emaciated, but very anæmic in appearance. The abdomen greatly distended with gas and ascitic liquid. Old adhesions obliterated entirely the right pleural cavity. There was no liquid effusion. The pericardium was normal, but contained about five ounces of clear fluid. There was slight thickening of the mitral valve and shortening of the cordæ tendinæ, allowing regurgitation. The right lung was collapsed, the pleura much thickened by plastic exudation and the seat of tuberculous formation. A moderate amount of gray miliary tubercles were found scattered through the substance of the right lung. The left lung also contained a number of gray tubercles, but not as many as the right lung, and without plastic pleurisy.

"The peritoneal cavity contained two quarts of straw-colored liquid. All parts of the peritonæum presented gray tubercles. There were old adhesions in many parts, particularly in the lumbar region around the mesentery and pancreas, matting together the viscera. This new-formed mass was crowded with tubercles. The lymphatic glands were moderately enlarged but not cheesy.

"The liver was normal, its capsule studded with tubercles, but no tubercles were discovered in the parenchyma. The spleen was covered with tubercles, but none inside. The kidneys showed signs of an early stage of chronic parenchymatous nephritis, but this certainly had not advanced far enough to cause alteration of the urine, for this was carefully examined a number of times with negative results.

"The brain was normal, only a few gray tubercles being found in the Sylvian fissure. There was about sixteen ounces of serous effusion."

Original Articles.

CONCERNING THE ÆTIOLOGY AND PATHOLOGY OF HYDRAMNIOS.¹

BY CHARLES M. GREEN, M. D.

SINCE writing the paper² which I read to this Society in February last, wherein I sought to formulate the present knowledge of the origin and pathology of hydramnios, I have met with another contribution to our knowledge of the subject by Dr. Nieberding of Würzburg, who has recently observed and carefully recorded³ two cases.

In the winter of 1883 Nieberding observed hydramnios in a case of twins from one ovum which he reported in a monograph entitled *Beitrag zur Kenntniss der Genese des Hydramnion*. In this case not only was one twin more developed than the other; but there was a considerable effusion in its cavities and great œdema of its whole body: hydramnion existed in only one of the amniotic sacs, and that one contained the larger fœtus. The placenta was single, and that part of it which nourished the larger fœtus was of greater size and was in a high degree infiltrated with serum. The pregnancy terminated at the end of the sixth month, and while the smaller fœtus showed no anomaly except a certain hyperæmia, examination of the larger fœtus disclosed a considerable hypertrophy of the heart and kidneys, and great infiltration of all

the organs with red and white blood-corpuscles. The hypertrophy of the heart was chiefly of the left side.

If now the question is asked, says Nieberding, to what causes are to be attributed the pathological increase of the liquor amnii of one sac and the dropsy of the fœtus contained in this sac, it must be answered that it is possible that an increased transudation from the maternal blood-vessels might have been the causal factor. Since, however, originally the size and presumably the permeability of both embryos were approximately the same, there is no reason why one sac should be thus filled and not the other. The idea that the vasa propria of one part of the placenta contribute conspicuously to increase the amount of the liquor amnii over and above the same vessels of the other part Nieberding says must be abandoned, since it was established by microscopical examination in this case that the chorionic capillaries were equally developed on both parts of the placenta and that those of the hydramnic part, instead of remaining patent longer than usual, were in great part obliterated. Nieberding therefore believes that the cause of the hydramnic condition of one sac in conjunction with dropsy of the contained fœtus must be sought in the circulatory conditions of this fœtus; and this belief is warranted by the pathological appearances in the present case, which were as follows: hypertrophy of the heart, especially of the left side; great enlargement of the kidneys with dilatation of the pelvis, filling of the glomeruli with red and white blood-corpuscles, and the presence of moderate blood-extravasations; considerable dilatation of the ureters and of the bladder, although the urethra was entirely permeable. These pathological changes must have their causes, and these causes were traced by Nieberding to a premature obliteration of the ductus arteriosus. The early closure of this duct must surely entail great changes in the fetal circulation: more blood must perforce enter the lungs; at the same time the blood-tension in the right ventricle must be greatly increased. On account of this tension not only would there result a backing-up in the whole venous circulation; but at the same time a greater quantity of blood would be forced through the foramen ovale into the left side of the heart, which on account of the greater demands thus made upon it to force on the increased amount of blood would hypertrophy and thus increase the tension in the arterial system. Herein, according to Nieberding, lies the explanation of all the anomalies of the affected ovisac and its contents: while the fetal œdema and dropsy were caused by the venous backing-up, which through the umbilical veins occasioned also the serous infiltration of the placenta, the increased arterial pressure resulted in an increased filtration by the kidneys, an increased diuresis: this increased amount of urine must have been evacuated from time to time, else there would have been found an enormous distention of the bladder; and this polyuria, according to Nieberding's firm conviction, must have had the most conspicuous share in the dropsical distention of one ovisac, while, on the contrary, the weakened heart of the other twin caused a lower arterial tension, a smaller secretion of urine and a minimum amount of fluid in its containing amnion.

Quite recently Nieberding has had a second instance of hydramnios in a case of single fœtation. A previously healthy secundipara, thirty-two years of age, whose first pregnancy and labor had pursued a normal

¹ Read before the Obstetrical Society of Boston, May 10, 1884.

² See vol. cxi., No. 6, page 121, of this JOURNAL.

³ Allgemeine Wiener Medizinische Zeitung, March 11, 1884.

course, and who was in the sixth month of her second pregnancy, sought advice on account of uterine hæmorrhage. Examination showed that for the time of pregnancy the abdomen was much distended, and that the position of the fundus uteri corresponded to the end of pregnancy. The fœtus was living, but was very small and very freely movable in the great amount of liquor amnii. The hæmorrhage ceased under the influence of rest and opiates. Two weeks later Nieberding found that the circumference of the abdomen had rapidly increased to such an extent that the woman was greatly distressed and had lost much strength. At the same time there was marked œdema of the legs and also of the vulva, indeed each of the labia majora had swollen to the size of a man's two fists: the fœtal heart could no longer be heard. On account of these symptoms Nieberding induced labor on the following day by puncturing the membranes: an enormous quantity of liquor amnii escaped, sufficient to fill once and a half times a large water pitcher.

The fœtus, of female sex, twenty-four hours dead before delivery, was well developed and corresponded to the beginning of the seventh month of pregnancy. On opening the abdomen the bladder showed itself greatly distended with urine and extended as high as the navel: the urethra was completely passable with a small catheter. The heart was very large and hypertrophied in its left half: it was larger than the heart of the pathological twin of the first case: the muscle was healthy and the valves normal. In the lungs, as in the first case, was observed, besides a considerable blood-cell infiltration, a large increase in calibre of the arteries with a well marked thickening of the vessel-walls. The liver was large and infiltrated with red and white corpuscles in the vicinity of the vessels. The kidneys were enlarged, and there was dilatation of the pelves and calices; the glomeruli were filled with blood-cells, and there was blood-cell infiltration of the parenchyma. The placenta was large and very œdematous and studded with a great number of large and small cysts from the size of a hazel-nut to that of a hen's egg, which were seated more or less in the vicinity of the chorionic covering of the placenta. The cord was inserted near the edge. Countless old and new blood clots, some of considerable size, were found as well directly under the chorion as on the uterine surfaces of the cotyledons. Under the microscope was observed, as in the first case, frequent obliteration of the vessels with greatly hypertrophied vessel-walls, which gave the impression of fibroid growths, which were perforated sometimes by one, but commonly by two very small vessel-openings. The cysts hung, as it were, on the vessels which were in intimate connection with the cyst-wall. Sections of these vessels at the seat of their passage into the cysts showed that an artery and a vein lay together: the artery appeared obliterated before its insertion into the cyst-wall, in order to develop itself as a cyst. The vein, much dilated and drawn out in breadth, surrounded the obliterated artery in a half circle, so as to lie smoothly over the cyst-wall. In the cyst-fluid were found countless, more or less altered red and white blood-corpuscles. Finally the vasa propria of Jungbluth were seen traversing the chorion, not in great number, but often beautifully injected.

On laying open the ductus arteriosus lengthwise, Nieberding found its lumen filled with crumbling masses which reduced considerably the calibre of the duct.

Microscopic examination showed these masses to be proliferations of the muscular coat and intima, as in the first case. He therefore has no hesitation in considering the premature obliteration of the arterial duct as the primary anomaly on which the circulatory disturbances of the fœtus and the other pathological changes depend. He also believes that the great increase in the amount of liquor amnii arose from the extraordinary increase of the secreted urine, without, however, entirely denying that other factors may have had some share in the increase. Nieberding adds that it now remains for him to examine the arterial duct of fœtuses from the same period of pregnancy where hydramnios does not exist, in order to prove whether perhaps the physiological obliteration of the duct at full term can occur in certain cases without being accompanied by so considerable anomalies of the ovum.

It does not seem to the writer, however, that Nieberding's cases and conclusions, interesting as they are, change materially the already accepted views on the pathology of hydramnios. Any pathological change in the fœtus, in the cord or placenta which disturbs the circulation so as to cause venous stasis or increased arterial tension would naturally result in dropsical effusions or increased filtration of urine: the fœtal skin and kidneys, and perhaps the umbilical cord and the chorionic vasa propria, would thus naturally contribute to increase the amount of liquor amnii. Whether the first disturbing cause is found to be in the heart, in the liver, in the kidneys, or in the placental circulation, the final result would doubtless be the same.

CRANIAL BONES OF A FŒTUS REMOVED FROM THE RECTUM.¹

BY O. W. DOE, M. D.

E. W., colored, widow, fifty-two years of age, entered the City Hospital on April 8th last, complaining only of diarrhœa. Her discharges averaged about seven in number daily and were very thin and often slightly bloody. Under the use of astringents she had but one daily, and after having been kept in bed for two weeks she was allowed to sit up. On doing so, she stated that a very full watery discharge from the rectum took place, and she had no voluntary control of the sphincter. The nurse was directed to give a laudanum injection, but found it impossible to introduce the syringe, as it seemed to impinge against a hard substance just inside the anus. My assistant, Dr. Welch, was called, and found that the obstruction was caused by a collection of small bones, one of which was removed and found to be the left temporal bone of a fœtus. By questioning her closely the following history was obtained, though she seemed somewhat unreliable in respect to dates:—

She had borne three children, the last thirteen years ago: her labors were not difficult. Ten years ago she had a miscarriage when about four months pregnant; but, as the only thing that came away resembled a piece of liver, she was not sure that it was a miscarriage. Since then her catamenia have been regular, until their cessation five years ago. About six months ago something rather hard, about the size of an orange, passed through the rectum. Since then she has had a diarrhœa, the discharges at first being accompanied

¹ Read before the Obstetrical Society of Boston, May 10, 1884.