(see Pl. III. fig. 1). The vertical position and the shape of the Ascidiozooids are like those in a typical *Botrylloides*.

The test is of a pale buff colour in most of its extent. It is slightly lighter and more transparent on the margins. It attains no great thickness in any part, but forms an even layer over both surfaces of the incrusted shell. In vertical sections the vessels and their terminal knobs appear to be more abundant in the lower part of the test and between the Ascidiozooids than on the upper surface. This is rather a puzzling circumstance, and is apparently incapable of explanation according to my view[1] that these vessels and terminal knobs have a respiratory function. Possibly their curious arrangement in this species is due to the fact that there is comparatively little test on the upper surface of the colony, as the Ascidiozooids are numerous and closely placed, while on the surface at the posterior ends of the Ascidiozooids there is a thickish layer of test in which lie most of the vessels and their terminal knobs, and a number of buds and young Ascidiozooids. The terminal knobs are in some places, especially at the sides of the Ascidiozooids, exceedingly plentiful on the ends of the vessels, from which they bud off in all directions (see Pl. III. fig. 2). In some cases the terminal twigs are like small bunches of grapes.

The cells in the homogeneous test matrix are neither of large size nor very abundant. The turning in of the test to line the branchial siphon is very clearly seen both in a surface view and in vertical sections. Figure 5 on Plate III. shows the appearance presented in a surface view with Swift's 1-inch objective of a specimen stained in picro-carmine, from the outside. The dark band (*sph*) is the sphincter muscle, and the test is seen to form fifteen or sixteen lobes, where it turns in to line the aperture. In vertical sections these lobes can be traced down to the anterior edge of the tentacles (Pl. III. fig. 4).

The mantle is very like that of *Botrylloides purpureum*. The branchial sac is large, and is elongated at right angles to the surface of the colony. Some of the transverse vessels are wider than others, but there is no regularity in their arrangement. A few muscle fibres are generally to be seen in the transverse vessels. The internal longitudinal bars are strong (Pl. III. fig. 3, *i.l.*), and are slightly thickened at their points of union with the transverse vessels, but there are no papillæ. In a fully developed sac there are at least twelve rows of stigmata, and there are twelve to fourteen stigmata in the largest rows.

The endostyle is large and conspicuous (Pl. III. fig. 4, *en.*). The dorsal lamina is very distinctly ciliated along its free margin (Pl. III. fig. 8, *d.l.*). The tentacles (Pl. III. figs. 4 and 7, *tn.*) are regular in their alternating sizes and arrangement.

The dorsal tubercle is rather larger than usual (Pl. III. figs. 7, 8, *d.t.*). Its edges are formed of low columnar cells with cilia directed inwards towards the centre of the opening. In some specimens, as shown in the figure (Pl. III. fig. 7), the neural canal

[1] On a New Organ of Respiration in the Tunicata, *Proc. Lit. and Phil. Soc. Liverpool*, vol. xxxix. p. 39, 1884.