

to be more numerous around the edges of the head, and the centre of the upper surface is more or less free from them. In one specimen there is an opening in the test at this point which is probably a common cloacal aperture. In two of the other colonies there is a distinct depression in the same region, and the surface of the test has a contracted appearance, so it is very probable that the centre of the upper surface is occupied by the common cloacal aperture, and that the Ascidiozooids are arranged more or less irregularly around this spot. The thorax of the Ascidiozooid is longer than the abdomen, but not so wide (see Pl. XXI. fig. 5), while the post-abdomen is longer than the thorax and the abdomen together.

The Ascidiozooids are of a pale opaque yellow colour, the test being grey and transparent. The test is very firm. Its surface glistens in parts but is not very smooth. Here and there a few grains of sand are found adhering. The test cells are very numerous in some places (Pl. XXI. fig. 6, *t.c.*). The matrix, although apparently structureless, seems to be denser in some places than in others, and in these regions stains more deeply with aniline blue and pierocarmine (Pl. XXI. fig. 7).

The musculature of the mantle is strong. The transverse bands are especially large (Pl. XXI. fig. 8), while the weaker longitudinal bundles are not confined to the branchial region but are continued down to the post-abdomen. The branchial siphon is of considerable size, and is cylindrical in shape (Pl. XXI. fig. 5). The sphincter occupies a large area. The mantle as a whole is very opaque, except over the reproductive organs in the post-abdomen. The muscle fibres are fusiform and not long (Pl. XXI. figs. 10, 11); they have large central nuclei surrounded by granular protoplasm (Pl. XXI. figs. 9, 10, 11). These simple muscle fibres are grouped in bundles in such a way that their large nuclei come more or less in line, and form conspicuous bands crossing the muscles transversely (Pl. XXI. figs. 8, 9).

The branchial sac is the most remarkable organ in this species. It is exceedingly simple (Pl. XXI. fig. 12), and has exactly the structure which is found in some of the deep-sea Simple Ascidians (*e.g.*, the genera *Culeolus* and *Fungulus* in the Bolteninæ and *Bathyoncus* in the Styelinæ¹).

The sac consists merely of transverse and longitudinal vessels of much the same calibre (see Pl. XXI. fig. 12, *tr.*, and *i.l.*). The spaces between them cannot be called stigmata on account of their large size and their nearly square shape. Also, as in the corresponding forms of branchial sac in Simple Ascidians, no cilia are present, this being another reason why the spaces should not be considered as stigmata. And yet if they are not stigmata the longitudinal vessels cannot correspond to the fine interstigmatic vessels of other forms, and must be regarded as internal longitudinal bars, which the similar vessels in *Culeolus* probably are. I prefer this alternative, although it necessitates the separation of this form from the other Polyclinidæ, none of which have

¹ See Part I. of this Report (in vol. vi., 1882, pp. 90, 122, 127, and 165).