

## SOME OBSERVATIONS ON APNŒA NEONATORUM.

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THE phenomena of still-birth (excluding the cases of immaturity, morbid action, or atrophy, in the fœtus) are, therefore, ordinarily due to the excessive action of a cause which operates in every labour. That cause is the suspension of the communication between the maternal circulation and that of the placenta, produced, except in those rare cases in which, at an early period of the labour, extensive separation of the placenta takes place, by the closure of the curling arteries of the uterus by the uterine contractions. The blood in the placental capillaries, as has been said, no longer changed by the influence of the arterial blood of the mother, ceases to move onward; the umbilical circulation is in consequence suspended; the aorta of the fœtus becomes congested; and the ventricles of the fœtal heart being in consequence over-distended, their contractions become slower and slower, and finally cease.

To this explanation it may, perhaps, be objected that the circulation through the cord cannot be suspended, inasmuch as it is still felt to pulsate, although slowly. But the beating of an artery under the fingers is, *per se*, no proof that the blood is passing through it. Tie the navel-string of a child just born, and, although pulsation at once ceases beyond the ligature, yet, between the point tied and the navel, it is for a time as vigorous as ever. A similar phenomenon, viz., pulsation in a part only of the cord, has often been observed where it was not tied. It is difficult to understand how accurate observers, like the late Dr. Denman, could remark that "the pulsation of the cord, when left untied, first ceases at the part nearest the placenta, and then by slow degrees nearer and nearer to the child, until it entirely ceases," without understanding the lesson which such a fact teaches, viz., that what has been mistaken for circulation through the cord is, in reality, nothing but the vibration communicated to the otherwise motionless columns of blood in the funic arteries by the contractions of the fœtal heart.

Again, it may be asked, why ascribe the whole effect to the compression of the curling arteries, and not, in accordance with received opinions, to pressure on the whole mass of the placenta, on the funis, or on the fœtus itself? To this it may be replied: that the cause assigned is quite sufficient to account for the phenomena, and that it is unphilosophical to seek for superfluous causes. Pressure on the placenta may act in a secondary way, but the first effect must, it is self-evident, be on the ultimate ramifications of the uterine arteries.

I have already referred to the stoppage of the placental circulation by compression of the funis previous to labour. After the commencement of parturition, the same cause may operate in aid of the compression of the uterine bloodvessels. When the cord is round the child's neck, and, after the delivery of the head, begins to be put on the stretch, the sides of its vessels must be made to approximate, not only by pressure against the child, but also by the extension to which they are subjected. The resistance to delivery caused by the cord calls forth more violent expulsive efforts of the uterus, by which the uterine arteries are more effectually closed. Some separation of the placenta also occurs, and the effect of these causes being still further intensified by the compression and stretching of the funis, which forces back the blood which its arteries contained, into the bloodvessels of the child, the action of its heart is the more impeded and its contractions become slower and slower, and, if the obstacle to delivery be not removed, finally cease. In the last case of this kind which I at-

tended, I was able, before cutting the cord, to count the pulsations of its arteries. I found them to be rather less than four in five seconds, or about forty in the minute; and yet the child, which was born almost instantaneously after its liberation from the restraining noose of cord, cried lustily before its lower limbs escaped from the vagina, and gave every other sign of vigorous life.

Compression of the head or trunk of the child probably has, in instances of tedious labour from contracted pelvis, or in preternatural presentations, its share in producing the phenomena of still-birth. But this cause cannot have acted when the child is still born, after an unusually rapid, and therefore easy, labour. This pressure, moreover, ends with the birth of the child, but the apnœa continues. That the phenomena then exhibited can be due only to the congestion of the heart, is proved by the change taking place on the establishment of respiration. With the first full inspiration the pulsation of the cord, which was 60, 70, or at most 80, in the minute, rises once to a rate of 120 or 130, the surface, which was dead pale, assumes the rosy hue of health, and the child cries and moves its limbs vigorously.

The explanation now attempted to be given of the phenomena of apnœa in newly born children, would be incomplete if another point were not referred to. The stoppage of the placental circulation, while it prevents the escape of blood from the body of the fœtus by the arteries of the cord, prevents also the entry of blood in the vein. One obvious effect of this is the loss of the vitalising influence of the maternal blood upon that of the child. As the whole of the freshly arterialised blood conveyed by the ductus venosus, is carried direct to the left ventricle, and thence to the brain, when the circulation through the cord is suspended, the brain suffers in two ways. Not only is the blood, in consequence of the oppressed and enfeebled state of the heart, sent to the brain with less force, but it is supplied of a deteriorated quality, and the nervous centres are thus rendered unable to furnish the heart with the necessary supplies of nervous energy; hence the state of the child is that of asthenia, and, at least partial, syncope. This, of course, is true only of the purely apnœal, or apparently anæmic, forms of still-birth. It is very different in the apoplectic variety. In that form, respiration has to a small extent been performed, and has again been suspended. By one or two more or less imperfect inspirations, the pulmonary tissues have been sufficiently expanded to cause a part of the blood sent from the right ventricle to pass through the pulmonary arteries. The current through the canalis arteriosus has thus been diminished, and the pressure on the left ventricle to the same extent relieved. It has, in consequence, begun to contract with greater force and frequency. At the same time blood has, in greater quantities, been returned from the lungs to the left auricle, by which the valve of the foramen ovale has been closed, the necessary consequence of which closure, when respiration has again, from any cause, been suspended, has been congestion of the right side of the heart, and of the general venous system. Hence the lividity of the surface, and the swollen features, the truly comatose state from cerebral congestion, and the occasional occurrence of sanguineous effusions within the cranium, or under the scalp. Notwithstanding this congestion of the right side of the heart, the left ventricle continues for a time to contract with its newly acquired frequency.

Before adverting to the practical considerations arising out of the subject before us, one or two further observations may be made.

The explanation given of the way in which very rigid labour becomes dangerous to the child will also account for the alleged effects of the secale cornutum. It is asserted by some writers that that drug has often been fatal to the child: it can only have been so by causing, in accordance with its mode of action, permanent, unresting contraction of the uterus, instead of

the intermittent action of natural labour: unless we also believe it to be in part due to the poisonous influence of the secale on the child.

We thus also learn the true mode of the production of the quasi-comatose condition of the foetus during parturition, which has been described by writers as a useful provision of nature for the protection of the soft parts of the mother from the too lively movements of the child while passing through them.

It is thus also explained how it has been possible for doubts to arise as to the breathing function of the placenta, because of the want of apparent difference between the blood in the umbilical vein, and that in the arteries of the cord. The comparison can, during the life of the mother, be made only when by the uterine contractions, the funis has been brought within reach of the eye and hand of the observer. If, as maintained in this paper, the effect of, even the earlier pains, is to stop the supplies of arterial blood to the placenta, that contained in the umbilical vein must, by the time it can be examined, have become almost, if not quite, as venous as that in the arteries of the cord. But were it possible in the last months of pregnancy, but before the commencement of labour, to inspect the interior of the uterus and especially the placenta, and the contiguous part of the uterine wall, and were our vision sufficiently piercing to pass through the coats of the vessels, we should see a marked difference between the contents of the arteries and those of the vein.

Do we not, finally, thus obtain the true answer to a question to which so many different replies have been given, viz.—why a child first breathes? Can it be doubted that it is the congested condition of the aorta of the foetus, and consequently of the ventricles of its heart, caused by the cessation of the current through the funic arteries, and the *besoin de respirer* thus produced, which, conveyed to the nervous centres, excites them to send back to the muscles of respiration the stimulus which rouses them to act? Dr. F. Ramsbotham, who, in appendix L of his valuable work, has collected nearly all the various theories propounded on this subject, finds fault with them all, and in particular objects to that which I have adopted (which is substantially that of Blumenbach), that “the sense of suffocation produced by the closure of the umbilical vessels” cannot be the cause of the first inspiration, “because the child breathes and cries before the circulation through the umbilicus is suspended.” But it has been shown that mere pulsation of the umbilical arteries is no proof that the blood continues to pass through them, and therefore that objection falls to the ground.

[To be continued.]

**AN IGNORANT AND PRESUMPTUOUS PUBLIC.** We observe, with surprise as well as pain, that the public still entertain so many erroneous notions on the subject of insanity generally, the government of asylums, and the treatment of their inmates. They seem to think that no one should be interfered with, however marked may be their peculiarities or inconsistent their acts, until self-destruction is attempted or murder committed. We have ourselves known instances of individuals who have committed the grossest acts of folly, squandered their money, and reduced their families and themselves to the verge of ruin, and who had all the distinctive characters of legal insanity, in behalf of whom there were always to be found those—professional as well as non-professional—ready to contend in opposition to the most satisfactory evidence to the contrary, that they were of sound mind, because, forsooth, they could not discover the unsoundness, or wilfully shut their eyes to all the symptoms which were evidence of insanity and called for legal interference. (Dr. Pritchard's *Report on Cases of Insanity*.)

## Transactions of Branches.

### EAST YORK AND NORTH LINCOLN BRANCH.

SEQUEL TO A CASE OF VESICO-VAGINAL FISTULA REPORTED IN “THE LANCET” OF APRIL 19TH, 1862.

By KELBURNE KING, M.D., Surgeon to the Hull Infirmary.

[Read May 22nd, 1862.]

MARY DAVIS, aged 43, was admitted into the Hull Infirmary on October 10th, 1861; and, from her own evidence and other testimony, the following history of her case was obtained.

About seventeen years ago she had her first and only labour; it lasted thirty-six hours, and was terminated by delivery being effected by means of the forceps. This was followed by severe inflammation of the vagina, which led to extensive sloughing of the parts; and, when cicatrization finally took place, she had no longer any power of retention of urine, which came dribbling away by the vagina, from which also there frequently passed a portion of the contents of the rectum. In this condition she became an inmate of the Brigg Workhouse, and remained there for about sixteen years, being prevented by her condition from following any active laborious employment, but not usually suffering any pain. To this freedom from pain an exception took place on at least one occasion about four years after her admission to the workhouse, when, after much suffering, a calculus, which she described as about the size of an apricot-stone, was discharged *per vaginam*, and her painful symptoms at once relieved.\* Nothing of note presented itself in her history from that time till the month of April 1861 (not 1860, as reported in the *Lancet*), when she was admitted into the London Home, under the care of Mr. I. B. Brown, and underwent an operation, or rather a series of operations, carefully described in the number of the *Lancet* for April 19th, 1862, and which had for their object the complete closure of the vaginal orifice and diversion of the stream of urine into the rectum, where, the action of the sphincter being unimpaired, it would be retained, and the stercorid urine under which she had so long laboured be remedied. This operation was completely successful in the object for which it was undertaken; and that, as may be seen from the report in the *Lancet*, in spite of very decided opposition on the part of the patient.

The cause she assigned for applying at the Hull Infirmary was, that her condition (which, though sufficiently deplorable before, had been usually free from active pain) had since the operation become greatly aggravated by continual uneasy and painful sensations about the anus and rectum, accompanied by constant desire to strain, heat and excoriation of the surrounding integument, and, in fact, incessant suffering, rendering her life perfectly miserable.

On examination, the perinæum was found effectually restored, only one very minute fistulous opening existing about half an inch in front of the anus, into which an ordinary probe could with difficulty be passed, and from which hardly a drop of urine flowed; the orifices of the vagina and of the urethra were totally effaced. On passing a speculum into the bowel, a gush of mingled urine and faeces took place; and, about two inches above the anus, there was found an opening which admitted the point of the finger, and from which the

\* Mr. Morley, of Barton, who was present at the meeting, knew of this case, and stated that several calculi had been discharged at different times from the vagina.