

THE RIDDLE OF THE UNIVERSE

VIII. In the further development of the various tissue-forming animals from the gastrula we have to distinguish two principal groups. The earlier and *lower* types (the *coelenteria* or *acoelomia*) have no body cavity, no vent, and no blood; such is the case with the gastræades, sponges, cnidaria, and platodes. The later and *higher* types (the *caelomaria* or *bilateria*), on the other hand, have a true body cavity, and generally blood and a vent; to these we must refer the worms and the higher types of animals which were evolved from these later on, the echinodermata, mollusca, articulata, tunicata, and vertebrata.

Those are the main points of my "gastræa theory"; I have since enlarged the first sketch of it (given in 1872), and have endeavored to substantiate it in a series of "Studies on the gastræa theory" (1873-84). Although it was almost universally rejected at first, and fiercely combated for ten years by many authorities, it is now (and has been for the last fifteen years) accepted by nearly all my colleagues. Let us now see what far-reaching consequences follow from it, and from the evolution of the germ, especially with regard to our great question, "the place of man in nature."

The human ovum, like that of all other animals, is a single cell, and this tiny globular egg cell (about the 120th of an inch in diameter) has just the same characteristic appearance as that of all other viviparous organisms. The little ball of protoplasm is surrounded by a thick, transparent, finely reticulated membrane, called the *zona pellucida*; even the little, g'obular, germinal vesicle (the cell-nucleus), which is enclosed in the protoplasm (the cell-body), is of the same size and the same qualities as in the rest of the mammals. The same applies to the active spermatozoa of the