Zoology Part XXXVIII: Report on the TUNICATA. Second Part. -Ascidiæ Cornpositæ. By William A. Herdman. Bound in Volume 14,188

if it was an isolated form it would be extremely difficult if not impossible to determine whether it should be regarded as a Simple or a Compound Ascidian. It is, however, so closely allied to *Synstyela incrustans* and other members of the family Polystyelidæ, that it becomes an easier matter to trace its connection with true Compound Ascidians than with true Simple Ascidians, and therefore I have placed it in its present position amongst the Polystyelidæ. Its affinities will be further discussed in the General Summary at the end of the Report.

The masses of test containing several Ascidiozooids are each of various forms (see Pl. XLVI. figs. 1–4), and are connected with one another by narrow bands of test. The larger colonies (Pl. XLVI. fig. 1) consist of a very large number of these masses united by their stolons to form a very irregular mass clinging closely to some foreign body. The smaller colonies consist of several of the little masses, or of a few independent Ascidiozooids joined by the usual stolons (Pl. XLVI. figs. 2, 3, 4). As may be seen from figures 2 and 3, the masses differ considerably in their size. The average size is 2 or 3 mm. in diameter. The side branches given off from the stolons are frequently thickened at their ends so as to form small knobs (Pl. XLVI. figs. 1–4). The whole of the outer surface of the colony is slightly incrusted with fine black sand grains, otherwise it is of a dull but light grey, and fairly smooth.

The Ascidiozooids vary in size from about 1 mm. up to 8 mm. antero-posteriorly. The larger ones are generally independent of their neighbours, and have a striking resemblance to individuals of some of the smaller species of *Styela* and *Polycarpa*. The apertures in these large Ascidiozooids are placed on long tapering siphons. They are square when open and cross-slit when closed.

The test is relatively small in amount in this species. Where it covers the body of an Ascidiozooid it is a thin tough layer, slightly sandy on its outer surface, and perfectly smooth and glistening internally. The Ascidiozooid can readily be shelled out from its coating of test, as the mantle does not adhere to it very closely. The stolons are entirely formed by test. The vessels are not numerous, but they are present in all parts of the colony. One or more may always be found in the stolon running longitudinally, and occasionally giving off lateral branches which may be long or short (Pl. XLVI. fig. 5, *t. k.*). The terminal knobs are short and globular. The ectoderm cells on the surface of the vessels are very distinct (Pl. XLVI. fig. 5, *v.*).

The branchial and atrial sphincters are wide. They extend over nearly the whole of the elongated siphons. Both longitudinal and transverse muscle bands are found over the mantle generally; they form a close network (Pl. XLVI. fig. 8).

The branchial sac has a single rudimentary fold upon each side. It lies close to the dorsal lamina, and consists of four closely placed internal longitudinal bars. It is separated from the dorsal lamina by a single row of very wide meshes, each of which contains about a dozen stigmata. The transverse vessels and the internal longitudinal

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