The general shape of a *Pyrosoma* colony is seen in fig. 1. Small colonies are as a rule more regular, and taper more towards the closed end than large ones. The narrower closed end is rounded, the other is truncated, and has a larger or smaller opening in its centre (Pl. I. figs. 1, 4). The size of this aperture, or rather of the lip or diaphragm which reduces it, has been used as a character distinguishing species; but F. D. Bennet[1] showed, in 1837, that in the living *Pyrosoma* the diaphragm can be moved so as to allow the aperture to enlarge and contract (see below, p. 28). Fig. 1, B, shows the open end of a *Pyrosoma* colony in which the diaphragm is extended so as to leave only a small central aperture.

The processes projecting from the surface of the colony vary considerably in arrangement, size, and shape in different species and colonies. Each one indicates the anterior end of an Ascidiozooid, and the branchial apertures can be seen (Fig. 1) either at the ends, or at the bases, or half way up the processes. The usual arrangement is for each large Ascidiozooid to form a dome-like projection or papilla on the surface of the colony at the extremity of which the branchial aperture is placed, while a longer or shorter process of the test extends outwards beyond that (see Figs. 2 and 4).

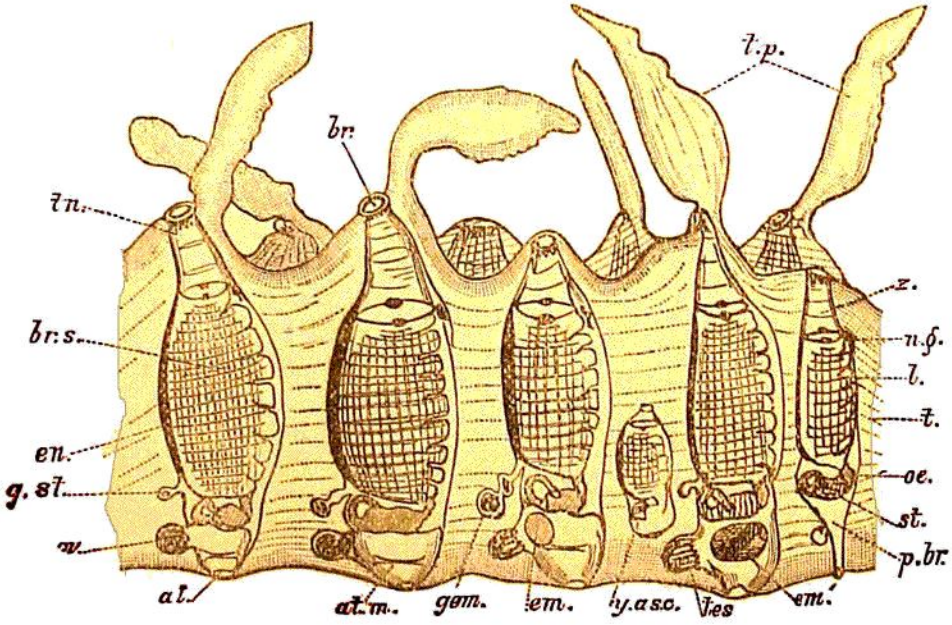

FIG. 2.—**Part of a section through a *Pyrosoma* colony.**

at. atrial aperture, *at.m.* atrial muscle, *br.* branchial aperture, *br.s.* branchial sac, *em.* young embryo, *em'.* older embryo, showing cyathozooid and ascidiozooids, *en.* endostyle, *gem.* bud on stolon, *g.st.* gemmiparous stolon, *l.* dorsal lanquet, *n.g.* nerve ganglion, *œ.* œsophagus, *ov.* ovum, *p.br.* peribranchial cavity, *st.* stomach, *t.* test, *tes.* testis, *t.p.* process of test, *tn.* tentacles, *y.asc.* young ascidiozooid, *z.* zona prebranchialis.

The Ascidiozooids are placed in a single layer, each having, when fully developed, its branchial aperture opening on the outer surface of the colony, and its atrial aperture opening into the central cavity of the colony or common cloaca. Consequently the antero-posterior axis of the Ascidiozooid coincides with the thickness of the wall of the

[1] *Proc. Zool. Soc. Lond.*, part v. p. 51.