

OUR EMBRYONIC DEVELOPMENT

would have been superfluous to these inhabitants of the water. With the inheritance of these protective coverings are closely connected two other changes in the amniotes: firstly, the entire disappearance of the gills (while the gill arches and clefts continue to be inherited as "rudimentary organs"); secondly, the construction of the *allantois*. This vesicular bag, filled with water, grows out of the hind-gut in the embryo of all the amniotes, and is nothing else than an enlargement of the bladder of their amphibious ancestors. From its innermost and inferior section is formed subsequently the permanent bladder of the amniotes, while the larger outer part shrivels up. Usually this has an important part to play for a long time as the respiratory organ of the embryo, a number of large blood-vessels spreading out over its inner surface. The formation of the membranes, the amnion and the serolemma, and of the allantois, is just the same, and is effected by the same complicated process of growth, in man as in all the other amniotes; *man is a true amniote*.

The nourishment of the fœtus in the maternal womb is effected, as is well known, by a peculiar organ, richly supplied with blood at its surface, called the *placenta*. This important nutritive organ is a spongy, round disk, from six to eight inches in diameter, about an inch thick, and one or two pounds in weight; it is separated after the birth of the child, and issues as the "after-birth." The placenta consists of two very different parts, the fœtal and the maternal part. The latter contains highly developed sinuses, which retain the blood conveyed to them by the arteries of the mother. On the other hand, the fœtal placenta is formed by innumerable branching tufts or villi, which grow out of the outer surface of the allantois, and derive their blood from the um-