

confess that my mind is not quite made up on this difficult point. Some authorities boldly assert, that lithotrity is less dangerous than lithotomy, whenever disease of the kidneys exists. I cannot go so far as this; your safest course, perhaps, will be to consider, in the most careful manner, all the circumstances of the case, and then, according to these, select the operation which seems less likely to irritate the bladder.

CLINICAL NOTES.

By MARSHALL HALL, M.D., F.R.S., &c.

NOTE VII.—ON MUSCULAR "TIC."*

In stammering and in chorea, *voluntary* movements are rendered irregular and grotesque by *emotion* or *spinal action*. In the movements in the muscular tic, of which I am about to treat, the movements themselves, however inordinate, are *voluntary*.

This tic frequently affects the eye-brows and eye-lids. In one patient the *eye-brows* are drawn violently upwards every minute. In another there was equally violent *winking*.

One gentleman has a *nasal* tic. One gentleman of fortune kept continually and frightfully rolling and lolling the *tongue*. Another closes and *grinds* the *teeth*, until the masseter and temporal muscles ache with the continual and violent action.

I was consulted the other day in the case of a patient who distorted the *face* and thrust forth the *hands* and *arms* in the most violent manner, rendering herself a spectacle to every bystander. It was by some thought to be chorea.

Some boys and girls have tics which prove so persistent as to continue through life. Protrusion of the chin to one side; a shake of the head; and a variety of grimaces, are of this kind. One person "*hitched up*" the trousers continually.

One patient pressed the knuckle of the fore-finger to the upper teeth until a *corn* formed upon it.

A frequent form of tic—for it belongs to these peculiar and abnormal voluntary actions—is the habit of *biting the nails*.

By intense attention, and by a firm volition, these movements may be arrested and suspended. But as these acts of the mind become wearied, the tic returns.

The emotions and the irritations augment the disposition to the tic and the actions themselves. Quiet, and improved health, and gentle occupation, are amongst our most important remedies.

The prognosis is unfavourable in regard to cure, but favourable in reference to ulterior consequences. I have rarely known these tics to disappear; but there is no disposition to permanent spasm or paralysis, as in epilepsy or chorea.

The muscular tic becomes a sort of want or necessity. I offered a bribe to one little patient if he would not, within a certain space, shake his head. He obtained the prize, but with the utmost difficulty.

It is a great question whether any *notice* should be taken of these tics; or whether they should be left to wear themselves out, if that event may be hoped for.

The study of the various voluntary, emotional, and spinal actions, is most interesting, and most important in a diagnostic point of view. Voluntary motions not only sometimes assume an abnormal form, but are in other cases affected with a peculiar *paralysis*. This is frequently seen in hysteria, constituting indeed some of its most remarkable forms—a fact for the detection of which I think the profession deeply indebted to Sir B. C. Brodie.

Such is hysteric paralysis. But there is still another form of muscular condition, which consists, not in *tic* or movement, but in *constant* contraction, voluntary in its essence. This affection obtains in some cases of paralysis agitans; the hand is perpetually closed, the arms rigid, and when the patient rises from his seat, it is without movement or flexion at the various joints. He is all "of a piece" as it were. Yet there is the *power* of opening the hand, flexing the limbs, &c., that is, of relaxing the muscular effort which bound his limbs in rigidity.

How much does the whole subject of the Nervous System and its Diseases still require investigation!

Grosvenor-street, Nov. 1852.

Postscript to the Note on Tracheotomy.

I have recently had intelligence of *five* cases of death from laryngismus, in which tracheotomy would assuredly have pre-

* Dict. de l'Académie Française.

vented that event. Three were cases of fatal epilepsy, one of them in a little girl. One was a case of tetanus; suffocative dyspnoea occurred on swallowing; then without swallowing; at length the patient expired in a fit of tetanic laryngismus! The fifth was a case of syphilitic ulceration of the border of the glottis: fits of laryngismus occurred. In one of these, the poor patient, a young woman, expired!

AN INQUIRY INTO SOME OF THE RELATIONS BETWEEN MENSTRUATION, CONCEPTION, AND LACTATION; AND THE INFLUENCE OF LACTATION IN CAUSING ABORTION.

FOUNDED UPON AN ANALYSIS OF THE HISTORIES OF ONE HUNDRED WOMEN.

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MR. ROBERTON, quoting Haller and Dr. Blundell, seems to lean to the opinion that the belief in the protective influence of lactation against conception is limited to the vulgar, and not generally participated in by physiological or obstetric writers. This is hardly a correct conclusion. I am disposed to believe that most obstetric authorities share in the popular belief, that conception does not ordinarily occur during lactation; but it is almost certain that very imperfect ideas prevail about the extent to which the law is invalidated by exceptions. One author at least, Dr. Tyler Smith, enters somewhat elaborately into the physiological reasons which determine the alternate activity of the ovaria, of the uterus, and of the mammae. He illustrates this subject by describing the successive phenomena of ovulation, gestation, and lactation, as forming a great genetical cycle, fulfilled by the successive functional activity of the organs of generation.

It is not my purpose to dispute the existence of such a law, but simply to endeavour to determine by numerical researches the *extent* to which the functional activity of one of the generative organs excludes that of the others; to elucidate some of the reciprocal actions of the generative organs, and some of the consequences which result when the functional activity of the ovaria, the uterus, and the mammae, or of the uterus and the mammae, are in contemporaneous operation.

I scarcely deem it necessary to remark, that the endeavour to bring even the apparently best-established physiological law to the rigorous test of numerical analysis, is seldom a superfluous or unfruitful task. If, to use the present instance, we assume it to be a law that the ovaria, the uterus, and the mammae have each their appointed successive period of activity, it must still be a matter of interest to determine the exact extent to which that law prevails; to ascertain the relative proportion of the exceptional cases; and to trace the effects which flow from these accidental deviations from that which is presumed to be the normal course.

Previously to the investigations of Mr. Robertson, of Manchester, (1831,) followed by those of Dr. Laycock, of York, (1842,) no accurate data having any bearing upon this subject existed. Mr. Robertson concluded, from the facts he had collected, that "there will elapse an interval of from *twelve* to *fifteen months* from parturition to the commencement of the subsequent pregnancy," in seven out of eight women who suckle as long as the working classes in this country are in the habit of doing. He considered that the law was proved, but it is obvious that he encountered numerous exceptions. Dr. Laycock's inquiries afforded results similar to those of Mr. Robertson. Taken together, the inquiries of Mr. Robertson and Dr. Laycock afford sufficient evidence of the existence of the general law that mammary activity excludes or retards the activity of the ovaria or uterus, while at the same time they place in a clear light the fact that the law is very far from being uniform in its operation. Dr. Laycock's inquiries were limited to the object of ascertaining to what extent lactation operates in preventing conception; Mr. Robertson sought, in addition to this, to ascertain the extent to which lactation operates in preventing menstruation. The series of observations which form the basis of this paper, embrace both these objects. The facts relating to the question of the influence of lactation in preventing menstruation and pregnancy, correspond to a great extent with those of Mr. Robertson and Dr. Laycock. The facts in my paper show the proportion of instances, in one hundred women, in which menstruation and pregnancy took place during lactation. One table will further show, what might indeed be anticipated, although Mr. Robertson failed to trace the con-

nexion, that those women who are subject to menstruation during lactation, are also the most prone to conceive during that period. Now, if we admit that menstruation is essentially an ovarian function, then we possess evidence not only of the frequent contemporaneous activity of the mammæ and the uterus, but also of the mammæ and ovaria. But a further analysis of the facts recorded in my tables, will illustrate other reciprocal actions of the generative organs. One striking fact will become manifest—viz., the extraordinary proportion of abortions which follow conception during lactation. When we observe that the attempt to maintain the contemporaneous activity of the mammæ and the uterus, leads to the expulsion of the embryo, we cannot but perceive a strong confirmation of the law, that the ovaria, the uterus, and the mammæ assume an alternate action. The inquiry into this subject of abortion, as connected with lactation, will, I believe, be found to constitute an interesting contribution to the history of abortion. It is a subject to which the researches of Mr. Robertson and Dr. Laycock did not extend.

I will, in the first place, inquire—*What is the influence of lactation in preventing or retarding menstruation?* It will appear from the first table, that out of 100 women, 37 menstruated during lactation. In some of these instances the menstruation returned within one month of delivery; in many, it continued throughout the whole period of lactation, unless, as frequently occurred, it was arrested by a new pregnancy; and in several, lactation could not arrest menstruation beyond twelve months. Indeed, there can be little doubt that in certain women the ovarian, or ovario-uterine actions concerned in menstruation, are very difficult to repress. In no less than four instances, even pregnancy did not prevent menstruation; and it is deserving of remark that in these same instances menstruation attended lactation as well. It will be shown hereafter that such women are more than usually apt to abort. Indeed, it is easy to conceive that the ovarian activity, and the condition of the uterus at the menstrual periods, must imperil the retention of the embryo.

The same table will also exhibit the relation between menstruation during lactation and conception. Out of the 37 women who menstruated during lactation, 24, or two-thirds, conceived. Out of 159 conceptions during lactation, 79, or one-half, occurred among the women who menstruated, while the remaining 80 conceptions fell to the 63 women who did not menstruate during lactation. In many women, again, it was especially observed that the appearance of menstruation during lactation—no matter at what period (in one case as early as five weeks)—was the signal immediately preceding conception. Some, for example, remarked that whensoever menstruation occurred during lactation, then conception ensued; on the other hand, they did not conceive on those occasions when menstruation did not appear. In other cases it was remarked that lactation had no influence in retarding menstruation beyond twelve months; in such instances it was generally found that the liability to conceive had returned simultaneously. Of the whole number of women (56) who conceived during lactation, 24, or nearly one-half, were accustomed to menstruate also during lactation. It may be conjectured, also, that in many women conception anticipates the appearance of the catamenia; and hence that some cases, at least, which in a numerical statement must figure among the instances of conception independent of menstruation, may, when rightly considered, be regarded as instances of conception which would not have occurred had the generative organs not been in that condition immediately antecedent to the appearance of the more marked phenomena of menstruation, and which were, perhaps, prevented by conception. But it must be admitted, that, even if we assume that some of the cases classed as examples of conception unconnected with menstruation, are, in reality, instances of the opposite kind; still there remains a large number of cases of women who were never known to menstruate during lactation, even when prolonged beyond the usual period, but who nevertheless conceived. How far these cases can be permitted to weigh as proof against the theory which would limit the liability to conception to the periods immediately preceding or following the catamenia—a function presumed by that theory to mark the maturation of an ovule, and its fitness for impregnation,—I cannot here discuss. But I may call attention to the circumstance that collections of facts of this kind may have an interesting application in the attempt to elucidate the obscure phenomena of generation.

But, avoiding the discussion of this question in its more philosophical aspects, I must refer to the facts I have adduced, as being amply sufficient to establish the practical point that there is a close relation between menstruation during lactation and conception. Mr. Robertson would appear to have arrived at a different conclusion upon this point. He says:—"Of those

women who usually conceived while yielding suck, the majority did not menstruate; in fact, the appearance of the catamenia during lactation did not seem to have any influence in disposing to conception."

The more minute analysis to which I have subjected my cases, will not sustain the opinion of Mr. Robertson. I may, moreover, remark that his opinion is at variance with the rule which obtain in women who are not suckling, and which manifestly indicates that in them there exists a near connexion between the phenomena of menstruation and conception.

The question has a most important practical bearing, the consideration of which I must postpone until after I have examined how far the table I have drawn up contains evidence serving to determine another question, viz.—*What is the influence of lactation in preventing or retarding conception?*

Out of the 100 women, 56 once or oftener, in the course of their parturient history, conceived during lactation. These 100 women had had 619 conceptions. Of this number of conceptions, 159, or one-fourth, had occurred during lactation. Hence it may be inferred that in 46 women, lactation had operated as an absolute protection against conception, and that in 450 lactations out of 619 (or three-fourths) conception had been prevented. The proportion of women whom I found had conceived during lactation is identical with that discovered by Dr. Laycock, and only slightly in excess of that arrived at by Mr. Robertson, who found that 81 women out of 160 had conceived during lactation. The facts given by Mr. Robertson and Dr. Laycock do not enable me to compare their observations with mine as regards the proportion of conceptions during lactation to the total number of conceptions.

What is the period of lactation at which these conceptions occurred? Mr. Robertson found that of 81 women who conceived during suckling, 42 did not on the average conceive till they had suckled for 19½ months, and that 22 had been in the habit of conceiving soon after parturition. I have arranged my own facts bearing upon this point under three periods. On referring to the table it will be seen that:

31	conceptions took place under six months' lactation.
77	" " " " " " " " " " " "
33	" " " " " " " " " " " "
In 18	" " " " " " " " " " " "
159	" " " " " " " " " " " "

35 women, therefore, had 107 conceptions under twelve months' lactation. In one instance conception occurred as early as five weeks after parturition; in four instances only was conception noted as having been delayed beyond eighteen months.

There is a problem in the physiology of child-bearing of extreme interest to determine—viz. What is the normal interval between parturition and the succeeding conception in the human female? This is the problem which especially engaged the attention of Mr. Robertson. It involves the question, What is the normal period of lactation? Indeed, if we admit what must be conceded as a general law, however numerous the exceptions observed, that one of the natural effects of lactation is to adjourn conception, then it will follow that the determination of the normal duration of suckling will assist us in ascertaining the proper intervals of conception. We may also derive some aid from the consideration of those cases in which lactation habitually protracted seemed to suspend conception for a certain definite period, at the expiration of which, conception regularly took place.

Mr. Robertson deduced from his observations, the corollary, that "in seven out of eight women who suckle for as long a period as the working-classes in this country are in the habit of doing, there will elapse an interval of from twelve to fifteen months from parturition to the commencement of the subsequent pregnancy." If we extend somewhat the proportion of exceptions, the law as stated by Mr. Robertson is probably a near approximation to the truth. It is, however, at variance with another conclusion of that very able author—viz. that the normal duration of lactation extends to twenty-four months. It can hardly be maintained that nature intended lactation to be continued throughout the period of gestation; and yet this contemporaneous support by the mother of one infant at the breast, and another in the womb, is implied, if we admit the truth of both Mr. Robertson's propositions. I shall presently place in a striking light the fact that Nature revolts against the attempt to load her with this double burden.

Neither am I prepared to assent unreservedly to another corollary of Mr. Robertson's—viz. "that the secretion of milk is the cause which regulates the periods of conception in mankind, as instinct operates to the same end in graminivorous quadrupeds."

It would be more correct to say: The secretion of milk is a means provided *firstly* for the nourishment of the new-born infant; and that during the period required for that purpose, conception is usually suspended. There is another argument which somewhat forcibly illustrates the law that lactation has a direct influence in suspending conception. Many women who, either in consequence of the death of their infants, or from some other cause, had brought lactation to an abrupt and early termination, and who neither menstruated nor conceived so long as suckling was continued, did so almost immediately on its cessation. The same result is also commonly observed after weaning in the ordinary course. But the efficient cause which presides over the intervals of conception probably lies deeper than this. The duration of lactation has been in all countries, and among the most widely different peoples, determined to a great extent by local or other circumstances, by prevailing customs or modes of life. It is to a certain extent an arbitrary thing. And the striking fact that lactation can rarely postpone conception beyond a certain period, clearly proves that the mere secretion of milk cannot be the cause which regulates the intervals of conception. Observation plainly establishes the fact that, in most women, after a certain period dating from parturition there is almost uncontrollable disposition in the ovaria and uterus to resume their proper functions, notwithstanding the forced activity of the mammae, and that conception takes place.

Mr. Robertson refers to the custom of uncivilized tribes for the purpose of deducing an analogical argument in favour of an extended period of lactation. He cites one class, consisting of the Mexicans and other American tribes, who suckled their children for three years, and who were not allowed to cohabit with their husbands till after weaning. In the other class, comprising the Greenlanders, the tribes of Northern Asia, and numerous others, this temporary divorce does not obtain; but in them also, suckling is continued for two years and upwards.

I believe the customs which may prevail upon this subject among barbarous or semi-civilized nations, supply no better evidence of the intentions of nature than do the customs of European women. Many a similar fallacious argument in obstetrics has been drawn from this reference to a presumed standard of nature. But it would not be difficult to show that no people pursue a life more exposed to the influence of external agencies, more artificial, and more widely different from that indicated by nature and by reason as the best fitted for the physical and moral attributes conferred upon man. The life of the savage approximates to the life of the brute creation. The nomadic habits, the dangers of the chase and warfare, and the frequent scarcity of food inseparable from savage life, give rise to a policy which may be a policy of Necessity, but which cannot be natural—of repressing by every possible means the increase of children. It is to this end that lactation is protracted among them beyond the limits usually observed in this country. In the first class of uncivilized tribes referred to by Mr. Robertson, among whom the women live apart from their husbands during suckling, the object in view is evident enough. In the second class, lactation is kept up with the same object, although it is often defeated. It must also be remarked, that the most authentic intelligence we possess concerning the habits of barbarous tribes, places it beyond a doubt that the policy of repressing the increase of children is still further carried out in the revolting practices of artificial abortion and infanticide.

We cannot, therefore, accept the evidence afforded by the customs of barbarous tribes, in seeking to ascertain the normal duration of lactation. But we are not without other means of forming an opinion. Many women cannot succeed in prolonging lactation beyond a certain time: which, having arrived, the milk falls off, or becomes thin and watery, losing the proper characters of milk, and no longer agrees with the infant. The period at which this happens is mostly, I believe, about twelve months after delivery. About this time, also, it is generally observed that the infant is furnished with teeth, which, if not adapted for mastication, at any rate assist in the prehension of food of more consistency than milk; and it is commonly observed that about this time such food has become more essential to its health and growth. Another argument may be drawn from a circumstance frequently observed, of which there are several instances in my tables—viz. that at the end of twelve months, menstruation spontaneously returns, and conception is apt to occur, as if at this period the proper term of lactation had expired. In the absence of any more exact data, it is not unreasonable to accept such indications. They incline, I believe, to fix the normal period of lactation at from twelve to fifteen months.

In 80 women I found the average duration of lactation to be 12½ months. The average duration of 36 women who did not

conceive during suckling, was 13 months; of 39 women who did so, 12 months. M. Robertson found the average age for weaning their children was 14½ months for the women who had not conceived during suckling; and 15½ months for those who had conceived once or oftener while so engaged. This result is opposed to mine; and it is also, I think, contrary to what might be anticipated. Those women who find that whilst suckling they do not become pregnant, will be likely to protract that function; and accordingly, in my tables, there are no less than five women who did not wean under two years. On the other hand, those women who do conceive while suckling, will frequently bring that function to an abrupt termination on making the discovery that they are pregnant. I have recorded one case in which suckling was arrested in three months from this cause.

I now proceed to examine another most interesting question—one upon which the facts I have collected throw a forcible light—viz., *What is the influence of lactation in causing abortion?*

Out of 100 women, 41 had had abortions; of these, 16 had conceived during lactation. The 41 women had had 74 abortions; of these, 27 followed conceptions during lactation. It thus appears that the proportion of total abortions to total conceptions, was 12 per cent. The proportion of abortions following conceptions during lactation, was 17 per cent; and the proportion of abortions unconnected with lactation, only 10 per cent. This large excess of abortions following conceptions during suckling, places beyond a doubt the influence of lactation in producing that event.

It is a matter not without interest in a pathological and therapeutical point of view, to inquire in what manner lactation operates in conducing to this result. A very acute and ingenious author ascribes the most important effects to irritation of the mammary nerves. The following quotation expresses the views of Dr. Tyler Smith:—"Irritation of the mammary nerves may produce abortion. That cause is seen in operation in cases of undue lactation complicated with a second pregnancy. Cases occur in which, during prolonged lactation, two or three conceptions and abortions follow each other, the latter being caused by the irritation of constant suckling. The question naturally suggests itself whether it is not the constitutional debility, rather than the local irritation, which induces abortion in these cases; and there can be no doubt that this, like many other anæmic conditions, may help to produce the accident. There is, however, over and above this, mammary irritation as a distinct cause."

Observation and reflection alike lead me to conclude that lactation leads to abortion by impairing the health of the mother, and to assign a very subordinate influence to the irritation of the mammary nerves. The theory of mammary irritation, indeed, as expressed in the passage I have quoted, is so qualified, that it can scarcely be entitled to be recognised as a distinct cause. The remark that irritation of the mammary nerves may produce abortion, is limited to instances of "*undue lactation*," of "*prolonged lactation*," complicated with a second pregnancy. If mammary irritation operates only under this condition, it has of course no independent efficiency; and we must look to those changes brought about in the maternal system and in the ovum for the real agents. In order to prove that simple mammary irritation may operate in producing abortion, it would be necessary to show that abortion is a frequent occurrence in the *early* months of suckling—a period when mammary irritation is the greatest; it should be observed in healthy women, and the embryo and envelopes should be sound. I will venture the remark that such a combination of circumstances is of rare occurrence. It is true that the influence of suckling in causing contraction of the womb is most marked immediately after delivery; and that the contractions so induced have a sensible effect in constringing the uterine vessels, and in expelling clots. Some women also experience for some time after delivery, at every application of the infant to the breast, some degree of uterine pain, and sometimes even a discharge of blood. But it is equally true that in most cases this responsive sensibility of the uterus to mammary impressions, gradually lessens as the interval from parturition increases. By the time that another conception has occurred, it is probable that the uterine susceptibility to such impressions is small. I do not remember ever having observed a case of abortion, in which all the circumstances were properly inquired into, without detecting some alteration of the ovum, or some diseased condition in the mother. The healthy ovum clings to the healthy parent with remarkable tenacity, defying the most long-repeated, as well as the most violent impressions upon the nervous system to dislodge it.

I may, however, here remark, that there is a mode in which mammary irritation does appear to have a direct influence in producing abortion. In some women, as I have before observed,

the application of the child to the breast causes a turgescence of the uterus, sometimes to the extent of effusion of blood from its walls. It is clear that when this occurs, the adhesion of the ovum is imperilled. But this is a mode quite distinct from simple excitation of the diastaltic function.

There is one circumstance which throws considerable light upon the excessive frequency of abortions following conceptions during suckling, which I have deduced from the analysis of my cases. I have already shown that those women who menstruate during lactation are the most prone to conceive. They are also the most prone to abort. Out of twenty-seven abortions following conceptions during lactation, no less than nineteen occurred in women who were accustomed to menstruate during suckling. It is not unreasonable to infer, that it is to the excessive functional activity of the ovaria and uterus in these women, that the frequency of abortion in them is to be attributed. Ovarian irritation, then, *to the point of exciting the menstrual secretion*, is a much more frequent cause of abortion than irritation of the mammary nerves. Dr. Tyler Smith has also expressed the opinion, that certain cases of hæmorrhagic menstruation are, in reality, cases of abortion, in which the ovum escapes unobserved, pregnancy not being suspected. My own observation distinctly confirms his position, that abortion mostly happens at the menstrual periods.

But according the first place in the production of abortion during suckling to ovarian irritation, the second must, I think, be given to the anæmic condition of the mother, induced by the double tax called for by the demands of the fœtus in utero on the one hand, and by the infant at the breast on the other. I believe that few women are able to bear this double burden with impunity. In some instances, the attempt to continue lactation after conception, *cannot* be persevered in. A constitutional revulsion occurs, which at once, and imperatively, announces that persistence is useless. The woman is seized with sickness, languor, and loss of strength; she feels that she is unable to continue. The milk all at once disagrees with the infant. Diarrhœa ensues; and if suckling is persisted in, it falls off. But when such marked indications do not manifest themselves at the outset, others not less important arise if suckling is long kept up after conception. I have constantly remarked, in women who were making this unnatural call upon their resources, a pallid, careworn expression of features; emaciation, or flabbiness of the soft tissues; a feeble pulse, easily hurried by the slightest cause of mental disturbance; palpitation, excessive nervousness and lassitude, and pain in the back, between the shoulders. Auscultation seldom fails to reveal the ordinary indications of anæmia. Bearing upon this point, I endeavoured to ascertain the effect of a second conception upon the secretion of milk. The facts I have hitherto collected are imperfect. In some instances, no great change in the quantity was noticed. In many the milk fell off in quantity; and in some it was arrested altogether. When abortion happened, the flow of milk was sometimes restored. If the quantity of the milk is so sensibly affected, it is not less certain that it becomes deteriorated in quality. The effete materials resulting from the utero-placental circulation, are thrown into the maternal blood, constituting a direct source of injury to the infant at the breast. The drain upon the system, through the mammary secretion, operates further by abstracting from the blood those nutrient elements which are requisite for the development of the fœtus. When the blood is subject to these sources of contamination and impoverishment, the assimilative and secretive functions necessary to restore its condition soon become impaired. A degraded state of the maternal blood operates in the following manner: *firstly*, it is unfitted to abstract from the fœtal blood its eliminanda; *secondly*, it is unfitted to impart to the fœtal blood the necessary nutritive elements; *thirdly*, it is a direct source by which impurities are communicated to the fœtal blood, having a positively toxic effect; and *lastly*, the languor or inertness of the current of the blood in anæmic patients, still further disqualifies it from effecting those changes in the fœtal blood, which demand not only a healthy constitution, but a sufficient momentum of the maternal blood, for their production. The ultimate consequence of this combination of circumstances, is, that the fœtus not unfrequently perishes for want of proper nutrition, and abortion follows.

Defective nutrition, or depraved blood, may also give rise to disease of the embryo or its envelopes, of which the most frequent form, I believe, will be found to be fatty degeneration of the villi of the chorion, and so lead to abortion in this way.

The causes of the excess of abortions during suckling may be arranged as follows:—

1. Ovarian irritation, determining menstruation.
2. Mammary irritation, causing turgescence of the uterus and discharge of blood.

3. Anæmia of the mother, which may destroy the fœtus, either through degradation of the quality of the maternal blood, or through the consequent *inertia of the circulation* of the mother.

4. Superinduced disease of the ovum.

In the preceding remarks I have only sought to account for the abortions during suckling in excess of those to which women are liable under different circumstances. Of course women who are suckling are liable to the same causes of abortion as operate in women who are not suckling; and it is probable that these common causes are even aggravated in intensity by the circumstances attending lactation.

Practical indications.—The facts I have collected, and the conclusions established, have their applications in practice. The first question which forces itself upon our attention is this:—Should suckling be discontinued on the occurrence of a second pregnancy? I refer to what has been said concerning the influence of suckling in causing abortion, to prove the necessity of doing so. But a difficulty arises in the determination of the existence of pregnancy in the early months, when the danger of abortion from the continuance of suckling is most imminent. I have known women who have gone on suckling for two and even three months after conception, in perfect ignorance of the fact. The diagnosis of early pregnancy is always difficult; when it complicates lactation it is unusually so. In some cases, as we have seen, menstruation precedes conception. When this occurs once or oftener, and is then arrested, it is, of course, a valuable indication. But there are numerous cases in which conception occurs without the previous appearance of the catamenia. In such instances the suddenly diminished secretion of milk may justify a reasonable conjecture that pregnancy is the cause. Some women are warned that conception has occurred by the sudden supervision of sickness; others, by that constitutional revulsion to which I have before alluded. As soon, however, as the existence of pregnancy is discovered, there can be little doubt that lactation should be brought to an end. There are three beings—the mother, the infant, and the embryo—who must all suffer by persisting. In the interest of all, weaning is essential.

But there is another case in which I would also raise the question of weaning, and which is more open to discussion. Should weaning be advised when *menstruation* appears during suckling? There are several considerations which weigh in favour of this course. We have seen that the women who menstruate during suckling are exceedingly prone to conceive, and if they conceive, to abort. By weaning, the liability to conceive is, perhaps, not much increased; and, consequently, the hope of averting pregnancy by suckling is small. But the fruit of a conception after weaning is much safer than the fruit of a conception before weaning. In the interest of the future progeny, then, weaning on the appearance of menstruation is plainly desirable. Again, it is not an unreasonable presumption that the return of menstruation is an indication that in the particular individual the time has arrived when the ovaria and uterus, having resumed their natural functions, have superseded the activity of the mammæ; and, as a consequence, it may be inferred that the milk secreted by the mammæ under these circumstances has become unfitted for the nourishment of the infant. Indeed, I have observed in several instances, where suckling was persevered in after the return of menstruation, that the milk alone was no longer sufficient, and that artificial food was resorted to. It is not in the course of nature that menstruation and lactation should proceed together. If menstruation will take place in spite of lactation, and if it be further probable that when menstruation returns conception will follow, what useful end can be answered by persisting in suckling?

I entertain a confident opinion that, as it is proved that a large excess of abortions takes place among women who suckle after menstruation and conception, so a considerable proportion of this excess of abortion may be obviated by weaning on the appearance of menstruation, or as soon as the existence of pregnancy is known.

To draw all the observations touched upon in this communication into a few points:

First. Lactation exercises a considerable influence in preventing menstruation and conception.

Secondly. This influence appears to be marked and constant in some women, and to exist but feebly in others.

Thirdly. The influence of lactation in averting menstruation or conception, cannot for the most part be kept up longer than twelve months.

Fourthly. There is a close relation between the occurrence of menstruation during suckling and conception—*i. e.*, when men-

struation appears during suckling, conception is very likely to follow.
Fifthly. When pregnancy takes place during suckling, and suckling is continued, abortion is very apt to follow.
Sixthly. The chief causes of the abortions brought about during suckling, are the revolt of the ovaria and uterus, evinced by the return of the menstrual nixus, and the deteriora-
tion of the mother's blood ; to which must be added, super-induced disease of the ovum.
Seventhly. The practical conclusion that weaning should be enjoined, not only whensoever pregnancy takes place, but also whensoever menstruation returns.
Gloucester-terrace, Hyde-park, November, 1852.

TABLE I.

ILLUSTRATING THE INFLUENCE OF LACTATION IN ARRESTING MENSTRUATION, AND THE RELATION BETWEEN MENSTRUATION DURING LACTATION AND CONCEPTION.

100 Women.			
Number who menstruated and conceived during lactation	24	Number of conceptions during lactation among the 37 women who menstruated	79
Number who menstruated during lactation, but did not conceive	13	Number of conceptions during lactation among the 63 women who did not menstruate	80
Total number who menstruated during lactation	37	Total of conceptions during lactation	159
Total of women who conceived during lactation		56	

TABLE II.

ILLUSTRATING THE INFLUENCE OF LACTATION IN PREVENTING OR RETARDING CONCEPTION.

1. Duration of Lactation.			
Average duration of lactation (in 80 women)	12½ months.		
Average duration of lactation in women (36) who did not conceive during lactation	13 months. — N.B. Five women suckled 24 months.		
Average duration of lactation in women (39) who did conceive during lactation		12 months. { N.B. One woman suckled only three months, conception occurring.	

2. Conceptions during Lactation—100 Women.

Number of women who conceived during lactation	56
Number of conceptions during lactation	159
Total of conceptions in the 100 women	619, or '26 nearly.

3. Classification of Conceptions according to periods at which they occurred.

In 9 women who had 18 conceptions during lactation, the period of conception is not specified.

12	"	had	31	"	under 6 months' lactation.	} 35 women had 107 conceptions under 12 months' lactation.
23	"	"	77	"	" 12 "	
16	"	"	33	"	after 12 "	

*60 — 4 = 56 159

The earliest instance of conception during lactation was at 5 weeks.

" latest " " " " 24 months.

* Four women had conceptions under and above twelve months' lactation, and are counted twice over.

TABLE III.

SHOWING THE INFLUENCE OF LACTATION IN CAUSING ABORTION.

Total number of concep- tions 619	Number of conceptions during lactation 159	Number of conceptions unconnected with lac- tation 461	Three women had abortions, both connected and un- connected with lactation.
Total number of women who aborted 41	Number who aborted having conceived during lactation 16	Number who aborted in- dependently of lacta- tion 28	
Total number of abor- tions 74	Number of abortions follow- ing conception during lac- tation 27	Number of abortions un- connected with lacta- tion 47	
Proportion of total abor- tions to total concep- tions12	Proportion of abortions fol- lowing conceptions during lactation17	Proportion of abortions following conceptions unconnected with lac- tation10	
Proportion of women who aborted after concep- tion during lactation to total number of women who conceived after lactation29			