

breathing is still difficult, and the mucus is still rattling in her throat, but she is decidedly better. Her eye is clearer, and she is no longer in the dozing state in which she lay last night.

Whilst I was in the ward she had another copious green evacuation.

I ordered one grain of calomel, every fourth hour, and to continue stuping.

During the day the purging continued, and her breathing improved every hour.

9th.—The child is breathing quite well, and the mother insists on bringing her home.

She called at the hospital every day to inform me that the child had still some cough, but on the third day was quite well. Her mouth was not sore, and her bowels regular.

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ART. XII.—*Case of Protracted Utero-Gestation; with Remarks.*

By C. JOYNT, M.D.; L.K.Q.C.P., &c.; Assistant-Surgeon 14th Bo. N.I.; late Professor of Midwifery Grant Medical College; Examiner in Medicine and in Medical Jurisprudence, University of Bombay; and Surgeon to the Bombay Gaol, and to the House of Correction.

I WISH to bring under notice the particulars of a case of utero-gestation protracted for several weeks beyond the average period; and I have the less hesitation in doing so as the subject of it was under my constant observation, not only during pregnancy, but before its commencement, as well as for some time after its termination.

A lady, aged about thirty years, who had been pregnant six times, the pregnancy on two occasions ending in miscarriage, came under my care in November, 1863. She complained of frequent and often excessive menstruation, as well as of that form of neuralgia of the ovaries described by Dr. West as "ovarian pain," and by Dr. Churchill more fully as "ovarian irritation." She was also the subject of frequent hystero-epileptic fits. It would appear from the history she gave me that she had suffered for some years previously from functional derangement of the sexual organs, of which pain was a constant symptom, for which she had been subjected to a long course of local treatment, which included the repeated application

of caustics, and on one occasion of caustic potash to the os uteri. The uterine symptoms for which she consulted me were referred by her to a miscarriage in the fifth month of pregnancy, which occurred in the preceding April, about seven months before she came under my care. I found no evidence of any organic lesion, either of the uterus or of the ovaries.

This lady menstruated in December, 1863, the discharge appearing on the 28th, and ceasing on the 2nd January, 1864. About the middle of the latter month she suffered from troublesome nausea and vomiting, coming on every morning and subsiding towards evening. This morning sickness was of a very distressing and intractable character, and was only very slightly mitigated by medicine. Its characteristic nature, and its persistence made me attribute it to pregnancy, and to that alone, especially as it had been an early and troublesome accompaniment to all her former pregnancies; and my opinion was confirmed by the non-occurrence of menstruation at the expected period. This morning sickness continued almost without intermission, though occasionally slightly alleviated by medicine, from the 14th of January until the last week in March. She quickened on the 28th of March, when she first distinctly felt the fetal movements. Her pregnancy, evidenced by all the ordinary phenomena, proceeded favourably until the 12th of May, when she was threatened with miscarriage. She had severe uterine pains and some hemorrhage, which, however, yielded to treatment and to the enforcement of rest in the recumbent posture. Abdominal enlargement advanced in the usual manner until the 21st of August, when she had a severe hystéro-epileptic fit, which lasted for seven or eight hours, during which she was almost completely unconscious. This fit was sufficiently alarming to cause some apprehension of an unfavourable termination, and was followed by a state of somnolence, which continued for about thirty-six hours. On recovering from this somnolent condition, she ceased to feel the movements of the child, for the first time since the 28th of March, nor was she again cognizant of them for some days. At this time I made a tactile and auscultatory examination of the abdomen, which I found to be as large as is usual at the seventh month of utero-gestation; but I could not detect any fetal movements. A well-marked uterine souffle or murmur was audible, but the pulsations of the fetal heart were not heard. This, of course, was not to be wondered at, as the lady was remarkably stout, and the consequent thickness of the abdominal parietes

might well prevent the fetal heart-sound being heard. On the evening of the 3rd October, having, as she believed, arrived at her full time, she was taken with labour pains, which increased in force till the following morning, when they abated, and disappeared during the day. The pains recurred on the evening of the 4th; increased during the night, declined towards morning, again disappearing on the 5th. This sequence of phenomena was repeated for four or five days successively. During an intermission I made a vaginal examination, and found the cervix uteri quite obliterated, and the os soft and patulous, so that, were it desirable, I could have introduced the point of my finger. Uterine pains, observing nearly the order and the duration described, continued to recur at uncertain intervals until the 21st of November, when I was hastily sent for near midnight. On arrival I found that labour had actually set in; the os uteri was dilated to the size of a shilling; parturition proceeded favourably, and she gave birth to a mature male child, at 5 o'clock, a.m., on the 22nd November, precisely seven weeks from the first appearance of labour pains. With regard to the child, the only circumstance at all noticeable was that it was born with a tolerably good head of hair, the lady observing that none of her former children had any hair whatever at birth.

For a week or ten days previous to the 3rd of October, there were present the usual indications of approaching labour, a sensible falling down of the gravid uterus towards the pelvis, and consequent relief from the distress caused by its pressure against the diaphragm, as well as slight apparent diminution of size in the abdomen itself. During the seven weeks which intervened between the first occurrence of uterine pains and the expulsion of the child there was an actual decrease of nearly two inches in the circumference of the abdomen, as ascertained by measurement.

I may here mention that on three separate occasions, subsequent to the occurrence of the spurious labour pains, there was a discharge of water from the vagina, each time to the amount of nearly, if not quite, a pint, according to the lady's own estimate. She thought the discharge was caused by rupture of the membranes, and each time expected labour to follow at once. This fluid, doubtless, accumulated in the space that sometimes exists between the amnion and chorion; for, though these membranes are generally in close apposition during the later months of utero-gestation, they are separated in the earlier months, the intervening space then containing a gelatinous fluid. We know, at all events, that in the later

months of pregnancy, fluid is sometimes found in this space, constituting a false amniotic fluid, which, when discharged at the beginning of labour, may be mistaken for the liquor amnii. Whether or not this was the source of the fluid discharged in the present instance is not of much moment as it has no obvious connexion with the protraction of pregnancy. It is, however, interesting as showing that a considerable quantity of fluid may accumulate external to the amnion. The discharge of the fluid was followed each time by relief from the sensation of fulness, and from the pain which she suffered.

Her convalescence was more favourable than after any of her former labours, all of which were attended with severe floodings, by which her life was more than once imperilled. So great was the loss of blood, and so difficult its arrest when last confined at the full time, in 1861, that she was advised by three medical gentlemen who attended her, never again to run the risk of pregnancy, as it would in all probability compromise her life. This advice she had ever in mind during her pregnancy, to the termination of which, she consequently looked forward with no small apprehension.

The period of utero-gestation in the case now related was, unquestionably, considerably protracted beyond the average limit of 275 or 280 days. It remains to fix as nearly as may be possible the limit of this protraction. The case supplies data sufficient to determine accurately the minimum duration of the pregnancy, and, within a day or two, its real duration. These data are:—

(a). The date of last menstruation, 28th December, 1863, to 2nd January, 1864.

(b). The occurrence of characteristic morning sickness in January.

(c). The perception of the fetal movements on the 28th of March, and their persistence.

(d). The threatened miscarriage in May, after the completion of the calculated fourth month of pregnancy, corresponding to the period at which she actually miscarried on two former occasions.

(e). The existence of a well-marked utero-placental murmur, with abdominal enlargement in August; and

(f). The occurrence of spurious labour pains in the beginning of October (marking, as I interpret them, the termination of the normal duration of gestation), when the cervix uteri was found obliterated. Any one of these signs taken by itself might be open to objection; but, in the aggregate, they afford evidence as strong as is ever likely to be adduced in proof of protracted gestation.

Besides these, however, my case furnishes another fact of importance in fixing the date of conception. My patient was, at the time I speak of, separated from her husband in order that she might be under my immediate care, being only visited by him occasionally. He was absent from the 26th of December to the 6th or 7th of January, when he returned and remained with her till the 10th. Before he again visited her the characteristic morning sickness had satisfied me that pregnancy had already commenced. This definitely fixes the 10th of January as the latest date on which conception could have taken place; so that the minimum duration of pregnancy must have been 317 days, or about six weeks more than the average.

It would be mere waste of time to discuss the value of the individual data on which the duration of pregnancy has been calculated. One of them, however, namely, quickening, perhaps requires a few remarks. As regards this sign there might be a possible mistake if it occurred in a primipara, but occurring as it did in a highly intelligent woman who had already experienced the sensation on six previous occasions, there is scarcely room for any doubt, and the less as the fetal movements continued to be felt, and with increasing distinctness afterwards. The unusually early period of pregnancy at which this sensation was felt deserves also to be noticed. The distinct perception of the movements of the child within eleven weeks and two days from conception is very uncommon. Denman, who is followed by most obstetric writers, says:—"Quickening happens at different periods of pregnancy, from the tenth to the twenty-fifth week, but most commonly about the sixteenth week after conception." Denman, however, gives no example, as far as I know, of its occurrence so early as the tenth week. Dr. Montgomery, of Dublin, the author of the most classic work on pregnancy, and of the ablest essay on its duration in our language, referring to Denman's opinion, writes:—"I confess that, with all my respect for Denman's authority, and appreciation of his sagacity and truthfulness, I felt for a long time sceptical as to the occurrence of quickening at such early periods; but in addition to the case above related, I met with another, more recently, at a still earlier period, so that I can no longer doubt." In this quotation Montgomery refers to two cases, related by himself, in which quickening occurred in eleven weeks and two days, and in ten weeks, respectively. He was probably in error in fixing the time of quickening in the latter case, for, finding that 213 days intervened between the perception of

the fetal movements and delivery, he deducted that interval from 280 days, the usual period of gestation, and the difference, 67 days, he considered as the time that elapsed between conception and quickening. To me it appears more probable that gestation was protracted than that quickening took place in the tenth week, for it is difficult to believe that the movements of the child can be distinct enough to be felt by the mother at so early a period. A similar mode of reckoning would make quickening to have occurred as early as the fortieth day in my case.

In cases of protracted gestation, where conception could not be traced with certainty to a single coitus, some physicians have been wont to deduct a certain number of days from the date of last menstruation in order to fix the commencement of pregnancy. Although conception is generally believed to take place soon after the cessation of the menstrual flux, yet it, undoubtedly, sometimes happens, and according to some obstetricians, often to be deferred till near the following period. As in any particular case it would be impossible to determine whether conception had immediately followed one menstruation, or merely preceded the one that is missed in consequence of its occurrence, those observers who have desired accuracy, chiefly, have deducted a period equal to a menstrual interval from the last menstruation, so as to fix the time of conception. For this purpose the distinguished Professor of Obstetrics in the University of Edinburgh, Sir J. Y. Simpson, allows a period of 23 days, and Dr. Murphy, late Professor of Midwifery in University College, London, has deducted 28 days from his cases; so that in the cases of protracted gestation recorded by these physicians, any error must be on the side of defect, and not of excess, as regards duration. In my case greater accuracy was obtainable without the necessity of having recourse to this plan; indeed, menstruation may be altogether excluded from the account. Its minimum duration was, as I have shown, 317 days, a duration which has few parallels in the annals of British medicine.

A very brief notice of those cases of pregnancy which are recorded as having attained a duration of 300 days, or more, may not be out of place. Dr. Merriman, who first in England investigated this subject, collected 114 cases in which gestation was reckoned from the last day on which the menses were seen, but excluding that day; in only four of these was gestation protracted beyond 300 days; in one it reached 309 days. Merriman's cases are, however, unsatisfactory, inasmuch as he made no allowance for

the probable interval between menstruation and conception. Dr Montgomery collected 56 cases, considered by him to be perfectly reliable, in which the date of fruitful intercourse was known, but in only one did the duration of pregnancy exceed 300 days, the husband having been with his wife on the nights of the 21st, 22nd, and 23rd of February, and labour occurring on the 21st of December; pregnancy lasted in this case, therefore, from 301 to 303 days. Dr. Reid, in his carefully collected series of 43 cases, in which gestation was counted from a single intercourse, gives only one in which it extended to 300 days. Three cases are recorded by Sir J. Y. Simpson in which gestation was protracted to 301, 309, and 313 days, respectively, after deducting 23 days from the date of last appearance of the menses. Amongst Dr. Murphy's cases two are found in which pregnancy is stated to have been protracted to 314 and 324 days, respectively, after deducting 28 days from date of last menstruation. Murphy's cases are, however, open to the objection that the subjects of them were hospital patients, on whose statements he was obliged to rely exclusively, and such statements are exposed to many sources of error, intentional as well as unintentional. The notes of the case which lasted 324 days were not taken by Murphy until six months after its termination. As he was satisfied with the data on which he calculated their duration, and as Dr. Taylor, in his *Manual of Medical Jurisprudence*, treats them as authentic, it is not for me to impugn their accuracy; their value would be much greater than it is had Murphy had the opportunity of observing them throughout. The late Prussian medical jurist, Dr. Casper, Professor of Forensic Medicine in the University of Berlin, commented upon them very severely, and blamed Taylor for attaching so much importance to them. More recently Dr. Murphy has met with another case in which he believes that pregnancy was protracted to 357 days, after deducting 28 days from the last menstruation. This case is recorded in the second edition of his *Lectures on the Principles and Practice of Midwifery*; the subject of it was a lady who had previously borne three children, two at the usual term, the third a fortnight later. The menses were last seen on the 10th of February, 1861; the motions of the child were felt about the middle of July; she expected her confinement in November, and felt her pains in that month, but the receipt of a letter gave her such a shock that the pains disappeared, and did not return till the 2nd of March, 1862, when she was delivered of a "feeble and diminutive" child. It appears that Murphy only saw

this lady once, when her pregnancy had already, as she thought, exceeded the average period, so that the value of the case is much impaired from this circumstance. Dr. Taylor, in the sixth edition of his *Manual*, refers to a case reported by Dr. Power, in his work on *Human Pregnancy*, in which gestation is said to have been protracted to 325 days. Taylor also mentions, in the same place, a case communicated to him by Mr. Chattaway, a former pupil. The healthy wife of a farmer, aged 36, menstruated for the last time in December, 1855, and quickened in the beginning of April, 1856; in the middle of September she was seized with severe false pains, accompanied with a discharge of mucus tinged with blood; and on the 19th of November was delivered of a female child of the average size. In this case pregnancy was apparently protracted, after deducting 28 days from last menstruation, to 330 days. Casper, referring to this case, says:—"It admits of another mode of computation: if we suppose that the last menstruation, 'in' December, occurred about the end of the month; and further, that the conception took place towards the end of January, then we have only a pregnancy protracted for about 300 days, which is nothing incredible. Moreover, nothing is said as to the usual menstrual cycle of this woman—nothing (so necessary for a critical estimation of the alleged perception of fetal movements at so early a date) as to whether the woman was a primipara. In what other science, may I ask, has there existed for centuries so total an omission of all critical inquiry as I have just proved to exist in forensic medicine, precisely the one of all others in which the phenomena observed require to be most sharply criticised!" Dr. Guy, Professor of Forensic Medicine in King's College, London, mentions a case (in the second edition of his *Principles of Forensic Medicine*) in which the minimum duration of pregnancy, as determined by the sudden death of the husband, was 308 days. The case was communicated to him by Mr. Hewitt, a former pupil of King's College, but no particulars of it are given.

The only other cases of pregnancy protracted beyond 300 days, which I have met with in the records of British practice, are those related by Mr. Robert Annan, of Kinross, in the *Edinburgh Medical Journal*, for February, 1857. In Mr. Annan's three cases he considers that gestation was protracted—in the first, for six weeks beyond the expected time; in the second, to 327 days; and in the third, to about the same period. These cases occurred, twenty, seventeen, and six years, respectively, before he related them, with



“some diffidence,” as “nearly as his notes and recollections permitted.” In Mr. Annan’s first case, the woman, considering herself at the end of the seventh month of her sixth pregnancy, had her nerves so strongly affected at a public mesmeric exhibition, as to be threatened with miscarriage. Instead of this, however, her confinement was postponed from the 5th of June, the day she expected it, to the 21st of November. In his second case, Mrs. —, aged 44, married in June, 1839; ceased menstruating in the end of December, and expected her confinement at the end of September or beginning of October, 1840. This event, however, did not take place till the 21st of November, when she was delivered, by the forceps, of a still-born female child. In his third case, Mrs. —, aged 26, menstruated on the 1st of April, 1836, and was delivered in February, 1837, of a male child, which weighed 10 lbs. 14 oz. Mr. Annan comments on this case, thus:—“Though the corroborating testimony of a mother who had borne live children at the full period was wanting, the defect was here amply made up by the male parent, a person of respectable status in society, who, on my expressing concurrence in the belief of the protracted period in this pregnancy, at once frankly stated that of this there could be no doubt whatever, as, during nearly the whole period above mentioned, he had not approached the nuptial bed.” “As far, then, as this case goes,” he proceeds, “it affords almost decisive evidence of protracted pregnancy; and, deducting a period of days for the interval between insemination and conception, the case seems as complete as the size of the child, and respectable human testimony, can make it.” Why, then, did Mr. Annan allow twenty years to elapse before recording it, and then only from memory! It is to be feared that if evidence more decisive than that furnished by his cases could not be adduced in favour of protracted pregnancy, the opinion expressed by Drs. Davis, Gooch, and Sir C. M. Clarke, in the Gardner Peerage Case, in 1825, would still be considered incontrovertible, viz., that the limits of gestation were fixed, and that protracted pregnancy was impossible. Yet these cases are referred to by Dr. Barnes, in the fortieth number of the *British and Foreign Medico-Chirurgical Review*, as illustrations of the vexed question of the duration of pregnancy, and without any expressed or implied doubt of their perfectly reliable character.

In Germany, Elsässer, “that most cautious enquirer,” as he is designated by Casper, who is apparently sceptical as to the existence of the quality of caution in British obstetric statisticians, in a paper

containing the particulars of 260 cases of pregnancy, entered in the Journal of the Stuttgart Lying-in Hospital, states, that in eleven of his cases gestation was protracted to periods varying from 300 to 318 days, reckoning from the last appearance of the catamenia.

In America, cases of protracted gestation have been frequently recorded. Professor Meigs, of Jefferson College, Philadelphia, in his work on *Obstetrics*, relates a case which he met with, in which pregnancy is alleged to have lasted 420 days, or nearly fourteen months, as ascertained chiefly from the statements of the woman herself, an hospital patient, and thus remarks upon it:—"Of course in relating this case, I do not consider myself responsible for the truth of the statements, further than they are worthy of confidence, in view of the character of the patient herself, and as the facts came under my notice. She had the appearance of perfect candour and sincerity in all that she said about it, and I have no doubt she thinks her pregnancy began in July, 1839, and ended on the 13th September, 1840." Besides his own case, Meigs relates one from Professor Asdrubali, in which a lady was affected with symptoms attributable to conception, on the 1st of March, 1796; and her husband died on the 22nd of the same month. On the 22nd of April, 1797, she was seized with symptoms of labour, and seven days afterwards gave birth to twins. This lady is stated to have had labour pains at the beginning of her ninth month, and to have discharged a large quantity of watery fluid from the uterus; these pains continued to recur for eight consecutive days. Dr. Meigs "cordially accepts the story of the accomplished author," and says that he finds in it nothing impossible to believe, more particularly as he has confidence in the case related by himself. Dr. Atlee, of Philadelphia, has recorded two cases in which gestation is alleged to have been protracted to twelve months, and to twelve months and seven days, respectively, and states that he "has not the least doubt of the truthfulness of the evidence in the cases." Dr. W. Stone, of Indiana, reported a case in the *Boston Journal*, for May, 1859, in which gestation is said to have been protracted to 330 days, reckoning from last intercourse. The subject of it was a married woman, who menstruated in February, 1858, and whose husband died on the 17th of March—the last intercourse having taken place on the 10th of the same month. She quickened on the 8th of July, and on the 3rd of February, 1859, gave birth to a female child, weighing 8lbs., whose osseous system was "extraordinarily developed." The mother had always sustained an

irreproachable character; and five physicians who investigated the case, were satisfied that it was one of protracted gestation. No wonder that Simpson should express his opinion that some of the cases of protracted gestation lately recorded, particularly "by our American brethren," exceeded the bounds of possibility. Such was also Murphy's estimate of them, until he met with the case in 1862, already mentioned, which appears to have put an end to his incredulity.

It is a circumstance deserving of attention, that in many of the recorded cases of protracted utero-gestation, signs of labour pains, &c., set in about the time of completion of the normal term of pregnancy. In several of the cases I have referred to, as well as in my own, this was observable. It was also noticed in an interesting case of protracted gestation, related by Dr. Tanner, in his work on *The Signs and Diseases of Pregnancy*, in which labour pains occurred on the 275th day from the last coitus, but ceased in a few hours, and did not return till the following day; again they ceased for twenty-four hours, and again returned; this happened daily for three weeks, when she gave birth to a female child, remarkable for its size, twenty-two days after the first occurrence of uterine pains, and 297 from the last intercourse. It was doubtless from observing this circumstance, that Dr. Jörg, of Leipzig, was led to believe that all cases of pregnancy exceeding 280 days, are merely instances of protracted labour. Jörg refuses to allow the period of gestation to exceed 280 days from the time of conception, and considers all cases of protracted gestation, as cases of "protracted parturition." The same idea would appear to have suggested itself to Denman, for he says:—"At the expiration of forty weeks the process of labour commenceth, unless it be hastened or *retarded* by some particular circumstance." Casper alone appears to have given to the occurrence of labour-pains, &c., at the normal end of pregnancy, its proper value as a proof of protracted gestation; furnishing, according to him, one of the three scientific points of any value in the diagnosis of disputed cases, the other two being the removal of all doubts as to the procreative capacity of the alleged father at the alleged time of conception, and the individual menstrual period of the mother.

A very unnecessary degree of importance has, I think, been attached to the degree of development presented by the child at birth, as probative of prolonged pregnancy. Dr. J. Matthews Duncan, for instance, says that the absence of extraordinary intra-uterine

development is a strong evidence against the reality of so-called cases of prolonged pregnancy. On the other hand, he considers its presence as "powerfully corroborative," of protraction in any individual case.

Dr. Duncan tells us that he has excluded two cases of supposed protracted gestation from the category of such cases, because the infants born were not at all larger than the former children of the same parents, who were born at the usual time. Such an opinion is at variance with nearly all experience. The over-maturity of the fetus is, according to Casper, a most variable idea, and only possessed of a negative value. If a child were "so very small that the mother did not know that her labour was over," it would be certain that it could not be the product of a protracted gestation. Doubtless there are various rates of intra-uterine growth, one fetus more slowly attaining maturity than another, just as one child attains manhood more slowly than another. In Casper's work on Forensic Medicine we find the details of the weights and measurements of 247 *mature* new-born children, which show that while the average weight of all the children was a fraction over seven pounds, there was a range of five pounds and a quarter, the maximum weight attained being ten pounds, and the minimum only four and a half; the measurements exhibited a range of six inches in the length. It is curious that the minimum weight as well as the minimum length was found in a boy. In a series of 391 children, born at the normal time, tabulated by Dr. Guy, in his book already referred to, it appears that the maximum weight was fourteen pounds, and the minimum, two pounds six ounces, while the mean weight was six pounds eight ounces, showing a range of eleven pounds and a half. Of 181 children, all of whom had reached the full time, as given by Dr. Guy, the average length was nineteen inches and a half, but there was a range of more than seven. In the obstetric institution in this city, of which I have charge, Julia Wale, a married woman, aged twenty years, recently gave birth to a well-developed child, fully as large as any fetus of eight months that I have seen, and yet, according to her account, it could not have been more than six months and a half, for this woman regularly menstruated till March, the catamenia appearing on the 10th, and ceasing on the 14th, of that month. Her child was born on the 2nd of October, 202 days after the last appearance of the menses. It only survived seven hours. Such facts as these show us what little dependence is to be placed on the degree of development of the child, either as favouring or opposing the belief in protracted gestation. Experience appears to

confirm what we would *à priori* expect, that it is for the sake of children whose *intra-uterine* development has been tardy that nature sometimes detains them in the womb until sufficiently matured to bear their extrusion from it with safety. Viewed in this light the occasional addition of a few weeks to the average duration of pregnancy appears not to be so very wonderful after all.

Nothing satisfactory, however, is known, or probably ever shall be, why utero-gestation is, in some rare cases, protracted beyond the natural, or, to speak more accurately, the average period, for the natural period has not yet been ascertained. Sir James Simpson has suggested the possibility of protracted mental agitation and anxiety producing this effect; and, in one of his cases, the lady whose pregnancy was protracted had endured much mental agitation owing to a steamer, in which she was a passenger, taking fire at sea; for seventeen hours she was exposed in an open boat, with but little clothing, and immersed in water. Mental anxiety was considered, by Mr. Annan, to have been the cause of the protraction in two of his cases. In my case, too, there was a good deal of psychical disturbance during the whole period of her pregnancy. But how many women suffer similarly, and yet protraction of that condition is not the result, premature labour being more commonly brought on by such influences.

The alleged importance of allowing for the time that may possibly elapse between insemination and conception, in calculating the duration of pregnancy, does not merit discussion. This interval was considered by Bischoff, reasoning by analogy from observations and experiments on some of the lower animals, to be about eight or ten days. Whatever physiological interest may attach to this question it possesses no practical or forensic importance. Pregnancy has been, and ever will be, reckoned from the last fruitful intercourse, when this can be ascertained with certainty. In the human female the length of time that may elapse between insemination and the fertilization of the ovum, is probably a variable one, and must ever remain a mystery, and, therefore, practically of no account.

In almost every class of mammals, in which accurate observations have been made for a sufficient length of time, the period of gestation has been found to fluctuate within limits as wide as those which have been observed in woman—either falling short of, or exceeding, the average duration. In the cow, the mammal most nearly approaching the human female in this respect, Baron Tessier found

it to vary from 260 to 321 days, showing a range of 61. Lord Spencer, whose observations were on a more extensive scale than Tessier's, found a still larger variation in the same animal, viz., from 220 to 313 days, the difference being as much as 93 days. Tessier found the duration of gestation in the mare, whose average period is believed to be about 330 days, to fluctuate between 290 and 419 days, the difference being 129; and these results have been confirmed by late observers. In the sheep, whose normal period is about 153 days, it has been found protracted to 157. In rabbits, whose period is 30 days, a protraction to 35 has been observed. In the sow, gestation has been found to vary in duration from 104 to 127 days. Similar variations are found in the period of incubation in birds, although the analogy between incubation and human gestation is less obvious than is that between the latter and gestation in the mammalia. Every one knows that a difference of three or even four days may exist in the time required by different eggs in the same clutch to bring the chicks to maturity. Although these facts have not been disputed there has yet been an unwillingness to admit the full force of the analogy borne by them to the protraction of human gestation. Dr. J. M. Duncan thinks this reasoning from analogy much over-stretched, and tells us that there are evident reasons for expecting that the period of gestation in woman should be limited on the side of protraction rather than in the lower animals. That he should so think is not surprising when he lays down the following dictum:—"That while absolute proof of the prolongation of real pregnancy beyond its usual limits is still deficient, yet that there is evidence to establish the probability that it may be protracted beyond such limits to the extent of three or even four weeks." These limits are, according to him, 275 days, minus the interval between insemination and conception.—*Vide Edinburgh Monthly Journal*, 1854.

Perhaps, after all, the ancients entertained a more correct opinion regarding the duration of gestation than modern physicians have done. Aristotle thought that there was good reason to believe that in the lower animals the period of gestation, generation, &c., were arranged in cycles, but that in mankind alone the period of gestation was subject to great irregularity. Pliny has given expression to a somewhat similar opinion, viz., that in all other animals there are stated seasons for reproduction, and periods of gestation; in man alone they are undetermined; gestation, he thought, lasted from seven to eleven months (lunar). To me it

certainly appears strange that the human female, exposed as she is to so many disturbing influences, psychical and moral, exciting and depressing, should alone be considered subject to a law of constancy in the period of gestation.

The case which I have now communicated is indebted for its chief value to the fact that I was cognizant of all the signs and symptoms of the gestation, so remarkably prolonged, *as they occurred*. This being so, I have thought it right to make it known, as there still continues to exist extensively among medical men an incredulity (unreasonable in my opinion) with regard to protracted gestation. The progress of medical science appears to be retarded as much by over-scepticism as it is by over-credulity. If it be true that utero-gestation may be in *rare instances* prolonged beyond its average duration, as my case goes a far way to prove, no harm can result from the admission of such an occasional occurrence. It appears to me to be the more necessary that every carefully observed case of protracted pregnancy should be placed on record, when we find Dr. Duncan propounding the dogma quoted above; and, more recently still, Dr. Tanner asserting that "all recorded experience of any real value, and all experiments upon animals, teach us that it is in the highest degree improbable that utero-gestation in the human subject has ever been prolonged beyond ten calendar months." Casper allows a greater latitude in the dogmata given by him, as sufficient for our guidance, as we would naturally expect, from his more extensive special knowledge and practical experience; these dogmata are:—"1. The usual duration of pregnancy is from 275 to 280 days. 2. Pregnancy may, however, indubitably be protracted beyond this, and that *even as far as the 300th day*. 3. Cases in which pregnancy is alleged to have been *protracted considerably beyond this, even to the eleventh, twelfth, and thirteenth month, have never been determined by accurate observations*; and allegations of this kind, in any individual case, are, therefore, completely *inadmissible*."

I shall conclude these remarks by quoting a passage from Sir Henry Holland's *Medical Notes and Reflections*, which appears to be peculiarly relevant to the subject:—"In questions of medical evidence there may be an excess of scepticism as well as of credulity. Sometimes this occurs in effect of a temperament of mind (not uncommon among thinking men) naturally disposed to see all things under doubt and distrust. There are other cases, where the same feeling, not originally present, grows upon the mind of

physicians who have been too deeply immersed in the details of practice. . . . From conscience as well as convenience, they come to confine themselves to what is safe, or absolutely necessary; and thus is engendered, by degrees, a distrust of all that lies beyond this limit."

NOTE.—This Paper was originally read at a meeting of the Bombay Medical and Physical Society, in November, 1865. A few verbal corrections and alterations have merely been made before transmitting it for publication.

ART. XIII.—*Flax Mills—their Machinery; Accidents Occurring Therein, with Suggestions for their Prevention.* By THOMAS H. BABINGTON, M.D.; T.C.D.; M.R.I.A.; Surgeon to County Londonderry Infirmary.

THE above may be considered an extraordinary text on which to ground a communication to a medical and surgical journal. The subject is one of importance. It, in my opinion, demands the attention of the public at large, as ratepayers, and of the Legislature; and I trust my brethren in the profession will concur with me in thinking that I am not out of place in asking them to consider the subject for a short space.

I have lived, during my professional life (commenced in 1835), in the flax-growing province of Ulster; first, in County Donegal, medical officer of a large dispensary district; afterwards at Port-stewart, County Derry; then, for thirteen years, medical officer of Coleraine Union Workhouse; and for twelve years surgeon to the County Londonderry Infirmary. In each year I have had under my care many cases of accidents from flax mills, of greater or less magnitude. In some cases one or two fingers have been lost; in others a whole hand, often a whole limb, sacrificed; and, occasionally, life lost by the frightful injuries inflicted.

Flax, when pulled from the earth, is steeped for a certain time, then spread on grass lands and dried in the sun; afterwards dried in kilns constructed for the purpose; then bruised, and carried to the mills ("*scutch mills*," as they were formerly called), there to be scutched or cleaned. And here begins the danger to lives and limbs.

In order to have the flax properly scutched or cleaned—that is, to have all extraneous substances removed, nothing to be left but