

OUR EMBRYONIC DEVELOPMENT

same structure in all vertebrates; a simple straight rod, the dorsal cord, lies lengthways along the main axis of the shield-shaped body—the “embryonic shield”; above the cord the spinal marrow develops out of the outer germinal layer, while the gut makes its appearance underneath. Then, on both sides, to the right and left of the axial rod, appear the segments of the “pro-vertebræ” and the outlines of the muscular plates, with which the formation of the members of the vertebrate body begins. The gill-clefts appear on either side of the fore-gut; they are the openings of the gullet, through which, in our primitive fish-ancestors, the water which had entered at the mouth for breathing purposes made its exit at the sides of the head. By a tenacious heredity these gill-clefts, which have no meaning except for our fish-like aquatic ancestors, are still preserved in the embryo of man and all the other vertebrates. They disappear after a time. Even after the five vesicles of the embryonic brain appear in the head, and the rudiments of the eyes and ears at the sides, and after the legs sprout out at the base of the fish-like embryo, in the form of two roundish, flat buds, the fœtus is still so like that of other vertebrates that it is indistinguishable from them.

The substantial similarity in outer form and inner structure which characterizes the embryo of man and other vertebrates in this early stage of development is an embryological fact of the first importance; from it, by the fundamental law of biogeny, we may draw the most momentous conclusions. There is but one explanation of it—heredity from a common parent form. When we see that, at a certain stage, the embryos of man and the ape, the dog and the rabbit, the pig and the sheep, although recognizable as higher vertebrates,