

also very soft. The arachnoid membrane easily broke down on pressure. The arachnoid lining of the left ventricle was thicker and tougher, and contained a rent, through which a purulent substance, perfectly diffuent, poured out. On cutting through this, the substance underneath was found to be infiltrated by the same sort of diffuent matter, and traversed by cellular bands in the substance of the corpus striatum. On exposing the whole of the diseased part, a cavity was found with very tough and rough parietes. The left communicating branch of the circle of Willis seemed to be three times as large as natural.

[To be continued.]

Original Communications.

SOME OBSERVATIONS ON APNŒA NEONATORUM.

By GEORGE GREAVES, Esq., Lecturer on Midwifery, Manchester Royal School of Medicine and Surgery.

[Concluded from page 36.]

I MUST now hasten on to make a few remarks on the treatment of children in whom respiration does not ensue immediately on birth. A large volume would not contain all the instructions given with this view, by writers, ancient and modern. A few of them only can be noticed.

Nearly all agree in forbidding the division of the umbilical cord until respiration is fully established. Some recommend us to wait until even the pulsation in the cord shall have ceased. These instructions both imply the belief, that fetal or intra-uterine life continues so long as the pulsations in the cord are felt; in other words that the breathing function of the placenta is performed, at least until that of the lungs is fully established, if not afterwards. If the reasonings in the former part of this paper are not incorrect, this opinion must be declared to be an erroneous one. It has, I think, been shown to be in the highest degree probable that the movement of the columns of blood in the vessels of the cord is permanently arrested at the moment of birth, if not before that event. But, granting this conclusion to be incorrect, if the communication between the child and the placenta, is to be maintained for the purpose of supplementing the not yet begun, or the still imperfectly performed, function of the lungs, it must be so maintained because the placenta still retains its power of action as a respiratory organ. But can we, with our present knowledge of the structure and functions of the placenta, and of the change which parturition must produce in its relations to the uterus, for one moment hold such an opinion? In an immense proportion of instances, the uterine contractions which expel the child detach the placenta in its whole extent. But even if a portion still remain adherent, the arteries which convey the blood of the mother into the sinuses of the maternal portion must, by the contractions which have extruded the child, have been entirely closed, and consequently the blood remaining in the sinuses must be venous blood, altogether incapable of effecting any vitalising changes in that contained in the fetal tufts. Therefore, supposing the current of blood to flow freely through the umbilical arteries, and the capillaries of the placenta, it must be returned by the vein unchanged. What, therefore, can be the advantage of maintaining a connection between the child and a placenta lying loose in the vagina, or if not altogether detached, retaining no arterial communication with the mother. The recommendation to maintain it can only be regarded as a lingering trace of the old-fashioned notions which attrib-

ted to the placenta some mysterious power of inherent vitality, notions which prompted the counsel to "put it into warm water and to sprinkle its maternal surface with a little ammonia and spirit," a prescription which to my amazement, I have found gravely repeated in the third edition of *Memoranda for Young Practitioners in Midwifery*, by the late Dr. Rigby, published in 1856.

Therefore, to preserve the connection between the newly-born and semi-inanimate child and an *effete* and almost lifeless mass such as the placenta has then become, whether we believe the circulation to continue through it or not, must at least be useless. But is it not positively injurious?

Will it not, in the first place, interfere with our efforts to resuscitate the child, and if the funis be at all shorter than natural, and the placenta be still wholly or in part retained within the uterus, endanger the mother by causing a risk of injurious jerks upon the cord?

But, secondly, what is our first duty in a case of delayed respiration? Unquestionably it is to sustain the action of the child's heart until it begins to breathe. Why then should we impose on the heart the profitless labour of sending the blood through the long round of the placental circulation, or even of attempting to make it go that round? By breaking the communication with the after-birth we on either supposition economise the child's strength.

But, thirdly, the retention of the communication between the child and the placenta must be in the highest degree prejudicial, by preventing the use of that mode of treatment which, of all others, I hold to be necessary for the resuscitation of a still-born child. If the delay in performing the first act of breathing, and the threatened extinction of life, be due to the enfeebled condition of the heart, and if that enfeebled condition be the consequence of an excessive degree of that which, at birth always to some extent exists normally, viz., the congestion of the aorta, caused by the cessation of the placental circulation, it is self-evident that the first step to the restoration of the balance of the circulation must be the removal of a portion of the load which oppresses the heart. This can best be effected by allowing bleeding to a small extent, from the divided extremities of the umbilical arteries. It is astonishing how small a loss of blood is sufficient for the purpose.

In a class of cases to which I have already referred, and which have so frequently a fatal termination, those, viz., in which the funis surrounds the neck so tightly, both as to prevent respiration, and impede delivery, I am in the constant habit of liberating the child by treatment which involves some loss of blood. If I can neither, without much force, slip the cord over the head, nor over the shoulders of the child, I divide the cord, and then somewhat expedite the delivery of the trunk. Bleeding to the extent of one, two, or three drachms, always occurs. Now if, as in the instance already referred to, the child's heart can be so oppressed as to be feebly beating forty times only in the minute, and yet the child when liberated from the vagina, can on the instant breathe, and cry, and move its limbs actively, can we doubt that this marvellously sudden change is due, in the first place, to the relief of the heart by the bleeding which takes place from the divided funis? In every instance then, in which a child does not breathe at birth, and in which it is not really and manifestly asthenic, from prematurity, innutrition, or disease, I would, after a pause of two or three minutes, advise that the cord be divided, and from one to three drachms of blood be allowed to escape before tying it. In cases of the apoplectic form of still-birth, more than this may have to be removed.

The next step must, of course, be to endeavour to excite respiration. Barely to enumerate the various modes of doing this, recommended by authors, would too much extend this paper, already too long. I can refer to two or three only. The use of the warm bath I believe to be

positively injurious. Any doubt previously existing on this point must have been removed by the observations of Dr. Waters, recently communicated to the Medico-Chirurgical Society. Dashing cold water on the chest, slapping the back or nates with the hand, or making circular friction with the tips of the fingers on the epigastrium, are all useful modes of treatment, and the last named I have rarely found to fail if the action of the heart had not altogether ceased. Dr. Marshall Hall's "Ready Method" has been highly extolled by some writers, but, should the treatment already recommended have failed, I should trust rather to direct imitation of the function of respiration by alternate inflation of the lungs by the mouth, and expulsion of the air by pressure on the chest and abdomen.

The early division and tying of the funis in still-born children has already been advised by writers of deserved celebrity, but by none, I believe, for the reasons assigned in this paper. Thus the late M. Moreau advocated it on the ground that the child, continuing to give out blood by the umbilical arteries, became gradually more anæmic and weaker. It seems to have escaped even him, that the beating of the cord is no proof that the blood is flowing through it. Dr. Richard King, in his very ingenious essay *On the Preservation of Infants in Delivery*, recommends the early tying of the cord, for a reason similar to that given by M. Moreau. He believes that after the birth of the child a drain of blood still goes on into the relaxed and uncompressed placenta, which in consequence becomes congested. And yet Dr. King came very near to the discovery of the fact which I have pointed out, viz., that pulsation of the cord is no proof of continuance of the circulation through it, for, at page 30, he says, "pressure on the umbilical cord will not for a considerable time, stop its pulsation. I have long been in the habit of calling attention to the pulsation in the piece of umbilical cord attached to the infant, while sitting in the nurse's lap, and therefore not only compressed but tied with tape and cut asunder."

Dr. King rightly describes the condition of still-born children who have not to some extent respired in the act of birth, as one of syncope, but his error consists, I conceive, in attributing the partial suspension of the heart's action to loss of blood, rather than to the causes assigned in this paper. The cases to which he refers (p. 58) of "deaths from drowning, where persons have fainted at the moment of submersion, in whom the face is pale and bloodless, and the features sunk and contracted," should have reminded him that an exsanguine appearance may exist without the previous loss of one drop of blood. As has already been shown, the ordinary signs of death by what is called asphyxia, being consequent on the suspension of respiration, can never be manifested in a being, in whom that function has never been commenced. I may add that my experience has led me utterly to disbelieve in Dr. King's theory of bleeding into the placenta, as evinced by congestion of that organ. In many hundreds of cases attended during the last five-and-twenty years, I have, after cutting the funis, left the extremity of the placental portion untied, and allowed it to bleed into the utensil provided for the reception of the after-birth, but I cannot remember an instance in which an ounce of blood so escaped. Were the congestion so great as imagined by Dr. King, bleeding, at least passive, to a much greater extent, would, in cases of still-birth surely have occurred.

In what has now been said, I am aware that I have advanced many opinions which are debateable, and some, perhaps, which will be thought positively erroneous. Where the latter has been the case, I shall be thankful to be set right, and shall be satisfied with having attracted the attention of my brother obstetricians to a field of research, hitherto, in this country, too little cultivated. I conclude with a brief recapitulation.

.. I maintain then :—

1. That the effect of even the earlier labour-pains is to close the ultimate ramifications of the uterine arteries; but that this closure is temporary only, and ends with the termination of each pain.

2. That, during the pains, the blood contained in the sinuses of the maternal placenta, not being renewed by fresh supplies of arterial blood from the curling arteries, cannot effect the needful changes in the foetal blood in the placental tufts.

3. That the blood contained in the tufts, remaining venous, stagnates in their capillaries, and that the umbilical circulation is thus arrested.

4. That as a consequence of this arrest, the aorta of the foetus and the ventricles of its heart become congested, and at the same time the brain ceases to be supplied with arterIALIZED blood.

5. That, consequently, the rate of pulsation of the foetal heart sinks nearly to half its normal frequency.

6. That, if these periods of lowered force of the foetal circulation occur too frequently, as in tedious labour, or too closely together, as in very hurried parturition, the child may be born almost or altogether inanimate.

7. That the effects of the suspension of the breathing function of the placenta are intensified by pressure on the funis, or on the head or thorax of the foetus.

8. That where there is not some mechanical obstruction to respiration, such as tenacious mucus in the fauces, or the membranes over the face, the efficient cause of still-birth is an excessive degree of a condition which at birth always prevails normally, viz., congestion of the foetal heart, which is to be relieved, first, by bleeding from the cord, and, secondly, by exciting respiration.

9. That the difference between the syncopal and apoplectic forms of still-birth, is that in the latter there have been imperfect acts of respiration which, by closing the foramen ovale, have caused general venous congestion.

Since I read the above paper, my attention has been called by my friend Dr. Samelson to a work by Dr. Hermann Schwartz, of which a very elaborate analytical review is given in the 13th volume of the *Monatsschrift für Geburtskunde*, pp. 304 *et seq.* Treating on the state of the foetus during parturition, Dr. Schwartz remarks, "an erroneous opinion has prevailed up to the latest period that after the birth of the child the placental circulation continues so long as the cord is felt to pulsate. But the contraction of the uterus which expels the child from the vagina must, to the uttermost, restrict the supply of arterial blood to the placenta, and either altogether detach it or close any of its vessels which still remain pervious." I need scarcely remark how closely these opinions agree with those which I have advanced. In respect of treatment also in cases of still-birth, I am happy to find an agreement. Dr. Schwartz says: "before tying the navel-string, it is useful to let it bleed a little."

CASE OF SUPPOSED HYDROPHOBIA.

By HENRY PORTER, M.D., F.G.S., Peterborough.

JAMES HOWLETT, aged 58, a game-keeper and dog-breaker, called at my surgery on the evening of May 31st, complaining of an aching pain in his body and limbs, with inability to open his mouth, which symptoms he attributed to getting wet through and catching cold while in a state of drunkenness. Before leaving my surgery, however, I learnt that he had been bitten by a dog on the wrist four days previously, and he wished to know if that had been the cause of his lock-jaw.

I prescribed for him a draught, containing a grain of morphia, to be taken immediately; and a second one, to be taken six hours afterwards, if he did not sleep. I told him not to fear the bite of the dog, but to call on me the following morning. When he had left my surgery, I took the opportunity of calling on a man who