

THE RIDDLE OF THE UNIVERSE

nal skeleton, a framework of cartilage and bone, consisting principally of a vertebral column and a skull; the advanced construction of the latter presents many variations, but, on the whole, all may be reduced to the same fundamental type. Further, in all vertebrates the "organ of the mind," the central nervous system, in the shape of a spinal cord and a brain, lies at the back of this axial skeleton. Moreover, what we said of its bony environment, the skull, is also true of the brain—the instrument of consciousness and all the higher functions of the mind; its construction and size present very many variations in detail, but its general characteristic structure remains always the same.

We meet the same phenomenon when we compare the rest of our organs with those of the other vertebrates; everywhere, in virtue of heredity, the original plan and the relative distribution of the organs remain the same, although, through adaptation to different environments, the size and the structure of particular sections offer considerable variation. Thus we find that in all cases the blood circulates in two main blood-vessels, of which one—the aorta—passes over the intestine, and the other—the principal vein—passes underneath, and that by the broadening out of the latter in a very definite spot a heart has arisen; this "ventral heart" is just as characteristic of all vertebrates as the "dorsal heart" is of the articulata and mollusca. Equally characteristic of all vertebrates is the early division of the intestinal tube into a "head-gut" (or gill-gut), which serves in respiration, and a "body-gut" (or liver-gut), which co-operates with the liver in digestion; so are, likewise, the ramification of the muscular system, the peculiar structure of the urinary and