

## **A New Look at Maternal Impressions: An Analysis of 50 Published Cases and Reports of Two Recent Examples<sup>1</sup>**

IAN STEVENSON

*Department of Behavioral Medicine and Psychiatry,  
University of Virginia School of Medicine, Charlottesville, Virginia 22908*

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**Abstract**—The idea that a pregnant woman may be so frightened by the sight of some deformity on another person that her baby will be affected by a similar defect is widely believed in most parts of the world today; it was also generally believed in the West until the early years of this century. The skepticism that then developed may have derived from lack of an explanatory principle and not from lack of evidence for a significant correspondence between stimulus and birthmark or birth defect. The present paper summarizes the main features of 50 published cases in which an unusual stimulus to a pregnant woman was followed by the birth of a baby with unusual birthmarks or birth defects that nearly always corresponded closely to the stimulus the pregnant mother had received. Two recent cases that the author investigated are presented. The author concludes that in rare instances maternal impressions may indeed affect gestating babies and cause birth defects. Almost nothing is known about why such effects occur in some pregnancies, but only rarely, or about the implementing processes involved. These may be paranormal.

### **Introduction and Review of Earlier Reports**

The belief that a shock or other strong impression in a pregnant woman can produce a mark or other defect in her baby has been held for centuries; although it is less common now in Western countries, it is still widely accepted in other parts of the world.

In a typical reported case of this type a pregnant woman sees on the street a person with a serious deformity, such as feet that have been partly amputated. She becomes distressed and fears afterward that her baby will be similarly malformed. When the baby is born, parts of its feet are absent, the defects corresponding to the defective feet its mother saw (Montgomery, 1857). Cases of this type are usually called "maternal impressions." In most instances the stimulus is a visual one perceived by the pregnant woman, but sometimes a vivid verbal description of a defect the mother has not herself seen may act as an apparently causal factor.

Writers on reproduction and embryology in ancient Greece and Rome assumed the reality of maternal impressions, and so did their successors, at least up to the 16th century, when Paré (1573|1982) cited cases of the type and endorsed the idea that maternal impressions could cause birth defects.<sup>2</sup>

In the 17th century Gervase Markham expressed skepticism and even scoffed at the belief in maternal impressions (Glenister, 1964). Opposition to the belief became stronger in the 18th century. In the early years of that century two English authors buffeted each other with alternate publications on the subject. One of them, Turner (1714-1731), defended the reality of maternal effects on the fetus, while the other, Blonde1 (1729), decried the idea as a crude superstition (Wilson, 1992). Later in the same century William Hunter (1718-1783) railed against it in his lectures on obstetrics (Hall, 1785). Elliotson (1852), referring to his medical education in the first decades of the 19th century, stated: "All my medical teachers dismissed the idea with contempt."

Controversy about maternal impressions was equally vigorous among French scientists. Buffon, the greatest French biologist of the 18th century, severely criticized the idea (Buffon, 1830, Vol. 4, pp. 480-482), but it had at least one fervent defender, Bablot (1788).

Some physicians of the 18th and 19th centuries who continued to believe in maternal impressions supposed that small nervous connections would be found between the uterus and the placenta and that these could somehow convey a mother's mental impression to her fetus. Advances in anatomy and physiology removed all basis for such conjectures and also for an equally imaginative suggestion that exchanges of blood between mother and fetus somehow transmitted the mother's impression to the fetus.

In the 1830s the German physiologist Johannes Muller (1834-40) (1840-42, Vol. 2, pp. 1404-1406) stated three reasons why he disbelieved in the effect of maternal impressions on a fetus: a) the already mentioned lack of physical connections capable of mediating communications between the mother and fetus; b) the frequent occurrence of negative instances in which pregnant women had been frightened and had expected to have a marked or malformed baby but had not; and c) the lack of correspondence between the frightening stimuli that the mothers mentioned and the common types of birth defects, such as cleft lip and absent extremities. (Muller emphasized the repetitive forms—what we might today call the recognized syndromes—of congenital anomalies, which studies of embryology and teratology were then just beginning to elucidate.) Muller concluded his dismissal of maternal impressions with derisive allusions to "animal magnetism," from the study of which developed both what we today call hypnotism and also the investigations of the phenomena that are today considered paranormal. It is important to note here that although Muller was familiar with birth defects, he was writing about reports he had read of cases attributed to maternal impressions; he seems to have had no direct experience of them himself.

Miiller's high reputation did not suffice to extinguish interest in maternal impressions on the part of physicians, and during the 19th century at least several hundred reports of exemplifying cases were published in medical journals and books. Moreover, the belief in maternal impressions continued to receive support among some scientists of competence and eminence. For example, Miiller's contemporary, von Baer, who is justly regarded as the founder of modern embryology, reported the case of his own sister. She had been much perturbed by a fire that she saw in the

distance and feared was that of her own house burning. She was then 6 or 7 months pregnant and long afterward

declared that the flame was constantly before her eyes. Two or three months after the fire she gave birth to a daughter, who had a red mark on her forehead which went to a point at the top in the shape of a blazing flame. It did not fade until she was seven years old. (Burdach, 1837, Vol. 2, p. 127; my translation)

The extensive writings on maternal impressions in the 19th century show the varying fortunes of the belief in them among physicians. If an exponent of the belief published a series of cases and supported the idea of maternal impressions, within a few years or sooner another author would publish a critique and raise again the familiar objections.

In 1865 Meadows published a defense of the concept, and, acknowledging the absence of any neural connections between mother and fetus, he suggested a process indistinguishable from modern ideas of paranormal communications. He believed the data "force upon us the conviction that mind does in some mysterious way operate across matter . . ." (Meadows, 1865, p. 89).<sup>3</sup> A few years later Fisher (1870), a skeptic, again emphasized negative instances in which women had been frightened during pregnancy (and expected to have deformed children) without any ill effects on their babies. Fisher reported having made a prospective study of over 1200 children he had delivered and of whose mothers he had enquired before their deliveries "in regard to their apprehensions of deformity in their offspring" (p. 258). He found that "by far the larger number" of the mothers expressed such fears and frequently specified the nature of the deformity they expected their child might have. Yet among this group of babies he found only three cases of birth defects.<sup>4</sup>

Taking the opposing view, Barker (1887) published a long paper in which he cited numerous examples of correspondences between an unusual stimulus to a pregnant woman and a subsequent birthmark or birth defect on her child. In the discussion of Barker's paper, Busey (1887), in the course of reviewing 41 additional cases, addressed the familiar question of chance as an explanation for them:

Upon the common doctrine of chance, the coincidence [between maternal impression and subsequent defect] is too remarkable to be explained so readily, and, if one [case] is suggestive, a second adds great weight, and a third is almost conclusive. The element of chance is eliminated by the great variety of causes with corresponding effects; that is, in each of the foregoing cases the circumstance producing the impression is different; yet in each case the effect is, to a greater or less degree, in correspondence with the causal circumstance. (Busey, 1887, p. 186)

In 1890 Dabney published one of the longest and most thorough reviews of this subject. He summarized reports of 90 cases published between 1853 and 1886. The series was large enough to permit an analysis of various features. He concluded that in 69 (77%) of the 90 cases there was "quite a close correspondence" between the impression upon the mother and her baby's defect. Dabney drew some

other conclusions from his data. For example, he found that defects related to errors of embryological development tended to be associated with maternal impressions received early in pregnancy; in contrast, birthmarks and other abnormalities of the skin and hair tended to be associated with maternal impressions occurring later in pregnancy. Dabney also noted instances in which the mother-to-be seems to have been little or not at all consciously affected by the stimulus and had no expectation that her child would be defective. He attached little weight to what a mother said about the kind of baby she expected to have. He emphasized that maternal impressions account for few of all cases of birth defects, and his main conclusion was "that they are one of the causes of defects or deformities, but by no means the only cause" (Dabney, 1890, p. 214). Dabney was undaunted by ignorance concerning the process, psychophysiological or other, that could mediate between the maternal impression and the related birthmark or birth defect.

Skeptics remained unquelled, and they sometimes even inveighed against the publication of reports of cases of alleged maternal impressions (Murdock, 1888). Conant (1863), Morland (1853), and Rich (1891) each published instances of a pregnant woman who had been frightened, expected to have a malformed baby, and nevertheless had a normal one.

Ballantyne, who in the 1890s wrote a series of papers on this subject with reports of additional cases, adopted a stance similar to that of Dabney:

The apparently extraordinary character of the phenomena witnessed is in itself no argument against their truth if the sources of information are reliable.... We are not so much concerned at present with the question, How are the effects produced? but rather with the primary inquiry whether, in conjunction with certain definite circumstances, certain clearly marked phenomena occur so frequently and so persistently as to compel the belief that there is more than the element of chance or coincidence in their association. (Ballantyne, 1890-91, p. 625)

Ballantyne engaged himself in a cause that was, by his time, rapidly losing ground. After the beginning of this century the number of reports of maternal impressions published in medical journals declined markedly, and they eventually became sporadic (Farkas and Farkas, 1974; Formijne, 1915; Leclerc-Montmoyen, 1949; Williams and Pembroke, 1988). Historians of teratology reviewing various theories of birth defects in the second half of this century dismissed and sometimes derided the belief in maternal impressions (Barrow, 1971; Glenister, 1964; Warkany, 1959; Warkany and Kalter, 1962).

Dabney (1890, p. 191) suggested that "thinking men came to doubt the truth of those things which they could not understand." A future historian of medicine disposing of more space than I can allow myself here might connect the decline (at the end of the 19th century) in the belief in maternal impressions to the rise among members of the medical profession of an increasingly materialistic view of human nature. The failure to identify a process for the action of maternal impressions eventually led to denial that there were any phenomena to be explained. Yet there may be.

I mentioned earlier Meadows's (1865) endorsement of maternal impressions with the idea that "mind does in some mysterious way operate across matter." We are certainly not in a better position to say today what this "mysterious way" may be; but evidence developed from more than a century of systematic research has made the belief that mind can act upon matter more plausible than it seemed to be earlier. Accordingly, I believe that we should reopen the question of maternal impressions. However, we can only expect the concept to gain new adherents if we take into account two important facts.

First, we must acknowledge that major birth defects and birthmarks (of say more than a centimeter in diameter) are not common. For example, Wilde (1843) studied the incidence of congenital malformations among 23,413 births during 8 years (1832-40) at the Imperial Lying-in Hospital of Vienna and found an incidence of 1 in 266, which is less than 0.4%. He was admittedly counting only major malformations, which he called "monstrosities"; and the incidence of congenital defects of some kind is much higher, perhaps as high as 2% today (Kennedy, 1967). However, for the purpose of the substantial birthmarks and birth defects usually associated with a maternal impression I think we are justified in saying—as I did above—that such anomalies are not common.

Second, it has been argued that if the fears of pregnant women could produce important morphological changes in their fetuses, medical reports of birth defects related to maternal impressions would be more frequent than they now are or, to return to the 19th century, than they were then. However, we can also note that reports of such correlations are (and have been) few in relation to all the births and also in relation to all the babies with congenital anomalies that have been born. Accordingly, we can say that maternal impressions can at best account for only a small portion of all congenital anomalies. It follows that if maternal impressions have any effect on fetuses, the effect occurs only among mothers and fetuses who are especially susceptible—either at a psychological level or a physical one. I agree with such predecessors as Elliotson, Dabney, and Ballantyne in believing that an unusual stimulus to a pregnant woman has sometimes caused an unusual birth defect (less often an unusual birthmark) in her baby. Taylor (1876) succinctly emphasized the importance of not allowing negative instances to bias our appraisal of the positive examples, rarer though these may be. He wrote:

It is said that many mothers are apprehensive during their pregnancy of some impending evil to themselves or their offspring, and may even be exposed to shocking sights, which produce *no* effect on the foetus, for there is no nervous connection between the mother and her unborn babe; but all mothers and babies are not equally susceptible to such influences, therefore this proves nothing in the special cases which *cannot* be explained. (p. 73)

This is a matter that readers should judge for themselves. This requires, however, an acquaintance with reports of actual cases. Selecting 50 cases from a much larger group I will next present summaries of their principal features.

### Principal Features of 50 Selected Cases

In many of these cases a physician (usually the author of the report) had both seen the wounded or disfigured person who had impressed the pregnant woman and examined the later-born baby; he was thus in a position to testify to the correspondence between the stimulus and the birth defect or birthmark. I selected cases in which the correspondence between the stimulus and baby's defect was exact or at least close. Also, in order to reduce the likelihood of a chance correspondence between stimulus and birth defect I selected only cases with unusual birth defects or birthmarks. Accordingly, I did not include any case of clubfoot, and the series has only one case of cleft lip, which occurred with a cleft palate. I did, however, include a few of the common types of birthmarks—hyperpigmented macules and "port-wine" marks (nevus flammeus). I believe that these 50 cases provide substantial evidence of some paranormal process linking the stimulus received by the pregnant woman to the defect in her later-born baby.<sup>5</sup>

#### *The Types of Stimuli Figuring in the Cases*

In Table 1 I have grouped the stimuli to the pregnant woman according to their association with violent events or ones that included wounds, such as surgical operations.

In 22 cases (Groups 1 and 2 summed together) the mother either was an eyewitness of another person's mutilation (criminal, accidental, or surgical) or saw the afflicted person soon after the mutilation. In another 3 cases (Group 3) the mother heard about the mutilation of another person; and in 6 (Group 4) she was herself wounded (accidentally or surgically). In 3 more cases (Group 5) amputations ac-

TABLE 1  
Types of Stimuli Figuring in 50 Cases of Maternal Impressions

Nature of Stimulus to Pregnant Woman	Number of Cases in this Group
1. Woman an eyewitness of another person's being wounded	7
2. Woman saw an injured (or operated upon) person soon after the wounding <sup>a</sup>	15
3. Woman heard about the mutilation of (or operation on) another person	3
4. Woman was mutilated herself or underwent surgery	6
5. Woman saw a person with a birth defect or major postnatal defect, e.g., the stump of an amputated arm	15
6. Woman saw a person with a lesion that was not congenital, accidental, or postoperative	1
7. Other kinds of stimuli	3

<sup>a</sup>Unless the report of the case explicitly states that the pregnant woman was an eyewitness of the wounding, I have assumed that she saw the wound only soon afterward.

accompanied or followed injuries. Thus violence—surgery is a kind of violence, but one to which the involved parties agree—figured in 34 (68%) of these 50 cases.

#### *Duration of Pregnant Woman's Exposure to the Stimulus*

The duration of the apparent stimulus for the maternal impression varied widely. In several cases the pregnant mother had the stimulus under view throughout much or all of her pregnancy. This would naturally be true in those instances where a stimulating injury with a resulting scar or deformity occurred to a member of the mother's own family, say her husband, another child, or a close neighbor. Suringar (1927) reported a case in this group. He learned about it from the mother of the affected child. When she was in the 6th month of her first pregnancy, a neighbor became seriously ill, and in order to help this person she brought one of the neighbor's children—a 10-year-old girl—to stay in her house. This child had had her hand caught in a laundry mangle and had lost part of one of the middle fingers of the left hand. The mother-to-be often worked alongside the child when there was housework to do, and she thus frequently had occasion to see the child's mutilated hand. Her son of this pregnancy was born with the middle finger of the left hand absent. Suringar's informant believed that her frequent viewing of the child's mutilated hand—over a period of some time—was the cause of her son's defect, all the more because no other member of her or her husband's family had had any such defect.

However, in some cases the mother seems to have had only a fleeting glance at the stimulating lesion. This was true in the case of a pregnant woman who just briefly saw in the street a woman with a "port-wine" birthmark (Liébeault, 1892). It was true in another case in which the pregnant woman barely glimpsed the scene where another woman was being operated on for a large umbilical hernia (Lacambre, 1906). In another case a young man who was run over by a cart must have been quickly transported from the scene, so that the pregnant woman who saw the accident would have seen his wounds only briefly (Moore, 1886). Carreras (1910) described a case in which a young boy was knocked down by a cart and his head wounded so that his scalp required extensive stitching. His mother, then less than 2 months pregnant, later accompanied her son to the hospital and was present when his wound was dressed. She wanted to keep her eyes closed so that she would not see the wound, but could not prevent herself from taking a quick glance at it. The sight profoundly disturbed her. When, 7 months later, she gave birth to her baby, a daughter, it was immediately noticed that the baby had an area of hairlessness on the left parietal region of the scalp at the site where the brother had been wounded. Carreras, who examined the girl, stated that the affected hairless area measured 1 centimeter in width and about 6 centimeters in length; it closely resembled the residue of a healed wound.

The duration of the mother's exposure to the stimulus, therefore, seems to be less important than its effect on her and also less important than any tendency she may have to dwell on the memory of the stimulus later. I discuss this third feature next.

*Emotional Reaction of the Pregnant Woman to the Stimulus*

In most instances the woman was described as "frightened" or "shocked," and where such adjectives are missing in the reports they can often be reasonably conjectured by considering the usual feelings that a woman would have when someone like her husband or child is seriously injured.

Some of the women became obsessed with the stimulus and could not stop thinking about it. In the case reported by Liébeault (1892) the woman affected actually hallucinated the original stimulus (a "port-wine" birthmark) appearing on other persons whom she saw in the street. However, other women seemed to have dismissed the stimulus from their minds and related it to a lesion in the baby only after the baby was born.

Curiosity appears to have been the dominant condition in three women who figured in a small epidemic of cleft lip that occurred in Belgium in the late 19th century (Theyskens, 1881). A woman who was in the first weeks of a pregnancy happened to see someone with an unrepaired cleft lip. She was greatly disturbed by the sight of this person and went to see Theyskens, telling him that she was firmly convinced that her baby would have a cleft lip. Theyskens tried unavailingly to reassure her. In fact, her baby was born with a cleft lip. The matter was much discussed in the area, and several pregnant neighbors came to see the new baby for themselves. As a result, according to Theyskens, some months later he had to repair three more cleft lips of babies born to these curious neighbors of the first affected baby. A similar, although less numerous spread of a birth defect of the forearm attributed to maternal impressions occurred in two cases cited by Elliotson (1852).

*The Mother's Expectation of an Effect from the Stimulus*

The beliefs of the pregnant women as to the effects of the stimuli on the babies varied widely. Some were unshakeably convinced that their babies would be damaged, others equally sure that there would be no effect from the stimulus.

In 8 of the 50 cases the mother did not expect to have a defective baby after she had an apparently affecting impression; in other cases the report does not state whether the mother expected the baby to be affected, and I think we can assume that in some, perhaps in most, of these cases the mother also had no such fear.

In 3 cases the woman feared having a baby with a birthmark and tried, with apparent success, to divert it from an exposed part of the body to a place where it would not ordinarily be seen.

On the whole, the 50 cases here analyzed support Dabney's (1890) judgment (based on a larger sample) that the mother's opinion about whether the baby will be affected indicates poorly what will in fact happen to the baby.

*Pertinent Observations about the Pregnant Woman's Personality*

The authors of the reports of the cases that I have studied concerned themselves almost exclusively with the correspondences in time and appearance (mainly anatomical location) between the stimulus and the mark or defect on the later-born

child. Most of them obviously, and probably all of them, believed that a maternal impression could affect an embryo or a fetus; otherwise they would not have taken the trouble to record the cases they reported. Only a few of them seemed aware of the possibility—and commented on it—that certain women might be more susceptible to maternal impressions than others. Their reports, therefore, contain almost no discriminating information on this aspect of the cases. In a few of the reports we are told, for example, that the woman was "known to be, at all times, very nervous and easily alarmed" (Montgomery, 1857) or that she had been diagnosed as having hysteria (Lagache, 1908). These, however, are exceptional; most of the reports convey little or nothing pertinent to this topic.

### *Period of the Pregnancy When the Stimulus Occurred*

For an analysis of the trimester of pregnancy when the stimulus occurred I increased the size of the sample by adding an additional 85 cases to the 50 cases just reviewed. These additional cases were drawn (with a few exceptions) from the same sources—medical journals and monographs—as the first 50. They included some of the commoner birth defects, such as simple cleft lip, which I had excluded from the 50 selected cases. For 113 of the 135 cases information was available concerning the trimester of the pregnancy when the pregnant woman was exposed to the attributed stimulus. The results of the analysis are shown in Table 2. The difference in the incidences of the stimuli among trimesters is statistically significant ( $p < .001$ ). I think it is also medically significant, because we can safely assume that a pregnant woman would be equally likely to encounter a stimulus of the kind we are considering in one trimester as in either of the others. The 1st trimester is that in which the main features of the limbs and organs are developed. During it the embryo-fetus is more sensitive to the teratogenic influence of infections and noxious drugs or toxins than it is in later trimesters. One would expect the 1st trimester to be also the period of greatest sensitivity to psychical influences.

However, several of the birthmarks and six of the birth defects corresponded to stimuli experienced by the mother in the 2nd or 3rd trimester of her pregnancy (Lagache, 1908; Thompson, 1878). In these cases, by the time of the mother's recep-

TABLE 2  
Trimester of Pregnancy during which Mother-to-be Received Stimulus of Maternal Impression (N = 135)

	1st Trimester	2nd Trimester	3rd Trimester	Not Stated
No. of instances of stimulus occurring during this trimester	80	20	13	22
$\chi^2 = 71.9$ . $df = 2$ . $p < .001$ .				

*Note:* Cases for which the stimulus was noted as occurring "early in pregnancy" were counted in the 1st trimester, as were two cases in which the stimulus occurred before the woman became pregnant. When estimates crossed the boundaries between trimesters, the cases were assigned to the later trimester, e.g., an estimate of "3-4 months" was assigned to the 2nd trimester.

ing the stimulus the organ in the baby that corresponded to the stimulus would, in ordinary embryological development, have been fully formed.

It has been suggested that a woman who has just learned that she is pregnant (and therefore is in the 1st trimester of her pregnancy) may be more apprehensive and hence more attentive to unusual stimuli than she is in the later phases of the pregnancy. If this is true—but I do not know of any evidence suggesting that it is—pregnant women might be led retrospectively to attribute significance to events of the 1st trimester more than to those of the later 2 trimesters. A retrospective false memory, however, seems excluded in those numerous cases in which, as I mentioned earlier, the physician reporting the case had seen both the stimulus to the mother and the defect in the later-born baby.

### *Unusualness of the Birth Defects and Their Correspondence to the Stimuli*

As I mentioned earlier, I deliberately selected many of the 50 cases for this analysis because the lesions were *not* those commonly occurring as birth defects. I wished thereby to neutralize, at least for these cases, Müller's (1834-40|1840-42, Vol. 2, pp. 1404-1406) objection that the lesions attributed to maternal impressions belong to the common types of birth defects and correspond little to the stimuli alleged to be their causes.

The correspondence between stimulus and lesion seems to be exact or extremely close in 46 (92%) of the 50 cases. This is an even higher proportion of correspondences than Dabney (1890) found; as I mentioned earlier, he considered that stimulus and lesion corresponded closely in 69 (77%) of 90 cases.<sup>6</sup>

In two cases a limb of the baby was affected in a manner corresponding to the stimulus, but on the side opposite to that of the stimulus. (This may have happened in several other cases, for which the reports do not specify the side of an injury or defect on the person seen by the woman.)

In one case, the pregnant woman's hand was seriously injured by her husband, but there was apparently no residual defect, such as occurred in her baby's brachydactyly. In another case, the man who impressed the pregnant woman had a stump of an arm, presumably from an amputation; her baby had no forearm and rudimentary fingers developing from the upper arm.

Nearly all the lesions of the babies are rare, and a small number are extremely so. Indeed, a few may be unique among birth defects. I include among the group of extremely rare congenital lesions: a case of a tracheal (thyroglossal) sinus; a case of birthmarks corresponding to marks of four bloody fingers on a face; a case of absent middle digits and metacarpal bones; a case of an unusual syndrome comprised of constrictions of the legs, a raw cicatrized area of the groin, and red marks on the backs of the hands; a case of the absence of the penis; and a case of the absence of a single metacarpal bone.

For some of the birth defects figuring in these cases we have reports of their incidence that seem to me adequately reliable. In Table 3 I give figures for several of the pertinent incidences. Readers can see that with the exception of cleft lip all the listed birth defects are rare, and most are extremely rare. The incidence of cases

TABLE 3  
Incidences of Some of the Birth Defects Figuring in Cases of Maternal Impressions

Birth Defect	Reported Incidence at Birth	Source of Data on Incidence
1. Umbilical hernia	1 in 23,413	Wilde (1843) (Austria)
2. Absence of the penis	1 in 30,000,000  No figures of incidence, but only 15 cases reported up to 1951	Harris (1898) (U.S.A.)  Campbell (1951) (U.S.A.)
3. Unilateral absence of forearm	1 in 22,000	Birch-Jensen (1949) (Denmark)
4. Unilateral absence of hand	1 in 65,000	Birch-Jensen (1949) (Denmark)
5. Thyroglossal sinus (small opening in the neck)	"never congenital"  "rarely congenital"  In a series of 310 cases, none had been noted at birth	Bland-Sutton (1903) (England)  Bailey (1929) (England)  Marshall and Becker (1949) (U.S.A.)
6. Anotia (absence of external ear)	No figures of incidence, but only seven cases reported up to 1948	Ružić (1948) (Yugoslavia)
7. Cleft lip with cleft palate	1 in 2,100  1 in 2,100	Wilde (1843) (Austria)  MacMahon and McKeown (1953) (England)
8. Ectrodactyly (absence of one or more fingers)	1 in 90,000	Birch-Jensen (1949) (Denmark)
9. Brachydactyly (short fingers)	1 in 40,000	Birch-Jensen (1949) (Denmark)

may be somewhat higher than the available figures suggest, because some cases of ordinarily hidden birth defects, such as absence of the penis, may never come to medical attention and hence would not figure in counts of medical reports. However, Wilde (1843) included information from all (or nearly all) births in the Imperial Lying-In Hospital of Vienna over a period of 8 years; and Birch-Jensen (1949) included in his survey of defects of the upper limbs the entire population of Denmark.

Rare as many of the pertinent birth defects are, their infrequency is only part of what we need to consider in appraising the likelihood that a maternal impression has caused a birth defect (or birthmark). We need also to consider how common is the mother's experience to which the defect is attributed. For the frequencies of this side of the cases I can offer no figures. However, although some of

the stimulating experiences, such as seeing on the street someone with a "port-wine" birthmark, are fairly common, others are surely extremely rare. It must be most unusual for a woman to examine the site where a man's penis has been surgically amputated; this was the stimulating event in the case reported by Owen (1863) of a congenital absence of the penis. It is surely also unusual for a person to have his face and neck slapped with a bloody hand leaving the red impressions of four fingers on the face and neck; this was the stimulating event in the case of a baby born with a birthmark on its neck and face suggesting "four bloody fingers" (Lee, 1891).

### *The Pregnant Woman's State of Consciousness When Stimulated*

In all 50 cases the mother of the apparently affected baby was awake when she was stimulated by the injury or deformity that corresponded to that of her later-born baby. However, two other cases have been reported in which a mother dreamed of some injury, and a corresponding malformation occurred in her later-born child. Hammond (1868) described the case of a woman who dreamed during her pregnancy—Hammond did not say how far advanced the pregnancy was—that she saw a man who had lost part of the external ear. When her child was born, "a portion of one ear was deficient, and the organ was exactly like the defective ear she had seen in her dream." Hammond added: "I have examined this child, and the ear looks exactly as if a portion had been cut off with a sharp knife" (Hammond, 1868, p. 19). In the second case of this type a baby was delivered and immediately found not to have the great toe of the right foot. On learning this the baby's mother said that during the 4th month of her pregnancy she had dreamed that a rat had bitten off the great toe of her right foot. The impression was so vivid "that she awoke screaming, and narrated the cause of her fright to her husband, who corroborated her statement"<sup>7</sup> (Brydon, 1886, p. 670).

## CASE REPORTS

### **The Case of Calvin Ewing**

Calvin Ewing was born on January 28, 1969, in a hospital of Los Angeles, California. His parents were John Ewing and his wife, Sylvia Hirst Ewing. Calvin was their first child, and they subsequently had a daughter, Harriet, who was born on August 12, 1971.

Immediately after Calvin's birth his mother noticed that he had a small sinus near the medial aspect of his right eye at exactly the site where she herself had a similar sinus. Hers corresponded to a sty, or the residue of a sty, in a deceased woman, Julia Ford, of whom she was thought to be the reincarnation. Calvin's sinus had no such known or conjectured antecedent from a previous life. The only identified cause for it seems to be his mother's intense fear, during her pregnancy, that her baby would have a sinus like hers.

I was able to examine Calvin and learn other details of his case when I met Sylvia and her family in Whittier, California, on May 24, 1973. (I had earlier met Sylvia in Alaska, first in 1965, when I studied her case.)

### *Sylvia Hirst Ewing's Fear about Her Baby during Her Pregnancy*

Sylvia's small sinus caused her considerable embarrassment as well as some physical discomfort when she was a child. It would discharge mucus or pus whenever she had a cold. Sometimes a tearlike liquid drained from it, and a doctor suggested that the sinus might be an aberrant tear duct. These effects of her defect may have contributed to her fear that her first baby would have a similar sinus. In 1973 she said to me:

I remember thinking whether he would have a deformity in his eye. When I first got pregnant, I began to think of what he [her baby] would look like. I was afraid he would look like me. That is all I thought about—whether he would look like me.

When they first brought Calvin to me after [his] birth, that was the first place—the eye—that I looked at to see if he had the hole. In a way I was excited that he had something that I had.

My thoughts about Calvin having the hole varied during [my] pregnancy. At times I thought he would not inherit it, and then I thought he would.

Sylvia's husband, John Ewing, confirmed that she had been intensely concerned about the possibility that the baby might have a sinus like hers. He said:

She was always worrying about whether Calvin would have a hole in the eye like hers. That was one of the first things she told me when I went to see them after he was born—that he had a hole by the eye.

### *Additional Information*

Sylvia had no dream before or during her pregnancy with Calvin, and (as I mentioned) he was not identified with any deceased person who might have reincarnated. In her statement that I have cited above she used the pronoun *he*, but I think that was with the knowledge (at the time she was talking) that she had had a baby boy; she did not mean to say that she had expected that her first baby would be a boy instead of a girl.

Up to the time of my meeting with Sylvia and her (marital) family in 1973, Calvin had never spoken about a previous life. He was then 4 years and 4 months old.

In 1971 Sylvia gave birth to a daughter, Harriet. During her pregnancy with Harriet, Sylvia had no concern about this baby also having a sinus like hers and Calvin's. She said:

I never thought of it [the possibility of a sinus in the new baby] when I became pregnant with Harriet. I thought it would not happen twice. I thought she could not have it.

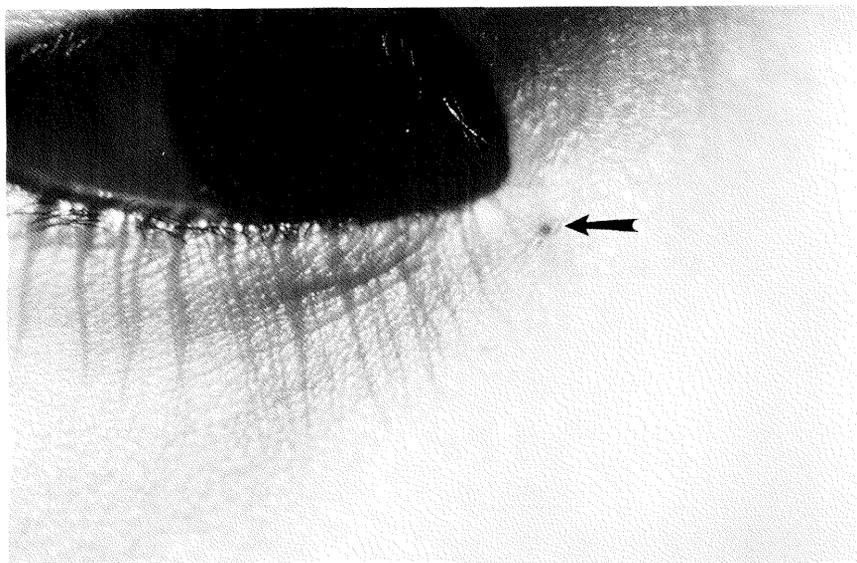


Fig. 1. Congenital sinus near the medial end of the right eye of Calvin Ewing as it appeared in September 1972, when he was 3 1/2 years old.

John Ewing agreed that Sylvia's attitude was different with her second pregnancy. He said: "With Harriet she did not worry."

I examined Harriet's eyes and she had no sinus.

#### *Calvin's Birth Defect*

Figure 1 shows the sinus opening near Calvin's right eye. It is at exactly the same site as the sinus near Sylvia's right eye (Figure 2), although his defect was somewhat smaller than hers. (The photographs of these figures were taken by a professional photographer in September 1972.)

Unlike his mother's sinus, Calvin's apparently had no connection with the conjunctival sac. It did not drain, even when he cried. He had once had a stye, but not at the site of his sinus.

#### *Comment*

If we wish to go beyond the use of such words as *chance* and *coincidence* in understanding individual features of a person's physical form, we must look for other explanations of Calvin's sinus. Two of these deserve mention.

It is possible that Sylvia's sinus might have resulted from a spontaneous hitherto unknown mutation, which she then passed on to Calvin.

The interpretation that I favor myself is that of a maternal impression. According to it, Calvin's sinus resulted from the strong fear Sylvia had during her pregnancy with him that he would have a sinus like hers. From her own description, her fear was accompanied by an image of what he would look like, and she even expe-

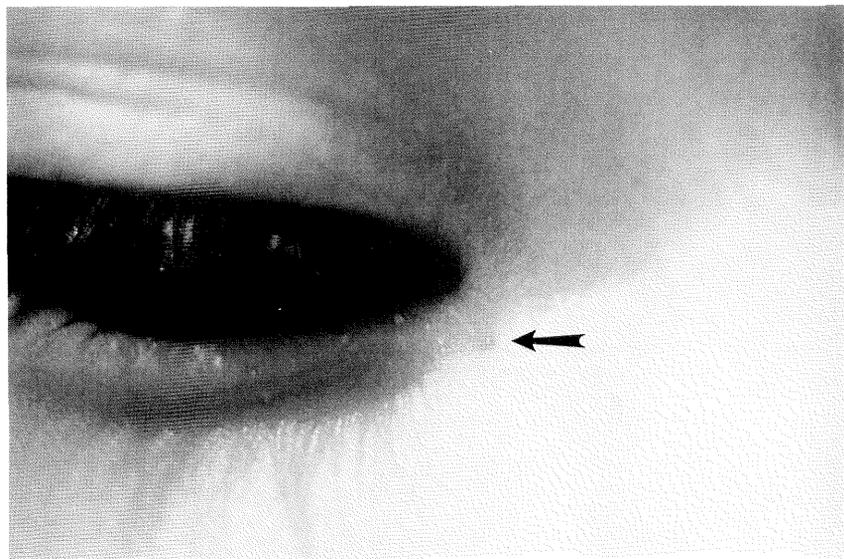


Fig. 2. Congenital sinus near the medial end of the right eye of Sylvia Ewing as it appeared in September 1972, when she was 23 years old.

rienced a touch of pleasure when he turned out to be like her. The image in her mind of his future physical appearance was "strong" enough to affect that appearance. In several of the 50 cases earlier analyzed, notably 2 that Ballantyne (1891-92) reported, a pregnant woman feared that a wound she had received would be reproduced on her baby, and this seems to have happened.

### The Case of Astride Stevaux

Astride Stevaux was born in Saverne, Alsace, France, on June 6, 1956. Her parents were André Stevaux and his wife, Antoinette. Astride was the first of their three children—all daughters.

When Astride was born, she was immediately found to have a major birth defect of her left hand. Its three middle fingers were markedly underdeveloped in both length and volume, although they did have small nails at their ends (Figure 3). The thumb and fifth finger of Astride's left hand and all the fingers of her right hand were normal.

When Astride was born, her father was about 22 years old. When he was 17, he had injured his right hand in an accident. He was then working on a farm and helping to operate a fodder-chopping machine. His hand became caught in the cogs that catch the stalks and feed them toward the blades. He lost much blood, and in the end it was necessary to amputate the index and middle fingers of the injured hand. The fourth and fifth fingers were saved, but could not be fully extended (Figure 4). Eventually he recovered almost complete use of the hand, and he became a butcher,

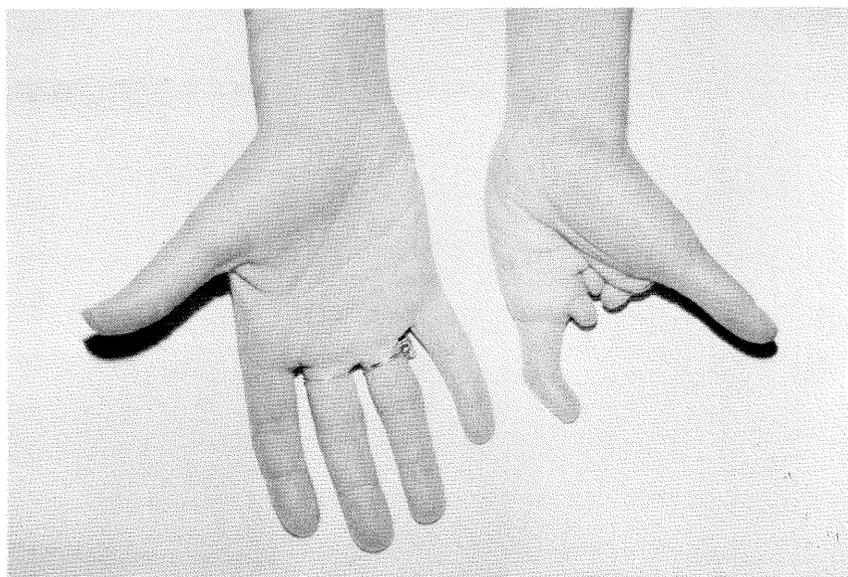


Fig. 3. Hands of Astride Stevaux. The middle three fingers of the left hand were markedly malformed, although each had a rudimentary nail. The other fingers were all normal.

André and Antoinette Stevaux married on December 27, 1954. Antoinette became pregnant with Astride about 9 months later.

The congenital deformity of Astride's left hand was attributed by at least some persons in her community to an impression on her mother from her father's deformed hand. Information about the case circulated in the community until it eventually reached Dr. Bernadette Chauvin (a native of Alsace), and she informed me about it.

Having learned of the case and obtained the agreement of the Stevaux family, I went to their home in the village of Haegen, near Strasbourg, on November 28, 1987. I was able to interview André and Antoinette Stevaux as well as Astride herself.

#### *Antoinette Stevaux's Condition during Her Pregnancy*

Antoinette Stevaux said that she paid no attention whatever to the deformity of her husband's hand during her pregnancy. Neither she nor anyone else in their circle predicted that her baby would be deformed. It was only after Astride's birth that some persons of the area began to conjecture that Astride's deformity derived from the impression that her mother must have had during her pregnancy when she would have had the deformed hand of her husband in view every day.

#### *Other Relevant Information*

André and Antoinette Stevaux were not related. Their other two daughters were entirely normal. Astride married and had a daughter who was also normal.

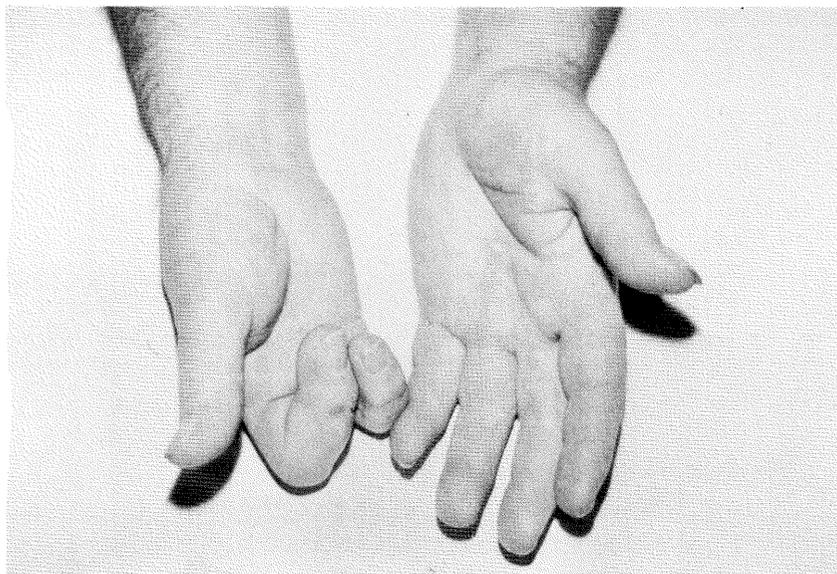


Fig. 4 Hands of André Stevaux. The index and middle finger of the right hand were missing following their amputation. The fourth and fifth finger of the same hand could not be fully extended.

During her pregnancy with Astride, Antoinette Stevaux enjoyed perfect health. She took no drugs or medications during her pregnancy.

#### *Comment*

This case is not like the typical one attributed to a maternal impression. First, Antoinette Stevaux underwent no single fright or shock during her pregnancy; however, as I mentioned earlier, in some cases a pregnant woman has been frequently or constantly exposed to a deformity in a member of her family. Second, Antoinette Stevaux expected no effect on her baby from her husband's deformity; however, in at least 8 of the 50 cases earlier analyzed the pregnant woman concerned had no expectation of any effect on her baby from the stimulus she experienced. Third, André Stevaux's *right* hand was injured and he lost two fingers from it, whereas Astride's deformity was on her *left* hand; however, in 2 of the 50 cases earlier analyzed a right/left reversal of lesions occurred. The lesions of André and Astride Stevaux were not identical, but I consider them closely similar. Thus, although the case has features deviating from the standard case of a maternal impression, its exceptional features have occurred in other cases that seem to me to qualify as instances for which a maternal impression is a possible interpretation.

#### **Concluding Remarks**

I do not doubt that many women are frightened during a pregnancy without this having ill effects on their babies. Although negative cases are far less often

reported than positive ones in the literature of maternal impressions, I cited some examples earlier of published cases in which a pregnant woman had been frightened, expected her baby to be deformed, and nevertheless delivered a normal baby (Conant, 1863; Morland, 1853; Rich, 1891). My question is: Does a frightening experience in a pregnant woman *sometimes* have an effect on the form of her baby? The answer to this question will depend on judgments concerning the likelihood that the correspondence between the attributed stimulus and the birth defect on the later-born baby could have occurred by chance. I have tried to reduce the likelihood of chance as a factor in the 50 cases I analyzed by selecting ones in which the stimulus was unusual and the birth defect was also unusual.

My examination of published cases and my study of the few cases that have come under my own observation have persuaded me to give an affirmative judgment on the question. I will not undertake in this paper to suggest how a woman's mental images could affect her baby. Here I am concerned to show that this may happen, not how it does. If maternal impressions do sometimes affect gestating babies, however, and if adequately explanatory physical connections between the mother-to-be and her baby cannot be identified, this may oblige us to postulate some paranormal process.

### Endnotes

1. This paper is adapted from a chapter of a forthcoming book *Birthmarks and Birth Defects: A Contribution to Their Etiology*. (New York: Paragon House Publishers. In press.) In brief form the paper was presented at the Annual Meeting of the Society for Scientific Exploration at the University of Virginia, May 23-25, 1991.
2. Readers wishing to have more information about the history of the belief in maternal impressions than I shall include in this section can find it in Barrow (1971), Glenister (1964), Gould and Pyle (1896), King (1978), and Warkany (1959). Rousseau (1982), in an essay on Tobias Smollett, reviewed ideas about maternal impressions current in 18th-century England. Smollett, a physician as well as a novelist, wittily exploited the belief for scenes in *Peregrine Pickle* (Smollett, 1751/1964).
3. Using different terms, several later authors proposed that some paranormal process would ultimately account for birth defects related to maternal impressions (Bruck, 1924; Drzewiecki, 1891; and Lowman, 1889).
4. In a paper of more than 50 pages, Fisher devoted less than 1 page to the report of his survey. He did not state how many of the women he questioned expected (as opposed to merely fearing) that they would have deformed children, although many of them did expect as well as fear such an out-

come. He also did not state whether the three women who did deliver babies with anomalies had been exposed to frightening stimuli during their pregnancies.

5. In my forthcoming book I give for the 50 cases a) details of the stimulus to the mother, b) a brief description of the birthmark or birth defect on the baby, and c) a reference to the published report of each case.
6. Eleven of the 50 cases I selected also appeared in Dabney's (1890) inventory of 90 cases.

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Correspondence and requests for reprints should be addressed to: Ian Stevenson, M.D., Division of Personality Studies, Box 152, Health Sciences Center, University of Virginia, Charlottesville, VA 22908

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