

lengthwise with the tubes, give them a finely striated appearance, as if they were composed of filaments laid parallel to each other. In the wall of the bulbous forks (*Fig. 14 f<sup>1</sup> f<sup>2</sup>*) of the axial funnel, these cells trend lengthwise, like meridians of longitude, converging at the two obliquely opposite apertures, the anterior and the posterior cœliac openings ( $\zeta \zeta$ ). The only place where this wall varies from one uniform very thin layer is where it constitutes at the same time the inner wall (*Fig. 87  $\gamma \gamma^1$* ) of the tentacular base; and there it is of variable thickness, as has already been described.

The vertical rows of locomotive flappers are entirely superficial. Each row consists of a great number of isolated, transverse, comb-like bodies, placed one above the other, and movable, either isolatedly or in regular succession or simultaneously. Each comb consists of a large number of ribband-like bristles, slightly arched upward and downward, of which the middle ones are the longest, tapering gradually sideways; so that the combs are, properly speaking, crescent-shaped, with a straight base, the teeth or fringes of which are movable in quick vibrations up and down, independently in each comb, and even independently to some degree in each portion of the same comb, as the middle fringes may be seen to move when the lateral are motionless, and the reverse. But, generally, all the fringes of one comb act simultaneously; but the motion in all the many combs of one row is successive, so that, when the combs are very active, they seem like waves moving up and down in rapid succession along each vertical row, or like the waving spikes in a corn-field agitated by the wind. Again, the undulations of the different rows are independent,—sometimes all the rows playing at the same time, at other times parts of the rows, or parts of each row, or parts of some rows, playing independently. Pleurobrachia moving with the mouth forward, the prevailing direction of the locomotive flappers is toward the abactinal pole, while in *Bolina* and *Idyia* it is toward the actinal pole.

The number of teeth or fringes in one of the larger combs may be about fifty; but they are not equally numerous through all the combs in one vertical row. The combs in the upper parts and in the lower parts of each row nearer the mouth and the area opposite are gradually shorter and shorter, and contain fewer and shorter fringes, the largest being about the middle of the vertical height. They terminate more abruptly and at a greater distance from the centre on the actinal than on the abactinal side, where they are naturally prolonged toward the central eye-speck.

The movements of these flappers seem at first to be identical with those of vibratile cilia; and one might be tempted to suppose that they are formed by a row of compressed vibratile cells, arranged in such a manner as to bring their cilia in one row, and the cells themselves in such superposition above each other