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THE

NERVOUS AND VASCULAR CONNECTION

BETWEEN THE

MOTHER AND FŒTUS IN UTERO.

BY

JOHN O'REILLY, M.D., F.R.C.S.I.

[REVISED AND ENLARGED.]

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INTRODUCTION.

THE ennobling profession of surgery is rapidly rising to the highest pinnacle of perfection and usefulness.

Medicine is brilliantly advancing in the sciences of diagnosis, prognosis, and pathology, but is yet in its infancy in point of knowledge with respect to the etiology of diseases, the modus operandi of medicines,* the scientific explanation of the causation of death by diseases or accidents: the mode in which poisons destroy life, as well as the way poisonous effects are counteracted by the administration of medicinal agents, known as antidotes.

In the following pages, I have attempted to throw light on many recondite, abstruse, and hitherto unexplored matters. I have furnished facts and arrived at conclusions that I confidently hope will assist and enable others, better qualified, to elevate medicine to an equal rank of honor and glory with surgery.

The practice of medicine should be no longer problematical; medical heresies should be frowned down, diseases should be

* When a highly educated Professor of Obstetrics tells his class at a clinique, in 1863, that he prescribes *secale cornutum*, deeming it to be the best medicine to relieve a patient that he is after examining, although he is totally ignorant of the scientific explanation of the modus operandi of that medicine, and that he further acknowledges his knowledge is totally empirical with respect to his reasons for prescribing it, it is a candid but significant confession of his ignorance. This must not be construed into reproach, as the same declaration, I presume, would be made by ninety out of every hundred of the profession, thus fully establishing the truth of the averment I have made with respect to the knowledge possessed by the profession with regard to the modus operandi of medicines.

treated and medicines administered with a full and complete knowledge of the causes of diseases, and the indications to be fulfilled by the administration, as well as by the action of medicines. There should be no guess-work or doubt entertained on these important subjects. Indeed the full and true knowledge of these things should be instilled into the mind and known to a mathematical certainty.

I have been more influenced by the desire to write clearly and intelligibly, than a wish to earn a reputation for elegance of diction or beauty of composition.

I most respectfully invite the severest criticism, being satisfied no man can justly or honestly criticise without thinking, studying, and making himself thoroughly conversant with the subject under consideration. I can conscientiously affirm my sole object is to elevate the character as well as promote the honor, dignity, and utility of the profession.

JOHN O'REILLY.

WASHINGTON SQUARE SOUTH,
New York, January 4, 1864.

THE

NERVOUS AND VASCULAR CONNECTION

BETWEEN

THE MOTHER AND FŒTUS IN UTERO.

Is there a nervous connection between the mother and Fœtus *in Utero?*

Are there organic or vital nerves in the Maternal uterine arteries, or in the Fœtal hypogastric arteries?

Almost all Anatomists and Physiologists, up to the present time, have ignored the existence of organic nerves in the maternal uterine arteries, and have likewise ignored the existence of organic nerves in the fœtal hypogastric arteries. It is an admitted fact that Anatomists and Physiologists have nearly all failed to discover, and consequently have failed to demonstrate, the presence of organic nerves in the maternal or fœtal vessels.

Is it necessary to question the correctness of the conclusions arrived at by Anatomists and Physiologists, in order to ascertain the truth as to the fact of the existence or non-existence of nerves in the maternal or fœtal vessels? Most unquestionably it is of the greatest moment to have the question settled truly and satisfactorily.

What scientific or practical advantage would follow from an investigation instituted to establish the certainty of the fact, that nerves enter into the structure of the maternal and fœtal vessels; and further, that these nerves inosculate in the placental lobule?

In a scientific point of view, it would be accepted as a great advantage conferred on medical science; as it would enable medical men to explain phenomena in a clear and intelligible manner, which, up to the present time, have appeared to them at once mysterious and inexplicable. While in a practical point of view, it would give them an opportunity to anticipate and ward off evil consequences by suitable remedial agents.

Assuming it possible that a continuous chain of nervous communication could be shown to exist between the mother and fœtus *in utero*, it may be asked, What has this link of connection to do with establishing any reciprocity of feeling or action between the mother and fœtus? Or how an impression made on the mother could be communicated to the fœtus?

In answering these questions, it must be conceded that if an impression can be communicated through a continuous chain of *nervous* structure in any case, and there is positive proof advanced that such communication does take place, in the most palpable manner, it follows as a consequence that the same law must hold good with regard to the conveying of impressions in every case where a chain of nervous communication is established.

To elucidate this matter. It is a clear case, that when a man is told to flex his great toe or index finger, he can do so.

It is evident that the sound of the voice in the first instance makes an impression on the filaments of the auditory nerve in the labyrinth of the internal ear; it is evident that the impression thus made passes through the brain, spinal cord, sacral plexus, sciatic nerve, internal plantar nerve, subdivisions of the latter nerve to the great toe; or, in the other case, through the brain, spinal cord, brachial plexus, median nerve, and its digital branches which supply the index finger.

Every Anatomist must admit the truth of the statement just made, and every Anatomist must also admit that the impression is communicated through the agency of the nervous structure alluded to, when he divides the internal plantar nerve in the one case, or the branches of the median nerve in the other, and perceives that sensation and motion are lost in the great toe and index finger, and finds the person can no longer flex the toe or finger—the communication being intercepted by the division of the nerves, the operation of the mind can no longer extend to the toe or finger.

To argue with a man who would deny that impressions were communicated through nerves after witnessing the result of the section of the nerves, would be reasoning with a person not capable of judging with his own senses the difference between a man and his shadow.

It is a very abstruse as well as perplexing matter, and one too

which puzzles Anatomists and Physiologists, to explain, how it is possible an impression could be conveyed through a soft pulpy matter like the brain and spinal cord, as well as through a nervous cord. But it is known that the brain is composed of hollow *nerve fibres*, and that the nerves are composed of a series of hollow *nerve tubules;* that communication is established between the nerve fibres of the brain and the nerve tubules of the nerves; and it is established that the brain as well as spinal cord is provided with an organization capable, when in action, of generating a volatile or phosphoric agent, which passes not only into the nerve fibres of the brain, stimulating the mind to action, but likewise passes through the nerve tubules of the nerves, making the operations of the mind co-extensive with the terminations of the nerves. The grey substance of the brain, as well as the grey substance of the spinal cord composed of organic glands, secretes the phosphoric or volatile agent required for the stimulation of the *nerve fibres* of the brain, the nerve fibres of the spinal cord, and the nerve tubules of the nerves. Just as the rays of the sun would pass through a number of cylinders incased in a cylinder of large dimensions, on being placed in a proper axis towards the sun, and collect in *foci* on the interior wall or floor of a dark cellar, so in like manner the phosphoric agent generated by the cerebral glands and the organic glands of the spinal cord, passes through the hollow nerve fibres of the brain, the nerve fibres of the spinal cord, and the nerve tubules of the nerves, to their terminations.*

* It will be recollected, in connection with this theory, that phosphorus becomes ignited or volatilized at the temperature of 100°—the temperature of the blood at the heart is about 100°—just the temperature required to keep the volatile agent secreted by the brain in a state of activity. It will be remembered Mr. Hunter could never succeed in raising the temperature of an inflamed part above the temperature of the blood of the heart. In some diseases the temperature is raised to 106° to 107°, but it is a remarkable and curious fact that the temperature does not reach 108°, at which point phosphorus melts. Such a contingency might be attended with the very rare fatality known as "spontaneous combustion." In inflammation, the blood is increased in temperature by the phosphorus in the serum of the blood; in arachnitis the pain is excruciating, whilst the patient is furiously delirious in consequence of the *overstimulation* of the nerve-tubules of the brain by the volatile agent, which is increased in strength. The part the volatile agent plays in the eyes of wild animals is curious and remarkable, furnishing these animals with lamps to examine the pictures of objects impinged on the retina. The phos-

Having shown that motion is dependent on an impression of the mind extending through a nerve, or communicated through it, it is now necessary to demonstrate that pain extends through a nerve, or is communicated through it.

The experiments of Sir Charles Bell are conclusive with regard to there being nerves of sensation and motion. Division of the posterior roots of the spinal nerves destroys sensation in the parts to which the nerves are distributed, whilst division of the anterior roots of the spinal nerves is followed by loss of motion in the parts to which the nerves are distributed. Again, exsection of the branches of the ophthalmic division of the fifth pair of nerves will remove the intolerable pain, at least for a time, consequent on the disease of the nerves called *Tic Douloureux*. The removal of a carious tooth attended with excruciating pain, caused by a branch of the dental nerve being irritated, which pain subsiding on the extraction of the tooth, shows that the pain is located in the nerve. The violent pain produced by touching a neuroma shows that the pain is in the nerve, a fact proved by the cessation of the pain on the removal of the neuroma.

The facts just stated leave no doubt that painful impressions are due to the presence of nerves, and, further, that painful impressions are communicated to the mind through nervous

phoric volatile agent secreted by the cerebral glands, and transmitted through the nerve-tubules, illuminates the interior of the globe of the eye, so that the eyes appear of a dark night like balls of fire.

Any person can satisfy himself of the presence of the phosphoric agent in the eye, by closing his eye in the dark, and pressing on the ball at its inner angle, when he will perceive a luminous spot at the outer angle, the reflection of the phosphoric agent from the retina. Another proof that it is necessary to have the temperature of the blood up to 100°, to keep the volatile agent in a state of activity, is afforded by the state of the fingers when exposed to cold. The will commands certain movements of the fingers, but the fingers cannot carry the operations of the mind into execution, in consequence of the want of power, caused by the depression of the volatile agent. In cases of paralysis, the limbs affected are colder than the sound parts of the body; the volatile agent is not transmitted through the nerve-tubules of the nerves in these parts, hence the diminished temperature. The union of the oxygen with the organic glands keeps up a certain amount of heat, which heat is still further augmented by the transmission through the animal nerve-tubes of the volatile phosphoric agent. The temperature of the body is lower during sleep, when the cerebral glands are at rest, and no secretion of the volatile agent takes place.

communication, a fact proved by the cessation of pain which immediately ensues on the removal or division of the nerves. Again, impressions of another character, not exactly painful, can be communicated from the mind to a distant part, as is exemplified when a person, whose thigh has been amputated, wishes to scratch his foot, imagining he has not lost it, thus showing that sensation extends or is coëxtensive with the mind.

It is clear that although the extremity is lost the mind is not at all impaired, but that its operations are yet the same as they were before the removal of the limb.

I have now, I presume, clearly demonstrated and established the fact that motion and pain are connected with the presence of nerves, or in other words, that pain and motion can be intercepted by the division of nerves, thus showing conclusively that there can be neither pain nor motion where there are no nerves.

It next becomes necessary to show that impressions made on the animal nervous system, or what is usually called the *Cerebro-spinal* system, are communicated and extend to the organic or vital nervous system through the *inosculation* of the nerves of the former with those of the latter.

To illustrate the connection between the animal and organic nervous systems, it is only necessary to mention the fact that, when a person is told some disastrous news, he feels a painful sensation about the heart, while this organ pulsates quickly and strongly. The impression made by the sound of the voice on the filaments of the auditory nerve in the labyrinth of the internal ear, passes through the nerve tubules of the filaments of the auditory nerve to the hollow nerve fibres of the brain, and from the latter to the nerve tubules of the *Par vagum*, to the nerve tubules of the nerves composing the anterior pulmonary plexus, through the inosculations of the branches of the *Par vagum* with the former. The impression next passes to the cardiac ganglion, through the connection of this ganglion with the pulmonary plexus, and, lastly, it passes to the heart itself through the nerves distributed to it by the cardiac ganglion. Direct nervous communication being established between the ear and the heart, the increased pulsation of the heart is

accounted for on the same principle as the flexion of the great toe, namely, through direct nervous communication. The painful impression complained of in the neighborhood of the heart, is caused by the shock being communicated to the cardiac ganglion.

It may be objected that, as already stated, a man can flex the great toe or index finger at pleasure, yet he cannot cause the heart to pulsate quickly at will, and consequently that there is no parallelism between the causes. This objection does not militate against the fact, that the impression is communicated through nervous intervention, when it is recollected that the impression is first communicated to the animal nervous system, and subsequently to the organic or vital nervous system. And, furthermore, when it is remembered that the will has no control over the functions of the organic or vital nervous system.

Every medical practitioner is aware that, if a woman three months pregnant be excited or shocked by hearing some frightful intelligence, she will have a miscarriage; here the impression is conveyed from the filaments of the auditory nerve to the brain, spinal cord, sacral ganglia, connected with the roots of the spinal nerves, the hypogastric plexus, the nerves surrounding the arteries, distributed to the uterus, causing contraction of the muscular fibres of this organ, and followed by the expulsion of the *ovum*.

The nervous communication between the ear and the uterus being established, there is no more difficulty in understanding the contraction of the uterus than the flexion of the great toe or index finger. A chain of nervous communication is found to exist in each case, and the same law that regulates the one case holds good in the other.

Having now, I presume, established the fact, that an impression can be communicated through the interposition of a chain of nerves, it becomes necessary, in the next place, to point out, that an impression can be made to extend to other parts, where no nerves can be demonstrated, in order to be able to account for the phenomena which ensue, as, for instance, when a person is charged with some ludicrous offence, his face is observed to become crimson. Here the impression is conveyed from the filaments of the auditory nerve in the labyrinth of the internal ear to the nerve fibres of the brain, to the nerve fibres of the

facial nerve, through the branches of the latter, to the organic nerves surrounding the branches of the *transversalis faciei* artery, which inosculate with the branches of the facial nerve. Thus, from the start or excitement, the nerves *lose* their power temporarily, the arteries become dilated, and hence the blushing which ensues can be accounted for.

It may be here necessary to observe that experiments made on the branches of the organic nerves confirm the truth of this explanation.

If the arteries which supply the right side of the head dilate when a section is made of the cervical nerve, it follows as a consequence that contraction of the arteries must be concomitant on the integrity of the cervical nerve. In other words, that as dilatation follows the section of the nerve, contraction must depend on the normal condition of the nerve. When the nerve is divided communication is cut off between the organic ganglion and the nerves which supply the coats of the arteries; the result is, that the nerves supplying the coats of the arteries become *paralysed*,* allowing dilatation of the coats of the arteries to take place, just as occurs in the case of the index finger which becomes *paralysed* when the branches of the median nerve which supply it are divided. The ganglion is the nervous centre in the one case, the brain in the other.

In the one case the will has control, as for example, over the movements of the finger; in the other it has not.

The animal nervous system is supreme in one case, the organic or vital in the other. The mind can regulate its own actions, but it has no power over vital actions. Hence it is a man can flex or point his index finger at pleasure, but he cannot give color to his cheek to please himself, or arrest the action of the heart to commit self-destruction.

Again, a painful impression can be communicated from the distant extremity of a nerve towards the nervous centre with which it is connected, as is exemplified in a case of whitlow at the tip of the right index finger, the pain is excessive, and the radial and digital arteries pulsate strongly and violently; the

* Dr. Brown-Séquard gives an explanation of this experiment diametrically the reverse of the one given here, at the same time that he expresses his surprise at the *unexpected* result of the experiment.

arteries in question feel hard, firm, and strong to the touch, showing clearly that the organic nerves are suffering great irritation.

It cannot be maintained that this condition of the arteries is attributable to the action of the heart, inasmuch as the corresponding arteries of the left side, namely, the radial and digital, are not characterized by similar phenomena as those pointed out as taking place on the right. It therefore follows that the strong contraction and firmness of the artery must depend on the irritation of the nerves in the coats of the arteries.

To prove that this explanation is true, it is only necessary to make a free and deep incision in a line corresponding to the axis of the index finger affected with a whitlow, so as to remove the pressure from the extremities of the digital arteries, and, consequently, from the organic nerves of these arteries, when the radial and digital arteries will resume their normal condition.

A great many attribute the state of the artery just described to *Vital Action*. The term *vital action* gives scope for an immense amount of speculation, and it is the one a medical man shields himself under when unable to explain a difficulty. Vital action signifies life. Without life there could be no pulsation of the artery. With the presence of organic nerves there could be no life: therefore, the state of the artery is consequent on the presence of organic nerves. *Life is located in the ganglionic nervous centres, and the distribution of the nerves of the organic or ganglionic nervous system:* a fact proved by death being caused by a smart blow on any of the principal ganglia, as, for instance, the semilunar, the cardiac, or superior cervical.

Again, when an artery is tied, pain is caused: how could this be, unless there were nerves in the coats of the arteries?

Sir Charles Bell has shown that section of the posterior roots of the spinal nerves is followed by the absence of pain in the parts to which the nerves, whose posterior roots have been divided, are distributed. It is therefore impossible to explain the pain produced by tying an artery, *without admitting the presence of nerves.* How could the mind be cognisant of pain in a part, unless it had communication with it? How could an impression be communicated from the ear to the great toe, or from the latter to the brain, unless through a chain of nervous communication? On the same principle, how could pain

be transmitted from the extremity of an artery to the brain, unless a chain of nervous communication existed between the extremity of the artery and the brain?

But, it may be asked, why take so much trouble to prove that there are organic nerves surrounding the arteries, inasmuch as organic nerves have been demonstrated surrounding the large arteries, and sending twigs into their coats, by Harrison, Scarpa, Quain, Hart, and other distinguished Anatomists?

Let any man now ask himself, does he believe there are no nerves in the distant extremities of arteries, because nerves cannot be traced or found in them? Let him ask himself, when he touches the top of the head with the point of the index finger or touches the lobe of the ear, does he not experience the sensation of the touch of the finger? Let him ask himself, is not the sensation caused by the presence of nerves in the parts indicated? Let him ask himself, could he point out the nerves of sensation in the structure of the scalp specified, or in the lobe of the ear, and he must answer he could not do so? Again, let him ask himself, is not the sense of taste in the tip of the tongue, and whether he can point out the terminations of the gustatory nerve in the structure of the tip of that organ? and I believe he must answer in the negative. Let him ask himself, if he was presented with a section of the *vena porta*, and not told what it was, could he demonstrate the presence of organic nerves in its coats? I think he should again answer negatively. It follows, therefore, if he cannot point out nerves where they most unquestionably exist, he cannot demonstrate nerves where there is only presumptive or physiological evidence of their presence.

I will give a further explanation of the mode in which nervous impressions are carried into execution. In some cases the mind is not able to exercise its will over certain parts, without the agency or presence of an external object or of an object impinged on the retina. In certain cases of paralysis, a person is unable to move his lower extremities unless he keeps his eyes fixed on them. Here it is evident the impression of the lower extremities made on the retina enables the mind to extend its operation to the nerves of the lower extremities. It follows, therefore, that the impression of an external object can act

through the influence of the mind and produce effects at a distant part, through the intervention of nervous communication.

In other cases impressions made on the retina may be said to be reflected on distant organs, as for instance, when a man sees a disgusting object his stomach will contract and reject its contents. Here the picture of the disgusting object may be said to be reflected on the stomach, or that the image on the retina extends to the organic nerves of the stomach by direct nervous communication. When a man sees a frightful object, the image can be said to be reflected on the heart, inasmuch as it ceases to beat, and the person drops down; the picture of the object extends to the organic nerves of the heart through direct nervous communication. When a mother sees her infant the milk rushes to the breast; the image of the child is reflected on and extends to the organic nerves and glands of the breast through direct nervous communication.

The optic nerve may be said to be one of the offsets given off from the brain and instituted for special purposes. The mind, through the agency of the optic nerve, examines objects which surround it; the mind must be coëxtensive with the terminations of the optic nerves, inasmuch as the mind sees the object impinged on the retina. As corroborative of the truth of this statement, it will be noticed, if the optic nerve be divided with the skull, the mind cannot perceive the object impinged on the retina, the connexion between the brain and the retina being intercepted by the division of the nerve.

It now becomes clear that the impression of the object made on the retina must pass through the trunk of the optic nerve to the brain, or that the impression must be continuous with the mind located in the brain through the trunk of the optic nerve, precisely in the same manner that impressions made on the tip of the index finger are examined, observed, and recognised by the mind, through the continuity and extension of the mind to the tip of the index finger through the median nerve. The truth of this statement is proved by the impossibility of learning anything by the sense of touch, after making a section of the median nerve, thus severing the connexion or continuity of the mind in the tip of the finger and the brain, the chief abode of the mind.

If the impression of an object made on the retina can be transmitted through the optic nerve or median nerve for one inch, as can be proved, as just stated, by the section of the optic nerve or median nerve, then it follows that impressions made on the retina can be transmitted to all parts of the body coëxtensive with the terminations of the nerves of the cerebro-spinal or animal nervous system, as well as coëxtensive with the organic nervous system through the connexion of the former with the latter.

In a conversation I recently had with Dr. Batchelder, one of the most respectable, distinguished, and talented members of the profession in this city, he communicated to me the result of a very important experiment he was in the habit of making on himself during the period when he discharged the duties of Professor of Anatomy and Physiology. It is particularly interesting and satisfactory, as it explains the mode in which a nævus maternus is formed on the fœtus in utero when the connexion of the latter with the former by direct nervous communication is understood. Dr. Batchelder, by directing his mind towards the central part of the patella, or rather the soft parts covering it, could, after a short time, cause pulsation of the vessel to take place, so as to be plainly felt by the index finger at the location indicated.*

This experiment affords a good example of the power the animal nervous system (the mind) has in making an impression on the organic nervous system (life). I presume no person will assert the arteries receive any other nerves except the nerves derived from the organic nervous system; and, further, I presume no person will dispute that the animal nervous system is connected with the organic nervous system, but, on the contrary, acknowledge it is connected with it at all points. From what has been just stated, there can be no difficulty in comprehending how an aneurism by anastomosis or vascular nævus

* "If a person fix the attention upon any part of the body, to any spot, for instance, not larger than a sixpence, over the knee-pan, if you please, which is, perhaps, more free than almost any other part from vessels that pulsate, he will in a few minutes, especially if the experiment be repeated a few times, perceive a sense of throbbing which had never been felt before." (*Life, Mind, and Matter*, by J. P. Batchelder, M.D.—folio 39.)

can be formed on the body of the fœtus by an impression made on the mother, on the same principle as that which governs Dr. Batchelder's experiment. The increased vascularity for a given period, as in Dr. Batchelder's case, may be said to represent a temporary nævus; whilst the increased and continued vascularity in the case of the fœtus, represents a permanent nævus, the impression being a length of time kept up. I will also state, in connexion with this very curious and very abstruse subject, that Professor Hamilton, so very well known for his great accuracy of observation, great precision in collecting and arranging facts, and sound judgment in arriving at conclusions, states he has no doubt but a person, by directing his attention to a certain part, such as the liver, for a given period, could excite inflammation in it. His views thus fully corroborate Dr. Batchelder's experiments, and throw light on the mode in which congenital deformities are produced.

I now come to a question of the greatest importance to the scientific and practical medical practitioner—one which is of the greatest interest not only to the profession but also to the public at large.

It is a question, too, which has baffled the greatest Anatomists and Physiologists of the past and present generation to solve. Evidence of the truth of a connexion existing between the mother and fœtus in utero is continually presented, and, although the *vox populi* affirms the truth of such a connexion, judging from facts and the evidence of the senses, yet, strange to say, the medical profession has failed to give a satisfactory account of the phenomena presented in it, and ignores as well as repudiates the idea of there being any nervous connexion between the mother and fœtus in utero.

Indeed, it is extraordinary to hear medical men of the highest professional standard protest there are no nerves in the uterine arteries of the mother, or in the hypogastric arteries of the fœtus, who endeavor to explain all the phenomena of life by investigating or experimenting on a certain set of nerves connected with the cerebro-spinal system, while they either ignore or confound another set of nervous centres and their nerves with the former, namely, the vital or organic nervous system.

Having demonstrated and proved in another place that vitality is located in the organic nervous system, it does not require much ingenuity of argument to show that the operations of fœtal life are presided over, or are under the influence of the organic nervous system, and that the cerebro-spinal system is not concerned in the operations of fœtal life, but remains dormant until the fœtus is expelled from the uterus and becomes an independent being.

Persons who declare that there is no nervous connexion between the mother and fœtus, cannot believe in the truth of the New Testament:—"For, behold, as soon as the voice of thy salutation *sounded* in *my* ears, the infant in my womb *leaped* for joy."—St. Luke, i. 44.

Here the *sound* of the voice made an impression on the filaments of the auditory nerve in the labyrinth of the internal ear, which was immediately communicated to the *Fœtus* in utero.

But as the truth of the Gospel on this subject is questioned by many, denied *in toto* by others, or believed as a miracle by Christians, I will adduce a well authenticated case to prove the correctness of the narrative given in the Gospel, as well as establish the fact that there is a nervous connexion between the mother and fœtus.

Mrs. H., aged thirty-seven, residing in *Norwalk, Conn.*, applied to me on the 30th of November last, and stated that she had been delivered of a dead child on the 29th of September by Dr. Lyons. She stated that about two weeks previous to the last date she received a great shock, and became greatly excited, bursting into a violent passion in consequence of seeing her nurse let fall on the stoop her little son, three years of age, whereby he received an injury on the nose, causing the blood to flow freely through his nostrils. She stated that she felt the child in her womb "*shake*" all over and move "*to and fro*" for about a minute and a half, when the movement ceased. She said she then knew the child was dead. She stated that, her labor coming on, she sent for Dr. Lyons, and told him the child was dead, and that the Doctor at the proper time delivered her of a dead child. She further stated that the Doctor declared the child had died in a "fit," and that it had died some time previously.

Mrs. O'R., aged thirty-eight, residing in Upper Canada, states that, during the last months of pregnancy, she was greatly alarmed, as well as had her hands burned, in consequence of her maid accidentally setting fire to the curtains of the bed on which she was lying. She says she used great exertions to extinguish the flames, and succeeded in doing so. But on the birth of her child taking place, the front of his chest, his sides, his back, and neck, were covered with small and large reddish blue spots. I saw the child in this city, and the marks are such as just described. There is not the slightest doubt but the fire she alluded to took place.

Mrs. P. states that between the fourth and fifth months of her pregnancy, her attention, whilst taking an evening walk in San Francisco, was attracted by a little ugly Italian organ-grinder, who presented a most forbidding appearance, being club-footed and without hands. She says in about a fortnight afterwards she received a great shock by receiving a letter announcing the death of a favorite sister, and further, that after the lapse of some time her mental anxiety was further aggravated by her husband's affairs becoming greatly embarrassed, and causing him to fail in business, so that from the fifth month up to the time of delivery she suffered great mental distress. She says that on the birth of her child he was found to have *vari.*

I saw the boy some time ago, and although he has a perfectly formed head, he is an *idiot.* With a view to remedy the deformity of his feet, he was operated on by a most accomplished and distinguished surgeon of this city, without any beneficial results.

The operation failed in consequence of the derangement attendant on the disturbance of the animal and organic nervous systems, and not through any fault of the operator.

I will briefly allude to some other cases, having an important bearing on the subject under consideration, which came under my observation.

A woman in the last month of pregnancy, had presented to her the dead body of her husband, who had been kicked to death by his horse. Some days after she was delivered of a son, who, when I saw him at the age of three years, presented all the characteristics of an *idiot.*

A woman, during the last days of her pregnancy, witnessed a frightful accident befall her husband. In due time she was delivered, and the child, a daughter, when I saw her, being over three years of age, showed all the characteristics of *idiocy*, as well as a convulsive movement of the muscles resembling *Paralysis agitans.*

A woman, in the last month of pregnancy, had been robbed of the hard earnings of herself and husband, which she had deposited in a chest. She experienced a tremendous shock, rendering her almost powerless and unable to do anything for some time. She was shortly afterwards delivered of a son, who is now perfectly *idiotic.*

A woman sustained a great fright in consequence of her husband having received injuries while attending to some machinery. She was soon afterwards delivered of a child, which she brought to me at the age of three months, at which time it was suffering from "a beating of the heart."

I examined the little patient, and, with the exception of the increased action of the heart, there appeared to be nothing wrong.

It is plainly evident that the conclusion to be arrived at from the recital of these cases is, that when an impression is made on the filaments of the auditory nerve in the labyrinth of the internal *ear*, or on the filaments of the retina, it is instantly communicated to the brain, the spinal cord, spinal nerves, the sacral ganglia, which are connected with the latter by nervous filaments; it is then communicated to the organic nerves derived from the *sacral ganglia*, and surrounding the *uterine arteries*, to the terminations of these arteries in the organic glands of the *placental* lobules, next to the organic glands, formed at the termination of the hypogastric arteries of the *fœtus* by the *inosculation* of the maternal and fœtal organic glands in the placental lobule; the impression is next communicated to the organic nerves surrounding the hypogastric arteries, and, lastly, to the *fœtus.* Thus establishing a complete chain of nervous communication between the mother and fœtus *in utero.*

I cannot help remarking that Jacob understood the fact that impressions could be made through the agency of external

objects on the fœtus in utero, as is evident from the following words:

"And it came to pass, whensoever the stronger cattle did conceive, that Jacob *laid the rods before the eyes* of the cattle in the gutters, that they might *conceive* among the rods."—Genesis, xxx. 41.

With a view to establish, in a scientific manner, the nervous connexion between the mother and fœtus in utero, it is necessary to quote authorities in order to more fully establish the facts that, first, organic nerves surround the hypogastric arteries of the fœtus, which in fœtal life are a continuation of the *internal iliac* arteries; secondly, that the arteries which supply the genital organs are surrounded by organic nerves; and, in the third place, to show the difficulty of tracing the organic nerves in the coats of the arteries, even where there can be no doubt of their existence.

Mr. Quain says: "Now, as to the *sympathetic* nerve, so far from being in any way derived from the brain or spinal cord, it is produced independently of either, and *exists* notwithstanding the *absence of both*. It is found perfectly *formed* in *acephalous* infants, therefore *does not arise*, mediately or immediately, from the *brain*; neither can it be said to *receive roots* from the *spinal cord*, for it is known to exist *as early* in the fœtal state as *the cord* itself, and be fully *developed* even though the latter is *altogether* wanting. It appears that whilst the organs of vegetation and life are being formed, the sympathetic nerves are *produced concurrently* with them; and that as the growth of these parts proceeds from the *circumference* to the centre of the whole body, from its lateral parts to the median line, the *sympathetic nerves* also *conform* to the general law."—See Quain's *Elements of Anatomy*, p. 711.

The importance of the facts contained in the paragraph just quoted cannot be too forcibly inculcated or too closely studied; no person is in a position to investigate the intricacies of the organic and animal nervous systems until he examines the primary organization and development of these systems.

The fact of the existence of the organic nervous system, as well as the existence of life in the fœtus, before there is a vestige of the cerebro-spinal system developed, at once shows its

importance, and should convince every thinking observer that the cerebro-spinal system is not to be compared with the organic nervous system as regards the functions each has to discharge. The regulation of the laws of life, the preservation and propagation of life, devolve on the organic nervous system;* whilst the regulation of the laws which connect the individual and enable him to hold communication with the external world, devolves on the cerebro-spinal nervous system.† Why the organic nervous system should be found to exist first is evident. It is of primary, whilst the other, the cerebro-

* The history of the creation proves the truth of this doctrine taken in connexion with geology:

"Let the waters bring forth the creeping creature having life." It is to be remarked, that the creeping creatures were made on the *fifth* day, and that the nervous system of the Invertebrata was formed for the purpose of giving an animal organization for the manifestations and operations of vitality in these creatures. Geology confirms the truth of the creation; the shells of the creeping creatures are found in the *lowest* strata of the earth, whilst the fossil remains of the *beasts* of the earth *are found* in the *upper* strata of the earth. The creeping things were made one day, and the cattle and beasts were made on another day; and judging from geology, several millions of years elapsed between the two days. Again, it is to be remarked, that there is a decided improvement made in the nervous system of the animals that were created on the sixth day; whilst man, who stands at the highest point of the creation, was, according to Genesis, the last animal made, as well as the highest made in point of development of the animal nervous system; on the operations of the latter, man, as a rational being, depends. Physiology shows that in the lowest classes of animals, the Invertebrata, there is only an organic or vital nervous system, and that the animal nervous system, in the higher classes of animals, becomes more fully developed in the various grades of creation up to man. Geoglogy shows that the creeping things were made before the cattle or the beasts of the earth, inasmuch as the shells of the mollusks are found in the lower strata of the earth; the fossil remains of the megatherium are found in the *upper* strata of the earth; whilst the skeleton of *man* is only found onthe *top* of the earth.

† TIEDEMANN says: "The weight of the brain of an adult male European varies between 3 lbs. 2 oz. and 4 lbs. 6 oz.

"The brain of men with feeble intellectual powers is, on the contrary, often very small, particularly in congenital idiotismus. The brain of an idiot fifty years old weighed but 1 lb. 8 oz. 4 dr.; and that of another, forty years of age, weighed but 1 lb. 11 oz. 4 dr."

DR. R. B. TODD says: "In all cases of idiocy there is a manifest imperfection in the development of the brain. This is sufficiently plain to the most superficial observer, from the small size of the head, which is so frequent a characteristic of this state, and which is more especially remarkable in adult life, when the development of the cranium by no means keeps pace with that of the rest of the body."

The conclusion to be arrived at from the authorities *just* quoted is, that the brain is the seat of the mind, viz. memory, judgment, and volition.

spinal nervous system, is of secondary importance; one is indispensable as being the seat of life; the other is for animal purposes, or the seat of the mind, and is not indispensable.*

* The organic nervous system is the abode of life; so, in like manner, the cerebro-spinal nervous system is the seat of the mind; as the operations of life are carried into execution through the complicated structure comprising the organic nervous system, so, in like manner, the operations of the mind are carried into execution through the complicated and mysterious structure of the cerebro-spinal nervous system. As life is a metaphysical agent, or an agent that cannot be demonstrated, incorporated with a physical agent—the organic nervous system—so again the mind is a metaphysical agent, or an agent that cannot be demonstrated, incorporated with a physical agent—the cerebro-spinal nervous system. As the functions of life are impaired or diminished when the organization or structure of the organic nervous system is deranged by disease or violence, so, in like manner, the functions of the mind are impaired or changed when the structure of the brain is deranged by disease or violence. Life may be driven from its connexion with the structure of the organic nervous system, and confined to only a portion of the structure of the organic nervous system, as is witnessed in a case of Asiatic cholera, or in a case of mortification of the lower extremities. The mind may be driven or deprived of its abode in the cerebro-spinal nervous system, as may be witnessed in cases where all the extremities are removed and a slice of the brain removed. As the organic nervous system is not life, but the residence or abode of life—a fact proved by there being no appreciable change in the structure of the organic nervous system of a man instantly killed by a blow on the semilunar ganglion and a living man—so, in like manner, the brain is not the mind, but the seat of the mind—a fact proved by there being no difference in the structure of the brain of a living man and one who has just died. Life and mind are the special gifts of the Creator.

Materialists who attribute the organization of living bodies tc chemical affinities, or histologists to the formation or generation of cells, could not, with all their learning, give life, as Dr. Corrigan remarks, to the most diminutive living creature; the structure of the cerebro-spinal nervous system is connected with the structure of the organic nervous system at all points; thus it is the mind can interfere with the functions of life; and as woman, by her evil-mindedness, defaced the soul of man in the eyes of his Creator, dooming him to death, so in like manner woman, through the agency of her mind, defaces the appearance of her offspring, as evidenced by congenital deformities. The manifestations of life, located in the organic nervous system, may be said to present from the date of conception, whereas the manifestations of the mind, located in the cerebro-spinal nervous system, are not at all manifest until after birth, and not fully developed for many years afterwards. The manifestations and functions of life, located in the organic nervous system, are fully developed in an infant, whilst the manifestations of the mind are not developed until the age of manhood. Thus it is the Creator first by a special act gave man life, and subsequently, by another special act, implied he had conferred upon him a special organization when fully developed, to enable him to regulate his acts during the existence of the life he gave him. Life, located in the organic nervous system, harmonizes with the mind located in the cerebro-spinal nervous system; thus the combined action of the two nervous systems operates for the convenience of the

Mr. Harrison, the celebrated anatomist, says, in speaking of the organic nerves which surround the aorta, "the latter accompany the common iliac artery to their division, and several filaments are prolonged around the internal and external iliac vessels."

"Quant aux nerfs, Schott et G. Valentin affirment avoir vus des filets provenants des plexus hepatique hémorrhoïdal ou uterine, accompagner les vaisseaux du cordon à quelques centimètres de l'ombilico."—*Leryet, Traité de Physiologie*, Tome ii. p. 802.

Doctor Hart, another distinguished anatomist, says:

"The arteries are plentifully supplied with nerves, of which the aortic system receives more in proportion than the pul-

individual, as evidenced by the contraction and dilatation of the iris, to enable the individual to see objects at a near or remote distance. The iris, supplied with nerves from the organic nervous system, dilates or contracts in cases when more or less light is required to impinge the image of an object plainly on the retina, the organ of the mind. The accuracy of vision thus attained is the result of the combined action of both nervous systems, and is in truth a PROCESSION from both. The operations of life, on the discharge of whose functions existence depends, never cease, as is witnessed during sleep when respiration and circulation are carried on. The operations of the mind require repose, a fact demonstrated by the absence of all mental operations during a sound sleep.

Physiologists confound the functions of the organic nervous system with the functions of the cerebro-spinal nervous system; hence follow the ambiguity, confusion, and mystery that every person must confess are found in their writings. In good truth I may say nothing particular can be gained from reading what they have written on the nervous system; all their theory is built upon a sandy foundation, and their verbose and labored superstructure is easily shaken to the ground.

The construction and mechanism of the human eye point out the consummate wisdom of the great optician who designed it. The complicated mechanism displayed in the construction of the ear, leaves no doubt but that the designer was thoroughly acquainted with acoustics. The same remarks are equally true with respect to the larynx, the heart, the lungs, the stomach, the liver, and other organs. The same observations as regards these organs are equally applicable to the various ganglions of the organic nervous system; each ganglion has its specific function to discharge, and is mechanically constructed to discharge the end designed, a fact proved by the effects resulting from the specific action of the ganglions. Again, similar remarks are equally true of the great and smaller ganglions of the cerebro-spinal or animal nervous systems. Each ganglion has its specific function to discharge, and is mechanically constructed to accomplish the end contemplated. The whole machinery of the organic nervous system and the cerebro-spinal nervous system being complete, it only requires the spark of life to set them in motion. The study of man is truly a sublime subject—γνῶθι σεαυτον.

monary artery; and the smaller arteries more than the larger trunks. The trunk of the aorta, the pulmonary artery, and the arteries of the head, neck, thorax, abdomen, and those of the *genital organs*, receive their supply from the nerves of *organic* life. These form a very intricate plexus on their surface. Two sets of nerves have been described as being furnished to the arteries—one set consisting of softer nerves, of a flattened form, are said to be *lost* in the cellular or external tunic—*nervi molles*. The other set, more firm and round, penetrate the middle tunic, in which they form a thin *membraniform expansion*, containing distinct fibres. Mëckel justly considers the internal nerves as subdivisions of the larger flattened external branches."

When anatomists and physiologists deny the existence of nerves in the arteries, they should remember the *nervi molles* are lost in the structure of the coats of the arteries, that in fact they enter into the tissue of the arteries and assist in the formation of the structure of the vessels. Let the anatomist attempt to trace the organic nerves in the coats of the arteries at the base of the brain to their destination, and he will at once admit the truth of the explanation I have given with respect to the nerves entering into the tissue of the coats of the arteries as described; instead of saying there are no organic nerves in the arteries of the brain, he must rather say the arteries are altogether composed of the organic nervous matter, or what is called and constitutes the *nervi molles*.

I shall now proceed to demonstrate scientifically and anatomically, that there is a nervous connexion between the mother and fœtus, through inosculation of the organic nerves of the mother and the organic nerves of the fœtus in the placental lobule. But, in order to understand the connexion, the anatomy of the placenta must be well comprehended.

It is necessary to have and to adduce *positive* facts, in order to arrive at positive conclusions. To explain phenomena by experimenting on the effects of phenomena, is not the way to explain the causes of the phenomena.

To explain the anatomy and physiology of the placenta by endeavoring to dissect it, or by experiments by the injection or inflation of its vessels, I believe to be a matter of impossibility.

Its mode of connexion with the mother as well as the fœtus must first be studied and understood, and its functions fully appreciated, in order to grapple with the investigation of its intricate anatomical organization. No man living could point out in a section of the placenta the various vessels which enter into its structure.

It is scarcely necessary to point out in this place what I have shown before, that the four sets of vessels in the placenta are analogous to the four sets of vessels in the liver, in their distinction and functions.

The liver purifies the blood, the placenta purifies the blood—the functions of the liver and placenta are, therefore, analogous. The number of vessels in each organ being the same, and the anatomical organization of the liver being settled, it follows, as a consequence, that the same anatomical description must be applicable to the placenta.

It is a fact that the blood of the hepatic artery is distributed to the liver, and that the branches of the hepatic artery terminate in capillaries in the liver. It is also a fact that the hepatic artery is surrounded by a retina of nerves, which can be traced on its coats as far as the transverse fissure of the liver.

It is a fact that the *vena porta* carries to the liver the impure blood which has circulated in the chylopoietic viscera, and that it divides into branches, which terminate in the *liver*.

It is a fact that a retina of nerves surrounds the trunk of the *vena porta*, and can be traced on its coats, extending to the transverse fissure of the liver.

It is a fact that the hepatic veins commence in capillaries, and carry the blood brought to the liver by the *vena porta* and *hepatic artery* to the ascending *vena cava*.

It is evident a union of the blood of the hepatic artery and vena porta must take place in the liver, inasmuch as the hepatic veins carry the blood furnished to the liver by the *hepatic* artery and *vena porta*.

It is true that the gall ducts commence in capillaries, and carry the gall to the hepatic duct.

Now, as to the analogy which exists between the Liver and Placenta.

It is true that the uterine arteries carry the blood from the mother to the placenta.

It is true that the uterine arteries are surrounded by a retina of organic nerves.

It is true that the uterine arteries terminate in capillaries in the placenta.

It is true that the hypogastric arteries carry the blood from the fœtus to the placenta.

It is true that the hypogastric arteries terminate in capillaries.

It is true that the umbilical veins commence in capillaries in the placenta.

It may be objected that there is no evidence to prove that the uterine arteries terminate in capillaries, and that the uterine veins commence in capillaries, or that the hypogastric arteries terminate in capillaries, or that the umbilical veins commence in capillaries. Can any proof be given that the vessels just named commence or terminate in capillaries as stated?

It is established in the case of the sow, that the arteries of the mucous membrane, or *decidua*, terminate in capillaries, and that the veins commence in capillaries; or, in other words, these vessels pursue the same course that regulates the distribution of arteries and veins in other parts of the body.

It is further evident, from the description given by Professor Owen of the vascular or membraniform expansion of the umbilical vessels of the Kangaroo, that the vessels terminate in capillaries, and commence in capillaries in the vascular membrane. In the human subject it appears evident that the arteries in the decidua, before the fœtal vessels are attached to it, terminate in capillaries, and that the veins commence in capillaries. Otherwise, how could the arterial blood be brought to the *decidua*, or how could the venous blood be returned?

The same remark is true of the fœtal vessels.

It is true the umbilical vein carries the purified blood to the fœtus. As the fœtus requires nutriment for its growth, it is evident that the umbilical vein must contain not only the blood furnished by the hypogastric arteries, but likewise some of the blood furnished by the mother. The umbilical vein contains the blood derived from both sources, namely, from the hypo-

gastric and uterine arteries, in the same manner that the hepatic vein contains blood derived from two different sources.

Although it is generally admitted that the umbilical vein carries a larger quantity of blood from the placenta to the fœtus than the combined volume of blood carried from the fœtus by the hypogastric arteries to the placenta, yet it is maintained by others that the quantity of blood received by the fœtus from the umbilical vein is precisely the same, or a little less than the quantity given off by the fœtus to the placenta through the hypogastric arteries.* The explanation given to support this theory rests on the established fact that the blood moves slower in the veins than it does in the arteries. It is necessary, therefore, to show that the blood moves as quickly in the umbilical vein as it does in the hypogastric arteries.†

* 86 Fifth Avenue, *March* 21, 1863.

Dr. John O'Reilly :

My Dear Sir :—As I understand your question in yours of the 16th, it is, Whether the umbilical vein carries from the placenta to the fœtus a larger or smaller quantity of blood than the umbilical arteries carry from the fœtus to the placenta ?

My impression is, that the vein returns to the fœtus just twice as much blood as passes to the placenta by one artery, and exactly the same amount as passes by the two.

In the placenta the fœtal blood is deprived of carbonic acid, but this makes no alteration in the amount.

Yours very truly,

T. G. Thomas.

† Fifth Avenue Hotel, *March* 19, 1863.

My Dear Doctor :—I reply to your note of the 17th at my first leisure moment.

I made some investigations respecting the relative capacity of the umbilical vein, hypogastric arteries, ductus arteriosus, etc., in a monograph on the fœtal circulation, published several years ago in the *American Medical Monthly*.

There is, however, one physiological fact which so modifies the bearing of these anatomical facts, that it is impossible to determine the precise influence of the latter; it is that the blood passes more rapidly through the arteries than through the veins.

The whole arterial system in the adult is usually calculated to contain at any moment 4-13ths only, while the whole venous system contains 9-13ths of the whole mass of blood; still, all that the veins contain is received (through the capillaries) from the arteries. I think it quite evident that, if the current of blood passes as rapidly through the umbilical vein as it does through the hypogastric arteries, the latter would be quite insufficient to return to the placenta nearly as much blood as the fœtus receives through the umbilical vein.

Yours truly,

E. R. Peaslee.

J. O'Reilly, M.D.

It is a curious fact that the hypogastric arteries coil around the umbilical vein. How is this fact to be explained? For what purpose are the arteries thus coiled around the vein? The answer to these questions appears obvious. The blood is sent from the fœtus to the placenta by the contraction and dilatation of the hypogastric arteries. But no such provision exists in the umbilical vein for the propulsion of the blood from the placenta to the fœtus.

It is clear a column of blood could not pass through a tube six feet long, coiled up into a small space, unless there were some propelling force in operation. Now, as there is no such provision made in the placenta for propelling the blood through the umbilical vein to the fœtus, what is the explanation to be given?

The hypogastric arteries being coiled around the umbilical vein, at each contraction must contract the vein, and propel the blood towards the fœtus; and at each dilatation must allow the blood to flow into the vacuum left by the removal of the blood by the previous contraction. Thus, it may be said the umbilical vein contracts and dilates, or that the *contraction* and *dilatation* of the umbilical vein are *isochronous* with the contraction and dilatation of the arteries. It follows, therefore, that the blood must move as fast in the umbilical vein as it does in the hypogastric arteries, inasmuch as the force of propulsion is the same.

It follows, therefore, if the blood passes as quickly through the umbilical vein from the placenta to the fœtus as the blood passes through the hypogastric arteries from the fœtus to the placenta, and the umbilical vein carries a larger quantity of blood from the placenta to the fœtus than the *combined volume* of *blood carried by the hypogastric arteries from the fœtus to the placenta*, that the additional blood contained in the umbilical vein must be derived from some other source than the hypogastric arteries; or, in fact, that it carries some of the blood furnished to the placenta by the uterine arteries. It is further evident, that as pure blood is required to be united with impure blood in the liver, for the purification of the blood in that organ; so, in like manner, pure blood is required for the purification of impure blood in the placenta, and for the removal of carbonaceous matter.

The uterine veins carry back the impure blood to the *uterine sinuses*, containing the impurities of the fœtal blood, in the same manner that the gall ducts carry the bile to the *hepatic duct*, *ductus communis choledochus*, *cystic duct*, and the *gall bladder*.

The *bile* is secreted by the combined operations of the organic glands in the liver. The nerves are prolonged on the coats of the branches and capillaries of the hepatic artery, and the branches and capillaries of the *vena porta*, and form glands in the *acini* of the liver, where they must inosculate, inasmuch as it is by the *union* of the blood of the vena porta and hepatic artery that the blood is furnished to the hepatic veins.

It is a fact that the branches of the vena porta accompany the branches of the hepatic artery in the structure of the liver.

It is equally true that the uterine arteries pass from the external or uterine surface of the placenta to the internal or fœtal surface, and then subdivide into branches.

It is also true that the hypogastric arteries, on arriving at the fœtal surface of the placenta, subdivide into branches and capillaries.

It therefore follows that the hypogastric arteries which are analogous to the vena porta, as regards the quality of blood they contain, must accompany the branches of the uterine arteries, which are analogous to the hepatic arteries as regards the quality of blood they contain.

Why the uterine arteries should pass through the placenta, as just described, therefore, can easily be understood; it is in order that their branches may accompany the branches of the hypogastric arteries to the placental lobules, guided by the same law as instituted in the case of the liver, where the branches of the *vena porta* accompany the branches of the hepatic artery.

The investigations of Mr. Hunter are of the greatest importance with regard to the anatomy and physiology of the placenta.

Mr. Hunter observed arteries as large as the quills of a crow passing from the uterus into the substance of the placenta. Reid, Goodsir, and Dalton have established the correctness of Mr. Hunter's statement.

It is evident, if the uterine arteries did not perforate the placenta to a certain distance, their branches, ramifications, and capillaries could not be brought in juxtaposition with the hypogastric arteries, their branches and capillaries.

In corroboration of the fact that pure blood as well as impure blood is necessary for the process of the purification of the blood in the placenta, it will be remembered that in the fœtus the liver is vastly larger in proportion to the liver in the adult; that this organ discharges the functions of the lungs in the purification of the blood for the fœtal circulation, as well as that the right branch of the umbilical vein *inosculates* with, or discharges its contents into the vena porta.

The blood is purified in the placenta by the combined operation of the organic glands in the placental lobule.

The nerves that surround the branches of the hypogastric arteries *extend* along the capillaries, and *terminate* in organic glands.

The nerves which *surround* the maternal uterine arteries are *prolonged* on their branches and capillary terminations—terminating in glands which *inosculate* with the organic glands at the termination of the capillary hypogastric arteries.

The purification of the blood is due to the operation of the organic nerves derived from the *fœtus* and *mother*.

The capillaries of the umbilical vein carry the pure blood to the fœtus, while the uterine veins carry back the impure blood to the *uterine sinuses*.

It may be said there is no evidence of a vascular connection between the fœtus and mother. But it will strike the most superficial thinker that a child weighing *sixteen* pounds when expelled from the uterus, could not attain such a weight, unless it received a supply of blood continually, to promote its growth and organization.

It is certain that neither animals nor plants can grow without receiving sustenance from some source.

It is equally evident that if the fœtus received only the same quantity of blood from the placenta by the umbilical vein as that distributed to the placenta by the hypogastric arteries, no provision would be made for its development.

It may be objected that in the sow there is no vascular con-

nection between the ovum and uterus; that no vessels can be discovered by the microscope passing from the *decidua* to the *chorion*, or *vice versâ*. It will be asked, how can the pig, under such circumstances, be supported or receive nutriment from the mother?

Is it not true that the mucous membrane of the uterus of the sow becomes highly vascular during gestation?

Is it not true that the mucous membrane is capable of secreting a sanguinolent fluid?

Is it not a fact that in the human subject during the period of menstruation a sanguinolent fluid is secreted?

Is it not true that in the sow, at a certain period of gestation, the mucous membrane of the uterus is thrown into *rugæ?*

Is it not true that the chorion, at a corresponding point, is thrown into *rugæ?* Is it not true that these *rugæ* are closely imbedded in the *sulci* formed by the *rugæ* in the uterine mucous membrane?

There can be no difficulty now in understanding how the secretion of the mucous membrane of the uterus, at the point indicated, is absorbed by the lymphatics of the *chorion*, and how it passes into the circulation of the embryonic pig.

The lymphatics take up the sanguinolent fluid precisely in the same way the lymphatics in the *valvulæ conniventes* or *villi* of the intestine take up the chyle.

The embryonic pig therefore receives in this manner ample sustenance from the mother.

The explanation I have already given shows there is a *vascular connection* between the mother and fœtus, and that ample provision is made for the wants of the fœtus in utero.

The inosculation of the vascular *chorion* with the vascular portion of the *decidua* marks the period when the maternal and fœtal vessels commence to act in reciprocity, and the time when the mother begins to afford more substantial sustenance to her offspring, as well as the period when the fœtus is influenced by impressions made on the mother.

In the earlier months of gestation the fœtus of the human subject is supported by the absorption of the sanguinolent fluid by the lymphatics of the chorion. But in the latter months

inosculation takes place between the uterine and hypogastric arteries, together with *inosculation* of the organic nerves which surround these arteries, thus at once establishing *a vascular and nervous connection* between the mother and fœtus.

In answer to the distinguished gentlemen who maintain that the blood of the fœtus is purified, or receives its oxygen from the maternal blood by the process of *endosmosis and exosmosis*, or the soaking in of oxygen, and throwing off of carbonic gas, through the intervention of a membranous septum (which process is scarcely more easily described than demonstrated), I would say they seem to forget the anatomical law that arteries terminate in capillaries, and veins begin in capillaries.

When mention is made of the fœtal blood being bathed in the maternal, it presupposes that the uterine arteries terminate in fountains of blood, but no such fountains are discovered in the placenta.

It is to be remembered, when making experiments with the blowpipe, that the structure of the placenta is connected together by cellular tissue, and that this cellular tissue can be inflated so as to present the appearance of *Sinuses* where none really exist.

Again, another difficulty presents itself to this theory, namely, the mode in which the blood is returned to the circulation of the mother as well as the fœtus. The blood, it must be admitted, after losing its oxygen, must be removed from the *Sinuses* to make room for a new supply of arterial blood. Now, unless provision is shown to exist for the purpose of removing the venous blood, it is clear the new supply of arterial blood would be mixed with the venous blood in the sinuses.

There is another objection which appears fatal to the doctrine of endosmosis and exosmosis, namely, that if oxygen passes into fœtal blood from the maternal arterial blood, and if carbonic gas passes from the fœtal blood into the maternal blood, it is a clear case that the two gases must unite and form carbonic acid. It therefore follows, as a consequence, that the fœtal blood could receive no oxygen from the maternal blood.

Is it not a palpable and incontrovertible fact, that four different kinds of blood circulate in the placenta, viz. the arterial blood supplied by the uterine arteries, the impure blood sup-

plied by the hypogastric arteries, the purified blood removed by the umbilical vein, and the impure blood taken away by the uterine veins?

Is it not an incontrovertible fact, that unless the arteries terminated in capillaries, and the veins commenced in capillaries, there should unquestionably be a commingling of the arterial and venous blood?

It must strike the most superficial thinker, that if the blood was purified in the placenta by the process of endosmosis and exosmosis, there would be *no necessity* for such a complicated amalgamation as that which *exists* between the maternal and fœtal vessels.

It is true no man can point out any one portion of the placenta as belonging properly to the fœtus, and another portion as belonging properly to the mother.

In case there is, as asserted by some, no communication between the maternal and fœtal blood, and that the latter is separated from the former by a membrane, then it is obvious the membrane should be susceptible of *demonstration;* and it is further evident that this membrane should be continuous over the whole placenta, so as to form a distinct boundary between the maternal and fœtal vessels, and thus preclude the mixture of the maternal and fœtal blood.

But no such membrane has or can be demonstrated. Again, in case the blood was purified by the process of endosmosis or exosmosis, there then would be no necessity for such a thick, bulky organ as the placenta, the very size and shape of which forbid the idea that it was instituted for the purpose of purifying the blood by the above-mentioned process.

A more simple arrangement, and one vastly more easily understood, would meet the requirements indicated, namely, *a vascular chorion, in close approximation with vascular decidua.*

I presume the advocates of the theory of the purification of the blood by the process of endosmosis and exosmosis, will say that there is no difficulty in understanding how the blood would be purified in such a case.

But I deny that, even under the circumstances stated, this doctrine is correct.

Will venous blood, extracted in a vacuum, and not exposed to the air, become oxygenized on being placed in juxtaposition with arterial blood slightly agitated, in case a fine animal membrane be simply placed between them? In case it be found that the venous blood is found *not to become* oxygenized, then it follows that the fœtal blood cannot receive its oxygen from the maternal blood, as the manner in which it should become oxygenized is similar to that just mentioned.

It may be said that I cannot prove the description I have given of the anatomy and physiology of the placenta to be correct.

I will endeavor to prove its correctness by facts.

A violent shock will disturb the functions of the organic nerves of the liver, arresting the function of the secretion of bile by the organic *glands* in the *acini* of the liver; so in like manner a shock will arrest the functions of the organic glands in the placenta.

In the former case, the shock is followed by jaundice, a fact showing the bile is not secreted from the blood.

In the latter case death of the fœtus follows the shock, a fact clearly proving that the carbonic gas is not secreted from the blood, and that the death of the fœtus ensues.

If the shock in the former case be caused by the announcement of disastrous news, the impression made on the filaments of the auditory nerve in the labyrinth of the internal ear is communicated to the *brain*, the *par vagum*, *solar plexus*, the retina of nerves surrounding the *vena porta* and *hepatic artery*, the organic glands in which the retinæ terminate in the *acini* of the *liver*, suspending vital action in the organic glands.

In the second case, the impression is conveyed from the filaments of the auditory nerve to the *brain*, *spinal cord*, *sacral ganglia*, *hypogastric nerves*, *retinæ of nerves* surrounding the *uterine arteries*, the *glands* formed at the extremities of the *uterine capillary arteries*, as well as the *organic glands* at the extremities of the *hypogastric arteries*, suspending the vital action of the *organic glands*.

The cases just quoted present themselves frequently to medical men, and although they cannot deny the facts, yet, up to the present time, they have not been able to give any rational or scientific explanation of the phenomena. But these cases

conclusively *prove* that the secretion of the bile, and consequently the purification of the blood in the liver, depend upon the vital action of the organic nerves.

Medical men are in the habit of explaining the *jaundice* which follows a fright, as well as the *death* of a fœtus from the same cause, by the indefinite and vague term, "*vital action.*" But when it is understood that you cannot have vital action without the presence of organic nerves, it follows that *vital action* or LIFE is located in the organic nervous system.

The facts adduced in the cases just alluded to prove the correctness of the anatomical description given of the placenta, and overthrow the theory that the blood is purified in the placenta by the process of endosmosis and exosmosis, or, in other words, through physical agencies.

The advocates of the process of *endosmosis* and *exosmosis* cannot explain why a shock would or could interfere with the process. When jaundice ensues after a shock, it is evident there must be a nervous communication between the mind and the liver. When death of the fœtus takes place from a similar cause, it must be evident there is a nervous communication between the mind and the fœtus.

As an impression can be communicated from the ear to the great toe, as already stated, and as the communication can be intercepted by the division of the nerve, so, in like manner, an impression made on the ear can be communicated to the liver and to the fœtus *in utero.*

Having, I trust, satisfactorily established, not only that there is a nervous but likewise a vascular connexion between the mother and fœtus *in utero*, I will now proceed to point out the importance, in a practical point of view, of understanding *that there is* such a vascular and nervous connexion between the mother and fœtus. First, premising, by way of parenthesis, that it would be impossible to explain how Syphilis and Small-pox could be communicated by the mother to the fœtus, if no nervous or vascular connexion existed between them. And, further, that it would be impossible to bring a fœtus *in utero* under the influence of medicinal agents, unless such a connexion existed.

When a woman who has not been vaccinated visits, in the last month of pregnancy, a person afflicted with *Small-pox*, she

is apt to be attacked by the disease, and the fœtus in her womb is liable to be attacked also, and when born, to present all the characteristic features of Small-pox.

If a Physician be asked how these circumstances can be explained, he must be deemed ignorant, indeed, if he is unable to give a satisfactory account of the phenomena specified.

To answer that the woman contracted the small-pox because she visited a place where a person was lying ill of the disease, and that the fœtus was seized with the malady because it was in such close proximity with the mother, must be considered in truth a *very* inadequate answer.

When a woman, in the last month of pregnancy, enters the chamber of a person ill with the small-pox, she inspires the air which has been contaminated by the poison of the small-pox emitted from the patient. The poison contained in the air enters the blood with the oxygen, and is given off with the oxygen to the organic glands. And after a short time it manifests itself by a rigor, which is followed by a certain cutaneous eruption, first in the form of pimples ; next, vesicles ; and, lastly, pustules.

The blood of the mother, contaminated by the poison, is carried to the placenta by the uterine arteries. The blood still containing the poison is carried by the umbilical vein to the left lobe of the fœtal liver, then to the right lobe through the inosculation of the umbilical vein with the vena porta ; it continues on through the *ductus venosus* to the ascending *vena cava ;* then to the right auricle of the heart ; next to the left auricle through the *foramen ovale.* The left ventricle propels it into the aorta and its ascending branches, which supply the head and upper extremities. The blood is carried back to the right auricle of the heart by the *vena cava,* is propelled into the right ventricle, next into the pulmonary artery, from which some of it is sent to the *lungs,* and the remainder through the *ductus arteriosus* into the descending aorta, to supply the lower parts of the body with blood, and also to furnish blood to the hypogastric arteries for circulation in the placenta.

The poison still contained in the blood is given off to the organic glands at the termination of the capillary arteries of the fœtus.

The practical deduction from what has just been stated is,

that a pregnant woman, who has exposed herself to the contagion of small-pox, should at once be vaccinated, and thus protect the fœtus from an attack of the malady.

The antidote or *prophylactic* is communicated to the fœtus in utero by the same mode of communication as the poison of small-pox.

Another illustration of the manner in which a fœtus in utero is poisoned through the instrumentality of the mother, as well as of the mode in which an antidote to the poison is conveyed to the fœtus, is found in the case of a woman laboring under secondary syphilis. In this case the blood of the mother is contaminated by the syphilitic poison, it is carried by the uterine arteries to the placental *lobules*, and from the latter by the capillary branches of the umbilical veins to the fœtal circulation, and to the organic glands of the fœtus, still containing the syphilitic virus. This fact is proved beyond question, at or immediately after the birth of the child, by its shrivelled appearance, its emaciated condition, its snuffling, its peculiar shrill cry, the copper-colored blotches on the *nates* and other parts of the body. The infant, after a certain interval, will have fissures about the lips, scales on the hands, ulceration at the roots of the nails of the fingers and toes, leaving no doubt that it is contaminated with syphilitic poison.

It must be confessed that it is of the greatest practical importance, not only to cure the mother of the syphilis, but likewise to cure the fœtus in utero of this loathsome disease.

As mercury, when judiciously administered, may be deemed a specific (if there is anything that can properly be called a specific) for the eradication of the form of secondary syphilis described by Mr. Hunter, and arising from what is called the "*Hunterian chancre*," and as the fœtus is always found, according to my observations, suffering from this form of the disease, it is obvious that mercury is the proper medicine to administer, not only to the mother but likewise to the fœtus in utero.*

* A good and original method for putting an infant under the influence of mercury, was lately given by a countryman of mine in an answer to Mr. Paget, when under examination for a commission in the British Army, as to the manner mercury should be administered to an infant suffering from syphilis, viz. I would salivate a she-goat, and feed the infant on the milk. At the same time he assured Mr. Paget it was a *common practice* to do so in *Dublin*.

When mercurial ointment is rubbed into the groin or calf of the leg of the mother, the mercury is taken up by the lymphatics, and carried into the venous circulation, next into the arterial circulation, and is given off to the organic glands at the termination of the arteries, and is thus brought in contact with the syphilitic poison previously communicated to the organic glands, and destroys the poison. The same process takes place when the mercury is introduced into the stomach; it is taken up by the lacteals and lymphatics, and through them passes into the circulation. In case there is a *fœtus* in the womb of the mother, the blood containing the mercury is given off by the uterine arteries to the placental lobules, and is carried from the latter by the branches and trunk of the umbilical vein to the fœtal circulation; it pursues the same course as the poison, and is brought in contact with it, neutralizing its poisonous action, and delivering the fœtus from its evil tendency.

Let it not be supposed that this is mere theorizing. I have had abundant opportunities of verifying the truth of the statement just made.

I have been repeatedly consulted by females suffering from secondary syphilis, who complained of being harassed by miscarriages, still-born children at the seventh, eighth, or ninth month of pregnancy, or living children who were attacked with syphilis shortly after birth.

When I am consulted by a pregnant woman, who, I am satisfied, is contaminated by syphilitic poison, I assure her the next child she will have will be born alive and healthy. I direct her, when she is pregnant, to return about the tenth week after conception, to repeat her visit between the fifth and sixth months, and, lastly, between the seventh and eighth months. On the return of the woman at each of these periods I put her under the influence of mercury, until the physiological effects of this drug become manifest, as evidenced by the tenderness of the gums and mercurial odor from the breath.

The result of this treatment is, that in due time the woman is delivered of a healthy child, and returns to me to express her unbounded gratitude for saving the life of her infant.

It is of the utmost importance to be thoroughly and correctly conversant with the Anatomy and Physiology of the

Placenta, inasmuch as when the nervous connection between the mother and fœtus is understood, there is no difficulty in explaining how a shock or impression can be conveyed from the mother to her offspring.

In the same way, when the vascular connection is understood there is no difficulty in explaining how the blood of the mother will poison the blood and the organic nervous system of the fœtus. Moreover, this knowledge of the Anatomy and Physiology of the placenta will explain the mode in which medicines administered to the mother will act as remedial agents for the eradication and extermination of diseases in the *Fœtus*.

PART II.

The matters treated of in the foregoing pages are, in my opinion, of vast importance not only in a scientific but practical point of view. With a view of giving a clearer and fuller explanation of certain phenomena which present themselves in connection with the fœtus in utero, I will add some further particulars.

Life is imparted to the semen on its being discharged from the virile organ, as evidenced by the shock communicated to the whole organic nervous system. The organic nervous system gives off life to the semen, and the latter imparts it to the ovum on coming in contact with it, much on the same principle as a galvanic battery gives off electricity to an object brought in contact with it, and as a loadstone imparts magnetism to a piece of steel, the vital shock is given off from the whole organization of the organic nervous system to the semen, and thus the imprint of the internal and external organization as well as general conformation of the male is represented on, or incorporated with the semen.*

* There is a great analogy between a bar of steel before being magnetized and the semen before being vitalized. The bar of steel, for instance, may be left in the neighborhood of steel filings without attracting the particles of steel, but on being magnetized will attract and continue to attract for some time the particles of steel to its surface, thus giving the bar of steel a different form and appearance. The semen before being vitalized, will form no union with the ovum, but remains passive in the uterus, or be discharged by the vagina, but on being vitalized will seize on the ovule and give it a different form from what it previously had, by appropriating and moulding the substances furnished by the parts in its vicinity. In each of these cases an immaterial agent is united with a material agent; electricity represents the immaterial agent in one case, life represents it in the other; the semen affords the material for the metaphysical agent to operate on, precisely as the steel affords the material for the physical agent to act on. The great difference between electricity and life consists in the fact that one can be generated by man, the other only by God.

The organic nervous system, as proved by direct experiment, is the abode of life. Oxygen is the food or fuel of life.

The MANIFESTATIONS of Life cannot be present without the *presence* or *assistance* of oxygen.* Oxygen is an external agent procured from the air. Blood affords the vehicle for carrying

* Life may be present without manifesting its existence or remain dormant in the organic nervous system. Pliny, "*De his qui elati revixerunt*," is quoted by Dr. T. M. Beatty in the first volume of the "Cyclopædia of Practical Medicine," page 548, who, amongst other instances, gives that of the Roman Consul, Avicula, who, being supposed dead, was conveyed to his funeral-pile, where he was reanimated by the flames, and loudly called for succor, but before he could be saved was enveloped by the fire, and suffocated. Bruhier, a French physician, who wrote on the uncertainty of the signs of death (1742), relates an instance of a young woman upon whose supposed corpse an anatomical examination was about to be made, when the first stroke of the scalpel revealed the truth; she recovered, and lived many years afterwards. The case related by Philippe Pue is somewhat similar; he proceeded to perform the Cæsarian Section upon a woman who had, to all appearance, died undelivered, when the first incision betrayed the awful fallacy under which he acted. A remarkable instance of resuscitation after apparent death occurred in France, in the neighborhood of Douai, in the year 1745, and is related by Rigeaudeaux (*Journal des Sçavans*), in 1749, to whom the case was confided. He was summoned in the morning to attend a woman in labor at a distance of about a league; on his arrival, he was informed that she had died in a convulsive fit two hours previously. The body was already prepared for interment. On examination, he could discover no indications of life. The os uteri was sufficiently dilated to enable him to turn the child and deliver by the feet. The child appeared dead also, but by persevering in the means of resuscitation three hours, they excited some signs of vitality, which encouraged them to proceed, and their endeavors were ultimately crowned with complete success. Rigeaudeaux again carefully examined the mother, and was confirmed in the belief of her death, but he found that, although she had been in that state for seven hours, her limbs retained their flexibility. Stimulants were applied in vain, and he took his leave, recommending that the interment should be deferred until the flexibility was lost; at five P. M. a messenger came to inform him that she had revived at half-past three. The mother and child were both alive three years after.

"There is scarcely a dissecting-room that has not some traditional story handed down of subjects restored to life after being deposited within its walls. Many of these are mere inventions to catch the ever greedy ear of curiosity; but some of them are, we fear, too well founded to admit of much doubt. To this class belong the circumstances related by Louis, the celebrated French writer on Medical Jurisprudence. A patient who was supposed to have died in the Hôpital Salpétrière was removed to his dissecting-room; next morning Louis was informed that moans had been heard in the theatre, and on proceeding thither, he found, to his terror, that the supposed corpse had revived during the night, and had actually died in the struggles to disengage herself from the winding-sheet in which she was enveloped; this was evident from the distorted attitude in which the body was found."

oxygen from the air to the organic nerves and glands all over the head, trunk, and extremities. Oxygen in its pure state is the proper fuel or support of life.* The powers of life are diminished or increased by the quantities of oxygen supplied to the organic nervous system. If the quantity be small the powers of life become feeble, as evidenced by the coldness of surface and feeble state of the circulation which ensue; if the quantity of oxygen be large, the powers of life are invigorated, as evidenced by the heat of the surface and the vigorous state of the circulation. The existence of life is endangered when the oxygen supplied is not of a pure character, and is adulterated with noxious gases or vapors. If, for instance, the atmosphere from which the oxygen is derived contains any noxious gas, such as carbonic gas, then the food or fuel for the organic nervous system, namely the oxygen, becomes poisoned and operates deleteriously on the organic nervous system, thus poisoning life. It is to be remembered the contaminated oxygen enters the blood during the process of respiration, and is given off with the oxygen to the organic nerves in the coats of the arteries as well as to the organic glands in which the arteries terminate. Thus the organic nervous system is brought under the influence of the poison, giving rise to coldness of the surface, feeble circulation, suspended respiration, or death.

If the atmosphere contains malarious poison, such as occurs in swamps or marshy districts, then the oxygen becomes contaminated with the poison, and on passing into the blood poisons the organic nervous system in the manner just described, and in some time manifests its pernicious influence on vitality located in the organic nervous system by the rigor which takes place, thus giving unquestionable proof that life is shaken in its abode, or expelled from its abode, as sometimes happens when the rigor terminates in convulsions followed by death, showing that vitality has struggled in vain against the deadly assault of the poison.

In case a person who has not been vaccinated remains in the

* The organic nervous system, the blood, and oxygen, are the material agents indispensably necessary to preserve the existence and manifestations of life.

room of a person suffering from small-pox, he must inhale the poisonous vapors of the small-pox emanating from the patient, together with the oxygen which passes into the blood and is given off to the organic nervous system, viz. the nerves in the coats of the arteries and organic glands in which the capillary arteries terminate; the food or fuel of life being poisoned, life gives proof of the injury it has sustained in a certain time by the rigor which ensues, showing conclusively that there is a contest between life and the poison in the organic nervous system.

The tissue or structure of the organic nervous system shakes and trembles by the struggles of life to resist the attack and repel the invasion of the poison. In connection with this matter, it will be remembered the organic nerves and organic glands are solid bodies; further let it be remembered, that, wherever there are arteries, there must be organic nerves, inasmuch as the organic nerves are found in the coats of the arteries and the organic glands in which the arteries terminate; further let it be observed, when the rigor takes place, the solid substances—to wit, the structure of the organic nervous system, the skin, the muscles, and the teeth, which receive nerves from the organic nervous system—are shaken; the blood is passive and is not concerned in the matter. Another example is afforded: When a person is in a room with a patient suffering from typhus fever, the air from which the oxygen—the fuel of life—is received, is poisoned by the emanations from the patient; the poison passes into the blood with the oxygen, and is given off to the organic nervous system with the oxygen—viz. to the nerves in the coats of the arteries and organic glands at the termination of the capillary arteries. The organic nervous system—the seat of life—is poisoned, and in due time vitality or life announces the fact by the rigor and prostration which follow.

I have now stated sufficient facts, and given sufficient illustrations to show that the organic nervous system can be poisoned through external agents introduced into the blood; such being the fact, it therefore follows that poisonous agents, when introduced into the blood in any other way, must poison the organic nervous system precisely in the same manner as poisons

contained in the atmosphere; as, for instance, when poison is introduced by the mouth, it passes into the stomach and intestinal canal, is taken up by the lacteals and lymphatics, passes into the venous circulation, passes to the right side of the heart, passes to the lungs, passes to the left side of the heart, and from the latter passes, by the aorta, its branches, ramifications, and capillaries, all over the body, head, and extremities, thus poisoning the organic nerves in the coats of the arteries, and the organic glands in which the capillary arteries terminate.

The same explanation is true of poisons applied to the surface of the body; the lymphatics carry the poison into the venous circulation, and it passes subsequently into the arterial circulation, and is given off to the organic nerves and glands.

The same explanation is true of poisons introduced into the rectum, or injected into the veins, or inserted into the skin or cellular tissue; the poison is taken up by the lymphatics, passes into the venous circulation at first, and next into the arterial circulation, and thus poisons in its course, through the agency of the blood, the organic nerves in the coats of the arteries, and the organic glands in which the arteries terminate.*

* To prove, by negative evidence, that poisons act on the organic nervous system through the agency of the blood, when introduced through the medium of the stomach, lungs, etc., it will be remembered it is not necessary to introduce agents always into the blood to cause dilation or contraction of the blood-vessels; as, for instance, when a little brandy is thrown into a person's eye it will instantly become blood-shot, the capillary arteries dilate, and allow blood to enter them. This condition of the arteries cannot be attributed to absorption of the brandy into the blood, inasmuch as the vessels of the other eye are not affected, which they should be if it depended on absorption of the brandy into the blood. The brandy stimulates the organic nerves of the conjunctiva. When strychnine is sprinkled on a blistered surface after the removal of the cuticle, the muscular fibres contract at once; this cannot be attributed to absorption of the strychnine into the blood, inasmuch as the other muscles do not contract, which they should do if the condition of the muscles depended on absorption of the strychnine into the blood; the strychnine stimulates the organic nerves of the abraded surface to contract, spasmodically. When concentrated prussic acid is placed on the tongue of a rabbit, it kills the animal by its sedative action on the organic nervous system before it can be absorbed, precisely as a blow on the semilunar ganglion kills by the shock it gives the organic nervous system, thus expelling life from its abode in the organic nervous system.

When salt is placed on the web of a frog's foot, it is followed by increased vascularity of the parts to which the salt is applied, but as increased vascularity is not

Having now explained the various modes in which the organic nervous system, the abode of life, is poisoned, through poisonous agents introduced into the blood, it does not require much argumentation to show the manner in which the organic nervous system of the fœtus is poisoned. The simple fact that a portion of the blood of the mother passes into the circulation of the fœtus, at once accounts for the matter. The organic nervous system of the fœtus is truly poisoned by the blood derived from the mother. The modus operandi of medicines administered to the mother, as therapeutic agents, as well as the modus operandi of medicines as therapeutic agents on the fœtus in utero, can be satisfactorily explained. As, for instance, when it is necessary to subject a fœtus in utero to the influence of mercury, with a view to eradicating a syphilitic taint, it is only necessary to administer to the mother mercury internally, or apply it externally; the mercury passes into the blood of the mother, and is carried to the placenta by the uterine artery and by the umbilical vein to the fœtus, where it is brought in contact with the organic nerves in the coats of the arteries and the organic glands in which the capillary arteries terminate, during the course of the circulation of the blood through the arteries, thus bringing the organic nervous system of the fœtus under the influence of the mercury, and thus expelling or neutralizing the syphilitic poison. The manner in which the *materies morbi* of diseases, such as scrofula, phthisis, cancer,

observed to take place all over the frog, it follows, the vascularity is not the result of absorption, but the local application of the salt which acts as a direct stimulant on the organic nerves of the part.

When a blister is applied, the cantharides stimulate the organic nerves of the surface to which the blister is applied, and is followed by the effusion of serum; if the action of the cantharides depended upon the absorption of the cantharides into the blood, then the whole surface should be vesicated. The cantharides stimulate the organic glands, and increase their activity of secretion.

When a person is scalded, vesication takes place; here it cannot be said that the hot water is introduced into the blood, as the whole surface should be vesicated if such were the case; the hot water stimulates the organic glands of the part, increased secretion of the organic glands follows; hence the effusion of serum which takes place can be explained.

Most authors attribute death, in cases of poisoning, to "blood-poisoning;" whereas the true explanation is, "blood-poisoning" in the first instance, and in the second poisoning of the organic nervous system through the blood, with destruction of life.

gout, is propagated to the fœtus from the mother, is now susceptible of elucidation, when it is known a portion of the blood of the mother, containing the *materies morbi*, is carried to the fœtus.

It is highly important to know that it is practicable to vaccinate the fœtus in utero through the agency of the mother; as, for instance, when the vaccine matter is inserted by small incisions in the skin of the arm of the mother, is taken up by the lymphatics, is carried into the venous and arterial circulation of the mother, and by the uterine artery is carried to the placenta, and from the latter is carried by the umbilical vein to the fœtus, where it is brought in contact with the organic nerves in the coats of the arteries, and the organic glands in which the capillary arteries terminate during the course of the circulation of the blood through the arteries, thus extending its prophylactic influence to the organic nervous system of the fœtus.

It is highly important to understand that a pregnant woman, who has been properly vaccinated, should not visit or remain in the room where a person is suffering from small-pox, inasmuch as the disease may be propagated to the fœtus. Why such should happen, can be easily explained; the poisonous emanations of the patient become mixed with the atmosphere during respiration; the poison passes with the oxygen into the blood; it is brought in contact with the organic nervous system of the mother, which resists its invasion in consequence of the protecting influence and operation of the vaccine poison to which it was previously subjected; a portion of the blood, however, containing the poison, is carried by the uterine arteries to the placenta, and by the umbilical vein to the fœtus, enters into the circulation of the fœtus, poisons the organic nerves and glands of the fœtus, which are unable to resist its invasion, not having the protecting influence of vaccination extended to them—thus explaining why the fœtus is born with the characteristics of small-pox.

When veratria is taken as medicine by a pregnant woman, its operation on the mother and fœtus becomes manifest; the veratria is taken up by the lymphatics and lacteals, is carried to the venous circulation, to the heart, to the lungs, to the left

side of the heart; and by the aorta, its branches, ramifications, and capillaries, to the head, trunk, and extremities; the veratria is brought in contact with the organic nerves of the heart, the organic nerves in the coats of the arteries, the organic glands at the terminations of the arteries; the veratria acts as a sedative on the organic nervous system; the powers of life become depressed, as evidenced by the depressed state of the circulation, respiration, and muscular system. The blood containing the veratria is carried by the uterine artery to the placenta, by the umbilical vein to the fœtus, where it is brought in contact with the organic nerves of the heart, the organic nerves in the coats of the arteries, and organic glands at the terminations of the arteries. The veratria is attended with similar phenomena as that described as occurring to the mother.

As many may doubt the truth of the explanation I have given with respect to the modus operandi of medicines, as well as the mode poisons are introduced into the blood, and pronounce all I have stated to be moonshine, I will give an example to illustrate my views:

The laborers who are employed in the lead mines in the neighborhood of Edinburgh are supplied with sulphuric acid to mix with the water they drink; the proprietors of the mines know, by past experience, that the men would be attacked with colic, neuralgic pains, and paralysis, unless they adopted this course. How, it may be asked, does the lead act as a poison? or how does the sulphuric acid act as an antidote? The answer is exceedingly simple; there is no difficulty in comprehending it; the vapor of the lead passes with the oxygen into the blood, is carried to the left side of the heart, and from the latter, by the aorta, its branches, ramifications, and capillaries, to the head, trunk, and extremities, and is brought in contact with the organic nerves in the coats of the arteries, and is given off to the organic nervous glands at the termination of the arteries with the oxygen. Thus the whole organic nervous system is brought under the influence of the lead poison.

When the man drinks the water diluted with the sulphuric acid, the liquid is taken up by the lacteals and lymphatics, passes to the venous circulation, passes to the right side of the

heart, passes to the lungs, passes to the left side of the heart, and from the latter passes, by the aorta, its branches, ramifications, and capillaries, to the head, trunk, and extremities, and is brought in contact with the nerves in the coats of the arteries, and is given off to the organic glands at the termination of the arteries. What now is the result? The acid converts the lead into a sulphate of lead, which is innocuous; and thus it is the sulphuric acid is a direct antidote to lead poison.*

* The following extract from my pamphlet, "Hints on the Treatment of Strangulated Hernia," illustrates my views on this subject:

"When the opium is taken into the stomach by the mouth, it passes into the intestinal tube, it is taken up by the lacteals and lymphatics, gets into the venous circulation, is carried to the right side of the heart, commingled with the venous blood, from thence to the lungs, and next to the left side of the heart, from whence it is distributed all over the body by the aorta, its branches, ramifications, and capillaries; the opium incorporated with the blood is brought in contact with the organic nerves on the internal coats of the arteries which communicate with the organic nerves of the external coats of the arteries through the branches of nerves which connect the internal and external coats; it is further communicated to the organic glands in which the capillary arteries terminate, and capillary veins commence. The opium causes the contraction of the arteries to the smallest diameter by its action on the organic nerves, as well as suspends the operation of the organic glands. Thus it will be perceived, that all the capillary arteries everywhere distributed become contracted, and that the action of the cerebral glands becomes suspended, the volatile agent secreted by these glands ceases to be secreted or to stimulate the nerve tubules of the brain, by whose action the operations of the mind are carried on, as well as the nerve tubules of the nerves, causing the arrest of sensation and motion. Thus it is the operations of the mind become suspended as indicated by sleep, and thus, too, the individual becomes insensible of pain, and incapable of locomotion, as well as, in truth, dead to all external influences. The organic glands of the peritoneum, on the principles indicated, cannot secrete lymph or serum, the capillary arteries cannot become dilated, and consequently cannot furnish arterial blood to the organic glands; therefore, as the capillary arteries are kept in a contracted state, and the organic glands placed in a quiescent condition by the narcotic influence of the opium, it follows as a consequence, that inflammation cannot ensue, or in other words, increased vascularity, known by the dilated state of the blood-vessels with the effusion of lymph or serum, cannot take place. But it will be said this explanation is Utopian, is a mere assertion, without proof, or is the product of an eccentric mind, and cannot be demonstrated; it is, therefore, important to inquire, can any proofs or ocular demonstration be given of the action of opium on the organic nervous system? Yes; ocular demonstration is afforded by the action of the opium on the pupils, they not only become contracted, but are immovably fixed; the iris, it will be remembered, is largely supplied with nerves from the lenticular ganglion, and it shows the condition of the organic nerves and glands all over the body, namely, that they are contracted and fixed.

Having given in detail the modus operandi of opium, let me conjure every man

These remarks must not be deemed a digression; it is a clear case; unless a man understands the modus operandi of medicine and poisons on the mother, he cannot have a true conception of their action on the fœtus in utero.

who is ignorant of the physiological process of the action of opium when administered as a therapeutic agent not to sneer at the explanation, or under the mask of scepticism make insinuations he cannot maintain; but, like a true philosopher, recollecting that arrogance is the cloak of ignorance, prepare to scrutinize the subject in all its bearings. Let him first ask himself, has any statement been made contrary to or inconsistent with facts derivable from anatomical premises? Let him next ask himself, is there any mystery or doubt about the way the opium obtains access, and becomes incorporated with the blood? Let him also ask himself, have anatomists found organic nerves in the coats of the arteries? Let him further ask himself, where the first impediment to the free course of the opium contained in the blood is to be found? Or, where does its progress appear to be intercepted? Let him ask himself, has he any doubt that the arteries terminate in capillaries, and that the veins commence in capillaries? Let him ask himself, is it true the blood loses or gives off the oxygen at the termination of the capillary arteries? Let him ask himself, is it true the blood in the capillary arteries is altogether of a different character from the blood in the capillary veins? Let him ask himself, is it possible the blood should lose its oxygen at a certain point and at once become venous, unless a gland intervenes to change the qualities of the blood? Let him further ask himself, if there is a gland interposed between the capillary artery and capillary vein, has the gland the characteristic mark of other glands, namely, an excretory duct? Let him ask himself, is the pore of the skin an excretory duct connected with the gland? Let him satisfy himself further by inquiring, has the gland any other characteristic of a gland besides an excretory duct, and he will find it has the power of secretion or secerning a saline fluid from the blood, which he can observe passing through the excretory duct or pore of the skin; let him yet inquire, can he find any gland with a very slender long duct connected with it, and he will find such to be the case, when he thinks of a single hair, which is a hollow tube of the smallest dimensions, and through which the secretion from the gland passes, and is observed when a person is in a state of perspiration; let him now ask himself is it true, what anatomists have stated relative to the structure of the brain, that it is composed of tubules or hollow nerve fibres, and that the nerves are all composed of a series of nerve tubes. Let him inquire why these nerve fibres or nerve tubes should be hollow unless to receive a secretion on the same principles as the tubules or ducts of other organs or glands having various functions to perform in other parts of the body; let him ask himself can he assign any reason why the opium as well as the oxygen should not be intercepted and communicated to the gland at the termination of the artery.

"With a view of demonstrating and testing the truth that there is a gland interposed between the termination of the capillary artery and commencement of the capillary vein, and in addition that it is a secreting gland, that it is furnished with an excretory duct, let him ask himself, why the surface of a person engaged in violent bodily exercise will become burning hot, and why he will become covered over with a profuse perspiration, exuding not only from the pores on the surface of the

Although this is a prolific subject, I will not pursue it further; enough, I am satisfied, is stated to show the necessity for knowing and understanding there is a vascular connection between the mother and fœtus in utero.

Having demonstrated that oxygen is necessary to keep the manifestations of life in existence in the organic nervous system, it next becomes necessary to point out that life can be expelled *in toto* from the organic nervous system, can be temporarily suspended in the organic nervous system, can be partly or momentarily expelled from the organic nervous system; a violent blow on the semilunar ganglia exemplifies the first case, as death instantly takes place, showing conclusively that life is driven from its con-

trunk and extremities, but likewise from the hair tubules, on drinking a copious draught of water, and continuing to exert himself. He can account for the heat of surface, when he recollects that respiration is hurried, and consequently that a greater quantity of oxygen is introduced into the blood; he remembers the physical law that heat is increased in proportion to the quantity of oxygen consumed, hence that the burning heat can be easily explained on philosophical principles. Again, he knows when the fluid imbibed by the mouth passes into the stomach and alimentary canal, that it is quickly carried by the lacteals and lymphatics into the venous circulation, next is conveyed to the right side of the heart, thence is forwarded to the lungs, next to the left side of the heart, and from the latter that it is distributed yet mixed with the blood, by the aorta, its branches, ramifications, and capillaries, all over the trunk, head, and extremities. He will now recollect that, previous to the introduction of the fluid into the blood, the latter contained an excess of oxygen which over-stimulated the organic glands, giving rise to the increase of heat. As it is now evident that the blood contains an excess of oxygen, and that it is also equally true that the blood has got introduced into it a new element, namely, water, and that the oxygen is given off to the organic gland as well as the water, it becomes apparent the gland, in the exercise of its function of secretion, must unite the excess of oxygen contained in the blood with the increased quantity of hydrogen furnished by the water. It follows therefore, as a consequence that, on the excess of oxygen uniting with the hydrogen, water or serum is rapidly formed, which is carried off by the excretory ducts or pores of the skin as well as by the hollow hair tubules on the scalp, thus establishing the fact that the water taken in by the mouth passes almost immediately out by the excretory ducts on the surface. In case he object that the water secreted by the glands is not of the same quality as the water taken in by the mouth, inasmuch as it contains saline ingredients; he will only find an additional proof that the water must have its quality changed through the operation of a secreting gland, which not only removes the hydrogen of the water into the blood with the excess of oxygen introduced in the blood, but likewise some of the saline particles of the blood; let him continue administering the water and keeping up the bodily exercise, and he will be thus afforded ocular evidence of the truth of this explanation."

nexion with the organic nervous system; a smart blow on the superior conical ganglion exemplifies the second case, inasmuch as the person falls down, apparently dead, but soon gets up, showing the manifestations of life are only briefly suspended; an extensive scald by very hot water, dashed on the surface, and followed by convulsions, exemplifies the third case; the shock caused by the hot water prostrates life in the organic nervous system, but does not permanently suspend it; life quivers and shakes, as evidenced by the rigor which takes place. Life struggles to hold possession of the organic nervous system: at one instant it is almost overcome and expelled from its abode in the organic nervous system, but at the next it clutches and regains its position in the organic nervous system; in some cases life succeeds in reëstablishing itself, in other cases it succumbs, death closing the scene. Hence, the relaxation and contraction of the muscles which take place during an attack of convulsions can be accounted for when it is recollected the muscles are supplied by organic nerves.

Mental impressions are followed in some cases by similar phenomena to those just described as resulting from external violence. A terrific fright will cause death and expel life from its abode in the organic nervous system. Witnessing a surgical operation will cause fainting or suspended animation. Sudden and certain disappointment will cause hysterical convulsions.

The same phenomena as those produced by external violence and mental emotions can be produced by material agents; as, for instance, a few drops of concentrated prussic acid will expel life from its abode, or destroy its connexion with the organic nervous system.

A jar of carbonic gas brought in contact with the nostrils will cause suspended animation, or temporary death of life in the organic nervous system.

Certain doses of strychnine will cause convulsions (partly or momentarily death of life in the organic nervous system).

Again, the same effects can be produced by the detraction of blood, as those produced by violence, material agents, and mental emotions; as, for instance, when all the blood is drawn off, life struggles in the organic nervous system for only a very

short period, and then ceases to exist. When a certain quantity of blood is drawn off, fainting or suspended animation, or temporary death of life in the organic nervous system, is the result; when the bleeding is still continued after the patient recovers from fainting, convulsions take place.

In the first case, all the blood being removed, no oxygen can be brought to the organic nervous system; the flame of life is thus quenched for the want of oxygen or fuel to keep it alive. In the second case, the current of blood being diminished, the supply of oxygen is not sufficient to support life in the usual way, and life is temporarily suspended. In the third case, when all the blood is nearly removed, life is ebbing, and makes violent efforts in its struggles (hence the convulsions) to grasp its connexion with the organic nervous system; it strives to catch the small quantity of oxygen brought by the blood, but ultimately sinks, exhausted, in most cases.*

Having stated that life can be depressed or strengthened in proportion to the quantity of oxygen consumed, it is proper to state that life can be depressed or strengthened by medicinal agents; as, for instance, when tobacco-juice is taken into the stomach, or injected into the rectum, or applied to the surface of the body, it is absorbed by the lymphatics, passes first into the venous circulation, and subsequently, in the usual course, into the arterial circulation; it is brought in contact with the organic nerves in the coats of the arteries, and organic glands at the termination of the arteries: life is prostrated and depressed by the action of the tobacco, a fact evidenced by the depressed condition of the circulation and respiration.

Brandy, when taken into the stomach, or injected by the rectum, or rubbed on the surface, passes into the venous circulation, next into the arterial circulation, is brought in contact with the organic nerves and glands, as in the former case, sti-

* The head of a sheep may be severed from the body by an incision carried round the neck, thus allowing the blood to flow off rapidly. It will be remarked, after all the blood is drained off, that the body will give vigorous manifestations of life for some minutes; it will be further observed that the mouth will shut and open for some time, even although the brain has been previously all destroyed, thus showing conclusively that life is not located in the blood or in the brain.

(See my work on the placenta, the organic nervous system, the oxygen, the blood and the animal nervous system physiologically examined.)

mulates and strengthens life in the organic nervous system, as evidenced by the circulation and respiration. When a pregnant woman is partly poisoned by tobacco, it is evident, therefore, that brandy should be administered, as being the best antidote to counteract its evil effects on the fœtus in utero.

A vascular and nervous connexion being found to exist between the mother and fœtus in utero, there can be no difficulty in comprehending the mode in which the fœtus in utero is rendered susceptible of whatever affects or concerns the mother. It may be asked—What is life? *

I will, therefore, observe that it is an invisible but powerful agent located in, or combined with, the organic or vital nervous system; that it exists wherever there is organic nervous tissue, and that its presence is recognised by its effects; that it discharges its various mysterious and complicated functions through the agency of certain material bodies called ganglia and nerves, which are all connected together and are almost inexplicable as regards their organization and anatomical arrangement; that it is the operating agent instituted or bestowed on man by the Creator, and figuratively described in these words: "Breathed into his face the breath of life, and man became a living soul;" thus indicating how life was to be propagated by the first man to his descendants. As the breath of life gave vitality to the body of the first man *after it was formed* of the *slime* of the earth, so in like manner the first man im-

* Life, located in the organic nervous system, when the organization of the organic nervous system is in a healthy and vigorous condition, whilst the individual breathes in a pure atmosphere, and when each ganglion as well as each nerve is discharging its specific functions in unanimity and harmony under the guidance of life, may be compared, in a certain extent, to a watch in thorough repair, after being wound up, when the machinery moves with the greatest precision and in perfect harmony through the power generated by the mainspring. But when life departs from the organic nervous system, the organic nervous system ceases to carry on its operations, precisely as the machinery of the watch ceases its movements on the watch running down. Here it may be said an invisible power in each case disappears. When anything interferes with any portion of the organic nervous system, in any part of the body, the whole organization of the organic nervous system is disturbed and its functions deranged, in the same way that the slightest impediment in the mainspring or wheels will interfere with the operations of the working of the machinery of a watch, causing it to go too slow or too fast, or to stop altogether.

parted the breath of life to the *slime* (*semen*) out of which his first-born *was formed*. Histologists who attribute the organization and the continued regeneration of the organization of the body to the formation of cells, as well as cells within cells, should remember that a cell or cells is or are material substances; that a cell or cells is or are product or products of a material substance, or the effect or effects of an invisible agent operating on a material substance. *Ex nihilo, nihil fit.* Histologists should also recollect that cells are only formed during the existence of life; and that it must, therefore, follow, as a consequence, as cells *are not* formed in the dead body, that life must be the *cause* of the production of cells in the living. The cells, as described by histologists, are formed or secreted by the organic nervous glands at the terminations of the arteries. The materials which compose them are contained in the blood, and the agent under whose operation they are formed is *life* located in the organic nervous glands.

APPENDIX.

CASES ILLUSTRATING THE VASCULAR CONNECTION BETWEEN THE MOTHER AND FŒTUS IN UTERO.

(Extracted from a paper on Veratrum Viride, read by Dr. Percy before N. Y. Academy Med.)

Case.—I was called to attend a young woman with pneumonia of the left lung; she was between the eighth and ninth months of pregnancy. Her own pulse on my first visit was 152, and the pulsation of the fœtus too fast to count. At the expiration of eight hours, under the use of veratrum viride, her own pulse was 82, and that of her fœtus 112. The medicine was continued, and produced slight vomiting, after which her pulse fell to 58, and that of her fœtus to 88. On the third day after ceasing the medicine her pulse was 86, and that of her fœtus 164.

In the "American Journal of the Medical Sciences" for 1853, there is a case related in which vaccination of the mother during pregnancy seemed to have extended its protecting influence to the child. After birth, vaccination was repeatedly tried without success.—*Madge, on Diseases of the Fœtus.*

Dr. Jenner has placed several cases on record where the fœtus was attacked with small-pox, whilst the mother escaped; and a case is noticed by *Mead*, in which a woman far advanced in pregnancy—being in attendance upon her husband who was ill with the small-pox—did not take it herself, as she had had it previously, but during her husband's convalescence the child died in utero, and was born covered with small-pox pustules. In cases of twins, one child may be covered with the eruption, the other being perfectly free. Children born at the "full time," or prematurely, had frequently been found covered with small-pox pustules in various stages of development, and sometimes with well characterized cicatrices, particularly in those cases in which the mother had been affected with the disease during pregnancy. Of these children some have died in utero, others born alive have died shortly after birth, while some have rallied and continued to live. Ebel has recorded a

case in which a woman fifteen days before her confinement experienced considerable uneasiness, and felt the child struggling violently in the womb. When it came into the world it was covered with small-pox pustules in the third stage. It is not stated whether the mother also had the disease. As we should expect, it is generally in those cases where the parents have been vaccinated or otherwise protected, that they send into the world infants covered with small-pox pustules, without themselves having felt any symptoms of the disease. Such was the case with Mauriceau's mother. She had been in attendance on her eldest son, ill with the small-pox; he died, and on the following day she was delivered of Mauriceau, who at the moment of birth had several small-pox pustules upon different parts of the body.—*Diseases of the Fœtus, by Madge* p. 129.

In November, 1862, I was called in consultation to a lady about 30 years of age, the mother of two children. It was a case of typhoid fever of about four weeks' duration. The patient's mind was too wandering to answer questions correctly, but her nurse did so for her, and said that she was quite in the fourth month of pregnancy; the accuracy of this statement was corroborated by the abdominal tumor. In a few days more the fever ceased and she convalesced rapidly; gestation not disturbed. Two weeks later, from some cause not well explained, she relapsed into fever again, and about the third or fourth day of this relapse she miscarried, bringing forth a fœtus of nearly the fifth month, recently dead, as manifested by the freshness of the body, cord, and placenta, in which fresh blood existed. She also had quite a flow—large, considering her reduced state. After this she soon got quite well.

R. Nelson.

Maternal Impressions.—Dr. John S. Beale communicates the following to the *London Lancet:*

Mrs. N——, aged twenty-four years, primipara, a woman of delicate build and highly nervous temperament, suffered a great deal during her pregnancy with morning sickness, faintings, and great despondency of spirits. About ten weeks previous to her delivery she had a few scattered spots of "herpes" on the front of the chest, which disappeared under ordinary treatment, when some kind, good-natured, knowing old woman informed her it was the "small-pox, and that without doubt her child would suffer from the same disease." The bare notion of this preyed very much upon her mind, and her husband and myself both failed in driving the absorbing notion from her brain.

On June 22d she sent for me, having been in labor some four hours.

On rupturing the membranes, a most unusual quantity of amniotic fluid escaped, coming away in gushes with the commencement of each pain. On the child being born, I noticed it had been dead for several days, the head, face, and whole surface of the body being covered at about three-quarter-inch intervals with pustules, exactly resembling in size, form, and appearance the small-pox vesicles at maturity. The depression in the centre was plainly marked. When the topmost cuticle was detached, there was no fluid of any sort underneath. The mother's first remark was, "Is the child marked?" She fully believed it would be so.

Extract of a Letter from RICHARD J. HALTON, Esq., L.R.C.S.I., Dublin, Ireland.

"Dr. Ringland alone has seen a case in which a jaundiced mother being delivered of an apparently healthy child, it showed symptoms of jaundice on the third day and died on the fifth."

"Drs. Hudson, Churchill, Ringland, and Brady, have seen frequent cases of abortion and premature labor in typhus; and Dr. Churchill saw a case in which, on the third day of the typhus, the fœtus in utero had a convulsion and died."

COMMUNICATION FROM MOTHER TO FŒTUS.—The following interesting item we translate from *Canstatt's Jahresbericht* (last number issued), which shows that in the intercommunication between mother and offspring even foreign matter may pass from the mother to the young through milk as well as placental blood:—The fact having previously been noticed by Flourens, that the bones of the fœtus became colored red when the mother has been fed on red coloring matter, he extended his observations still further, and has found that the bones of the young offspring become red-tinted when, during the period of nursing, its mother feeds upon reddened food. The experiment succeeded perfectly in young suckling pigs, of which the bones became red in from fourteen to twenty days. Since, however, the pigs might have eaten some of the reddened food of the mother, Flourens selected another class of animals for experiment, in which this source of error could not exist—viz. albino rats and rabbits. In the albino rat the skeleton became red in eleven days; in the albino rabbit the same phenomenon occurred in nine days, though not a trace of reddened matter had been eaten by the young, since they had lived wholly upon the milk of their mothers. The coloring material usually employed in these experiments is that from the rubia tinctoria madder.—*San Francisco Med. Press.*

DEAR DOCTOR:—You wished me to give you a brief outline of the cases I related to you:

Mrs. —— was exposed to small-pox during the latter term of pregnancy. I vaccinated her, and the vaccination took very well. After the birth of her babe, I vaccinated it 14 times, but the vaccination never took.

Mr. —— was exposed to small-pox, and I vaccinated him immediately. On the sixth day of the vaccination he returned home after an absence of some months; 281 days after his return his wife was delivered of a babe, who, like the one above mentioned, could not take vaccina.

Mrs. —— was exposed to small-pox, and had varioloid very mildly. She had passed the middle of her term of pregnancy; she aborted, and the babe was covered with small-pox.

If you wish these fuller, I will make them out for you. I would rather, until after 10th February, you would not use my name; after that you are welcome to do just as you please.

CASES ILLUSTRATING THE NERVOUS CONNEXION BETWEEN THE MOTHER AND FŒTUS IN UTERO.

Professor Mott states he knew a medical man who had a faithful and perfect picture of a pig represented by a nævus on his back. The history connected with this peculiar case is easily told. His mother, during the period of gestation, was frightened by a black pig suddenly running from behind a currant-bush whilst she was walking in her garden.

Professor Mott removed from the side of a lady a nævus representing in every respect a veal cutlet, with grains of pepper visible on it. (The preparation can be seen in Professor Mott's museum.) The history connected with this case it was thought would explain the phenomenon. The lady's mother wished to eat a veal cutlet, and sent her husband to procure one; but on his return without it, she felt greatly disappointed, slapped her hand on her side, exclaiming: "O my, what shall I do!" The infant, on being born, was found to have the nævus, as already described, at a part corresponding with the part of her she struck with her hand.

Professor Mott saw several members of one family born with hare-lips, as well as the children of some of the parties so affected also born with hare-lips. During the gestations the mothers were impressed with the conviction that the children would be born with hare-lips.

Professor A. C. Post, of this city, saw a case where a woman, during the period of gestation, was frightened by a mouse running across the room. On the child being born, it was found to have a tail hanging from the back of the head, resembling in all respects a mouse's tail.

Professor A. C. Post saw another case where a woman, during the period of gestation, was obliged to turn a Doctor out of her lodgings for non-payment of rent. She happened, during this proceeding, to enter

an apartment occupied by the Doctor, and was startled by finding the fore-arm of a child, minus the hand. On the birth of the child, it was observed that the hand of the infant was wanting, presenting a truncated fore-arm.

A very good illustration of the influence of fear is also given by Baron Percy as having happened after the siege of Laudun in 1793: "In addition to a violent cannonading, which kept the women for some time in a constant state of alarm, the arsenal blew up with such a terrible explosion as few could bear with unshaken nerves. Out of ninety-two children born in that district within a few months of the occurrence, sixteen died at the instant of birth, thirty-three lingered for from eight to ten months, eight became idiotic and died before the age of five years, and two came into the world with numerous fractures of the limbs." Dr. A. Combe, in his work on Insanity, has recorded some curious facts illustrating this subject, and he also alludes to the well known circumstance that Pinel and Rush, in their respective countries, observed the great number of insane, idiotic, and malformed children born during, or shortly after, the intense excitement of the revolutionary periods. (Madge on Diseases of the Fœtus.)

The following cases have occurred in my practice:—

1. A child born with one eye of a light-blue color (right eye); the other a dark hazel. Mother says she had seen a child with similar eyes sitting on a doorstep in Lisson-grove.

2. Child born with mouth and upper and lower extremities resembling those of a dog. Mother states that she was worried and torn by a dog whilst she was in the seventh month of gestation.

3. Child born with left eye blackened as from a blow. The mother stated that her husband came home irritated, and struck her (eight hours previous to her confinement) on the corresponding part of her face.

4. A child born with four little fins or stumps for upper and lower extremities. The mother had been frightened by seeing a man maimed in his lower extremities, who used to traverse the streets on a board with wheels.

5. Child born ten nights after display of fireworks in commemoration of Crimean war. Child's feet were covered with bladders of serum, similar to those arising from scald or burn. The mother was alarmed by the descent of a stick of a discharged fire-rocket, which struck the roof close by the place where she was standing.—John S. Beale.

CASES COMMUNICATED BY PROFESSOR CARNOCHAN, SURGEON-IN-CHIEF TO THE EMIGRANTS' HOSPITAL, WARD'S ISLAND.

14 EAST 16TH STREET, *January* 17, 1864.

DEAR DOCTOR :—I have not been able to give you until now the precise information regarding the two cases of hare-lip which I mentioned to you, as I have no doubt occurred from maternal impression conveyed to the fœtus.

One case was that of Mrs. B—— of New London, Connecticut, who was delivered of a female child, otherwise healthy, about eighteen months ago.

At the sixth week of pregnancy she had occasion to visit a dentist for the purpose of having one of her front teeth filled. In order to expose more fully the part to be operated on, the dentist rather roughly hooked up the upper lip with a curved instrument, at times drawing firmly and harshly upon the instrument, and maintaining the lip in this position for an inconvenient length of time. The lady told me that all this handling of her lip made a very disagreeable impression on her at the time, and that she had, during her pregnancy, a dread of its effects upon the child. The child was born with a very bad hare-lip.

The other case was that of a Mrs. P—— of this city. At the eighth week of pregnancy, while at breakfast one morning at a hotel, two girls, probably of the same family, suddenly entered the room and seated themselves opposite her. They had been the subjects of hare-lip, and had been operated on with but partial success in removing the deformity. Mrs. P. was most disagreeably impressed with the picture thus abruptly presented to her mind, and frequently, while carrying her child, made mention of her fears regarding its formation. Mrs. P.'s child was born with a very bad hare-lip.

I could proceed enumerating cases of a similar character, proving, as I believe, the positive influence of maternal impressions upon the fœtus in utero. I am disposed to the belief that the impressions have most effect during the early periods of pregnancy.

I write hurriedly. With regards, I remain

Very truly yours,

J. M. CARNOCHAN.

(Extract of a Letter from ALDEN MARCH, M. D., President of the American Medical Association.)

"The first surgical operation I ever performed after receiving my diploma, forty-three years ago, was for the relief of an infant a few weeks old, born with Hare-lip, which the mother charged to the impression

made upon her mind, while the infant was in utero, in looking at an adult who was laboring under the same congenital deformity. So general was the impression that the latter was the cause of the former, that the neighbors of the mother of the infant recommended and advised me to operate on the young man, thereby to prevent any further mishaps. This I did in a few days, after having operated on the infant. This case was thoroughly impressed upon my mind, because it was at a very early period of my professional life."

Charles A. Budd, M.D., Professor of Obstetrics in the University of New York, has communicated to me the subjoined cases :—

"Some seven or eight years ago I was requested by a gentleman (a New Orleans merchant) to visit, at his hotel in this city, his mistress, who was a quadroon of unusual personal attractions. I found her in labor at the sixth month of gestation, with her first child. Upon inquiry, I ascertained that symptoms of premature labor had been developing themselves for nearly a week previously, which were entirely referable to a sudden fright which she had received, the precise nature of which was not stated at the time. The labor progressed without anything occurring worthy of mention, until after the delivery of the fœtus, which, after the delivery, was wrapped in a blanket and put away. The woman then expressed her fixed conviction that the child was 'marked,' giving as a reason therefor the fact that about a week previously she had received a sudden fright, while calling upon a friend, from having a pet dog jump violently into her lap. I endeavored to dissipate the idea by argument and ridicule, but she insisted that I should make an inspection of the child, when, lo! and behold, upon the integument on the inner aspect of one of the arms was a deep discoloration, having the general shape and proportions of a dog : the head, with the ears, the legs, and tail, was particularly well marked. I made every effort to procure the 'specimen,' but was not successful, having even failed in my attempt to bribe the undertaker to whose care was assigned the duty of burying the premature defunct.

"The other case occurred many years ago, and, as some of the parties are still living, can be verified if necessary. A lady, some four or five months advanced in gestation, was shopping with her sisters, and remained in her carriage while the other ladies were making their purchases. A sailor, who had been wounded in an engagement on the lakes under Commodore Perry, was soliciting alms, and, in order to excite compassion, thrust the stump of an amputated arm in at the window of the carriage. The lady was very much alarmed and shocked, and for the

remainder of her pregnancy could not divest her mind of the impression which the exhibition had created. Her child, delivered by my father, was born with but one arm."

Doctor Gilman, Professor of Obstetrics at the College of Physicians and Surgeons of New York, had related to him by the late Dr. Moore Hoyt, a man well known amongst the profession for his high sense of honor and veracity, the particulars of a case where he delivered a lady of a child with club feet. Dr. Hoyt stated the lady in question was very handsome, but very silly and vain, and particularly prided herself on the beautiful symmetry of her feet. It appeared that she was fretting during the whole period of her gestation lest her child should have ugly or deformed feet, and that immediately on the child being born, she requested the doctor to examine the child's feet, and see were they "deformed," as she supposed they would be. The doctor reluctantly complied with her request, thinking it an absurdity, when he observed, to his astonishment, the child was club-footed, but evaded telling her such was the case, knowing her peculiar temperament.

Dr. Batchelder, ex-President of the New York Academy of Medicine, related a case which occurred about fifty years ago. Whilst a medical man was in attendance on a woman in labor, sitting in the usual position occupied by obstetricians, he was watched by a young woman about three months pregnant, who sat on the side of the bed opposite to him. At the regular time, the doctor was called upon to attend the latter, who inquired earnestly, on being delivered, if the child had a mole on the ear; to which request little attention was paid at first; but, on her pressing her inquiry, the child's ear was examined, and a mole was found on the ear; she said she knew it must be so, inasmuch as she was continually thinking of the mole she saw on the doctor's ear when he was attending her friend. Dr. Batchelder says the doctor had a mole on his ear, and that there cannot be the slightest doubt entertained as to the truth of the case, as he was present on both occasions.

Dr. Horsfield, Fellow of the Academy of Medicine of New York, states that, when he was a young practitioner and connected with the Lying-in Hospital, he was requested by a young woman to attend her at her residence when labor came on. On visiting her previous to that period, he found she occupied a poor basement, and was painfully, in other respects, convinced of her poverty, at the same time that he was amazed by the appearance of a very fine salmon hanging up over the fire-place; contrasting the poverty of the place with the luxury represented by the salmon, he asked the woman how it came to pass she had

such a fine salmon; she replied that, on going to market on a certain occasion, she saw the salmon, and could not resist the temptation of purchasing it, although she felt satisfied she was not rich enough to indulge in such expensive commodities; she further added, she tried not to buy the salmon; that she left the place, but was irresistibly compelled to return and get it. (This took place between the fourth and fifth months.) In due time parturition took place; the head and body of the child presented a peculiar and strange conformation; in truth it was salmon-shaped, whilst the fingers and toes were webbed, representing the fins or tail of the salmon.

Professor Frank H. Hamilton related a case to me which he had an opportunity of seeing whilst on a travelling excursion, and whilst yet a very young man. On the occasion alluded to, he was invited, with the other passengers, to look at a curiosity in the neighborhood of the place where fresh horses were supplied to the stage; which sight, he and they were assured, could be gratified for a trifling compensation. The show consisted of a child without eyes in the sockets, the body presenting a truncated, unseemly mass, with the extremities (upper and lower) very thick, rolled round with a thick fold of the soft parts in connexion with the trunk, and then tapering to points. There were four spots or holes over each hip. The mother stated that, during her pregnancy, she was terribly frightened by feeling something creeping on the back of her neck; that, on putting it off with her hand, she discovered it was "a beetle," whereupon she fainted, and continued in a state of suspended animation for a long time, or until her husband ran home from the field where he was reaping.

Cases communicated by John Burke, M.D., Grand Street, N.Y.

"I have no doubt but that strong impressions made on the minds of some pregnant women will cause injury to the offspring, for it has ever been the belief among females that sudden fright or the sight of some horrid object will not only cause miscarriage—of which I am sure—but deformity or marks on the offspring. A few years ago there was a young man in First avenue, near Tenth street; he had one side of his face covered with green silk, and the other looked soft and flabby; on the whole, the poor fellow was not pleasant to look upon; his first impression was rather appalling, for I often noticed him sitting on the stoop of his residence. To my certain knowledge, several females attributed their miscarriage to being frightened by him. The following case is illustrative of how much sudden fright will affect the offspring of a pregnant woman:

"Mrs. A—— was born without a left hand; it was wanting at the wrist; when her mother was pregnant of her, a market-woman, who had lost the fore part of her fore-arm and made a living by carrying around vegetables, came to the lady's residence; she walked to the kitchen-door, and, without knocking, opened it and thrust forward her stump of an arm; the lady was in the kitchen, and, on beholding the bare stump so suddenly coming into view through the door, she fainted, and remained more or less ill to the birth of her child. When it was born, the hand was wanting.

"Now here are two things, one of which we are certain of: the child —now a married woman and mother of two children—was born without a hand; her mother attributed the cause to the apparition of the market-woman; does it not appear to follow, like cause and effect? I really do not know what explanation to give; but old Father Jacob knew something of it when he caused all the lambs to be yeaned spotted."

Cases communicated by B. Duggan, M.D., Third Avenue, N.Y.

"I was called to attend Mrs. —— about two o'clock in the morning, and, having been previously engaged and the distance short, I was there in about half an hour from the bell rung; and, on entering the room, found all still, and was told the child was born. The landlady, who often performed the office of midwife, and, I believe, in this instance, would have dispensed with my services but for the appearance of the child, said to me in close whisper: 'Doctor, I declare to God, a she-rabbit!' They told me it was born alive; and, from appearances, it was a very short time dead; but I did not try any means to resuscitate it. With the exception of the ears, the whole head was that of a rabbit; there was as much of the skull wanting as is usually sawed off to make a dissection of the brain, just about half an inch above the eyebrows and ears; the ears were natural; but the eyes, being the very superior part of the countenance, and a slit or hare-lip, made it exactly resemble a rabbit; the body was naturally formed, with the exception of a caudal appendage to the last lumbar vertebra, or upper portion of the sacrum; it was about the size of the last joint of the infant's forefinger, with a natural integument and tendinous feel. There was no thumb on either hand; the fingers were remarkably long, looking more like talons than fingers. On the head I could not trace the sutures or fontanelle; but here and there a slight bony deposit, and no hair, except at the back of the head. Although she says her brother kept a poultry-stand and sold rabbits, she never recollects any impressions made on her by such."

Two Cases communicated by Joseph Martin, M.D., Fellow of the N. Y. Academy of Medicine, 653 Fourth Street, N. Y.

"In 1835 I attended a lady who resided near Hagerstown, Washington county, Maryland, in labor with her first child, which was born without the auricular portions of the two ears. The head presented a singular appearance, as if the ears had been cut off close to the scalp, the child being well formed in every other respect. The mother, as usual, manifested great anxiety at the time of delivery to know if 'the child was all right,' but the deformity was concealed from her, and when I left she was doing well. A few hours after I was sent for in great haste. When I arrived I found her in hysterical convulsions; she had, as she afterwards said, taken advantage of the momentary absence of her mother to get out of bed and ascertain, what she very much dreaded, that her infant was without ears. After recovering from the shock she informed her mother and myself, that in the early part of her pregnancy she visited a married sister who was confined on an adjoining farm, and that she was attracted by the strange appearance of a large hog without ears, which she frequently saw in the front yard. She then recalled to my memory the fact that I had several times during my professional attendance upon her sister, passed the mutilated animal in the yard, when she was watching it from a window at which she was seated, and remarked that its peculiar appearance in consequence of the loss of both ears had ever since haunted her imagination. The child lived eight months.

"On the 29th of January, 1849, I delivered Mrs. G——, who then resided at No. 124 Columbia street, N. Y., of a male child that had neither thumb nor fingers on its right hand, but was well formed in every other part of the body. With unusual anxiety she watched her infant at the time of its birth, and discovering the defect, exclaimed, 'I knew it would be so!' She then told me that from the earliest period of her pregnancy her mind dwelt upon the deformed right hand, without fingers, of a man who sold trinkets from a basket which he carried upon that arm, and that 'she could not resist a strange desire to look at that hand whenever she had an opportunity.'"

Cases selected from the Note-Book of Frank H. Hamilton, Esq., Professor of Military Surgery, etc., etc.

Professor Hamilton has operated on forty-five cases of hare-lip. I have selected the cases from his admirably arranged table which bear on the subject of my investigation,

No. 2.—A. A. G——, female. Single hare-lip. Cause assigned by mother for explanation of deformity: by mother lifting the lip before a mirror and opening a gumboil while pregnant.

No. 4.—E. W——, male. Single hare-lip. Cause assigned by mother: extracting tooth during pregnancy.

No. 5.—A. G. T——, male. Double hare-lip. Cause assigned by mother: extraction of tooth during pregnancy.

No. 9.—W. J——, male. Single hare-lip. Cause assigned by mother: father went hunting and brought back a rabbit, when mother was four months gone.

No. 15.—J. L——, female. Single hare-lip. Cause assigned by mother: dressing the head of a boar against her will.

No. 24.—N. H——, female. Single hare-lip. Cause assigned by mother: seeing a case of hare-lip when four months gone.

No. 27.—B——, male. Double hare-lip. Cause assigned by mother: extraction of molar tooth when six weeks gone.

No. 34.—A. A. F——, female. Single hare-lip. Cause assigned by mother: frightened by a man with a hare-lip.

No. 35.—J. H——, female. Single hare-lip. Cause assigned by mother: frightened by a woman with hare-lip.

In Case No. 10, double hare-lip, three children in one family had hare-lip. In Case No. 45 two uncles of the mother had hare-lip.

Michael Walsh, aged thirty-five, congenital nævus on chin, *lobuli* of a purple color covering whole chin; not painful, never bled. Cause assigned by mother, that she was marked by a piece of fresh meat during pregnancy.—*Note-Book of F. H. H.*

Cases communicated by James Ross, M.D., Fellow of the Academy of Medicine of New York.

Mrs. McT—— gave birth to a child destitute of the right ear externally. With the exception of a very small portion of the lobe, the meatus appeared to be nearly closed; the thumb of the right hand was closely approximated or drawn towards the index-finger, so as to represent, to a certain extent, a pig's hoof. The history she gave of the occurrence is briefly told. On visiting a neighbor's house, during the second month of gestation, her attention was attracted by a pig's head. On arriving home she took an extreme longing for pig's head, and sent to several stores to procure some, but was disappointed in getting any to suit her taste; although mortified at the time, she thought no more of the circumstance.

A young lady in 18th street has several marks, as if produced by the

impression of the fingers on her left forearm and arm. During the early months of gestation, whilst sitting in her room, the mother of the young lady longed to get a glass of ale. On seeing persons drinking ale in a house opposite, she expressed a strong desire to get some ale, but was told it would not be respectable, or that it would be a shame to send for any at that time. During the interval she squeezed her left arm and forearm with the right hand, as persons often do when in a state of suspense or expectation, and left the impression of her fingers on the parts.

"CASTLETON, VT., Nov. 21, 1863.

"FRIEND ROSS:—The boy who did chores for me at the time of my wife's pregnancy had picked a chicken, brought it into the kitchen, and was dancing it on the table. My wife happened to come into the room at the time, and he spoke to her, and wanted that she should look at his baby. She at first did not look up, but on his insisting upon it, she looked around and only noticed how much the naked wings looked like deformed arms of a child; did not notice any other part of it, and immediately turned away; was not at all frightened, and entirely forgot the matter, thinking that it could not mark the child if she thought of it. At first she thought she would not look at it, in case of any such thing. She thinks it was five or six months before the child was born. She was not excited in the least, only thought she would not look at its head, as it might be bloody, or something; but it made so little impression that she entirely forgot it till I mentioned the resemblance when the child was three months old. No surgical operation has been performed, but the hands have been drawn out a little by a kind of brace made for the purpose. The hands seem to have been once in the proper place; but, drawn off by some means, the muscles extend from the wrist to the shoulder, thickened and webbed at the elbow like this:

The arm would be natural length if the hand was on, but it is drawn off just at the width of the wrist. She can use her hands freely.

"Yours truly,

"J. HOPE."

Dr. Ross had several opportunities of seeing the child alluded to in

the above case, and got the particulars, as contained in the above letter, at my request from Mr. Hope. J. V. R.

In a valuable monograph published in the *American Medical Monthly* for 1854 by Edward Warren, M.D., of Edenton, N.C., will be found the following:—

"A number of instances in point might be mentioned in this connexion, but a few will suffice for my present purpose. Millingen gives the case of a lady who, during pregnancy, was struck with the unpleasant view of leeches applied to a relation's foot. Her child was born with a leech coiled up, in the act of suction, on the identical spot.

The same author, on the authority of Bennett, relates the following instance of this sympathetic agency of mind on matter:—A woman gave birth to a child with a large cluster of globular tumors growing from the tongue, and preventing the closure of the mouth, resembling in every particular common grapes, and with a red excrescence from the chest, like the wattles of a turkey. On being questioned, before the child was shown her, she answered that, whilst pregnant, she had seen some grapes, which she longed most ardently for, and that she had been attacked and alarmed by a turkey-cock. Nævi materni frequently resemble fruits, and it is a well authenticated fact that there exists a remarkable sympathy between them and what they represent. Some will actually assume a tinge of maturity when the fruit is ripening, and become gradually more pale as ~~it~~ is going out of season.

The same thing has also been said in regard to animal marks, which are not uncommon. For instance, they will present a deeper color when the animal by which they have been produced is mentioned or seen.

From these facts, it appears that a mental impression is not only capable of directly reproducing itself, but also of developing a mysterious sympathy, the influence of which is felt and perpetuated so long as the organism concerned in its operations remains in existence.

The particular object of this paper is to add a few more instances to those already reported, for the purpose of contributing something towards the settlement of a question which has been so long mooted in the medical world.

There is a negro boy in this town, aged about ten years, in good health and quite well grown, whose countenance bears a remarkable resemblance to that of a fox. The likeness is so great that it strikes every observer at first sight, and attracts the immediate attention of all who see him. But this is not all; he walks and runs habitually on his hands and feet, like a quadruped, and is more active than most boys of his age who use their limbs in the ordinary way.

He is solitary in his habits, shy in his manners, and of a cunning and roguish disposition. In almost every particular, some resemblance to a fox manifests itself; and when all the points of similitude are considered together, the likeness is most remarkable.

As soon as my attention was directed to him, I became interested in the case, and instituted inquiries in regard to the experience of his mother during her pregnancy. The resemblance to the fox was plainly distinguishable when the child was born, and has continued to increase until the boy presents the appearance and peculiarities mentioned above.

Another case of a like nature came under my observation recently. A pregnant woman, residing near this town, saw a picture of a rabbit with which she was exceedingly delighted. When her child was born, it was hare-lipped, and bore so striking a resemblance to a rabbit that the most casual observer could not fail to discover it at a glance. The infant attracted much attention because of this strange circumstance, and was visited and examined by many persons in the neighborhood.

Among those who saw it frequently was another pregnant woman, and when she gave birth to her child it was marked in the same way, and bore a similar resemblance. The first child died early; the other is still alive and in good health.

I am acquainted with a young man, the first finger of whose right hand presents a very singular appearance. The end of it is devoid of everything like a nail, save in three points, which correspond in size and position to the eyes and mouth of a snake, and presents almost an exact resemblance to the head of a serpent.

He says the account which he received from his parents and their contemporaries is, that when his mother was pregnant a snake crawled into the house, to which she pointed in great alarm with the first finger of her right hand, and then fainted away.

I have no way of establishing this matter positively, but the young man was assured of the truth of the explanation, and I have every reason to consider it correct.

I have seen some cases in which the maculæ resembled fruit, and know of others in which fish were distinctly represented. In all of these, the effect of an impression made on the mind of the mother by some external cause could be traced and established. Thus, a woman was fond of pears, and longed intensely for them during her pregnancy; when her child was born, a small pear was pendent from its ear and the last finger of the right hand. Another desired to indulge in eating crabs, but for some reason was unable to gratify herself in that respect. Her child had the figure of a crab distinctly marked upon it, and bears the nævus to this day.

Dr. Samuel Hart reported the following Cases to the Kings County Medical Society in 1861.

May 10, 1837.—Mr. S—— consulted me at my office respecting Mrs. S——, then near, I think, her third confinement, and stated that she complained of extreme abdominal distension, which was so great as to render her situation quite distressing. As no relief could be obtained from this prior to delivery, I merely prescribed some trifling remedy to amuse and if possible to divert her mind from this annoying condition. Mrs. S—— had never been my patient before; had recently removed from the country into our city, and had experienced no trouble of this kind in either of her former pregnancies.

In the afternoon of the 12th I was requested to visit her in haste, as she was represented as being in great distress. I was soon seated by her bedside and found the vagina filled and distended by an enormous bag of waters, extending to the external labia. I at once ruptured the membranes, which was followed by a flow of waters such as I had never met with before, and which compelled me to turn aside to escape the thorough drenching I should otherwise have received. So great was the quantity, and so persistent the flow, that one of the attendants placed a bucket to receive it, which caught more than a gallon, and it seemed a moderate estimate that an equal amount had already flowed upon the carpet.

This discharge of waters immediately relieved this, to me, extraordinary abdominal distension. I have spoken thus particularly of this unusual amount of waters for an object which will appear in the course of this paper.

Then turning to my patient, the os uteri was found fully dilated, but the presenting part could not be satisfactorily determined. It seemed to the touch to resemble somewhat the bones of the head, but unlike that usually presenting; and passing the finger over the whole surface, there was a spot extending horizontally as far as could be reached, resembling the feel of ecchymosis, and a moderate pressure revealed fragments of bone beneath, which were loose and movable.

In this stage of the labor the true character of the presentation could not be ascertained, but further progress rendered it evident that a head was approaching delivery, with the face in the perineum and the occiput to the pubes, the top of the head coming down. The uterine contractions were vigorous and expulsive, and there was thrown into my hands with almost spasmodic force, an object sad to view, when regarded to be of human origin. Life appeared extinct, and no effort at resuscitation

was attempted. The child was small, a female, born at the full period, and probably less than three pounds in weight. But so great was the anxiety to conceal it from view, that I was not permitted to ascertain this, or make an anatomical examination.

The head quite strongly resembled that of the cat in form and feature; the eyes, nose, and mouth were wholly feline, but the ears were human. The neck was entirely wanting; the head placed midway between shoulders, the occiput being on a horizontal line with the spine. Upon the top of the head, at a right angle to the sagittal suture, over the whole extent of the parietal bones to their attachments to the temporal, about the width of two inches, was presented an appearance like that produced by a severe blow with a solid instrument. (This was the part that during labor presented to the touch the feel like ecchymosis.) It resembled a bruised, gory mass of cuticular tissue, and the parietal bones beneath were in several fragments. Whether originally so formed I deem human ken incompetent with certainty to determine. The little hair there was upon the head was human. The trunk of the body, the upper and lower extremities were human and perfect. Nothing was said in the presence of the mother at this time respecting her monstrous progeny. It was, immediately on its birth, wrapped in a blanket and taken to another room, where I made the examination and discovered the phenomena described above.

The day following, this lady herself stated to me the following particulars:

About four and a half months previous to her delivery, while residing in the country, a young cat came to her house and greatly annoyed her; it kept constantly at her feet, mewing piteously, which an abundant supply of food had no influence to check. Supposing it to belong to a neighbor at a little distance it was taken there, but immediately returned. It proved so distressing to her that she said to her husband, "I wish you would kill it," and to use her own expression, "he dashed out its brains against a stone;" she heard the blow, but did not see it; she was not disturbed at the killing of the cat, the annoyance it had caused her entirely ceased and she thought no more of it, and when informed of the resemblance of her offspring to a cat, this circumstance did not at first occur to her. Mr. S—— remarked to me the appearance upon the head of the child, both in locality and resemblance, perfectly corresponding with that of the cat, produced by the blow which destroyed its life. Mrs. S—— got up well, and her previous and subsequent children were in every respect perfect in form.

The next case occurred in the evening of April 8, 1843. This case

much resembled the above; was a first confinement, was accompanied with a like quantity of waters, and the same uncertainty of the part presenting, although with the above case in view little annoyance was felt, and it was followed with a like result. The child was dead. The head was decidedly feline, though not so strikingly marked as the preceding. It presented the same bruised gory appearance of the tissues over the parietal bones, which were whole and not in fragments. The child was a female, a little smaller than the other, and was born at the seventh month. In this case the ears, the trunk, and the upper and the lower extremities were natural. The form of the head and the face feline.

This lady informed me she had been occasionally annoyed by a cat coming in her way during her pregnancy, but not often. She likewise remarked that the cat was always peculiarly hateful and offensive to her. She recovered well.

The last case, gentlemen, which I shall present to you, and the last of the kind I have had the misfortune to meet with, occurred on the morning of February 1, 1855. It was a fourth labor, and at the full period. Uterine contractions were soon well established, and taking a seat by my patient, the membranes were found protruding and distending the vagina; they were at once ruptured, and a flood of waters followed as in the preceding cases. But by this time I had become so accustomed to these phenomena that they ceased to disturb my equanimity, but seemed like old familiar acquaintances. The presentation was puzzling and uncertain, exhibiting to the touch quite a different sensation from either of the other cases. From the extensive smooth, flat rather than convex bony surface that could be reached, it was evident a head of some kind was presenting, and quite clear it was not that of my old acquaintance the cat. I was rather pleased that I was about to be introduced to some new form of monstrosity, for that such was the case no doubt could now be entertained. As the labor progressed a new phenomenon appeared which proved perplexing, and somewhat obscured the definite character of the presentation. A thin movable substance at the side of the part, approaching about an inch in width, was discovered; this was soon found to be attached and pendent from it, but the child was soon born and dissipated all uncertainty. The head of this child closely resembled that of the dog both in form and feature, and presented a most sad spectacle. In form, a dog's head upon a human neck and body, in every other respect perfect. The pendulous portion, so troublesome previous to the delivery, proved to be the ears, both of which, nearly two inches in length, together with the head and all the features, were strikingly canine in form. The child was quite

small, and although it never respired, a slight movement or two of some of the limbs made it probable it could have been easily resuscitated, but this was not attempted. My record does not specify the sex, which I find is the only omission of the kind.

This lady afterwards made to me the following statement: a neighbor's dog came almost daily to her yard and greatly annoyed her from the early stage of her pregnancy, and when about three months advanced she passed two dogs in the street in circumstances that excited in her mind extreme indignation. This she expressed in language the most extravagant.

The dog which thus constantly disturbed her was a large black Newfoundland dog, and this continued till near the time of her confinement; but she had never entertained any apprehension or solicitude that her offspring would be other than perfect in form and feature.

GENERAL SESSIONS.

New York. August Term. 1808.

The Commissioners of the Alms-House
vs.
Alexander Whistelo.
} *Bastardy.*

Present—Clinton, Mayor.
Van Wyck, Recorder.
Mott, Bingham, and Drake, Aldermen.

Extracts from Report.

"The defendant is a negro; the mother a mulattress; and the child has the hair and most of the features of a white; the color, indeed, somewhat darker, but lighter than most of the generality of mulattoes." —(Mayor Clinton.)

"The strength of the adversary's case I take to be this—that, at a critical moment after Mr. Whistelo and Miss Williams had been just long enough in bed together to be drawing towards a perfect understanding of the business which brought them there, the lady saw, or thought she saw, an apparition of a white man making towards her with his cocked pistol in his hand; and the true point now is, whether that apparition did of itself beget the child, or only change it from

black to white, after it was begotten, by acting on the nervous system of the mother. Dr. Mitchell maintains the effect of maternal imagination with all his might."—(Mr. Samson's Reply.)

City of New York, ss.:

Samuel Burrow says he is of opinion that Alexander Whistelo is not the father of said child; and that he supposes the father of the said child to be a white man.

City of New York, ss.:

Samuel S. Mitchell says that he thinks there is a possibility—nay, a probability—that the said child has been begotten by the said Alexander Whistelo.

*Extract from the Evidence on the Cross-Examination of Dr. Mitchell.**

Q. Was there not some other case which you mentioned before the police office?

A. I mentioned, somewhat jocularly, the loves of Theagines and Chariclea. Chariclea was a beautiful and fair virgin of Ethiopian parents. Her whiteness was occasioned by her looking on a statue of Venus.

Question by the Mayor.—About what time, Doctor, might that have happened?

A. The work is written by a Christian Bishop—Heliodorus—who wrote about the fourth century. It was the first novel I ever read, and made a great impression on me.

Q. As to those cases in which the agency of some external objects upon the mother's imagination produces an entire change in the fœtus have you any facts within your knowledge?

A. There was a man in the city of New York who kept a cow.

Q. Will you tell the court, Doctor, the story of that cow?

A. The cow was a favorite with the wife of the man; but he found it more convenient to kill her than to keep her.

Q. And how did the death of the cow influence the birth of the child?

A. The cow affording a larger supply of provisions than was required for family consumption, he sold part and reserved the rest.

* Doctor Mitchell was one of the most eccentric as well as celebrated physicians of his day; he was well known for his sterling honesty, profundity of thought, convincing candor in expressing his opinions, and was looked upon as a walking encyclopædia.

Counsel.—Very well, sir; be so good as to relate the rest.

Witness.—Among the parts that were reserved were the feet. The wife saw them hanging up in a mangled state. It was the first news she had of the death of her favorite cow, and she was so vehemently moved and so shocked, as to affect the child of which she was then pregnant.

Q. And what was the result?

A. The child was born without any arms, and with distorted feet.

Q. Did you ever converse with the father or mother of the child?

A. I did not. But the child is still alive, and there is no doubt of the fact.

Q. Have you examined the child?

A. I saw it once as I passed, playing with a cooper's shaving-knife between its toes. I stopped to inquire, and was told the story.

Q. Is there no other case, ancient or modern, to support this theory?—is there nothing in verse or prose?

A. There is a case, called the Black Case, in Haddington's Poems. He was a Lord of Sessions, or other considerable man in Scotland. The story runs thus: There was a man who followed the profession of an attorney or a scrivener, who had a very amorous wife. But he had not leisure to attend to all her gaieties. Once, that he was unable otherwise to free himself from her importunities, in toying with her, he upset his ink-bottle in her shoes. She brought him a black child in consequence. He reproached her, but she reminded him of the ink-bottle and of his awkwardness. There is also the story, told by Malebranche, of the woman who saw a man broken on the wheel, and bore a mangled and disjointed child. If such changes as the last are true (and there is strong authority for it), then the mere change of color or complexion is not difficult to believe.

[Note appended to the Report.]

Remarkable Effect of a Pregnant Mother's Imagination.

"A young married lady, pregnant with her second child, being with her parents at Brunswick, in New Jersey, where it was fixed she would lie-in; when that time drew nigh, she sent to New York for her nurse; and, having made every necessary preparation for the interesting moment, waited with tranquillity for a few days before it arrived. Nurses generally employ this time in telling tales, gossiping, etc.

"The nurse, in this case, told one afternoon to the pregnant lady and her mother how she had once nursed in the family of a Jew, and how she saw the little infant circumcised; and dwelt upon the description of

the operation with great minuteness. The young lady sat and listened; and, being very susceptible of sympathy, first shed tears, then fainted. A day or two afterwards she was delivered, after a very short labor, of a boy. All went on very well till the next day, when the nurse discovered that the child's prepuce was diseased. Dr. Scott, of Brunswick, was immediately sent for. He came; and, on examination, found *the whole of the foreskin destroyed by a sphacelus!*

"The above circumstances happened in the winter of 1798–9. The young lady, her husband, and child, all died in the course of the year." —Vide *Med. Rep.* vol. iii. p. 89. Vide *Wheeler's Criminal Reports*, vol. iii. folio 194.

F. K—— presents rather an unseemly appearance in consequence of a violet-colored nævus on the left side of the face, extending to the left side of the nose, as well as the eyelids and left temple, sending digitations on the scalp. The cause assigned by his mother attributes the nævus to a shock she received whilst being blooded by her husband, who was a respectable surgeon, for inflammation of the lungs during the latter months of her pregnancy, when she put her right hand over her left eye, so as to prevent her seeing the blood flowing from the vein opened in the left arm.

N.B.—The author of this essay can vouch for the authenticity of this case.

Case communicated by Theophilus Mack,* M.D., St. Catherine's, Canada East.

A woman was delivered of an acephalous monster, and the mother of my patient at once ascribed it to her daughter having looked for a long time at a caryatid a friend of mine had caused to be rudely chiselled on the front of his building; and she strenuously insisted that a law should be passed to prevent people from disfiguring the front of buildings in such a way, and causing similar catastrophes!

Cases communicated by Michael Hogan, L.R.C.S.I. and L.K., and Q.C.P.I.

Case 1.—While attending lectures on Practice of Medicine, under the late lamented Dr. Nelligan of Dublin, I recollect him to have related numerous instances, which came under his own immediate observation,

* Dr. Mack thinks it an absurdity to suppose an impression can be communicated by the mother to the fœtus in utero, and looks upon it as a popular superstition; and gives the above case as an instance of its being so, which occurred in his own practice.

of children having been born with marks clearly referable, in his opinion, to frights received by the mothers during the periods of their pregnancy; among the rest, the following case: A lady, with whom he was well acquainted, during the period of her pregnancy having received a fright from seeing the mane of one of her horses on fire, the stable having caught fire, soon gave birth to a child having the mark of a horse's mane between its shoulders.

Case 2.—I myself have been thoroughly conversant with all the particulars of the following remarkable case: An intelligent country-woman, advanced in the period of gestation, while killing a chicken, on seeing some of the chicken's blood on the palm of the hand, became suddenly alarmed lest the child of whom she was pregnant should bear the marks of the blood, threw the chicken from her hands, took a seat, and immediately placed the palm of her hand extended under the side of her face; and in this position with her cheek leaning on her hand, spent some time, much troubled in spirit, brooding over the probable results. After the full period of the pregnancy had expired, she gave birth to a healthy female child, with a well-defined mark of blood all over one side of its face, demarcated above by the hair, below by the horizontal ramus of the lower jaw, and in front by the median line. The first question which the mother asked after the birth of the child was—"Is the child marked?"

Case 3.—The woman referred to in the last case, while pregnant of another child, got a fall, by means of which the cuticle was, to some extent, slightly stripped off both her knees; at this she was only slightly alarmed, however; the child, when born, and ever afterwards, had both knees marked, the cuticle all over both having the appearance of the cicatrix of an extensive superficial burn.

Lycosthenes ad annum mundi 3757 refert, puerum cum elephanti capite natum Sinuessæ. Hoc idem recitari ait, Aldrovandus a Polydoro Virgilio; et addit ex relatione virorum fide dignorum, anno Domini 1565. Mulierem enixam esse puellam capite elephantis reliquo corpore bene constituto prout in apposita apparet figura.—*Physica Curiosa P. Gaspare Schotto, Societatis Jesu.* *Herbipoli*, MDCXCVII. Vol. i. folio 582.

COMMUNICATION FROM A. K. GARDINER, LATE PROFESSOR OF OBSTETRICS.

NEW YORK, 141 EAST 13TH ST., February 16, 1864.

JOHN O'REILLY, M.D.:

MY DEAR DOCTOR:—That very well *paved* place has received several additional stones, some of them boulders, by my good intentions to reply to your request respecting the intra-uterine malformations of children—that I would note my personal experience of the circumstances connected with them, and especially their alleged causation from maternal impressions.

My observations have not been very extensive or very conclusive. Still, for a period, I was in the ordinary habit of inquiring of mothers respecting any fright that they may have had during their pregnancies, and whether they feared that their children might be marked thereby.

As a general thing, most mothers have an anxiety lest their children have some malformation; and the first inquiry after their birth is, if their "child is marked;" whether it be a boy or a girl being generally of secondary importance.

I have never known, as a result of all my inquiries, that any one mother ever *predicted* the marking of a child, although they were often ready *afterwards* to account for the occurrence of a strawberry or other mark, ascribing it to some, till then, forgotten fact, which indeed grew stronger and more evident by the repeated narrations.

Now for the cases which I can remember, and the statements connected therewith:

Case 1.—I saw Mrs. Dr. D—— (Nov. 21, 1854) some years since in consultation with her husband and the attending accoucheur, in the case of a first-born, where the labor was tardy and the presentation doubtful. It was an acephalous child at full term and more, as was thought, as there had been entire absence of movement for many months, and the child long dead, the skin being almost entirely stripped off, where the frontal bone was entirely wanting, with some deformity of the adjacent cranial bones. This arrest in development must have occurred surely within the first three or four months, yet the mother was fully persuaded that the child had a *monkey's head*, caused by a fright she had received some three months before the child was born, and when it had six to seven months of utero-gestation. At that epoch an organ-grinder's monkey leaped towards or upon her; and she, frightened, ran away from the front door with great speed and fell upon the stairs by tripping in her haste.

Case 2.—Mrs. X—— had her first child born with five fingers and a thumb on each hand, which was ascribed to her annoyance felt while carrying the child, because, from her small hand, she was unable to play octaves upon the piano which she was assiduously practising; and her constant effort to forcibly stretch her fingers apart, even when in bed and sometimes on waking, found herself thus employed; another reason given for this same occurrence was, that her brother, telling her that she could not separate the fingers voluntarily while keeping the first and second and the third and fourth closely together, she practised this feat assiduously until she had acquired this faculty.

The story is good thus far, but her only two children that have lived were both feeble and seven months' children; and several, intermediate and subsequent, were variously deformed—one with malformation of the heart, another with immense hypertrophy of the liver, none living but a few hours; and the last not only had five fingers and thumb on each hand, but had a *spina bifida* in the lumbar region; for all of which accidents she had not any reason to give, no fright or trouble, and of the existence of such forms of disease she had never before any intimation.

Case 3.—Mrs. H—— (April 15, 1858) had a child born with *spina bifida*, without any suspicion on her part; and why, she had no theory.

Case 4.—Mrs. L—— had a child with distortion of the feet—*talipes varus*—but with little malformation, and which I ascribed to prolonged pressure, as the presentation was the feet and breech, the child apparently "sitting on its hunkers.'

Case 5.—Mrs. Smallman (Oct. 21, 1849) had a child with one foot turned in; she had expected some deformity, having had a fright, but did not know what.

Case 6.—Mrs. T——, a lady of extreme nervous sensibility, and the mother of several children; while carrying her eldest she was much annoyed by a dog barking in the neighborhood; this boy, till eighteen months old, showed marked excitement at the presence of or the barking of a dog. The second, a girl, had a mark on the temple, caused as she considered by her great desire for oysters, and which it was considered to resemble.

When carrying her last living child but one, and in her third month of gestation, an individual much contracted by rheumatism, bent over, scarcely able to walk upon his bent legs, and his hands hanging powerless before him, his arms half flexed upon his breast, was sent to her husband to be rubbed and otherwise heated. He was unfortunately seen by the lady, she accidentally letting him into the house, a circumstance rarely occurring. She felt a very peculiar sensation, remarking upon it at the time that she felt like fainting. All reference to this theme was carefully avoided afterwards, but she had great and unusual disturbance within her womb, feeling as if the child was endeavoring to turn over. She was also annoyed greatly by the talk of a parrot in the vicinity, which, it being summer time, was the source of constant noise.

When this child was born it was one of the most misshapen children ever seen, the arms and legs appearing to be dislocated at their junction with the trunk, and almost powerless. The child is now a very remarkably bright and intelligent girl of some twelve years of age, but she has never been able to stand without support, and of course has never walked; her arms seem to be dislocated at the axillary joint, with some deformity of the clavicles, and the arms and hands so twisted and rigid that they are almost powerless. If her head remains in its erect position she cannot touch any portion of it with her hands; but by drawing down her head towards the table she is able to feed herself, though with great difficulty and in an uncouth manner. Any considerable motion of the arm is accomplished only by moving her body also.

Besides this marked and persistent personal deformity, her father states that, for some two years, the tones of her voice resembled the tones of a parrot so closely that even he had difficulty in distinguishing them.

The history of this case would be incomplete did I not state that this deformity was hidden from the mother for some weeks, and that, when she discovered it, she soon after became insane, and subsequently was taken to a lunatic asylum for some weeks. At a subsequent confine-

ment she showed signs of a recurrence of this mental alienation, and was sent into Vermont, where a change of scene produced the desired result.

Some of the above-mentioned cases are non-conclusive, others are apparently impossible, but the last case seems to be a strong one for your side of the question.

THE FOLLOWING CASE OCCURRED IN THE PRACTICE OF PROFESSOR MILLER, OF RUSH MEDICAL COLLEGE.

(Copied from the *Chicago Medical Journal.*)

Mrs. W——, in her third pregnancy, while passing to different parts of the city in following her vocation—ladies' hair-dressing—frequently met an individual in the streets who was considerably deformed and was severely affected with *chorea.* The sight of the individual, with his fantastic and purposeless movements, his idiotic countenance and distortion of body, produced a strong and repulsive impression on her mind, so that she frequently expressed the fear that the effect would be unfavorable to the perfect development of her child. During the progress of her labor she manifested anxiety on this point. The labor, which took place March 26, 1863, was natural. The child, a female of the ordinary size, lived for a few minutes, and presented the following peculiarities:

On the back of the head was a tumor the size of a large orange; it had a hare-lip and cleft palate. The inferior extremities were of unequal length, both feet turned inwards (talipes varus), on each foot were six toes, on each hand five fingers. The specimen is preserved in the Museum of Rush Medical College.

238 NINTH AVENUE, NEW YORK, July 11, 1864.

DR. JOHN O'REILLY:

MY DEAR SIR:—Agreeable to your request, I give you the particulars of the case I mentioned to you the other day. Mrs. J. Miller, seven months in gestation, upon going to the flour-barrel was considerably frightened by a mouse which jumped into her sleeve, and finally was caught by her husband between her shoulders. On delivery of her child, at full time (the above circumstance having been previously related to me), I found a mole, forming a very complete representation of a mouse, in comparatively the same place on the child's back as where the mouse rested on the mother.

Yours,

H. LASSING, M.D.

Extract of a Case of Monstrosity, by Thomas Boulton, Esq., L.S.A.

(From the London Lancet.)

I shall now describe the case of this strange formation; it is that of two female children united to each other through the entire length of the abdomen and chest; the neck is single, and the head enormously large; in fact, it is two heads joined together in front, but strange to say only one face, and that by no means a bad one. The occipital part of the head in both is perfectly well formed, with two ears to each, and the back, shoulders, and lower extremities, are quite natural on each side. It is of nearly full size, and weighs about eight pounds. No sign of vitality showed itself after birth; but as there was no appearance of decomposition, it is evident it had lived up to a very short period before. There was only one umbilical cord, which was of large size and inserted very low down in the abdomen between the two children, as will be seen by the sketch. The union by the chest and abdomen is perfectly solid and of the entire thickness of the bodies, which, as I have understood, is the case with the Siamese twins, by mere fleshy elongations. The body is rather wide, being almost the width of two fœtuses. One peculiarity of the mother is, that she has remarkably dark and wavy hair, with somewhat the Ethiopic stamp; and this is strongly shown on the head of the monstrosity, which has a considerable covering of the same kind of hair. I have not made any *post-mortem* examination in this case, as I wished to preserve the formation entire. I am therefore unable to give you any anatomical description of the internal parts; but I may just add, the genital organs and anus on each I deem perfectly normal in their appearance.

As to the question of any supposed cause for the production of these irregularities, the formative process naturally suggests itself to the mind when these occurrences happen. In this case nothing unusual occurred to the mother during her pregnancy, except that on one occasion, when about four months gone, she was much alarmed by a cat suddenly and unexpectedly jumping upon her; and when she was informed, some time after delivery, that there was something unusual in the birth, she exclaimed she was sure it was a cat she was confined with. The influence of imagination on the fœtus in utero is still a *vexata questio*, and one on which I am disinclined to express any positive opinion; but in the majority of cases where malformations occur, there is some unusual impression existing on the mind of the parent that things will not be quite right at birth.

North Leach, Gloucestershire, 1864.

ADDENDA.

THERE is another class of facts which seem referable to the same category, that, namely, which exhibits the influence of a male parent upon the subsequent offspring of a different parentage, as in the well known case of the transmission of the Quagger marks to a succession of colts, both whose parents were of the species horse, the mare having been once impregnated by the Quagger male; and in the not unfrequent occurrence of a similar phenomenon in the human species, as when a widow who marries a second time bears children strongly resembling her first husband. Some of these cases appear referable to the strong mental impression left by the first male parent upon the female. (*Carpenter's Physiology*, page 970.)

The following statement may be relied upon as being authentic:

In the year 1845 a menagerie arrived at Mr. Dorsimer's Hotel at Buffalo. The elephant belonging to the exhibition was placed in a shed in the yard, in close proximity to a sow, at the time undergoing the process of gestation. It appeared the attention and equanimity of the latter were at once attracted and disturbed by the appearance and presence of the former. At the proper period the sow farrowed, when, to the amazement of the habitués of the hotel, the young pigs presented probosces the length of their bodies, thus resembling young elephants. Doctor White, Professor of Obstetrics in the University of Buffalo, gave the particulars of the circumstances alluded to in the above narrative in a paper read before the Erie Co. Medical Society, and Professor Bedford, of this city, has a specimen or preparation of one of the pigs in his museum.

COMMUNICATED BY DOCTOR BERNARD SHERIDAN.

I have known, for years, a beautiful horse, color white as milk, save the place of the saddle, which was the color of a new saddle, with stripes of the same color on the neck, like the reins of a new bridle. The cause of this strange but beautiful phenomenon was a runaway white horse, caparisoned with a new saddle and bridle, whisked rapid and near the dam whilst being served, which caused her to fret and start at the time.

CURIOUS ILLUSTRATIONS.

The following extracts, with the plates annexed, are copied from a learned work entitled, *Georgii Simonis Winteri de Aldlersflugel Tractatio Nova et Auctor de Re Equaria. Complectens partes tres. Nuremberg, Anno Mundi MDCCIII.*

CHAPTER XVI.

ALTERA DIGRESSIO DE MONSTRIS EQUINIS.

Monstra, id est partus monstrosi, quemadmodum inter homines alteraque animalia, ita et inter equos sæpenumero nasci solent.

Circa monstra vero duo potissimum dubia occurrunt. Unum, quare, alterum quomodo generentur?

Causa primaria, ad inscrutabilem Dei Ter. Opt. Max. (qui omnis naturæ auctor est) providentiam, absque controversia referenda est, attamen, cum, ut dicitur, Deus et natura frustra nihil agere soleant, peculiare, quid prodigiosis hujusmodi nativitatibus videtur innuere. (Folio 128, G. S. Winteri.)

Quomodo et qua occulta vi operante monstra progenerentur, varii varie sentiunt: alii virtuti imaginatrici, in ipso conceptionis instanti attribuunt, maxime si equa quidpiam quod fœtui assimilatur eo tempore conspexerit; Quod sane verisimile est vel ipsa teste experientia; equæ namque si quatuordecim ante admissuram diebus, pictura, desideratæ formæ et coloris equum repræsentans, quoadusque equire incipiat, objecta fuerit, admissarium vero, sive verum, sive probaticum non videat unquam, nisi pannis depicto equo concoloribus cooperatum; tempore coitus vero vel maxime picta illa proponatur effigies, quo illius contemplatione species phantasiæ altius imprimat: quæ deinceps per alterum duarum hebdomadarum spatium, usque ad secundum experimentum, objectetur: post octimestre denuo, imo usque dum pariat; apparebit sane, pullum, quem editura est, coloribus in pictura expressis fore conformem. (*G. S. Winteri*, folio 134.)

Non minus insigne naturæ portentum fuit Equus Julii Cæsaris primi Romanorum Imperatoris, Asturcus nomine, qui pedes quasi humanos habebat, ungulasque ad digitorum formam findebat (Vid. Fig. 21); ab hoc, cum pullus esset, vaticinati sunt augures, fore, et que hujus equi, simul et Romani orbis Imperator fieret (fol. 132).

Fig. 21.

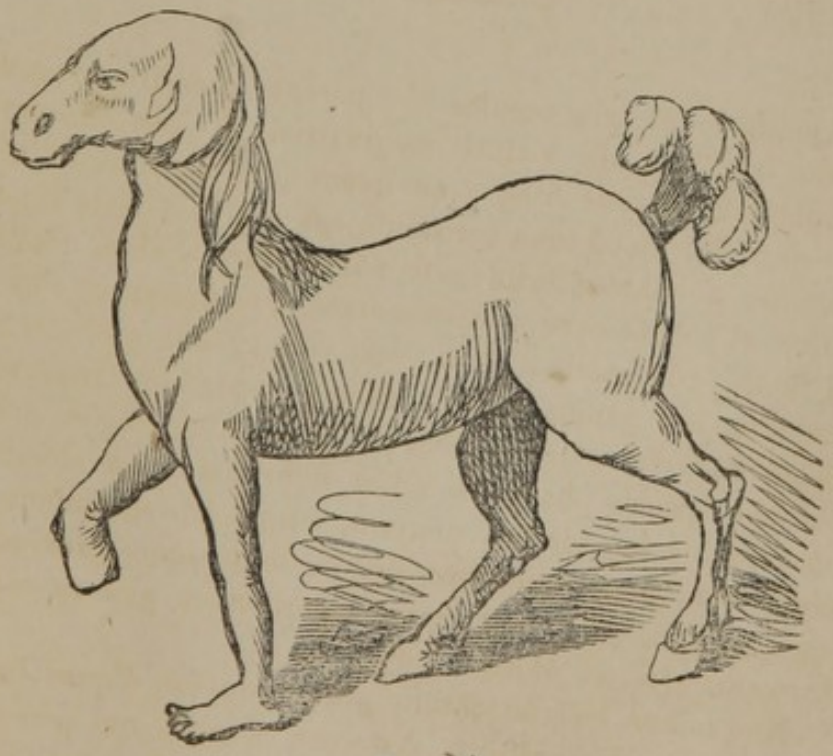

Fig. 27.

Pullus iste in quadam Pomeraniæ equaria, nomine Rechovo Anno 1554, natus est; supervixit dies tres. Vid. eundem fol. eodem (Vid. Fig. 27) fol. 138.

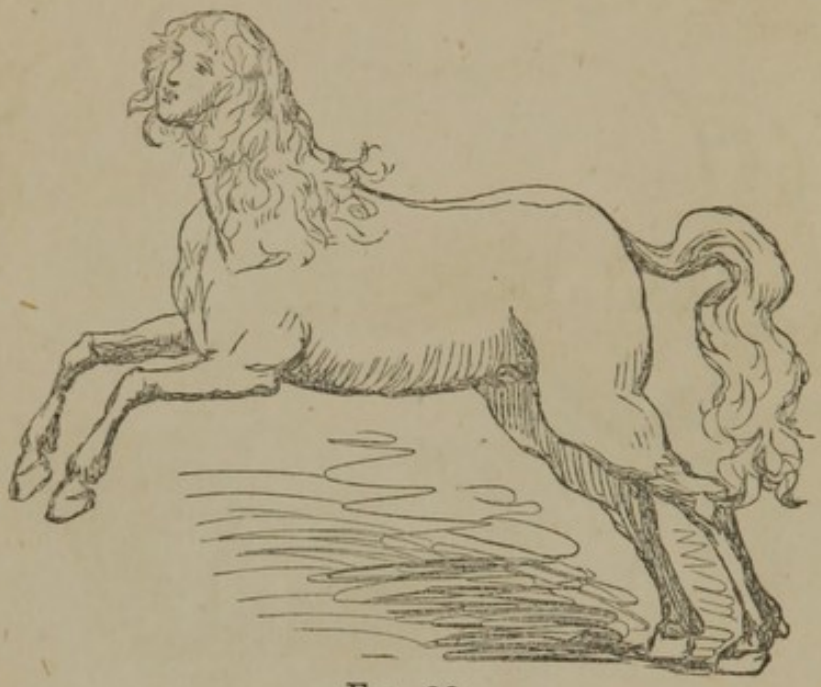

Fig. 22.

Pullus iste Anno Domini 1254 in agro Veronensi natus est, humano prorsus capite, cætera equus. (Vid. Fig. 22, fol. 136.)

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