

motive flappers of the Ctenophoræ, in which each fringe is a whole cell, do not necessarily appear as a specific type of structure, but may constitute a natural link between more complicated organs with distinct muscles and the simplest fringes of structural cells. I entertain now so little doubt respecting such transitions, that I have not hesitated, throughout this description, to consider the rows of vertical locomotive fringes as true ambulacra; though there is as great a difference between them and the ambulacra of Echinoderms, as there is between them and simple vibratory cilia. We are, in fact, led to recognize, through the whole type of Radiata, a natural gradation in the structure of the organs through which currents of water are produced around the body, from the simplest combinations in Polypi to the most complicated apparatus in Echinoderms. In Polypi we have only vibratile cilia arising from structural cells over extensive surfaces of the whole body, while in Beroid Medusæ there are, in addition to such cilia, peculiar rows of fringes, made up of special cells, which move by their own contraction, and in Echinoderms each fringe, in the shape of an independent ambulacral tube, assumes as great a structural complication as the whole system in *Aclephæ*. The ambulacral tubes in Echinoderms generally, indeed, seem to me to bear the same relation to the aquiferous system with its vesicles in Star-fishes, and to the true ambulacral gills in Echini, as the fringes of the locomotive combs with their contractile base bear to the ambulacral chymiferous tubes in Ctenophoræ.

If, from this review of the superficial ramifications of the chymiferous tubes, we proceed to an investigation of their connection with the internal stems and the central cavity of the whole system, we find a very close resemblance in their arrangement to what has already been noticed in the genus *Pleurobrachia*,—the chief difference between the two genera consisting in the peculiar termination and connections of these tubes in the lobes of *Bolina*. The centre of the chymiferous system constitutes in *Bolina*, as in *Pleurobrachia*, a vertical hollow axis, extending from the centre of the abactinal area to the abactinal opening of the digestive cavity, upon the sides of which it gives off two coeliac tubes extending as far as the mouth. These tubes, however, are not so wide as in *Pleurobrachia*, while the digestive cavity itself is larger, extending nearer the central black speck; so that the funnel, which branches toward the circumscribed area, as in *Pleurobrachia*, is shorter, the main cavity from which the main trunks to the ambulacra arise much narrower, and the tubes extending toward the margin of the mouth along the lateral walls of the digestive cavity in the same proportion longer. But the general arrangement is identical. The differences exist only in the proportional development of the different parts of the whole system, as also in the curve of the main trunks of the ambulacral branches, which are more strongly bent upward, instead of stretching horizontally across the body. Owing to the lesser development of the