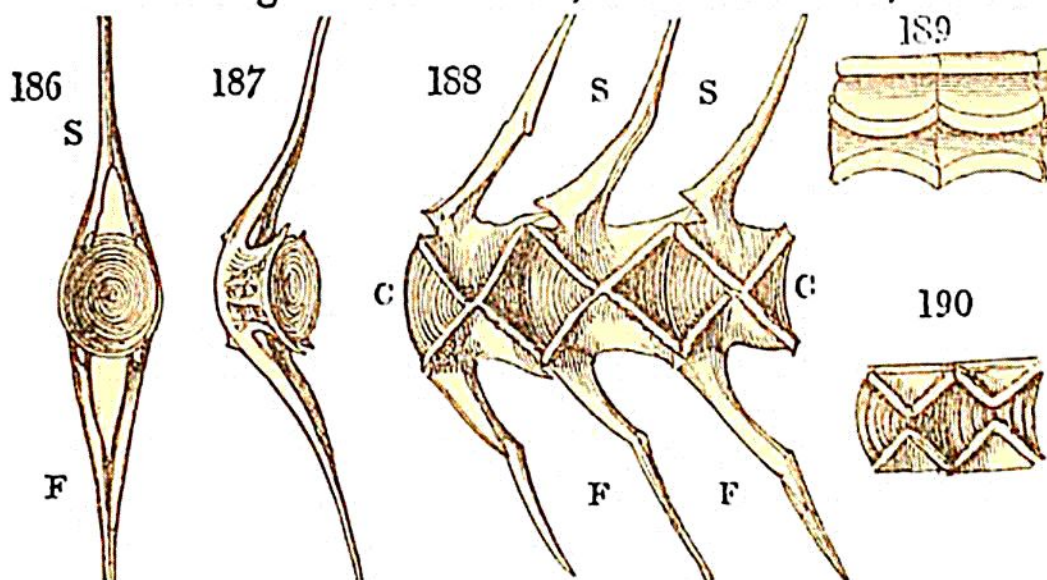


For this purpose, all the important viscera are placed forwards, and crowded towards the head. No room is allowed for a neck; and the abdomen may be almost regarded as continuous with the head, there being, properly, no intervening thorax; for the respiratory organs are situated rather beneath than behind the head. All this has been done with a view to leave ample scope for the prolonged expansion of the coccygeal vertebræ, and of their muscles, which compose more than half the bulk of the animal.

Having seen how all impediments to the free motion of the tail have been carefully removed, let us next inquire into the mechanism by which mobility has been given to that organ. The first peculiarity we meet with in the structure of the spine of fishes is the mode in which the vertebræ are connected together. The bodies of each vertebra, as may be seen in Figures 186 and 187, are hollowed out, both be-



fore and behind, (considering the spinal column as extended horizontally,) so as to form cup-like hollows: by which means, where the concave surfaces of two adjacent vertebræ are applied to one another, a cavity, having the shape of a double cone, is formed by the junction of the margins of these conical hollows. These cavities are distinctly seen laid open in Fig. 188, which represents a vertical section of three adjacent vertebræ of a cod. The edges that are in contact, are united all round by an elastic ligament, which readily yields to the bending of the vertebræ upon one ano-