

spinous processes are very large, and project far beyond the others, while occasionally they occur in groups. They generally taper a little towards the tip, which is often attenuate, and of a deeper brownish hue than the rest of the cœnœcium (Pl. VII. fig. 1). The free tips of the branches frequently show a somewhat palmate arrangement, with longer spines variously divided. The irregularity in regard to the distribution of the spines recalls the processes on the peculiar sponge *Chondrocladia*, though this feature is much more marked than in the latter. All the spines are hollow, and in connection with the canals and cavities of the cœnœcium.

The surface of the cœnœcium, moreover, is dotted, especially at the bases of the spines, with large rounded apertures, which lead into the interior of the stem, the latter being honeycombed from end to end by an irregular system of wide canals and somewhat rounded cavities, intersected by bridles and arches, which thus provide for the constant ingress and egress of sea-water throughout the entire system. The inner wall of these canals and chambers is as smooth and glistening as the outer surface of the cœnœcium, the secretion being perfectly homogeneous. It cuts with great readiness, and as cleanly as a soft *Fucus*; while it is much less tough than the glistening tubes of the Annelids. Microscopically it is composed of numerous layers of a translucent and very fine membranous secretion, so that in the preparations there are endless lines and folds, while the sheen or lustre is doubtless due to the same arrangement.¹ The whole disposition of the tissue clearly indicates that it is the work of the polypides, just as much as the tube of an Annelid or *Phoronis*, the more regular and less bulky tube of *Rhabdopleura*, and in some respects the shell of a Mollusk. Like the Annelidan tubes it most approaches, it is little affected at first either by nitric acid or caustic potash, though the former after a time somewhat softens and bleaches it.

This secretion of *Cephalodiscus* is paralleled by the curious investment or "house" of *Appendicularia*, which by some has been held to be the homologue of the Ascidian test, and which fills the tow-net with a semi-solid mass when the animals are abundant. It differs considerably from the branched system of annulated tubes formed by *Rhabdopleura*, each of these corresponding to a single polypide, while the rings of which it is composed are successively produced at the termination of the tube by the secreting powers of the great buccal shield or præ-oral disk. Professor Lankester, moreover, has very clearly explained² that the differences of the rings in the attached or recumbent part of the tube and those of the erect portion—differences first pointed out and figured by Professor Allman³—are due to the changes in the buccal disk which secretes them, this disk being characteristically bifid in the young specimens which form the recumbent portion of the tube. This symmetry and regularity are absent in the house of *Cephalo-*

¹ All these features are well seen in a series of sections mounted by the dextrous hands of the late Professor Busk.

² *Quart. Journ. Micr. Sci.*, vol. xxiv., N. S., p. 625.

³ *Journ. Roy. Micr. Soc.*, vol. ix. pp. 61–62, pl. viii. figs. 4, 6, &c., 1869.