* We have used the word *quickening* throughout this note, in the sense given to it by the case of Rex *v.* Phillips, 3 Campb. 27.

† 3 Insti. 50.

a murderer. The enormity of the crime, the difficulty of bringing the offender to justice, the powerful temptation with which the last impulse of modesty urges the ruined female to conceal this offence, all require, that it should be distinctly marked out by the law, and overawed by a penalty, if not more severe, yet more sure, than that upon which the arbitrary discretion of a judge might fix, as the punishment of a common law misdemeanor. It was not, however, until late in the reign of George III. that the legislature took notice of the imperfect state of the common law, on the subject we are discussing. By the 43d Geo. 3, c. 58, s. 1, provisions respecting attempts to procure abortion were enacted; but as that act has been since repealed, and provisions of the same description have been inserted in the 9th Geo. 4, c. 31, it will be only necessary to consider here, that part of the latter statute which contains those provisions.

By the 43d section of the 9th Geo. 4, c. 31, it is enacted,* "that if any person, with intent to procure the miscarriage of any woman, then being quick with child, unlawfully and maliciously shall administer to her, or cause to be taken by her, any poison or other noxious thing, or shall use any instrument, or other means whatever, with the like intent, every such offender shall be guilty of felony, and being convicted thereof, shall suffer death as a felon: and if any person, with intent to procure the miscarriage of any woman, not being or not being found to be then quick with child, unlawfully and maliciously shall administer to her, or cause to be taken by her, any medicine or other thing, or shall use any in-

* The corresponding Irish statute is the 10 Geo. 4, c. 43, s. 1.

strument or other means whatever, with the like intent, every such offender, and every person counselling. aiding, or abetting such offender, shall be guilty of felony, and being convicted thereof, shall be liable, at the discretion of the court, to be transported beyond the seas, for any term not exceeding fourteen years, nor less than seven years, or to be imprisoned, with or without hard labour, in the common jail or house of correction, for any term not exceeding three years; and if a male, to be once, twice, or thrice publicly or privately whipped, if the court shall so think fit, in addition to such imprisonment."

The meaning of the words "quick with child," in the former act, had been settled by a decision made previously to the passing of the 9 Geo. 4. c. 31. I allude to the case of Rex *v.* Phillips, 3 Campb. 74, the leading one on the old act. In that case, the prisoner was indicted on the 1st section of the 43 Geo. 3. c. 58, and after hearing the evidence of medical men on the point, Laurence, J. decided, that a woman could not be considered quick with child, until *she had felt* the child alive and quick within her.* That the construction thus put upon the words of the statute, explains them in the sense in which the legislature intended to use them, there seems no reason for doubting; and it must be confessed, that in thus adopting the period of quickening, as that which was to determine the degree of guilt, the framers of the statute have laid themselves open to the forcible obser-

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* It is evident from the whole of the case, that the sensation of "quickening," whether caused by the movement of the child or not, was the sensation referred to by these words, for the 15th or 16th week of pregnancy is stated in the report to be the usual period when the sensation is experienced.

vations in the text.[*] It may indeed be said, that in fixing on this period of gestation, the legislature was actuated by a desire to procure some clear proof of the fœtal life, to support a conviction in those cases in which the punishment was capital; and that for this purpose, the fact of quickening, when once ascertained to have taken place, was decisive. The probability of the female herself mistaking the fact, and the non-occurrence of quickening during the whole period of pregnancy in some instances, added to the doubt entertained by many physicians as to the cause of quickening, would afford an answer to this observation; but the comparative ease and certainty, with which, by the stethoscope, the action of the fœtal heart can, it seems, be ascertained, at once deprives this consideration of all weight with respect to those cases in which the destruction of the fœtal life has not been effected. Criminal attempts indeed, not followed by abortion, or by the death of the fœtus while in utero, would perhaps sometimes admit of no more satisfactory proof of the fœtal life at the time of the attempt made, than the declaration of the woman herself that she had previously quickened. And we should recollect, that an alteration in the law need not exclude such evidence, but that if unattended with suspicion, and fairly given, it might, with trifling corroboration, be, in many cases, sufficient to justify a verdict of guilty. Surely, then, we may with confidence come to the conclusion, that the criterion of guilt should be the existence of life in the fœtus, and not merely the occurrence of quickening; a sensation, which is by some supposed to depend upon changes in position of the womb, and not even

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* *Supra*, 192.

to have any necessary connection with the child's movements. Difficulty, no doubt, must, in many instances, still attend the investigation, but then the merciful principle of our law, which gives the prisoner the benefit of every rational doubt, would preserve his life from being affected by that difficulty, while justice might, in most cases, be partially satisfied, by extending any new statute, so as to include attempts to procure the abortion of the fœtus, although no proof of its life should be adduced.

If, however, any given period of pregnancy must still be fixed upon as determining the guilt of the offender, it would, perhaps, be more consistent with sound sense, to fix that period at the end of the seventh month of pregnancy, and to punish with greater severity the attempt to expel the fœtus from the womb, at a time when it is not capable of individual life, than when greater development and growth have rendered its separate existence possible. Such a distinction, at all events, would afford surer grounds for a satisfactory conclusion, than the uncertain test which has been adopted in the statute.

There has been only one more decision on the last act, to which it is of importance to allude. It had been decided on the 2d section of the 43 Geo. 3, c. 58, that it was immaterial whether the substance administered was capable of procuring abortion, or whether it exactly agreed with the description given of it in the indictment;* and Laurence, J. who decided the case, stated, that it was immaterial whether the woman was actually with child. This dictum must not, however, be taken in its full extent; it has been decided by the twelve judges,

* Rex. v. Phillips, 3 Campb. 76.

upon the corresponding clause of the late enactment, that it is an answer to an indictment on that clause, to show that the woman was not pregnant at the time of the alleged perpetration of the offence.*

In conclusion, we shall refer to a class of offences against the fœtus, the law upon which, previously doubtful, has been lately the subject of judicial decision. In 1st Russell on Crimes, 424, it is laid down, that "when a child, having been born alive, afterwards died by reason of any potion or bruises it received in the womb, it seems always to have been the better opinion, that it was murder in such as administered or gave them." In support of this position, several authorities are cited by Russell, but he at the same time mentions, as opposed to it no less an authority than that of Sir Matthew Hale. By the case of Joseph Senior, 1 Moody, 346, the doubt has been set at rest, and the principle of the position in Russell established: the twelve judges in that case decided, that a prisoner was guilty of manslaughter, who, while acting as a midwife, had, through ignorance of his profession, injured the skull of the infant, so that, although born alive, it died immediately afterwards: and this decision has been followed by another, which appears to have settled exactly the period when the child can be considered sufficiently in *rerum naturâ*, to be the subject of homicide. In the case of the King v. Richard Enoch and Mary Scully, 5 Car. and Payne, 539, it was decided by Parke, J. that to support an indictment for murder, against a prisoner who had inflicted an injury on the child before birth, it was necessary to prove, not

* Rex v. Scudder, 1 Ry. and Moo. 217.

only that the child had been born and had breathed, but also that it had supported an independent circulation.*

Note [a].

In our last note we attempted to show, that, to render any offence against the fœtus in utero indictable at common law, it was not necessary for the female to have quickened; and that the objections which had been raised against the law of England upon this score applied only to the part of it created by statute. The evidence required by law, to prove the plea of pregnancy pleaded in stay of execution by a woman when capitally convicted, has also been supposed necessarily to include the proof of her being quick with child.† If, by this, it be meant, that to support the plea, there exists any necessity of showing that the movement generally experienced by females about the fifteenth or sixteenth week of gestation has occurred, it seems that the law does not call for such evidence. The words of Lord Coke on this subject, are,‡ "When a woman commits high treason, and is quick with child, she cannot upon her arraignment, plead it, but she must either plead not guilty or confess it; and if upon her plea she be found guilty, or confess it, she cannot allege it in arrest of judgment, but

* This case appears completely to take away all efficacy, in a legal point of view, from the test of floating the lungs.

† See 1 Paris & Fonb. Med. Jour. 939.

‡ 3 Inst. 17. And see 1 Hale, P. C. 368; 2 Hale, P. C. 413.

judgment shall be given against her; and if it be found by an inquest of matrons that she is quick with child, (*for privement enseint will not serve,*) it shall arrest and respite execution till she be delivered; but she shall have the benefit of that but once, though she be again quick with child; so as this respite of execution for this cause is not to be granted only in the case of felony, whereof Justice Stamford speaketh, but in cases of high treason and petit treason also." Sir Matthew Hale has laid down the law in terms apparently similar, but more accurate, and more in accordance with the authorities cited by him, which are the same as those cited by Lord Coke, (*ubi supra*): "This plea of pregnancy," says Sir Matthew Hale, "in *retardationem executionis*, hath these incidents to it: 1. She must be with child of a quick child;" and he then goes on to mention other particulars not bearing on this point. The oath administered to the jury of matrons, by whom the truth of this plea is to be tried,* and the form of the issue which is handed up to them, correspond with these words of Sir Matthew Hale; and we submit, that his expressions, rightly interpreted, contain a correct statement of the law.

We have carefully examined all the authorities referred to by Lord Coke and Sir Matthew Hale, but have been unable to find one previous to the time of Lord Coke, which would support his position, if he be understood to mean, that the plea of pregnancy can be of no avail to a woman capitally convicted, unless she proves that she has quickened. Some of the authorities referred to by Lord Coke and Sir Matthew Hale, even

* 4 Chitt. C. L.

state the issue to have been merely "*enseint ou nient;*" but the passage Lord Coke evidently had in his mind, when writing the words alluded to, was that in Stamf. P. C. 198, where the terms are, "Si el fuit enseint de *vive* enfant ou nient." The same expressions are used in 22 Ass. Pl. 71, being the case referred to in Fitzh. Coronne, 180, the latter of which books Stamf. cites, (*ubi supra.*) It is then obvious, that the language of Sir Matthew Hale is more accurate than that of Lord Coke; and though the difference may not at first appear material, it will be found in reality substantial and important. The terms quick with child refer to the sensations of the female and not to the vitality of the fœtus; and to prove the fact which they designate, it would require the same evidence that it is necessary to produce in support of an indictment under the 9 Geo. 4, c. 31, for the offence which that act has made capital.

We do not, however, at all suggest, that these two great lawyers differed in substance, as to the law upon this point. That Lord Coke did not intend to use the words he has adopted in the sense they would, if literally taken, convey, is manifest, from the expression "*privement enseint*" used by him as well as Stamford, to denote the state of pregnancy which would *not* be sufficient to support the plea. The words "*privement enseint,*" if they mean any thing, can only signify a state of pregnancy not discoverable by any diagnostic method, but the proof of the existence of which must rest solely on the declarations of the female herself; while, on the other hand, the words "*enseint de vive enfant,*" "pregnant of a living child," seem used for the purpose of designating any state of pregnancy wherein the existence of the fœtus can be satisfactorily proved

by evidence, not consisting solely of the declarations of the accused, and wherein there is no ground for supposing that the child, although in utero, has by accident or some natural cause been destroyed.

In Hawkins, P. C. lib. 2, c. 51, s. 10, the words of Lord Coke, viz. "quick with child," are used in the text; but as he refers to Coke and Stamf., *ubi supra*, and in his note adds, that in the Case 22, Ass. pl. 7, it is expressly stated, that the inquiry was whether the woman was *enseint* with a live child or not; and as he adduces this reference, in corroboration of Lord Coke, it is evident that he considered the words of Lord Coke as used in the sense contended for, and also, that he considered the word "quick," when applied to the fœtus in utero, as synonymous with "alive." If any doubt remains on the point, as far as the authorities can determine it, Sir William Blackstone's explanation of the terms must effectually remove all difficulty. "If," says he, speaking of the jury of matrons, "they bring in their verdict—quick with child, (for barely with child, unless it be *alive* in the womb, is not sufficient,) execution shall be staid generally till the next session." And although, from his subsequent expression, it seems possible that the child did not become alive or quick until some period after conception, yet if we once allow the law to be, that pregnancy of a live child is sufficient to support the plea, we submit, that upon no sound principle of that law or of reason, are we now confined to any method of proof which popular error may have originated. Medical science has exploded the idea, that what is usually termed quickening has any thing to do with the commencement of life in the fœtus, and its conception and vitality are, we believe, universally considered

by physicians as contemporaneous. The law asks only one question, "is the fœtus alive?" and excludes not any state of pregnancy, save that, which, denoted by the words "*privement enseint*," can be proved to exist only by the declarations of the accused made under all the terrors of impending execution. In the case of Margaret Mackessey,* the plea of pregnancy appears to have been supported solely by the declaration of the prisoner herself; and that case, therefore, does not seem to militate against the conclusion we contend for, while the case of Catherine Smith,† in which it is impossible that quickening could have taken place, is a powerful authority in support of it. In the latter case it was doubtful whether pregnancy existed at all, but there were grounds to suspect that it did, and upon the well-known principle of law, the benefit of that doubt was given to the accused, and she was found pregnant of a quick child; here the female was not merely "*privement enseint*," for besides her own declaration, there were facts which induced the suspicion of her being pregnant, and the jury founding their verdict on those facts which thus raised a *rational doubt*, were fully justified in finding her "with child of a quick child," because, if pregnant at all, that pregnancy *primâ facie* supposed vitality in the fœtus. In one word, the evil intended to be guarded against by the law, in excluding the case of "*privement enseint*," is, the enabling a female, merely by her unsupported allegation, to protract the expiation of her guilt, while the noble principle upon which the reprieve of pregnancy is founded will, in nine cases out of ten, be broken through, if that being, whose innocence has been pro-

* *Supra*. 190. † Ibid. 193.

verbial for ages, must, because the mother has not experienced its movements, be doomed to participate in the punishment of her guilt.

It may be thought that the case of Rex *v.* Phillips* is at variance with our ideas on this subject; but there is a palpable distinction between the grounds for the decision in that case, and the reasons for the conclusion we would establish. In deciding that case, upon a statute highly penal, Laurence, J. was bound by the rule of law, in *favorem vitæ*, to construe the terms of the enactment in the sense most beneficial to the prisoner; and as the words in that act are "quick with child," and refer to the female herself, he could not have given them a wider signification. The very rule followed in that case would require, that, in favour of the fœtal life, the widest signification should, in the case of a plea of pregnancy, be put on the terms, even if they were identical, and *a fortiori*, that where there is a ground of distinction even in *appearance* substantial, that distinction should be, in *favorem prolis*, adopted. We hope the reader will excuse the length of these observations; the subject is one which must interest the feelings of human nature, and if our views appear questionable, we trust they will not be attributed to a desire of presumptuously broaching novel doctrines, or impeaching by crude suggestion, that which may have been sanctioned by usage, or settled by the learning and talents of those great men to whom veneration is a just debt. If upon any just ground it can be considered the law of the land, that the period of quickening not having elapsed, the existence of a living child will not support the plea in question,

* 3 Campb.

we would say that the legislature is imperatively called on to interfere, and to put an end to an evil too great to be characterized as merely an absurdity; it is bound to preserve the existence of that being, who, in the sight of God, is endued with a living soul.

The tribunal, by which the plea of pregnancy is tried, lies, we fear, too much open to the objections in the text. Picked up from amongst the inhabitants of towns, selected by none of those rules which, in relation to other juries, the law lays down, not chosen from any particular rank in society, and as the Norwich case almost fatally demonstrated, ignorant of the subject they are about to investigate, the jury of matrons would have no redeeming argument in their defence, but that which the modesty of a convicted felon may supply, had not a Judge, whose experience is surpassed only by his unrivalled talents, rescued it from, perhaps, total condemnation, by declaring that he had generally found the jury of matrons the most conscientious of juries. If upon the trial of this plea, the jury of matrons find a verdict in favour of the prisoner, she is entitled to be reprieved generally until the next Sessions.* Upon the authorities it appears to be law that a reprieve cannot be had more than once for this cause, and that if a female, having had the benefit of the plea, be delivered and become again *enseint*, she cannot plead this second pregnancy in stay of execution.† Some of the older cases,‡ indeed, suggest a doubt of the correctness of this doctrine, and certainly it cannot be defended on any sound principle.

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* 1 Hale, P. C. 369. † Ibid.

‡ 12 Ass. Pl. 12; Bro. Abrdt. tit. Cor. 72; Fitzh. Abrdt. tit. Cor. 180.

The reason assigned by Sir William Blackstone,* that "the female shall not by her own incontinence evade the sentence of justice," is one, which, even if good, would not extend to every case, and cannot, in any, palliate the destruction of the fœtus: indeed no weight can be given to such a reason, where we find Sir Matthew Hale (*ubi supra*) citing a case to show, that if the jury of matrons find the woman pregnant, and she prove not to be so, but become so afterwards, yet she shall have the benefit of the plea; for her incontinence might be just as easily the cause of pregnancy in the one case as in the other. There are, however, positive authorities in the old books, which distinctly state, that the reprieve cannot be had twice for this cause;† and as these are unaccompanied by any marks of disapprobation on the part of the reporters, and are adopted by most of the text writers, we fear that the law would now be laid down in conformity with the last mentioned cases.‡ This then, is a point which also requires legislative interference, and we trust that the time is not far distant, when those who have been engaged in the amendment of our criminal code will turn their attention to the defects existing and supposed to exist in the branches of it, discussed in these notes; indeed we do not imagine that

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* 4 Blackst. Com. 395.

† 22 Ass. Pl. 7; 25 Edw. III., Coronne, 130; Bro. Abt. tit. Pain, 11.

‡ Although the reporters in these cases do not seem to doubt the law, one of them, 25 Edw. III, adds quaintly enough, "nota que le gaoler n'avoit nul penance, ne, rient fuit de cet enquis," which indeed was rather odd, as there were two women under sentence of death committed to his charge, to both of whom the same accident happened.

the subject can have escaped them, or that our humble observations, even if correct, can give them any information which they have not long anticipated.

Note [B].

The provisions of our common law for the protection of the fœtus from injury are consistent with those recognizing its civil rights, and are founded on principles similar, if not identical. The destruction of the child in the womb was not, legally speaking, murder, because that innocent being enjoyed no individual existence; still, as the vital spark had been lighted within, to extinguish it was denounced as an aggravated offence: even the consequences of the parent's crimes were averted from the fœtus, and the mercy of the law arrested the uplifted arm of justice, until the birth of the infant left the guilty mother alone beneath the impending blow. On similar grounds did the law treat the fœtus as a being entitled to civil rights, not, indeed, equally extensive with those which the enjoyment of individual existence could alone confer, but still of no little importance. The child *en ventre sa mere* was not at common law ranked amongst persons *in esse*, so as to be capable of taking an estate by way of remainder, nor could it have been so considered on any sound principle. An estate limited in *remainder* must, according to the rigid and inflexible rules of law, vest in some person either on the termination of the preceding particular estate of freehold, or at the moment of its original creation. But the very essence of a vested remainder is, that if the particular estate was to determine, the remainder might be im-

mediately enjoyed in possession by the person to whom it was limited, and of such enjoyment the fœtus in utero is totally incapable;* for that purpose it is not (to use Lord Coke's words) sufficiently *in rerum naturâ*. If, then, a remainder was limited to a person unborn, and if that person was *en ventre sa mere* when the particular estate determined, the remainder at common law was gone for ever;† it could not, for the reasons mentioned vest in the person to whom it was originally limited, and it could vest in no one else, because to it no other person could be entitled. On the other hand, if a man died seised of an estate of inheritance, leaving his wife *enceinte*, the next heir to the deceased might have entered on the estate and received the rents, but immediately on the birth of a posthumous child, the inheritance was divested from the heir and went over to the infant, who, however, in conformity to the principle above alluded to, was not entitled to an account of the intermediate profits.‡ It is obvious that in this case the heir was a person *in esse*, in whom the estate before vested in the ancestor could vest, and that it not being destroyed by any rule like that which in a similar case would have annihilated a contingent remainder, could, without violating any rule of law, be transferred from the heir to the infant, the moment the birth of the latter gave him a legal capacity of enjoyment.§ The mischief which this recog-

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* Fearne, Cont. Rem. 216.

† Salk. 227; 4 Mod. 282; 2 Blacks. Com. 169.

‡ 2 Blacks. Com. 169, 16th edit. (n. 4).

§ The case of a contingent remainder has been provided for. By the act 10 & 11 W. 3, c. 16, the child *en ventre sa mere* in rendered capable of taking a remainder, as if born in the life-time of the father, so that the intermediate profits in cases coming under

nition of the civil rights of the fœtus might have occasioned was, however, carefully guarded against. The common law, in general but too deficient in the power of preventing evil by anticipating it, in this instance deviated from its usual course, and gave the writ *de ventre inspiciendo* to the heir-at-law, to protect himself against the imposition of another child, in the place of that alone entitled to intercept the inheritance in its descent. The earliest of our legal writers supply us with satisfactory accounts of this remedy. Bracton,* Britton, and Fleta, all mention it; but the former, more full and accurate on this, as on many other points, than the latter two, gives the form of the writ used in the instance where the widow did not marry again and also that where she did, there being a distinction in the forms applicable to these two cases. When the writ was first framed, all estates of inheritance were fee-simple, and could not have been devised; but the statute *de donis* having converted conditional fee-simple estates into estates tail, the power of devising real estates by will having been created since the framing of the writ, and the act of 10 & 11 W. 3, c. 16, having made the child *en ventre sa mere* capable of taking an estate limited by way of remainder, the remedy has very properly been extended in practice to cases arising from these alterations;† and the court, acting on the broad principle laid down by Lord Thurlow in *ex parte* Wallop,‡ "that it is a writ for the fur-

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the act belong to the child from the death of the father. See 2 Blacks. 169, 16th edit. (n. 4).

* Bracton, 69, *a*; Britton, 165, *b*; Fleta, lib. 1, c. 15.

† Aiscough's case, 2 P. Wms. 591. See the case cited in the note, *supra*, 201.

‡ 4 B. C. C. 90.

therance of justice, and that it ought to issue whenever the justice of the case requires it," has granted the writ even to a devisee for life.* The propriety of extending the remedy to the cases alluded to can scarcely be questioned; the principle on which the writ was first framed clearly authorizes that extension, but as to proceedings under it we cannot but agree with Hargrave,† that "to change the established form for the sake of softening its rigour is a dangerous precedent" That precedent seems, however, to have been created in *ex parte* Aiscough; Lord Hardwicke allowed the examination of two midwives, and their subsequent daily visits, to supersede the usual and legal method of executing the writ, and unless, as was suggested by the Master of the Rolls in another case,‡ the parties consented to the terms of the order, such a change in the method of executing a common law writ approaches very nearly to legislation. In one case, indeed at common law, the writ was executed in a method less irksome and indelicate than in other instances: if the widow, alleged to be *enceinte*, married again before her delivery, the law ventured not upon so arbitrary a stretch of power as to take her from her husband, but she was permitted to remain with him, "on his entering into a recognizance that she should not remove from the house they then inhabited, and that some of the women returned by the sheriff should see her every day, and that three or more should be present at her delivery."‖ A method less harsh seems to have been followed in the time of Bracton, when the widow married again; but she seems even then to

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* 4 B. C. C. 90.

† Co. Litt. 8, *b*; Harg. (n. 3.) ‡ *Ex parte* Bellett, 1 Cox, 297.

‖ Co. Litt. 8, *b*; Harg. n. 1; Cro. Jac. 685.

have been carefully guarded; in all other cases, the strict legal method of executing the writ is most clearly expressed by the language in which it is framed, and that even in Bracton's time was, when the widow did not marry again, the same as it is now;* for Hargrave† is mistaken in attributing to those remote times a more delicate method of executing the writ. The direction contained in the writ is in the following words: "Tibi præcipimus quod assumptis tecum duodecim discretis et legalibus militibus et duodecim discretis et legalibus mulieribus de comitatu tuo, in propria persona tuâ accedas ad præfatam R. et eam coram præfatis militibus videri et diligenter examinari et tractari facias pubera et ventrem in omnibus modis, quibus melius certiorari poteris utrum impregnata sit necne. Et si ipsæ mulieres ipsam R. impregnatam invenerint: tunc diligenter inquiras ab eis de tempore quo ipsam crederint fore paritura. Et inquisitionem quam inde feceris, scire facias justiciariis," &c.‡ Well, indeed, might Hargrave say, "that this writ, if executed strictly, would be an *intolerable grievance*;"‖ but when we hear, that if the sheriff return that the widow was pregnant, a second writ issued, commanding him to have her removed to some house, and confined there under a system of vigilant observation, we cannot hesitate to denounce as unworthy of the institutions of Great Britain, a remedy which spares neither female delicacy nor personal liberty.§ Upon the trial of a plea

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* Bracton, *ubi supra*.

† Co. Litt. 123, *b*; Harg. (n. 1).

‡ Reg. Brev. 227.

‖ Co. Litt. 8, *b*; Harg. n. 3.

§ Cro. Eliz. 566. The words of the second writ are framed with the greatest apparent anxiety to prevent any supposititious child being imposed. The sheriff is directed to keep pregnant women away from the house in which the widow is confined. See Bracton, *ubi supra*.

of pregnancy, the testimony of medical men comes within the rules of legal evidence, and can therefore be adduced, while the presence of other men is not necessary; but the investigation under the writ *de ventre inspiciendo*, while it requires virtually a jury of matrons, indelicately calls also for a jury of *so many* men, that, under the most favourable circumstances, but few of them could be professional. That some remedy should be provided in lieu of the writ, or rather, that its execution should be modified by the only power legally competent to do so, is obvious; and it is no answer to allege, that the remedy has fallen into disuse, for this may have arisen from the natural disgust with which the feelings of modern society would regard such a proceeding; and, at all events, if useless, let it be declared illegal, for legal remedies, if suffered to exist, although deprived of their utility, are more liable to be abused when unexpectedly called into action, than those of which the limits are by every day's practice clearly and notoriously defined.

The proper method of applying for this writ is to the Court of Chancery, as *officina brevium*, by petition,* supported by proper affidavits, and showing that the party making the application will be entitled to the estate, if there be no issue of the deceased person. The title of the party must be clear, and a mere expectancy will not do; the heir apparent cannot have the writ, although his ancestor be on the point of death and a lunatic, for *nemo est hæres viventis*.†

The last instance, I have been able to find of the issuing of this writ is the case of *ex parte* Wallop, cited

* *Ex parte* Bellett. 1 Cox, 299.

† Co. Litt. 8, *b*; 6 Ves. 260.

above, which was decided in 1792, and I confess that it is not an easy matter to assign a satisfactory reason for the disuse of a remedy, the application of which since that period would probably in many cases have been useful.

In inquiring under the writ *de ventre inspiciendo*, whether or not the female be pregnant, the result depends no more upon the fact of quickening having taken place, than it does in the instance of the plea of pregnancy, or of offences at common law affecting the child in the womb. The writ merely directs the sheriff to cause the woman to be examined, and to return "*utrum impregnata sit necne*;" and the fact, that the writ commences by assigning, as a reason for the issuing of it, that "*ipsa falso dicit se esse prægnantem cum non sit*," seems conclusively to show, that the mere declarations of the widow herself would not be sufficient evidence of pregnancy, if unsupported by any circumstances from whence their probable truth or falsehood might be ascertained. This further establishes the conclusion at which we have arrived in relation to the doctrines of our common law examined in these notes, viz., that it attributed to the fact of quickening no greater importance than to any other symptoms which could be considered as indicative of pregnancy; and that pregnancy, once established by any proofs stronger than the uncorroborated declarations of the female herself, entitled the fœtus to all the civil rights which the law judged it capable of enjoying, and to all legal safeguards for the preservation of its existence. In fact, once the fœtus could be proved to be in utero, its rights to property and to protection from injury were the same from the moment its existence was proved, until the period when

born into the world, and casting aside these imperfect rights, the child became entitled to all the privileges of its fellow-subjects, save those which, with the anxiety of a parent, the law suffered to devolve on it only when nature had perfected the body, and education was supposed to have matured the mind. The law, in protecting the fœtus, acts upon principles which the legislators of most enlightened nations, ancient and modern, seem to have adopted. "In Egypt, the woman condemned to die, was never executed until after her delivery; and the tribunal of the Areopagus observed a similar regulation, that the innocent infant might not suffer for the crime of its mother."* The penal code of France, since 1670,† has, through all its variations, proceeded on the same principle, and in this instance, probably, as in many others, in common with the laws of most other European nations, its provisions are borrowed from the Roman law, which is most liberal and comprehensive in recognizing the rights of the fœtus.‡ But neither by the codes of Rome or France is any particular period of pregnancy pointed out as that, upon the arrival of which the existence of the fœtus shall be recognized; and if the common law of England has used expressions in appearance less comprehensive, those expressions will be found to mean substantially the same thing. Pregnancy of a quick or live child is in reality synonymous with simple pregnancy; and, as we have before ob-

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* 1 Par. & Fonbl., Med. Jur. 239, n. (c).

† Beck. El. Med. Jur., 2d ed. 73, referring to Foderé and Capuron.

‡ Qui in utero est, perinde ac, si in rebus humanis esset, custoditur, quoties de commodis ipsius partus quæritur.—*Ff.* 1, v. 40. "Prægnantis mulieris damnatæ pœna differatur quoad pariat."—*Ibid.*, 48. 19. 3.

served, even if by a popular error, quickening, or any other fact, have been considered as the only sure evidence of the life of the fœtus, yet, as the law has merely required the existence of that life, and has not specified any method of proof, surely no particular proof can be rendered indispensable by the expressions of Lord Coke,* made, as they are, with a direct reference to authorities which do not warrant them if literally taken, and explained, as they are, by the contra position of the words "*privement enseint;*" nor yet can that effect be produced by the words of Sir William Blackstone, unsupported by any authority at all,† save that which may be wrung from the manner in which Bracton uses the words "*formatum*" and "*animatum*," as though conception and animation were not cotemporaneous.

The question, in fact, is, whether the law, having created the necessity of proving the fœtal life, any method of proof, however specious, or however sanctioned by usage, can be supported when once discovered to be erroneous. The same principle which would reject the formerly almost conclusive test of the life of the child upon trials for infanticide,‡ because that test has been shown to be liable to error, will also hold the fact of quickening unnecessary to demonstrate the life of the fœtus. In rejecting the test in cases of infanticide, we do not act in opposition to precedent, that test was allowed by judges to be relied on, because they believed it to be a sound method of proof: but the very prin-

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* 3 Inst. 17, *b*.

† 1 Blacks. Com. 129. "Life begins, in contemplation of law, as soon as an infant is able to stir in its mother's womb."

‡ Car. Sup. Crim. L.

ciples which led them to admit it would lead them to refuse its admission, now that it is discovered to be uncertain. By the same rule, if the law of the land requiring proof of the fœtal life, that proof was by mistake allowed to rest on any one to which undue importance was attached, this being an error as to fact, might at once, by judicial decision, be corrected. Our common law might thus be rescued from the imputations which are due (if at all) to the method of applying it, adopted under erroneous impressions as to facts, and not just when applied to the principles of that law which in this instance, as in many others, being founded on the dictates of reason and common sense, possess within themselves wonderful powers of development and of adaptation to the increasing intelligence of the age. If the law had in terms directed the fact of quickening to be ascertained, then to alter it save by legislation, would be unconstitutional: but if it has not done so, and an error, as to that importance of the fact, has sometimes led the bench to give it undue weight, with the judges themselves rests the full power of correcting the mistake, should the legislature by no declaratory act put an end to all question on the subject.

In returning as we have done to the question of the importance, in a legal point of view, of the period of quickening, we may appear guilty of an unwarrantable digression from the immediate subject of this note; but our slight notice of the writ *de ventre inspiciendo* was not intended to break in upon, but to assist the main object of all our observations. Finding in some works of high authority on medical jurisprudence imputations thrown out against our law for the adoption of a test exploded by all medical men; and seeing that the language

of Sir W. Blackstone* and of other text writers seemed to favour the supposition which the meaning of Lord Coke's words† also appeared to support; we thought that the few notes we had undertaken, at the request of the author, to write, could not embrace a more interesting subject, than a discussion on the real state of the law as to these matters, and a brief inquiry, whether, upon principles and authority, the law of England contained amongst its provisions, doctrines so absurd as those complained against. We confess that we did at first feel startled by some of the expressions of Blackstone and Coke, until by looking through the authorities they referred to, examining the words of Sir Matthew Hale and finding that in the case of Catherine Smith‡ evidence of pregnancy of only six weeks was, by one of the most eminent of modern judges, allowed to go to the jury, we discovered that the law acknowledged no such principle; we had, indeed, begun to feel our veneration for the common law shaken, and to doubt whether a code, which tolerated such an absurdity, could deserve the elegant encomiums of Sir Wm. Blackstone, or the quaint but not less forcible praises of Lord Coke. For a part of the alterations made in our criminal law by statute we can find no satisfactory excuse; the period of quickening has been absurdly adopted as the criterion of guilt, and the error against which modern science was even then protesting, has been put upon ths statute book, although it seems never to have contaminated the principles of our common law.

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* *Ubi supra.* † 3 Inst. 17. ‡ *Supra*, p. 193.

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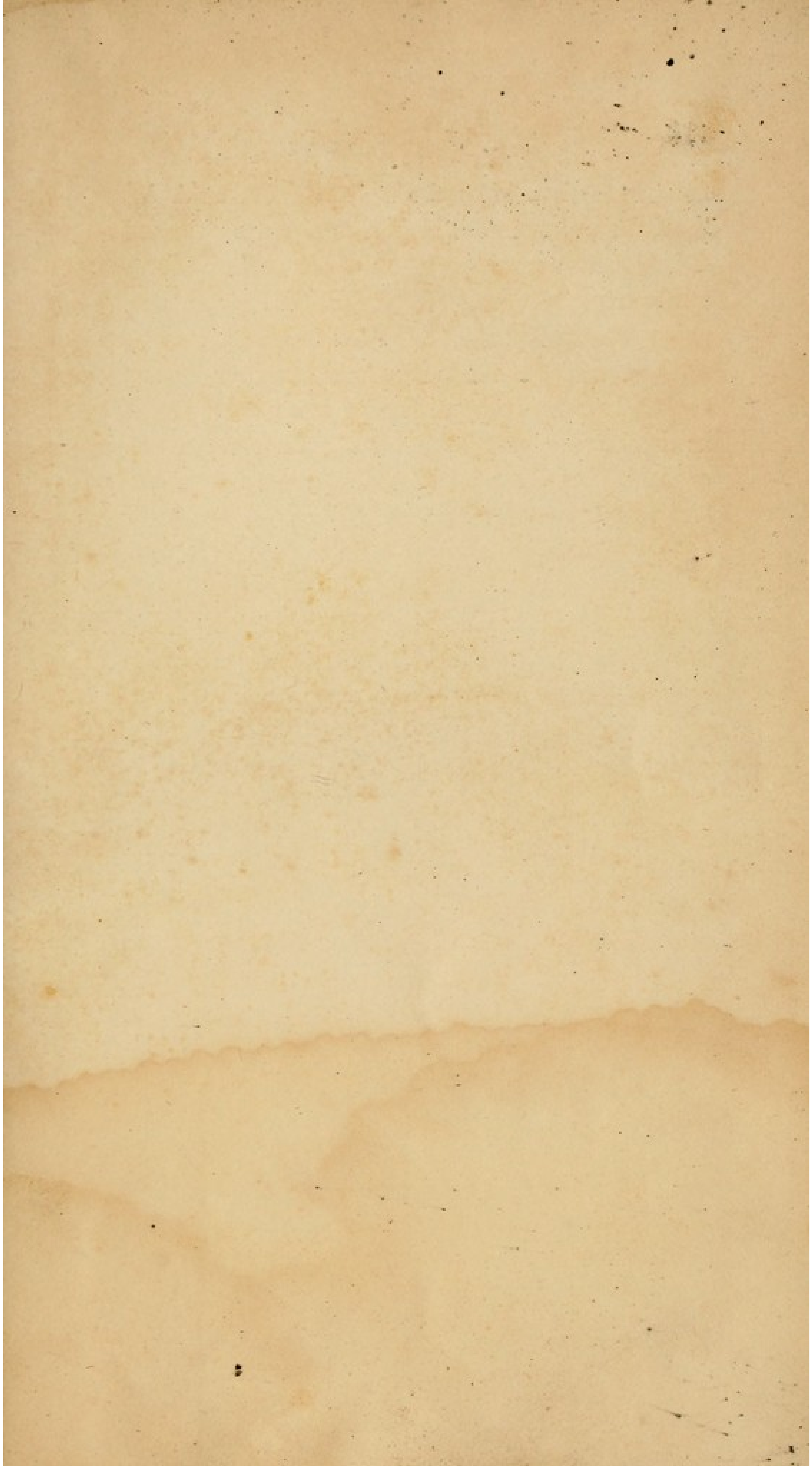
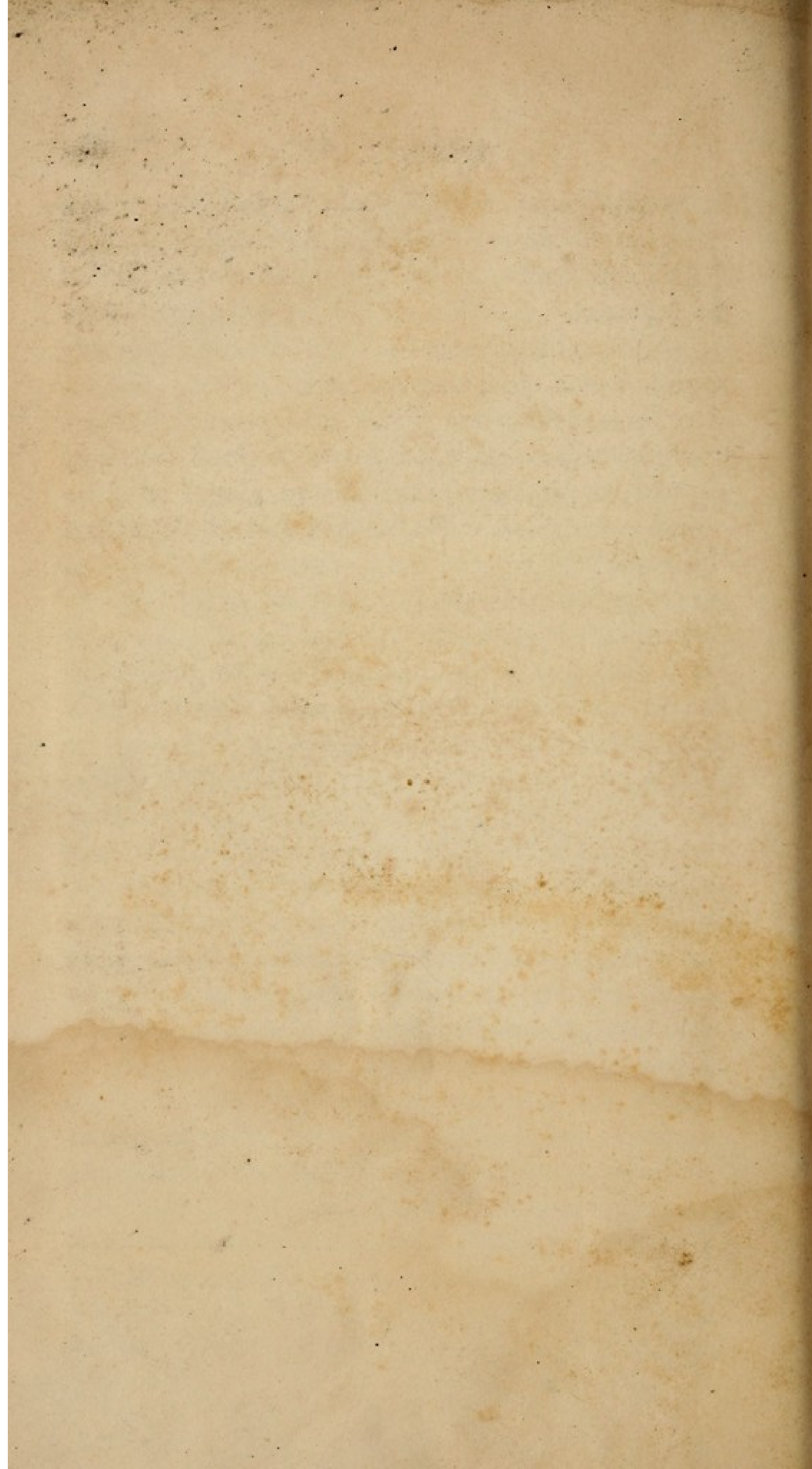
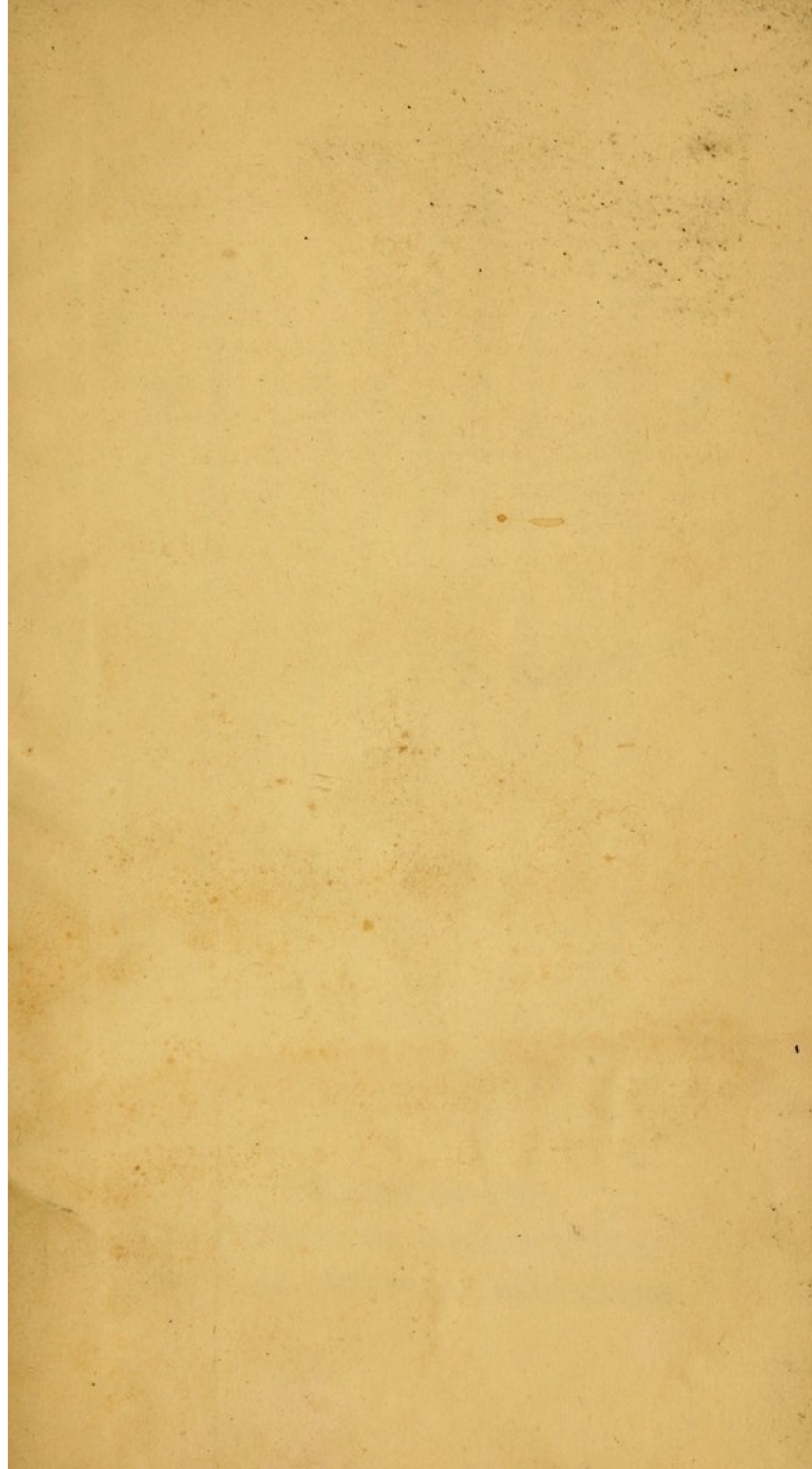
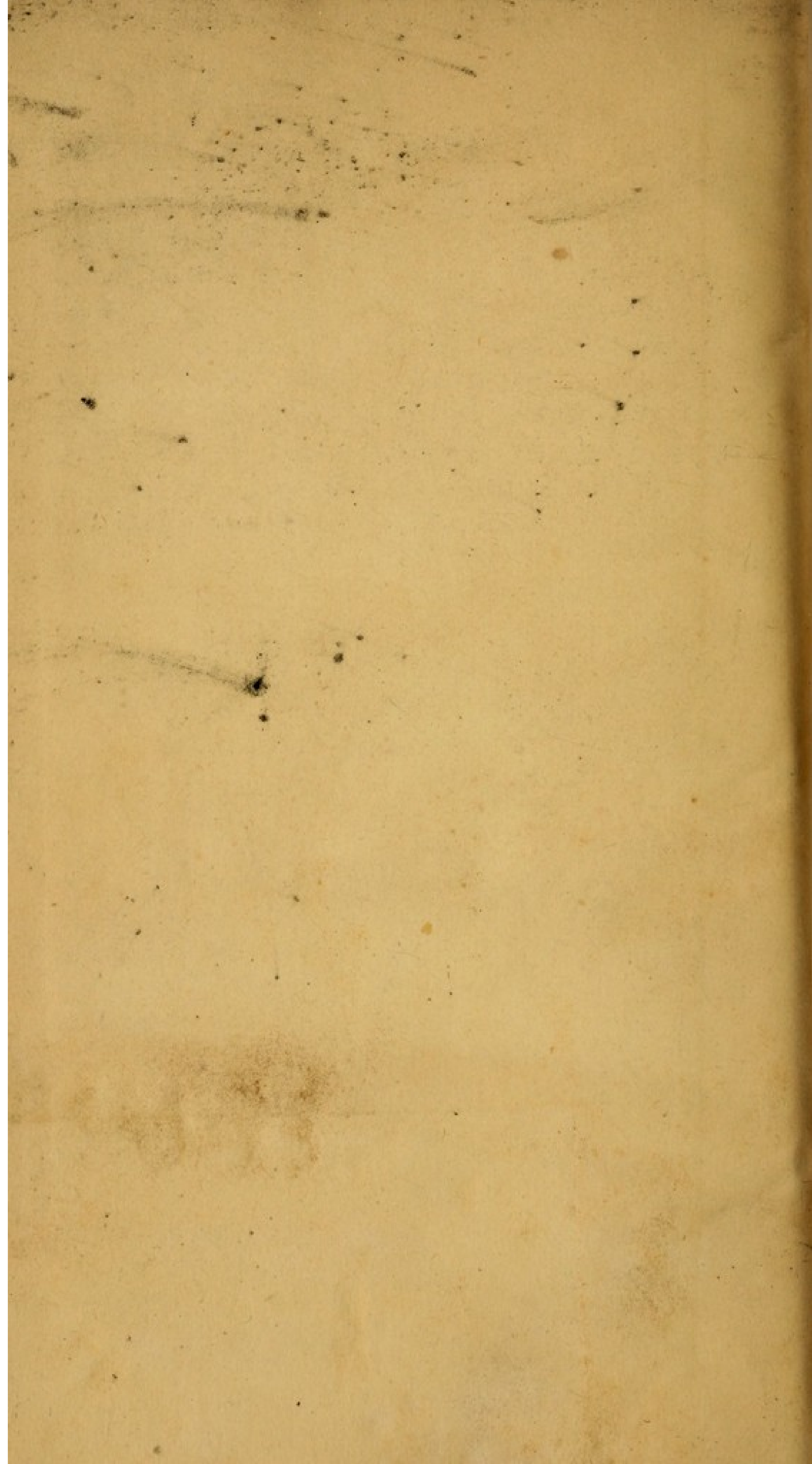
* Ut supra. † 3 Inst. 17. ‡ Supra, p. 183.









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