

employed in this as in the former case; but there was much greater difficulty in moving the bowels; and no effectual evacuations were procured until an injection of turpentine had been administered.

In such cases, success depends on the activity, energy, and promptitude of the treatment.

ARTICLE V.—*On the Fœtal Circulation.* By WILLIAM MACDONALD, M.D., F.R.S.E., Lecturer on Anatomy, Edinburgh.

HAVING long doubted the correctness of the received explanation of the circulation of the fœtus in utero, the following is submitted to the consideration of anatomists.

The mode of the circulation of the human adult, being both pulmonic and systemic, has in some measure rendered the explanation of the utero-fœtal circulation confused in its anatomical details; but if it be viewed physiologically in its vascular structure and form, considering the heart and the pulmonic circulation in abeyance, compared with its breathing condition, it will at once be seen to consist of a single system of arteries and veins originating and terminating in the smallest continuous tubes expanding into larger trunks. The utero-fœtal circulation may be physiologically considered as analogous to the aquatic or ichthyo-branchial circulation, where the placenta may functionally represent the analogue of the deciduous branchiæ of the aquatic animals.

The aeration of the blood in the fœtus need not be considered so complete as in the breathing adult; still the blood, after it has been diffused throughout the whole body by the aorta, its branches and capillaries, for the growth and nutrition of the fœtus, and collected by the minute ramuli of the venous system, may be so altered as to require the transmission through some organ to prepare it for renewing and continuing its course through the vascular system. The pulmonic systems within the fœtus being dormant, some other expedient must be found; and this seems to be afforded by the placenta. As in the adult, so in the fœtus, the whole blood distributed by the aortic system is at last collected into the superior and inferior venæ cavæ, to be transmitted through the ærating organ—the placenta. The visceral portion, by its partial circulation being heparised, is then blended in the ductus venosus with the blood from the rest of the body in the united trunk of the venæ cavæ. From this point the circulation may be described as commencing, the heart being considered as a mere receptacle for a portion of the blood, affording, as it were, an elastic apparatus or pump, the blood in the great hemal trunk must find another channel. The flow through the superior cava meets the current of the inferior cava, and by the umbilical vein leaves the fœtus at the umbilicus in its course to the placenta, where it is exposed in sinuses to the maternal blood, in which the loops of the

umbilical vessels are bathed, in the manner pointed out in the Edinburgh Medical and Surgical Journal, vol. 55, by Dr Reid, the eminent physiologist of St Andrews. After this, the aerated or placentized blood is transmitted through the umbilical arteries into the foetal iliacs and aorta, where its course in the great trunk is in a direction contrary to that in the adult; but the current, in all its branches, is the same both in the adult and utero-foetal condition. Thus the whole of the blood, circulating through the foetus, is transmitted through the placenta, whereas in the usual and received description, only a very small portion of it, in the same condition as that employed for the growth of the foetus, is sent through the placenta, while all the impure or altered blood is poured into and mixed with the current in the heart, and sent to nourish the body. In such an intricate subject, so far beyond actual demonstration by examination of the actual circulation in the living human foetus, it is necessary to consider how it may be most rationally explained, and the sketch now submitted seems liable to the fewest objections.

Part Second.

REVIEWS.

Nuisances in Edinburgh, with Suggestions for the Removal thereof, addressed to the General Commissioners of Police. By ALEXANDER MURRAY, Inspector of Lighting and Cleaning. 8vo. pp. 29. Edinburgh, 1847.

Unhealthiness of London, and the Necessity of Remedial Measures. By HECTOR GAVIN, M.D., Fellow of the Royal College of Surgeons of Edinburgh; Lecturer on Forensic Medicine at Charing Cross Hospital. 8vo. pp. 69. London, 1847.

THE reports of the Commissioners for inquiring into the state of the large towns and populous districts in England and Wales, which have now been for two or three years before the public, present a state of things as respects cleanliness hardly credible in a country pretending to civilisation—still less in a country so remarkable for the outward appearance of propriety and comfort as England at large. These reports exhibit in Manchester, Liverpool, Bristol, Leeds, Hull, Sheffield, Birmingham, Norwich, Nottingham, and many other towns of note, such an accumulation of nuisances as one would think Constantinople or Cairo could hardly parallel. But sewerage, polluted streams, stagnant waters, cesspools, dunghills, slaughter-houses, pigstyes, defect of scavenging, damp and crowded