

No distinct cell structure was made out in this surface layer in *Sporadopora*, although such probably exists, as it was clearly seen in the case of the surface layer of *Errina labiata*. The layer bridges over the gaps in the superficial meshwork of the cœnosarcal canals, and portions of it close in the mouths of the sacs of the zooids when the latter are in the retracted state. Over the mouths of the sacs and radial canals of the retracted gastrozooids these special parts of the surface layer appear as discs of membrane, with very small apertures in their centres, and showing a radial fibrillation diverging from these central openings which seems as if caused by contraction of the tissue in order to close the aperture.

Embedded in the surface layer are numerous nematocysts of two kinds, larger and smaller. These are figured in Plate X. fig. 9. The larger nematocysts are in the form of cylinders, very slightly bent. Their ends from which the threads are shot are bluntly pointed, whilst their opposite extremities are rounded. The thread at rest is coiled up spirally within the cell, in the usual manner (Pl. X. fig. 9, *a*). The emitted thread has, near the cell, an elongate enlargement, which is beset with a spiral of spines (*a'*). The remainder of the thread is simple. These larger nematocysts have a length of about $\cdot 0016$ of an inch.

The smaller kind of nematocysts are of an ovoid form, slightly flattened on one side, and, like the larger kind, more pointed in shape towards the end from which the thread emerges. They measure $\cdot 00064$ of an inch in length. They have a small bladder-like enlargement on their emitted threads, but it is, as far as was ascertained, devoid of spines.

In both kinds of nematocysts the threads are shot out, not in a line with the length of the cell, but at a slight angle to this, and in continuation of the curves of the cells.

Thread cells of almost exactly similar structure to these two occur in all the genera of Stylasteridæ, the soft parts of which are described in the present paper.

The nematocysts are developed in transparent cells of the ectoderm, which always contain a nucleus of finely granular appearance. The young nematocyst is seen developing within the cell with the nucleus lying beside it, and in proportion as the nematocyst increases in size and maturity the nucleus diminishes in bulk (Pl. X. fig. 9, *c*, *d*, *e*).

Nematocysts of both kinds are to be seen in abundance in all stages of development in the ectodermal cells of the more superficial regions of the cœnosarcal meshwork. Both larger and smaller nematocysts are present in abundance, scattered in the superficial layer of the ectoderm.

The larger form of nematocysts also occur in well differentiated nematophores, which occur disposed irregularly amongst the zooids in the superficial region of the coral (Pl. III. NN). The nematophores are irregularly semicircular in vertical section, with the flat side of the semicircle coinciding with the surface of the superficial layer of the ectoderm. Except on this flat side they are bounded by a membranous wall, which