though in a few its formation takes place on so insignificant a scale as to render its presence liable to be overlooked. In the Hydrocorallia it is replaced by an internal hard calcareous corallum. In by far the greater number of cases it constitutes a firm protective tube by which the cœnosarc is invested, while in the great primary section of the Calyptoblastea, it is continued for a greater or less extent, and in a more or less modified form, over the various zooids of the colony. In these it forms the cup-like receptacles or hydrothecæ into which the hydranths can become retracted, as well as the peculiar receptacles—gonangia—destined for the protection of the generative buds (Pl. X. fig. 2*a*; Pl. XII. fig. 1*a*; Pl. XXIV. fig. 1*a*; &c.). In the Gymnoblastea, on the other hand (Pl. III.), neither of those protective extensions of the perisarc exists. In two very remarkable genera, *Synthecium* and *Thecocladium*, fine examples of which have been brought home by the Challenger, another function besides that of the protection of the hydranth would seem to devolve on certain hydrothecæ. In *Synthecium* some of the hydrothecæ situated on definite parts of the colony contain no hydranths, but on the other hand enclose, each, the peduncle of a gonangium which springs from the bottom of the hydrotheca (Pl. XXXVII. fig. 1*a*, &c.). In *Thecocladium*, again, every branch of the colony springs from within a hydrotheca, which thus, instead of containing a hydranth, encloses as in a sheath the proximal end of the branch (Pl. XXXVIII. fig. 3). The perisarc varies greatly in thickness, from a strong coat in which numerous layers of deposition may be seen, to a delicate, scarcely recognisable pellicle, and is invariably absent from those zooids which have detached themselves from the colony in order to lead an independent life in the open sea.

While the cœnosarc of the Hydroid colony is, as an almost universal condition, protected by an external perisarcal tube, an exception to this condition is found in *Hydractinia* and *Podocoryne* as well as in the entire section of the Hydrocorallia. In *Hydractinia* and *Podocoryne* the chitinous perisarc forms a continuous thick stratum permeated by a network of anastomosing cœnosarcal tubes, and overlaid by a naked extension of the cœnosarc. In the Hydrocorallia the calcareous corallum, which here forms the hard skeletal tissue of the colony, and is also permeated by anastomosing tubes of cœnosarc, is in a similar way overlaid by a superficial covering of cœnosarc. Indeed the relations between the *Hydrocorallia* and *Hydractinia* are in many respects of the most intimate kind.

V. The Gonosome.

The various zooids and associated structures now described are more or less directly connected with the nutrition of the colony, and may, as has already been said, be collectively designated by the name of *trophosome*. There are, however, other parts of the colony on which a different group of functions—namely, that of sexual reproduction