

the portion of the coelenteron beneath the ovary, and in some sections are seen to be united to the lower lateral angle of the ovarian mesogloea.

*Ectoderm.*—The ectoderm varies from 0·04 to 0·06 mm. in thickness, and differs considerably in structure from that of *Antipathella*. The surface of the ectoderm is raised into innumerable small rounded papillæ, varying from 0·09 to 0·117 mm. in diameter. Longitudinal sections of a tentacle taken near the surface (Pl. XIII. fig. 9), show that the centre of each papilla consists of a battery of nematocysts, whilst the margin and the depression between adjoining papillæ is occupied by gland cells. These papillæ are most marked on the tentacles and upper portion of the polyp. The surface of the ectoderm becomes smooth towards the base of a polyp. The nematocysts vary from 15  $\mu$  to 24  $\mu$  in length and have a diameter of about 1·5  $\mu$ ; they are similar to those of *Antipathella* in all respects excepting size. The gland cells, on the other hand, are quite different. In longitudinal sections of a tentacle (Pl. XIV. fig. 5), they are seen to occupy the depressions between adjoining papillæ, but never extend to the base of the layer, as in *Antipathella*. The depressions in which the gland cells are situated are usually much more marked than is shown in the figure. The gland cells vary from 23  $\mu$  to 25  $\mu$  in length in the tentacles, and are filled with dense refractive granules. All the ectodermal glands of this species are apparently of the granular type.

The fibrous ("sensory") layer of the ectoderm is of considerable thickness (23  $\mu$  to 26  $\mu$ ). The fibres are very numerous and delicate, and extend from the bases of the nematocysts and gland cells to the mesogloea. At the base of the layer a number of ganglia occur (Pl. XIV. fig. 5, *ga*), which appear more numerous than in *Antipathella*. Some of the fibres beneath the batteries of nematocysts present two or three bead-like thickenings as is figured by Jourdan for the Actiniaria.

The ectodermal muscular layer is well developed in *Antipathes dichotoma*, and consists of a single row of longitudinal fibres applied to the smooth surface of the mesogloea. In transverse sections of a tentacle the elongate slender fibres constituting the greater portion of the middle layer of the ectoderm appear to be continuous with the specialised longitudinal fibres of the muscular layer. A similar appearance is presented in the ectoderm of the base (Pl. XIV. fig. 6, *f*). The ectodermal musculature does not apparently attain so much importance in the stomodæum as in other parts.

In the cœnenchyma, consisting of the fused bases of the polyps at the back of a branch, there is an almost total absence of nematocysts. In sagittal sections they are seen to become less numerous on the body-wall, and towards the base they usually disappear altogether. The gland cells, on the other hand, increase considerably in number, and ultimately constitute the greater portion of the surface ectoderm. They are here, however, more irregular in size and shape, and some do not reach the surface. The slender fibres appear to be more numerous, and some of them may be clearly seen to reach the surface of the ectoderm. Near the base of the fibrous layer numerous irregular groups of granules