part (*os*) is turned toward the openings of the wall of the cavity, which communicate with the surrounding medium. From this arrangement, it is evident that the genital pouches cannot be turned inside out through these openings, as is the case in the Cyaneidæ, though water is constantly flowing in and out, in consequence of the expansion and contraction of the pouches themselves. Along the edges of the sexual organs there are short, hollow tentacles, projecting inward, which, by their motion, must contribute to the aëration of the eggs, by the constant change of the surface of the water with which they are brought into contact. These tentacles are homologous to the digitate appendages of the sexual organs of Aurelia.

Between the four genital pouches there are four openings in the lower floor (*s s*), magnified in *Figs.* 6 and 7, Pl. XIII., which lead into the main channels traversing the arms, and communicate, therefore, with the surrounding medium, through the narrow apertures or pores scattered between the fringes of the arms. Through these pores the food is introduced into the branching channels of the arms, and through these into the main cavity, into which the apertures (*s*), above described, directly lead. As the mature eggs fall into the main cavity, they have no other way to make their escape except through these same apertures and channels. As these apertures, *s s*, *Fig.* 4, are the only openings through which the food reaches the main cavity of the body, they might be considered as mouths, but it would certainly be a violation of all homologies, to call by this name openings which are removed from the holes leading to this cavity by the whole distance of the length of those parts of the arms where they communicate with the surrounding medium. Far, therefore, from being mouths, they are truly homologous with those emarginations in the angle of the arms, in Aurelia (see Pl. VI. *Fig.* 3, *i i*), which also lead into the main cavity of the body, and we must look for the mouth elsewhere. Now, a comparison of the arms, represented Pl. XIII. *Fig.* 2, segments *4* and *5*, with the arms of Aurelia, represented Pl. VI. *Fig.* 1 (where their marginal lobes are closed upon one another), and *Fig.* 3 (in which the same marginal lobes are spread open, to show how the capillary surface inclosed between these margins lead into the main cavity of the body), will leave no doubt upon the mind of an unprejudiced observer, that there is no essential difference between the structure of the arms of Polyclonia and Aurelia, except in the mode of branching of the whole arm, and the closer approximation of their margins in Polyclonia, in which they are soldered at intervals, and cannot, therefore, be spread, as those of Aurelia. *Figs.* 15 and 16 show these margins, and the way in which their terminal lobules are approximated, leaving, here and there, wider fissures between them. In fact, but for the connection between opposite margins of the same arm, the structure of these parts is the same in Aurelia and Polyclonia. *Fig.* 7 of Pl. VII., which represents a por-