

## MATERNAL IMPRESSIONS.\*

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IT is generally assumed that the term "maternal impressions" is intended to denote those disturbances of the minds of women which occur at a period when they are naturally more susceptible than at other times to the influence of mental trouble, or to causes which excite, depress, or in any other manner produce serious impressions on their nervous systems. The difficulty of explaining satisfactorily the manner in which the phenomena arise has induced many of our profession to regard them more often as coincidences than as the consequences, of the causes stated to have produced them; while others, who have had a larger number of examples presented to their notice, have allowed the probability of cause and effect, yet have declined to speculate on the various links which unite one with the other.

Sometimes, however, a difficulty which has long appeared insuperable is diminished when we change the point of view from which we have been accustomed to regard it, and yields to attempts to overcome it when they are made in a different method and with well organised purpose; of which we have many examples in physical science, or more familiarly in the experience of the mountaineer, who succeeds in the ascent of lofty summits by an entire change in the starting-point of approach.

Such a change of position as that to which I refer is often the result of a suggestion from those who have tried and failed to accomplish their object by one particular plan, yet have neither the time nor energy to attempt the scheme which observation leads them to believe likely to prove successful. When such persons, however, give their directions to others, it is at least necessary that they should support them by satisfactory arguments, and should place at disposal such assistance as experience enables to offer. I need hardly say that I am in the humble position of one of this class, so far as regards having failed to elucidate the causes which give rise to those departures from the ordinary course of natural development which we meet with in the fetus and in young children, and which are referred to "mental impressions" by which the mother has been affected. There is no intention, however, on my part, to throw labour on others in which I am unwilling to share. It is really from the fact that valuable observations may be made by many members of our Society, that the following remarks and suggestions are brought under their consideration.

Instead of describing generally the various conditions which are met with in practice, and are quoted as examples of maternal impressions, we may take a case which is related by Mauriceau of an instance of the kind. The chapter in which it occurs is entitled "Of the Diseases of Women with Child", and contains excellent directions for the management of the pregnant state. (Trans. Mauriceau's work, 2nd ed., 1716, Chamberlen.)

"If she ought to govern herself well in the observation of what we have lately mentioned, she ought no less to be careful to overcome and moderate her passions as not to be excessive angry; and, above all, that she be not affrighted, nor that any melancholy news be suddenly told her; for these passions, when violent, are capable to make a woman miscarry at the moment, even at any time of her going with child; as it happened to my cousin's mother (Mrs. Dionis), a merchant dwelling in the street Quinquamfois, whose father being suddenly killed with a sword by one of his servants, who, meeting him in the street, traitorously run him through out of spite and rage, because he had, some few days before, turned him out of doors. They brought immediately this ill news to his wife, then eight months gone; and presently after brought her dead husband, at which sudden fright she was immediately surprised with a great trembling, so that she was presently delivered of the said Dionis, who is to this day (which is very remarkable) troubled with a shaking in both hands, as his mother had when she was delivered of him, having yet no other inconvenience, notwithstanding he was born in the eighth month, by such an extraordinary accident; nor doth he seem to be above forty years old, though near fifty. When he signed his contract of marriage, they who knew not the reason of it, when they saw his hands shake, thought it was through fear of his bad bargain, of which they were disabused when they had heard the catastrophe that hastened his birth. Wherefore, if there be any news to tell a high-belly'd woman, let it rather be such as may moderately rejoice her (for excessive joy may likewise prejudice her in this condition); and, if there be absolute necessity to acquaint

her with bad news, let the gentlest means be contrived to do it by degrees, and not all at once."

From such cases as this, the opinion must have originated that the child *in utero* might be affected indirectly through the mother; and though, through popular ignorance, very exaggerated and doubtful statements have been made regarding the extent to which maternal impressions may affect the child, still, like most popular ideas, there are sufficient reasons, when we consider it, to justify further inquiry into the subject. We may perceive, however, that the case just related is not one of those in which the child is born with some peculiar deformity of such a nature as to produce a resemblance, fancied or otherwise, to the object which was the cause of mental disturbance to the mother. This attempt to connect the deformity or other unnatural condition in the child with the form, colour, or other peculiarity in the object, is one which is constantly being made, though a not very careful consideration of the grounds for that idea would soon lead to the conclusion that such a relationship as popularly imagined is most improbable. In the reports of cases, for example, of a child having a mark upon its face resembling a spider, or that of one born with only one leg, in consequence of the fright sustained by the mother from the sight of a spider or a cripple, we have generally evidence that the person who relates them so strongly believes in this connection between cause and effect, that he has seen resemblances which to the sceptical mind would be quite inappreciable. For scientific purposes, it is difficult to make use of such cases, not only because the idea referred to may have led the reporter to force the resemblance to suit the theory, but because he has also probably forced the details of the occurrence of fright to the same extent and purpose.

The arguments generally urged against the theory of resemblance, if we may call it so, are of considerable force, though, indeed, of such a nature as to leave us dissatisfied, because they are negative rather than positive, and do not attempt to explain the facts by any other theory.

It has been observed that—

1. The same abnormalities occur very frequently where there has been no fright whatever.
2. In animals, as well as in the human species, corresponding deformities are met with, though there is no reason to imagine that they have been produced by fright.
3. Most deformities occur at those early periods of pregnancy when the woman is not sensible of or certain of the fact.
4. The same unnatural formation may be observed in several children of the same parent.
5. All abnormalities are rather subject to the laws of physiological development than to the effects of fright.
6. In twins, the abnormality is present in only one of the children.
7. We are aware of no direct nervous connection between the mother and child.
8. Serious physical disturbances, particularly fright, occur to pregnant women, but are not followed by abnormal conditions in the child.

Although these arguments do not explain the manner in which deformities arise, they support the theory that there is a law of variation which presides over all abnormal developments in the fetus. It certainly would appear that they are intended to discourage the view that there is any connection between the mother and the child, and that such deformities occur in a certain proportion without any particular cause. It is probable that this view is correct, so far as regards certain forms of variation, though it would be quite reasonable to argue that the percentage theory is just as likely to be true of cause as of effect.

The fact that those deformities which are evident at once are more rare than the varieties which occur in internal organs and are only exhibited by dissection, will account for the difference in statistical returns intended to show the relative proportion between children born well and ill formed; and the general conclusion at which Förster (*Die Missbildungen des Menschen*, 1865) arrived, after an extensive inquiry into the subject, still remains true—namely, that there does not seem to be any definite numerical ratio between them. But, to decide to what extent maternal impressions are the cause of deformity—that is to say, in how many cases it is reported to have been so—we should require different statistics from those which simply exhibit the relative frequency of certain kinds of abnormality. It would be necessary, of course, to have a distinct account of the peculiar nature of the mental disturbance, the period of pregnancy at which it occurred, the duration of its effects, and, lastly, an exact anatomical account of the part or organ affected.

There are some forms of cardiac disease, of cutaneous disease, and others, in children, which you would hardly be inclined to refer to so remote a cause as the condition of the mother; and we might be disposed to allow simply that a feeble state of health in a woman is

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sufficient to affect her child; but we might not think of connecting congenital diseases of the heart in the child with rheumatism, scarlatina, or variola, in the mother. Thus it frequently happens that examples of deficiency of the tissues of the heart, an irregular distribution or connection or deficiency of the principal blood-vessels, are reported with anatomical exactness, while no account is given of the mental or bodily condition of the parent.

There is one question the decision of which would be of great assistance; and that is, whether all deformities or deficiencies have originated very early indeed in foetal life, and have, therefore, gone on *pari passu* with the growth of other parts; or whether it is possible that some of the less serious departures from the normal condition may have had their origin at later stages of pregnancy, and that, too, where the processes of development had so far followed the ordinary laws of growth. For instance, is it possible for the septum of the ventricles, at one time perfect, to undergo such changes as to result in the formation of an opening, which, of course, assumes the actual removal of already formed tissue? Or, again, suppose the growth of a finger were arrested at the second month of pregnancy, could those conditions be produced which we meet with of absolute deficiency in consequence of absorption and the increase in surrounding parts? Can morbid processes, such as that of inflammation, affect the septum of the ventricles, and be followed by absorption and rupture? Or, in the case of a limb, may the processes of nutrition and growth be arrested and take a retrograde course?

The other view—that, from the very earliest period of existence, the course of development is arranged, and that what we term abnormalities are the preordained results of another system of growth—has undoubtedly this argument in its favour, that, in many cases of abortion, at very early periods indeed, we meet with evidence of abnormality.

Not to wander away, however, into the inscrutable, let us return abruptly to the simple question, Can mental disturbances produce an influence on the foetus *in utero*? We soon begin to see that it is necessary to classify the various causes which can affect the mind. A mental impression becomes too vague a term, when the variety of emotions is considered by which the mind may be excited. Fear, hope, joy, anger, in various degrees, producing various effects, and all the other means by which the mind may be agitated or depressed, appear to be beyond the reach of classification. Some might indulge the fancy so far as to imagine that certain emotions agitate certain organs of the body in particular, and that in this way the foetus is affected; that, as certain emotions appear to disturb the circulation and violently agitate it, others—as, for example, long continued mental trouble—will produce disorders of nutrition by disturbing secretion and absorption.

We can understand the difficulty of establishing such a view as this; and those who are inclined to support it will probably find more assistance in the evidence of one or two careful observers, than in abstract reasoning. Without indulging in compliment, we may fairly attach considerable importance to the fact that, among such observers, Dr. Peacock has expressed an opinion in its favour. "The occurrence of accidents," he remarks, "and strong impressions upon the mind of the mother, are also supposed to conduce to the irregular development of the offspring; and in many cases such causes appear to have operated. In several instances which have fallen under my notice, the mothers of children labouring under malformations of the heart have assigned the defects in their offspring to strong mental impressions or shocks which they sustained during pregnancy; and there seems reason to believe that such causes, by deranging the maternal, and indirectly the foetal, circulation, might produce the effects." (*Malformations of the Heart*, p. 165-166.) We must really commence by a close examination of what we intend by an "impression", in the sense in which we use it in these cases. It is clear that the mind may be influenced through any one of the senses, more particularly through those of sight and hearing. But in daily life, it is a matter of experience that the mind is terrified, troubled, or otherwise disturbed, by causes which act directly on no particular sense, more often than by those that shock through their direct influence on sight or hearing. That part of the individual which we are in the habit of calling by the name of the feelings or the emotions, is peculiarly liable to disturbance in this way. The case that has been related is an example of emotion from ill news, a more frequent occurrence than any other to which certain abnormalities in young children may be attributed.

Fear and joy may be taken as general expressions of two classes of mental conditions, of which the latter rarely, as far as is known, produces those effects we are considering.

Fear may arise in a variety of ways, and may affect the moral nature very differently, according to the manner and duration of its action. It is difficult to say what we mean by fright, as distinct from fear. Fear, or again anxiety, which would appear to be a protracted species

of fear, is decidedly capable of producing impressions on the mind of a woman, and of being followed by abnormalities in her child. We have a class of cases where actual danger has been threatened, and a different state of excitement has been produced from that which follows sudden and alarming intelligence. Thus, we have instances of women whose lives have been threatened by another person; or where the life of one of their own children or of another person has been in danger from fire or violence in their presence; where they have been alarmed by an accident or a thunderstorm, whether injured or not by it. In these cases, we perceive that the senses are more or less directly affected, but decidedly in a manner different from that in which either sudden intelligence, or any object of disgust or fear, produces an impression. It would appear, therefore, that a "maternal impression" is not quite so easy to define as might be imagined. We can only admit that, through the feelings and through the senses, a variety of impressions may be made, varying principally with the extent to which moral and animal feelings are separately or simultaneously excited.

It is unnecessary for me to assure you that, instead of the subject appearing more intelligible on reflection and careful observation, it grows in difficulty, and seems more and more inexplicable. To increase this difficulty, it is found that a maternal impression may affect, not the bodily, but the intellectual, condition of a child, producing results practically far more serious than peculiar local abnormalities, such as deficiency of fingers, toes, etc.

I have yet one remark to make concerning the anatomical arrangement of abnormalities, which I ought to have introduced before. By this method, the deformities are classified according to the separate organs and parts in which they occur; for instance, those of the skull and spinal canal are grouped together; those of the hands and feet form another class, and so on; as well for internal as external parts. The number of names which such a system requires must necessarily be very considerable, since all parts of the body of a foetus are liable to abnormal growth; and, although there may appear to be certain laws which govern these abnormalities—that is to say, that certain forms are more frequent or more rare than others—yet we are not assisted by such a method in the explanation of the causes which may have produced them. Nor, indeed, does it seem to me that we are much enlightened by the terms used in the classification—terms necessarily abnormal and monstrous; such, for example, as *terata anakatadidyma*, a class of double monsters united above and below, and containing as species *prosopo-thorakopagus*, *thorakopagus*, *rachipagus*.

It is clear that it is necessary to classify, if possible, the various causes which may produce an impression; but, as I have already remarked, such an attempt would be impossible in our present state of knowledge of the connection between external objects and the sensorium. It would be necessary for us to be able to explain how impressions produce effects in healthy persons before we could hope to discover their influence in pregnancy: for example, such cases as that of uterine hæmorrhage in a woman who has almost recovered from parturition, in consequence of the fright occasioned by seeing one of her children in flames, or of the sudden arrest of the secretion of milk in a similar condition from a somewhat similar cause.

Nor does the argument, that there is no direct nervous connection between the mother and child *in utero*, appear to be of much value, when we have instances of young children being affected with convulsions during suckling, in consequence of the mother having been alarmed by sudden fright or ill news. These are facts well established by experience, though they do not admit of direct anatomical explanation.

It would, on reflection, appear to be most natural that maternal impressions should be more frequently followed by some unnatural condition of the intellect of the child than by abnormalities of growth, and this point is worthy of particular attention.

It is at least a more reasonable view, and decidedly more practical, than that which attempts to connect the malformation with the object of terror. When the cause of fright has been of a moral character, and has principally excited the feelings, we should expect the results to be exhibited in an abnormality of the intellect rather than of the growth. To confirm our expectation, we find by experience that it is true. The instances of mental abnormality have been numerous which have come under my notice. Such cases of imbecility or deficiency of intellect in the child are almost always attributed by the mother to mental disturbance previous to its birth, while this is by no means so frequently the case in malformation. The ratio, too, between the numbers of cases of marked malformation and those of intellectual abnormality is much greater than you could suppose, and I do not think we should be exaggerating in estimating it as nine to one.

The term intellectual abnormality may very reasonably be objected to, and it would be quite fair to demand a definition of it. If a defini-

tion would assist in the explanation of the cause why a child should suffer in this way, we might be anxious to obtain it; but we can easily afford to leave the definition for the present, and inquire into the phenomena or the simple symptoms and conditions of these children. At an early age, that is, before two years are completed, it is premature to judge of the intellect of a child; yet there are symptoms which enable one to predict that, with the progress of time, there will not be a corresponding progress in its intellectual development. The important functions performed by the organs of speech, and the evidence of comprehension which we usually expect to be exhibited by the expression and the obedience of a child, are more or less deficient. Sometimes the sense of hearing and the powers of speech are simultaneously affected; in other cases, the appreciation of sound and harmony is above the average, while speech and intelligence, by which I mean a knowledge of the use of things and the influence of example, are absent.

When first these cases came under my observation, it appeared to me to be a more interesting question to determine what anatomical condition could have produced this deficiency in speech than to decide the exact nature of the maternal impression to which it was attributed.

More extensive experience, however, has induced me for the present to confine my observation to the particular effects of purely emotional disturbances during pregnancy upon the child. We lose sight of such cases after the age of six or seven, because the parents have by that time discovered that there is little hope from medical treatment, and, therefore, seek for safe asylums for the children. Without entering into the details of the earliest symptoms of intellectual deficiency arising from maternal impression on this occasion, I still beg to express the hope that at another time I may be permitted to bring a series of cases before you; while, after the attention of the members of this Society has been directed to the investigation in daily practice of the view I have attempted to establish, it is more than probable that some important conclusions may result from a comparison of our opinions upon it.

### MATERNAL IMPRESSIONS.\*

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THE subject which I have the honour to bring before the notice of the members of this Association to-day is one not only of singular interest in itself, but is specially adapted for discussion by family practitioners. However much metropolitan men may have the advantage of the general bulk of country practitioners in many matters, our position secures for us a claim to be heard on the subject of those peculiar modifications of development in the fœtus which depend upon some fright, or other strong impression, made upon the nervous system of the mother, during the early months of pregnancy. Most of us who are engaged in midwifery practice have become more or less familiar with "the mother's mark" commonly met with in the form of discolourations of the integument, and pilous nævi; we are all well acquainted with the "strawberry", "raspberry", or "the mouse", which is so frequently seen. At times, the resemblance to some natural object is very marked; so faithful to nature, indeed, that the "mark" is recognisable by the most cursory glance, so close the simulation of the original object. At other times, a deeper impression is made upon the nerve-centres of the mother, and a distinct modification of the form of the fœtus is the result. This would seem often, indeed commonly, to be due to arrest of development, the primitive embryo retaining in its arrested evolution the characteristics of the creature which has occasioned the fright. There is something weirdly interesting in the fact that, when the object of fright is, as it frequently is, a living creature, one of the lower animals, its own configuration should be impressed upon the plastic form of the hapless being undergoing its evolution within the body of the startled or terrified mother.

In a case related by Mr. C. M. Thompson (of Sevenoaks) in the BRITISH MEDICAL JOURNAL of April 4th, the object of fright was a toad; and, when the child was born, the attendant, who had naturally been much puzzled with the presentation, found that the child's head and face exactly resembled a toad. From my own experience, I can quite understand how puzzled he might be. Though not a very old practitioner, I have met with four cases, which I shall briefly relate.

CASE I.—Mrs. H., aged 30, a healthy woman, went to the flour-bin; and, when she put her hand into the bin, a mouse ran across her arm. The child was born with a mark on its arm, which now distinctly resembles a mouse.

CASE II.—Mrs. G., aged 25, when pregnant with her third child, went into the straw-yard for some straw; a rat jumped out, and in her fright she put her hand across her throat. The child was born with a mark across the throat, which now resembles a rat in shape and colour. In her next pregnancy, she was frightened by a dog, and placed her hand over the sacrum. The child was born with a mark over the sacrum, which now resembles a dog. I may add, that the idea of selecting the place for the mark, which they deem inevitable, by striking the hand upon some part which is not likely to be seen, is prevalent amongst country people.

CASE III.—Mrs. T., aged 34, who had had several children, was returning from market, when a toad jumped across her path and frightened her; she went on to the full period, feeling as in her other pregnancies, except the dread of something being wrong. I was sent for to attend her, and, on my arrival, found her delivered of a still-born child free from "marks". She was suffering from strong labour-pains. On passing the finger into the os, no presentation could be detected. I introduced my hand, and with difficulty brought down a foot; after a few pains, the poor woman was delivered of a child resembling a toad, which died in a few moments.

CASE IV.—Mrs. H., aged 23, when about three months gone in her second pregnancy, was startled by one of the neighbours running into her house, and saying her pigs were fighting in the yard. She ran out and endeavoured to separate them, but without effect. From then until the sixth month, she was always thinking about the pigs, and expressed to her friends that she feared her child would be disfigured. On rupturing the membranes, a very large quantity of water came away; shortly afterwards, a female child made its descent. Then this specimen which I have the honour to lay before you was born.

Dr. Blundell, in his work on *Midwifery*, page 1012, relates an unusual case which occurred in the practice of Dr. Lee, where the monster was brainless, and was accounted for by the patient in the following manner. During her pregnancy, prompted by curiosity, she watched the doctor while he was engaged in examining the head of her son, who had died of hydrocephalus, and she saw the operation at the moment when the calvarium and brain were removed. A list of scores of interesting cases might be made, if care were only taken to put them on record, by the different medical men scattered through the country, who are interested in this matter; and I shall be most grateful to those gentlemen who shall from time to time publish such cases, or, if they do not choose to do that, if they will only address a private communication to me on the subject. Of course it is needless to say, that I should keep perfect faith with any gentleman who should desire to have his name kept out of the description of the cases he may furnish to me, in subsequent publication of the collected cases. I have received a communication from Dr. R. J. Lee, as to the effects of general fright or emotion upon the development of the foetal viscera, especially of the heart and brain, which opens up a most interesting field of research. Its further discussion must, however, form the subject of some future paper.

There are two points of interest in these curious cases: one a speculative one, and one a very practical one. We will take the speculatively interesting matter first. How do these modifications of development on the part of the child follow the fright given to the mother? By what means is the change brought about? There is no doubt that the starting-point is a "state of expectant attention", to use the language of Carpenter, upon the part of the mother. It is the direction of consciousness to the part, the fixing the attention upon it, either by voluntary action on the part of the mother, who broods over the matter, and so prints the impression on the growing plastic tissues of her child; or by involuntary fixation of attention, by some action of the lower and deeper seated cerebral centres, independently of, and unconnected with, the higher volitional centres. Such persistent attention, voluntary or involuntary, affects the embryo in the womb. How is this influence of nervous impressions upon the organic functions brought about? The most careful examination of the umbilical cord has failed to discover, in the mass of the cord, the sarcode or jelly-like material of which it is composed, any trace of nerve-fibres. Carpenter is of opinion that this effect must be produced upon the maternal blood, and transmitted through it to the fœtus, since there is no nervous communication between the parent and the offspring (*Principles of Human Physiology*, sec. 733). Dalton, in his work on *Physiology*, page 629, is of opinion that it is through the placental circulation that those disturbing effects are produced upon the nutrition of the fœtus, and the mode in which these effects may be produced is readily understood from what has been said of the anatomy and functions of the placenta. But, with all due deference to such authorities, I may venture to suggest that there may possibly be such a nerve-communication existing in an altogether unexplored direction; I mean in the vaso-motor nerves which

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