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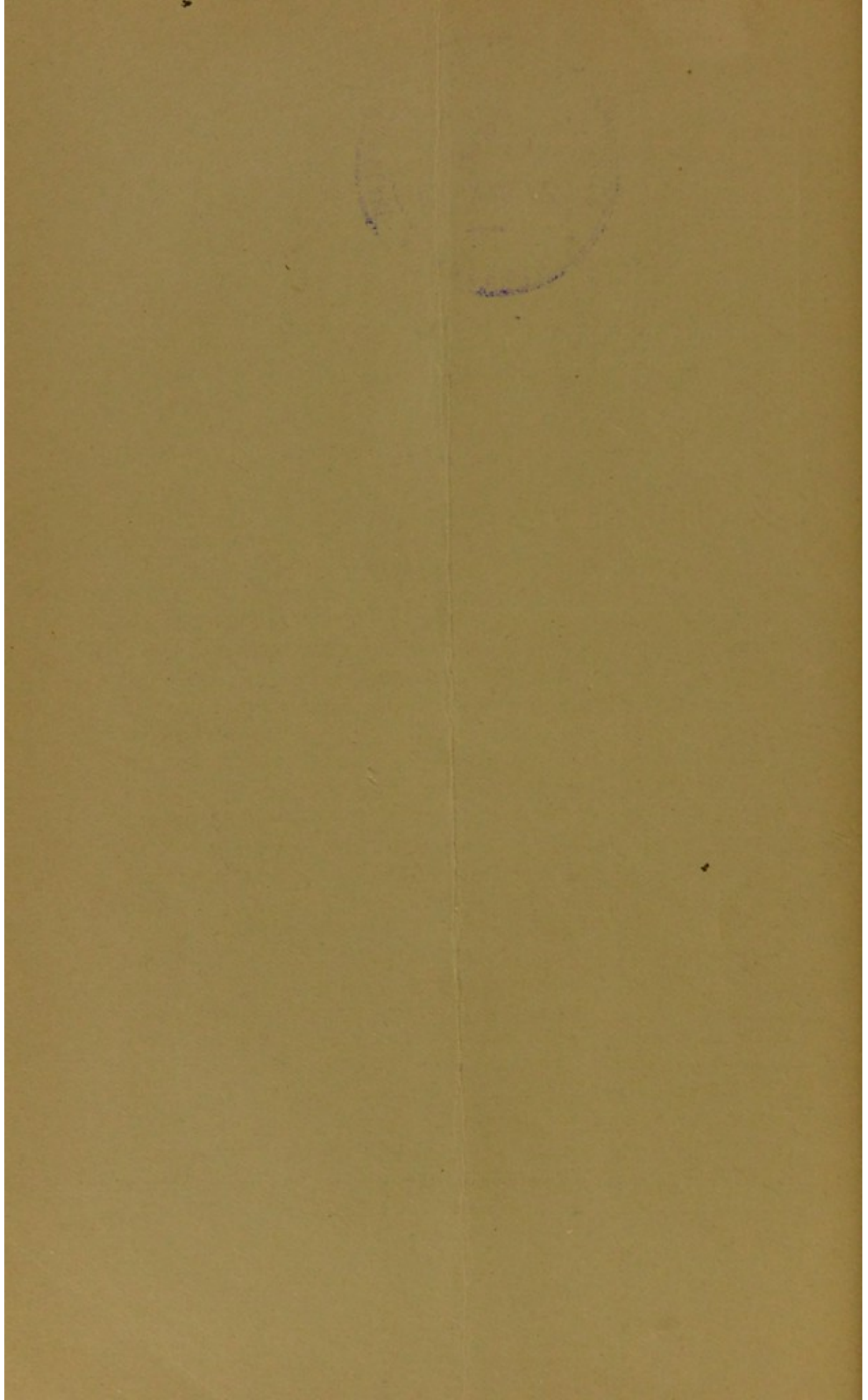
BY  
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7







## MATERNAL IMPRESSIONS.

DISCUSSION ON DR. BARKER'S ESSAY.

BY SAMUEL C. BUSEY, M. D.,  
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WHAT I may have to say on this interesting question will be supplementary to the paper which you have just heard read. It is a subject difficult to discuss, because the relation of cause and effect between the single fact of the existence of a deformity and the alleged circumstance of a mental impression can not be proved. We have, however, some facts, more data, and many coincidences; and the object I have in view is to endeavor to present these evidences in such manner as may bring you to a conclusion similar to that of Dr. Barker and myself. I do not intend to offer any dogmatic conclusion, nor have I any positive convictions to present; but I have a belief that there is some relation of cause and effect between the mental impressions of mothers and fetal deformities. This belief is something more than mere credulity, and in support of it I will submit several propositions.

First, any prevalent concurrent belief must be based upon an element of truth. The circumstance to which Dr. Barker refers, of the exhibition at the watering-troughs of variously colored rods of poplar and chestnut to the flocks of Laban, and the creation of a race of "ring-streaked, speckled, and spotted" cattle, is, perhaps, the first recorded illustration of the effect upon the offspring of an impression made, during gestation, upon the parent. This is, perhaps, as generally and firmly believed as any other fact recorded in Genesis. It was, moreover, at that time, a common belief that animals were affected

in this manner, and a commentator remarks that sheep were the most impressible of the lower order of animals. From that early date to the present, this belief has been continuously growing more prevalent. With the advances in civilization, learning, and science it has continued to increase in prevalence. Now it is a fixed and permanently accepted truth with a vast majority of intelligent women. Among men it is very generally accepted; and as the evidences and facts accumulate, many more medical men concede the possibility of such a relation of cause and effect. If it were absolutely destitute of an element of truth, is it possible that a belief having its origin in such an apparently trivial circumstance as the trick of Jacob could have become a fixed belief in the female mind, and, notwithstanding the numerous assaults made and ridicule hurled against it by medical men, continuously acquire prevalence among all classes of people?

The second proposition is that, as in the physical world there is no effect without a cause, so it is likewise true in the world of life that there can be no effect without a cause. Nature commits no freaks. As an abstract proposition, this is probably acceded to; but it is alleged that, as deformities and blemishes occur more frequently in the vegetable kingdom, where there is neither intellect, instinct, nor brain, therefore the condition of mind and the possibility of mental impression can not enter as a factor in producing like results in the human being. To my mind this is a strong argument in favor of this relation of cause and effect. The deviations in form which occur much more frequently in the vegetable kingdom than in any other, are produced by extraneous influences not less subtle, occult, or inexplicable than the effect of mental shock and persistent mental impression upon a fetus deriving its sustenance from the mother, whose mind is indelibly impressed with a certain conviction that an injury to her offspring must follow. We are constantly witnesses of the deviations in form in vegetable life caused by conditions of the atmosphere, climate, season, heat, moisture and dryness, soil and locality. We can not have failed to observe the variations in form, in the general characteristics of growth and development, in the colors, fragrance, and beauty which the

floriculturist has produced in many flowering plants, and the alterations in size, taste, and nutrient qualities of edible vegetables and fruits produced by the horticulturist. These changes, alterations, and improvements exhibit the effect of extraneous causes, either directly managed by the intellectual master-man, or by some condition of the natural elements which, as yet, we do not understand. No one can expect to find in the same field of wheat every head the same size, nor every grain in each head of the same grade and weight. No one can expect to find upon the fruit-bearing tree every blossom alike, nor every fruit of the same flavor and size. No one expects to see upon the blossoming rose-bush every bud of equal size, with every petal of exact shape and shade of color. Neither does any one expect to find among any species of thorough-bred animals uniformity of size, weight, and color; nor equal speed and power. We see these variations; we witness the effects, and reason from effect to cause. In a vast majority of instances we fail to demonstrate the relation of cause and effect; and, when in the comparatively few cases this relation is established, it is the logical or practical deduction from the multiplication of like variations under like circumstances.

The third proposition is as follows: If in a single case the relation of cause and effect can be demonstrated between the fact of fetal deformity and the circumstance of maternal impression, that one case must be accepted as proof, and the inference must be clear that if one such case does occur, others may.

Moreover, if there are any number of cases in which it can be shown that an impression was received, and that there followed a deformity of the fetus corresponding in essential particulars with the maternal impression, it must be conceded that the relationship of cause and effect is presumptively established. This latter proposition can be illustrated by a number of instances; none more marked, perhaps, than the one related by Dr. Barker in his paper—that of pressure made upon the hand of the mother, while sitting in the theatre, and the birth of her child with absence of the first and second phalanges of the left hand.

All the cases may be divided into four classes :

1. Those classed as coincidences. If there were no others, the theory might be discarded.

2. Those in which there was a maternal impression and fetal blemish or deformity, with absence of correspondence. These two classes are constantly referred to in proof of the theory of chance, or mere coincidence, and, considered without reference to other evidences, they would attract but little attention. But Nature does not uniformly present results in a definite form and manner. The ultimate fact can not always be established without consideration of the trivial evidences which, when grouped in orderly arrangement, constitute a continuous chain of evidence, leading in the direction of a definite conclusion. These two classes should be regarded as the initial stage in the process of inductive reasoning by which I am attempting to establish a conclusion, and must, at least, be accepted as proof of the presence of an effect, even though the cause of the blemish or abnormality may not be so manifest.

3. This class includes those cases in which there is no previous mental impression or conviction, but correspondence between an observation and fetal deformity. The mother did not receive a shock, was not disturbed concerning the probable deformity of her child, but had observed a certain thing, and when the child was born the deformity was present, corresponding with the observation. In such cases there is neither maternal shock, fright, nor conviction, nevertheless there is correspondence between the observation and fetal deformity. These circumstances remove such cases from the possibilities of freak, coincidence, or chance, and point directly to some change in the complex economy of the pregnant woman, produced by an extraneous influence, and transmitted to the dependent fetus. Every one admits that virtues and vices, whether hereditary or acquired, may be transmitted. If this be true, why may not a vice of the animal economy, even though originating during the progress of utero-gestation, influence the physical development of the fetus? In fact, such an effect is not an uncommon occurrence. If the general development and formative energy of the fetus can be influenced by the physical condition of the mother, why may not the de-

velopment of some special part be influenced by some sudden and unusual change or disturbance of the reproductive activities? If a father with a cleft palate or supernumerary digits can beget a child with a cleft palate or supernumerary digits, why may not a pregnant woman, whose impressible nature may be greatly changed by trivial circumstances, transmit to the formless embryo an impression, or the influence of a disgusting observation upon her physical economy? If a child begotten during the inebriation of the father may, and usually does, suffer some evil effect, why may not the maternal economy, changed by extraneous conditions, be equally effective in modifying fetal development? It is not the alcohol, but its effect upon the man, that is transmitted. If a father with supernumerary digits may beget a child with like deformity, it does not follow that a pregnant woman who may have observed such a deformity in another person will give birth to a child with like deformity; but may not the observation in each case be the element of causation? The greater probability of such fetal deformity in cases where the father is thus afflicted may be the result of the more constant observation of the mother. These speculations might be multiplied *ad infinitum*. They do not demonstrate the relation of cause and effect, but they do establish a basis for a rational belief.

4. This class refers to the cases of correspondence between the maternal impression and the fetal deformity. I have not examined the literature of this subject very carefully, but will cite a few cases.<sup>1</sup> The first to which I will refer is the case reported by Dr. Goodell in the *American Journal of Obstetrics*, May, 1871, p. 131.

Dr. Goodell stated, that while he scouted the extravagant statements made by the laity with regard to the influence of maternal impressions upon the fetus, yet he was inclined to the belief that there is more in them than physiologists are willing to concede. In support of this he would narrate a remarkable case. It occurred in the family of a Fellow of the Obstetrical Society of Philadelphia, to which Dr. Goodell, with the permission of the father, had narrated the circumstances.

<sup>1</sup> The illustrations cited comprise only those to be found in my private library. I have not had time to refer to the library of the Surgeon-General's office.



They were published, but somewhat imperfectly, in the *American Journal of Obstetrics*, May, 1871, p. 131.

The lady menstruated for the last time May 6, 1870; and on July 7th her husband was invited to assist at the rite of circumcision in the family of a Hebrew friend, living directly opposite. The lady was intensely interested in the description of the operation, of which she demanded the minutest details, and which she deemed a very "cruel" one. It, indeed, made so great an impression upon her that for several days it was the constant burden of her thoughts and conversation. She would even wake up her husband at night to talk with him about the cruelty of the rite and the sufferings of the child. As the result will show, her husband at that time took alarm lest this morbidness on his wife's part should affect the future child. She was delivered on February 6th, Dr. Goodell being in attendance. The child, a boy, was born during the momentary absence of the father, who was called out of the room to see an office-patient; but he returned before the cord was cut, and immediately asked what the sex was, and whether the child was perfectly formed. Being on the further side of the bed, he could not see the child. Dr. Goodell replied that it seemed to be sound. "Examine the penis," anxiously demanded the father, "and see whether it is all right." The room being dark, Dr. Goodell could not see very well, but thought that he detected a hypospadias, and so informed the father. Without looking at the child, he at once said, "You don't mean hypospadias, but circumcision." Sure enough, upon a closer inspection, the glans penis was found exposed, while the retracted prepuce, adherent to the corona glandis, actually showed the yet granulating sore of what seemed to be a recent circumcision. Dr. Goodell stated that this case had converted him to the belief that there sometimes exists in the early months of gestation a relation of cause and effect between a maternal emotion, especially if of a powerful nature, and a birth-mark.

DR. BUSEY, continuing.—It does not seem possible that such precise correspondence between the maternal impression and the condition of the prepuce could have been a coincidence.

CASE 2.—Ashburton Thompson (*Trans. Obstet. Soc. Lond.*, vol. xix, p. 94). A mother received at her door a visitor, who had in the median line of his neck an aperture where a tracheal tube could be worn; in fact, it was a cleft left by such a tube. The mother was impressed with the conviction that her child would be deformed, and it was born with a cleft in the median line of its neck, almost identical in appearance with the observation.

CASE 3.—The same author reports another case, in which the mother received during the same pregnancy two impressions at different times, and differing entirely in their nature. Her child was born with two distinct deformities, corresponding with the separate impressions received. It is more logical to conclude that these effects were the results of the maternal impressions, than that two such remarkable coincidences should have occurred during the same pregnancy independently of the nervous perturbation and mental anguish which were known to be present.

CASE 4.—A fetus,<sup>1</sup> at the fifth month, was born marked with a compact mass of hair continuous with the eyebrows, and extending evenly and uniformly over the whole forehead, which "gave the head a very singular expression, very closely resembling a squirrel." The mother stated that when "only a few weeks gone in pregnancy she had been greatly startled by a pet squirrel that had attempted to bite her."

This child also exhibited two well developed lower incisor teeth, which were ascribed to her "frequent repugnance at the sight of some poorly-constructed false teeth worn by her aunt."

CASE 5.—The child of Mrs. T.<sup>2</sup> was born with a red mark on its back, and also a mark in the center of its forehead. The mother had, during the fourth month of her pregnancy, received a blow on her lumbar region, and a month later was struck on her forehead by something falling.

Coincidences may repeat themselves, but the chance of coincidence in such cases where there is direct correspondence between the maternal impression and the effect is infinitesimal.

<sup>1</sup> Stevens, *Obstet. Gaz.*, vol. iii, p. 465.

<sup>2</sup> Wilson, *Obstet. Jour.*, G. B. & I., vol. viii, p. 333.

mally small. If the facts as stated are correct, the relation between the phenomena is direct.

CASE 6.—Fearn<sup>1</sup> reports the case of absence of the same metacarpal bone of the same hand of the child of a mother who witnessed the removal of the corresponding bone from the hand of her husband. She was much shocked and alarmed at the sight.

CASE 7.—Dr. G.<sup>2</sup> sustained a fracture of “his leg, midway between the ankle and knee. His wife was about five months advanced in pregnancy. When the child of which she was pregnant was born, it had on the leg corresponding with the injured limb of the father, and at precisely the same spot, the appearance of a fracture of a limb, and there was also a decided shattering of the leg.”

CASE 8.—A woman,<sup>3</sup> when three months pregnant, was frightened by the sight of a “dog’s foot sticking through the crack of a door in her room.” Her son was born with a deformed hand, bearing some resemblance to a dog’s foot.”

CASE 9.—“A lady,<sup>4</sup> three months advanced in pregnancy, saw a pig, driven furiously out of an inclosure, have its bowels torn out by the stake of a fence.” She was greatly shocked, and fainted. “Her child, when born, had the entire front of the abdomen covered only by a thin film, and the intestines were visible through it.”

CASE 10.—A pregnant woman<sup>5</sup> suddenly saw one of her children covered with blood by some accident. “The child she was carrying was born with a large red stain upon its face. This woman had not thought of or brooded over the occurrence, nor had she any apprehension that her infant would be marked.”

CASE 11.—A pregnant mother<sup>6</sup> had one of her ears torn through by the forcible dragging away of one of her ear-rings.

<sup>1</sup> *Report Med. Ass. Ala.*, 1850.

<sup>2</sup> Dossey, *Trans. Med. Ass. Ala.*, 1850.

<sup>3</sup> Baker, *Obstet. Gaz.*, vol. i, p. 347.

<sup>4</sup> Parker, *Amer. Jour. Med. Sci.*, vol. xxv, p. 360.

<sup>5</sup> Hayward, *Amer. Jour. Med. Sci.*, vol. xxv, p. 359.

<sup>6</sup> Doane, *Amer. Jour. Med. Sci.*, vol. xxv, p. 358.

Her child was born with a fissure in the ear corresponding to the laceration in its mother's.

CASE 12.—Adams<sup>1</sup> delivered a child with a forearm terminating in a conical stump just above the wrist. The mother, during her pregnancy, had nursed a brother who had had his hand torn off by machinery, and the forearm afterward amputated. The malformation of the child was upon the same arm.

CASE 13.—A girl,<sup>2</sup> thirteen years old, very small and delicate for her age, had a middle finger upon one hand equal in size to that of a man. The corresponding metacarpal bone was also enlarged. The mother, during her pregnancy, had for a long time dressed a felon or whitlow for an old uncle. "The affected finger corresponded to the one malformed in the case of the daughter. The operation was always disagreeable to her, as she was a woman of a nervous temperament."

CASE 14.—A lady,<sup>3</sup> when two months and a half pregnant, though not at the time aware of it, suddenly saw a man, recently killed, lying with one upper extremity exposed, bloody, and so twisted that the hand lay upon the upper part of the neck. At this sight she nearly fainted, was ill for a month, and during the remainder of her pregnancy could not banish the sight from her mind. She also feared danger to the child *in utero*. The infant exhibited an extensive blood-mark covering the back of the corresponding hand, and extending along the extremity to the shoulder, and somewhat upon the neck.

CASE 15.—A lady,<sup>4</sup> "four weeks after her marriage, saw a hen injured, by the breaking of one of its legs and the removal of the lower portion. She was exceedingly troubled at this, continually dwelt upon the subject, and insisted that her child would be deformed. The child, perfectly formed in other respects, exhibited upon one of its lower extremities simply a heel, and the rudiments of five toes with microscopic nails."

CASE 16.—Haldeman<sup>5</sup> was present at the birth of a child with absence of both parietal and upper three fourths of the frontal and occipital bones. The eyes were large, full, and

<sup>1</sup> *Amer. Jour. Med. Sci.*, vol. xxv, 358.      <sup>2</sup> Jackson, *Ibid.*

<sup>3</sup> Jackson, *Amer. Jour. Med. Sci.*, vol. xxv, 358.

<sup>4</sup> Storer, *Amer. Jour. Med. Sci.*, vol. xxv, p. 356.

<sup>5</sup> *Obstet. Gaz.*, vol. v, p. 233.

bright. The superciliary ridges were very prominent, and densely covered with brown hair. When this child was shown to the mother, she exclaimed, "Oh! those are the eyes and brows of my brother John." John had been killed on a railroad, and the body was brought home for interment. Her second month of pregnancy had just passed when she saw the disfigured body, and the "ghastly face and eyebrows."

CASE 17.—A lady,<sup>1</sup> in the third month of her pregnancy, was so horrified at the appearance of her husband with a severe wound of his face, from which the blood was streaming, that she fainted, and subsequently had an hysterical attack. She "could not get rid of the impression the sight of her husband's bloody face made on her," and was afraid the child would be affected. It was born "with a dark red mark upon the face, corresponding in situation and extent with that which had been upon the father's face."

CASE 18.—The wife<sup>2</sup> of a janitor of the College of Physicians and Surgeons, during her pregnancy, dreamed that she saw a man who had lost a part of the external ear. This dream made a great impression, and she mentioned it to her husband. The child was born with one ear "exactly like the defective ear she had seen in her dream." Dr. H. says it looked "as if a portion had been cut off with a sharp knife."

CASE 19.—Stewart<sup>3</sup> was asked by a mother, immediately after the birth of her child, if the hands were well formed. Each hand had a supernumerary finger. The mother had been impressed by seeing a man with supernumerary fingers.

CASE 20.—Taylor<sup>4</sup> has seen a child whose right hand was without fingers. The mother, early in her gestation, had been approached by a beggar, at the same time thrusting out a mutilated hand.

CASE 21.—Miller<sup>5</sup> narrates the case of a man who, by an accident, had lost a part of his scalp. The ghastly sight so frightened his pregnant wife that she fainted, and the child was born with a bald spot on the top of his head, which is permanent.

<sup>1</sup> Hammond, *Psychological Journal*, vol. ii, 1868.      <sup>2</sup> *Ibid.*

<sup>3</sup> *Amer. Jour. Obstet.*, vol. vi, p. 641.      <sup>4</sup> *Ibid.*

<sup>5</sup> *Obstet. Gaz.*, vol. iv, p. 67.

CASE 22.—A lady<sup>1</sup> whose mother had a cancerous tumor between her eyes, which she had seen frequently during the early months of her pregnancy, and about which she was much worried, gave birth to a child marked with a nævus “projecting out between the eyes, the size of a cherry.”

Kerr reports a case, cited farther on, of a subsequent pregnancy without any maternal impression, but with the birth of a child with a blemish corresponding to an impression received during the previous pregnancy, and to the blemish on the child of that pregnancy.

My credulity will not permit me to accept the doctrine of chance or coincidence in explanation of the correspondence between the maternal impressions and the fetal deformities in this group of cases. Upon the common doctrine of chance, the coincidence is too remarkable to be explained so readily, and, if one 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. In a few of the cases the maternal impression was absent or forgotten. It is not improbable, in such cases, that the impression was effaced while the effect remained. The susceptibility and impressibility of pregnant women differ; and the degree of mental anguish which different women may suffer from a similar disgusting and shocking observation will vary very greatly. The frequency of deformities of children after some shocking sight is the test of the truth of such cause of deformity. I can not trace the connection between the two phenomena in each case, but the effect succeeds the impression with more definiteness and precision than logical sequences usually do. I can not dismiss as mere chance the fact, that a mother who had received two separate and different impressions gave birth to a child marked by two distinct and corresponding deformities or blemishes; nor the other fact, that a woman in two consecutive pregnancies gave birth to a child marked alike and corresponding to an impres-

<sup>1</sup> Taylor, *Phila. Med. Times*, vol. vi, p. 307.

sion received during the first pregnancy. In this connection it may be stated, that a mare once folded by a quagga will ever afterward, when folded by a stallion, bear striped colts; and that the peculiarities of the first husband may be transmitted to the children of the widow by a second husband.

The effect of maternal impression may be more fully illustrated by the two following cases:

CASE 23.—Miller cites the case of Mrs. Wilkins,<sup>1</sup> who was suddenly seized with an uncontrollable longing for oysters, which could not be gratified, and, fearing that her intense longing and disappointment would result in marking her child, she clapped her hand upon her buttocks, with the wish that it should be there, if it occurred. "The youngster was graced with a large and well-formed oyster upon his buttock." This case seems to prove too much, and would not have been referred to but that it is corroborated by the second case, which has been reported by a physician whose accuracy and fairness no one will doubt.

CASE 24.—Mrs. P.,<sup>2</sup> during the fourth month of her pregnancy, received a visitor whose face was disfigured by a mark of bright scarlet color, covering one half of her nose and extending on the cheek. The vivid account of her mortification and troubles, and of the failure of her efforts to have it removed, made a profound impression upon Mrs. P. When the visitor discovered that her friend was *enceinte*, she was horrified, and expressed fears that the baby would be marked as she was. Mrs. P. had the same fears, and remarked, "Well, if my baby is to be marked, I will mark it here," slapping herself on the right buttock. The child was born in November following, at full term, with a bright red mark on the right buttock, irregular in shape, and measuring two and a half inches. This case is reported by Dr. Prentiss, to whom the interview was related at the time of its occurrence, and who was present at the birth of the child.

These two cases are as closely allied as two earthquakes, occurring at different times and in widely separated localities, can be. The phenomena in both are so alike, that a like cause

<sup>1</sup> *Obstet. Gaz.*, vol. iv, p. 67.

<sup>2</sup> Prentiss, *Phila. Med. Times*, vol. xii, p. 385.

must have been common to both. Chance does not offer such precision. Freaks of Nature can not be so exact in concomitant detail. Similar coincidences vary sufficiently to dismiss the suggestion of like causes. After-thought is eliminated. There is no circumstance in the history of either case which attaches to heredity. If the first, by itself, should appear as an event proceeding from an unknown cause, the second is surrounded by all the conditions of intelligent deliberation.

These considerations may properly be followed by the citation of cases, which show that in the matter of maternal impressions, as in other physical conditions, like causes will produce like results.

CASE 25.—A lady,<sup>1</sup> of a highly nervous and impressible temperament, with a cultivated mind, during the third or fourth month of her pregnancy was greatly disturbed and made sick and faint at the observation of her maid, who had been very badly burned about the eyes, causing considerable ecchymosis around the eyes, and active congestion of the conjunctiva. Her child was born marked upon the conjunctiva of both eyes.

CASE 26.—A pregnant woman,<sup>2</sup> whose little daughter fell against a hot cooking-stove and was badly burned on the face, hands, and arms, was greatly shocked and frightened. She frequently referred to the accident. Three months afterward her child was born marked with blisters on the lips, in the mouth, on the right ear, right elbow, both hands, each knee, and both ankles, resembling those caused by burns.

CASE 27.—Thirteen months after the birth<sup>3</sup> above referred to Mrs. H. gave birth to another child "marked precisely on the same parts and in the same manner as the above described one. The mother had for some years enjoyed good health, and was altogether free from disease at the time."

CASE 28.—The child of Mrs. M.<sup>4</sup> was born with two distinct vesicles on the left hand, one over the metacarpal bone, and the other on the phalanx of the index finger. Previous to the birth the mother had burned her hand, and the vesicles

<sup>1</sup> Heddens, *Amer. Jour. Med. Sci.*, vol. xxiii, p. 558.

<sup>2</sup> Kerr, *Amer. Jour. Med. Sci.*, vol. xxxiv, p. 285.      <sup>3</sup> *Ibid.*

<sup>4</sup> Wilson, *Obstet. Jour.*, Great Britain and Ireland, vol. viii, p. 333.



on her hand corresponded exactly with those on the hand of the child.

CASE 29.—A lady<sup>1</sup> who resided next door to a woman with a double hare-lip, and who had seen this person daily during her pregnancy, was firmly convinced that her child would be marked. It was born with a single hare-lip and cleft palate.

CASE 30.—A lady,<sup>2</sup> when two months pregnant, was impressed with the belief, by the sudden observation of a woman with a double hare-lip, that her child would be born with a similar deformity. It had a double hare-lip, and double cleft palate.

CASE 31.—A woman,<sup>3</sup> between four and five months pregnant, was much impressed by the narration of the details of an operation for hare-lip. Her child was born with a hare-lip.

CASE 32.—A woman,<sup>4</sup> during her first pregnancy, having constantly before her a mental picture of a former fellow factory workman who had a hare-lip and cleft palate, was haunted with the idea that her child would have a deformed mouth. The child was born with a hare-lip and cleft palate.

CASE 33.—A woman<sup>5</sup> had been, during the early months of her pregnancy, disturbed by visits from a beggar-woman with a hare-lip, and had had a "horrible picture in her mind" ever since, and was distressed with the fear that her baby would "have a mouth like the old beggar-woman." Her fears were realized.

CASES 34 and 35.—Carnochan<sup>6</sup> gives an account of two cases of hare-lip. One, he states, was caused by a dentist, who roughly lifted the mother's lip at the sixth month of pregnancy; the other, by the mother, at the eighth week of her pregnancy, seeing two girls suddenly enter her room who had been imperfectly relieved of the deformity.

It is claimed that maternal impressions can not exercise any agency in the production of fetal blemishes and deformities, because, in many cases, the time of their occurrence is either

<sup>1</sup> Baker, *Obstet. Gaz.*, vol. i, p. 347.

<sup>2</sup> *Ibid.*

<sup>3</sup> Channing, *Amer. Jour. Med. Sci.*, vol. xxv, p. 360.

<sup>4</sup> Jameson, *Amer. Pract.*, vol. xviii, p. 76.

<sup>5</sup> *Ibid.*

<sup>6</sup> *Richmond and Louisville Jour.*, vol. xxv, p. 424.

not coincident with the evolution of the part of the fetus affected, or is prior to the period when the ovum acquires an intimate attachment to the womb; and because it has been proved that like deformities have been caused by injuries to the mother's abdomen, diseases of the uterus, secundines, and ovum, heredity, diathesis, the formation of fibrous bands, placental adhesions, pressure of a loop of the umbilical cord, and fracture.<sup>1</sup> To make this argument conclusive, it is furthermore maintained that malformations, for the most part, have their origin during the period of embryonic life in which the ovum is formless *blastema*.

No one has claimed, nor even expressed a belief in the doctrine, that every case of fetal deformity is attributable to a maternal impression. Neither has any one who has assailed this belief or doctrine satisfactorily explained the cases in which the correspondence between the impression and the malformation has been demonstrated. It would be stretching one's credulity beyond the capacity of human intellect to assume that any one of the pathological conditions before enumerated could adapt a vice of conformation with such precision to either a previous or coincident maternal impression. Admitting, then, to its fullest extent, the argument of exclusion from lack of coincidence between the time of mental excitement or depression of the pregnant woman and the period of evolution of the part affected, and that like malformations may be caused by a variety of morbid conditions, there remain many cases, some of which have been cited, where prolonged mental emotion, protracted grief, distress, or shock, occasioned by some thrilling recital, disgusting observation, or sudden terror, offers the only explanation of the two corresponding phenomena.

If the etiology is incomplete without the factor of hereditary or acquired diathesis, the concession carries with it an element of causation even more occult and inexplicable than the theory of maternal impressions, because it implies that in those cases presenting the phenomenon of correspondence between the mental disturbance and fetal deformity, the diathetic vices must oftentimes, in some incomprehensible manner, verify the

<sup>1</sup> Waddell, *Richmond and Louisville Med. Jour.*, vol. xxv, p. 420.

fears and predictions of the mother. If a diathesis is an admitted and recognized cause, why may not a shock, grief, sudden terror, mental distress, and anguish, which may affect a pregnant woman's health, deprive her of sleep, destroy her appetite, interfere with the assimilation of her food, disturb the secretions and produce emaciation, interrupt the progress of fetal growth and development? The proper nutrition of the fetus is certainly influenced by conditions of the mother's health, and it does not seem irrational to conclude that some delay, arrest, or misdirection<sup>1</sup> of fetal growth might result from such temporary interference with the developmental processes as a deep and protracted mental impression might produce.

Dr. Arthur Mitchel, Commissioner in Lunacy for Scotland, seems to have demonstrated that such perturbations of a mother's mind may cause imperfections in the child. From four hundred and forty-three cases of idiocy or imbecility, examined with special reference to the effect of "strong mental emotion affecting pregnant women as a cause of idiocy in the offspring," he has selected the following six cases, which did not in the history of the children present any other circumstance which "had a preferential claim to be considered the cause of the imperfection."

CASE 36.—"A woman,<sup>2</sup> while pregnant, witnessed from the shore the drowning of her husband, a fisherman, during a storm. She was in a deplorable state of terror while watching his danger, and fainted when the catastrophe came. Long afterward she remained in feeble health. Her child, when born, was small and weakly, and turned out an idiot."

CASE 37.—"A woman, while pregnant, lost three of her children in one week of epidemic fever. Her grief and agitation at the time were excessive, overwhelming, and she continued in a state of deep depression, never quitting her bedroom till she was delivered, several months after the bereavement, being then in a wretched state of bodily health. Her child was an idiot when born, and her next and last child was still-born."

<sup>1</sup> Miller, *Trans. Obstet. Soc. Lond.*, vol. xxvi.

<sup>2</sup> *Trans. Obstet. Soc. Lond.*, vol. xxvi, p. 127.

CASE 38.—“A woman was in the sixth month of pregnancy when a great flood occurred, which threatened such danger to her and her family, that a boat was made fast to the door of her house, by which they were to escape if necessary. She and her children were for a short time left alone in the house; and while thus situated, a tall man, unknown to her, dripping wet, and in apparent agitation, walked into her cottage, sat down by the fireside, and, after a few minutes, rose abruptly and left, never having spoken. She became most alarmingly terrified, and for several days could not be tranquilized. She sat watching the door for the re-appearance of what she regarded as a mysterious visitor, and screamed violently if any movement or sound could be interpreted by her fancy into an indication of his approach. The child's movements *in utero* were observed to be quick and violent, and she complained of the pain they gave her. It was not, however, born before the full term, and soon after birth was seen to be idiotic.”

CASE 39.—“When in a state of pregnancy, a young woman was plunged into deep and protracted grief by the sudden and distressing death of her husband—a loaded cart having passed over him. She was left in extreme poverty, and to her grief was added anxiety about the maintenance of her children. Her bodily health suffered greatly. Her child, born at full term some months after the accident, was small at birth, and was soon recognized to be defective in mind.”

CASE 40.—“A pregnant woman saw one of her children gored to death by a cow. Her mental disturbance and agitation were excessive, and could not be subdued or controlled. The motions of the fetus in this case are described as having been so intense as to give the woman and her friends alarm. Abortion was threatened, but did not occur. Her child is now a chronic idiot.”

CASE 41.—“A woman was driving a dog-cart when the horse ran away. The vehicle was upset, and the accident caused the immediate death of the horse. The woman is said to have been physically uninjured, but she continued for a day or two in a state of abject terror, from which she could not be aroused. She was pregnant at the time, and her child, which was born about the full period, was partially paralyzed at birth,

and is now a complete idiot. It is possible, of course, that in this case bodily injury may have been inflicted on the mother, though it was not perceived. The mental emotion, however, was certainly of a very unusual character, and it was the belief of the woman herself, and of her friends, that this accounted for the condition of her child."

These cases Mitchell cites as proof that "protracted violent mental excitement or deep mental impression may cause defects of the offspring." He has given the subject the most careful study, and "can see no reason why it should not be regarded as sufficient."

The effects and influences of heredity furnish very many corroborative circumstances and conditions. Peculiarities of physical conformation, temperament, disposition, mental defects, and special characteristics, virtues, vices, and habits, are transmissible to the offspring. We recognize types that distinguish races, nations, communities, and families, and yet the inequalities and dissimilarities in the offspring of common parents are numerous and multiform, and everywhere, among all civilized nations, in all countries and climates, in every sphere of life and grade of society, in all trades, occupations, and professions, individuality is a characteristic of the human race. The special peculiarities which differentiate individuals may be inherited from either or both parents. We also know that mental and physical conditions acquired by the mother during the period of pregnancy may be inherited by the child. If a virtue or a vice, an idiosyncrasy, a mental defect or a habit, a disease, either inherited or acquired by the mother during pregnancy, can be transmitted to a fetus *in utero*, it does not seem any less possible that a shocking circumstance or observation occurring during the earlier months of utero-gestation, and continuously during the remaining months operating through its perturbing influences on her mind and constitution, should impress the fetus with its analogue. It is a well known fact that fright, anger, grief, or any sudden and violent mental shock, may so change and deteriorate the quality of the milk, especially during the earlier months of lactation, as not only to render it unfit for use, but quickly and fatally poisonous to the nursling.

In view of this classification of the cases, and the grouping

of a few of the most striking, does it not appear manifest that I have established a basis for a reasonable belief in the relation of cause and effect between maternal impressions and fetal deformity?

There are two theories in regard to the *modus operandi* of maternal impressions: One, and the more popular, is that they operate through the blood; the other, through the nervous system. If there is any truth in the doctrine, it is more than probable that the detrimental influences are exercised in both ways. Food, medicines, poisons, and diseases are conveyed to the fetus *in utero*. Children have been born with measles, scarlet fever, small-pox, and other communicable diseases. Congenital chorea, hysteria, and epilepsy have been observed. There have been entire families of choreic persons, in which the disease has been propagated through several generations. Mothers, who had suffered a severe fright when advanced in pregnancy, have given birth to choreic children. The transmission of these nervous diseases is very rare; but the transmission of a tendency to hysteria, chorea, and epilepsy, and of a special susceptibility of the nervous system, is very often demonstrable.

The most remarkable demonstration of the transmissibility of disease, and of the continuous duration of the predisposition through remote generations, has been made by Dr. Billings, in his recent address at Brighton, before the British Medical Association. He has shown that the prevalence of certain diseases, in certain localities in this country, is due to the fact that the population of these regions of country consists mainly of the descendants of emigrants of European races among which the diseases had been for an unlimited period very prevalent.

Thus, Mr. President, I have endeavored to present to you the evidences, some slight, some more positive, and others leading directly up to the conclusion which we desire to establish. I do not claim to have demonstrated the relation of cause and effect, but I hope I have presented the doctrine which Dr. Barker and myself maintain is tenable, in such manner as to command your favorable consideration.

