

tissue composed of cœnosarcial meshwork zooids and gonophores, which may be called the living lamina.

The canals of the cœnosarc are composed of a very thin and transparent membranous wall, covered on the outer surface by a layer of ectoderm cells, and on the inner lined by endoderm cells. In general structure the canals closely resemble those of the cœnosarc of *Millepora* as described and figured in the first part of this memoir.

The ectoderm layer covering the cœnosarcial canals varies much in thickness, being thickest in the more superficial parts of the cœnosarcial meshwork. I was, unfortunately, unable to examine its structure in the fresh condition, because the trawl by which the specimens of *Sporadopora* and of most of the other genera were obtained came up late in the day, and the short daylight available sufficed only for the investigation of more important matters.

Although a definite cell structure is not to be made out everywhere in the ectoderm of the cœnosarc, as for example in the surface layer of the coral, it seems probable from the appearances presented by specimens hardened in osmic acid that such characterises it throughout. The layer investing the canals is mainly composed (Pl. XI. fig. 13) of transparent inflated nucleated cells which vary in size, so that the stratum is in some places two cells thick, in others only one. Amongst these cells occur nuclei and certain cells in which nematocysts of two kinds to be presently described are contained in various stages of development.

The calcareous matter of the cœnosteum must be secreted by this ectodermal layer of the cœnosarcial canals, but I have not been able to observe how this takes place, or whether by means of any particular form of cell.

In the membranous layer of the canals no structure was detected. The endodermal lining of the canals is composed of abundance of spheroidal pigmented cells, containing a nucleus and granules of pigment of various sizes, and closely similar in appearance to those occurring in *Millepora*. The pigment in the present species is of a brick-red colour. Besides these cells, smaller transparent, colourless, spheroidal cells occur in the endodermal layer, and also free pigment granules and effete pigment cells, devoid of granular contents (Pl. XI. fig. 14). The arrangement of these several constituents of the endoderm within the lining of the canals was not determined. No doubt in all the Stylasteridæ the inner surface of the canals is, as usual, ciliated, although cilia were not able to be made out in any case, owing to the action of reagents on the tissues.

As will be seen by reference to Plate III., the cœnosarcial canals form in *Sporadopora* a very complex network, which brings, by means of the freest anastomoses in all directions, the several members of the compound organism into complete circulatory connection with one another.

The interspaces in the meshwork, occupied in the recent condition of the coral by hard masses of the cœnosteum, are larger and wider in the deeper regions of the cœnosarc than