

The number of lobes surrounding the branchial and atrial apertures is of considerable importance in classifying the Tunicata, but it is by no means obvious what it is that

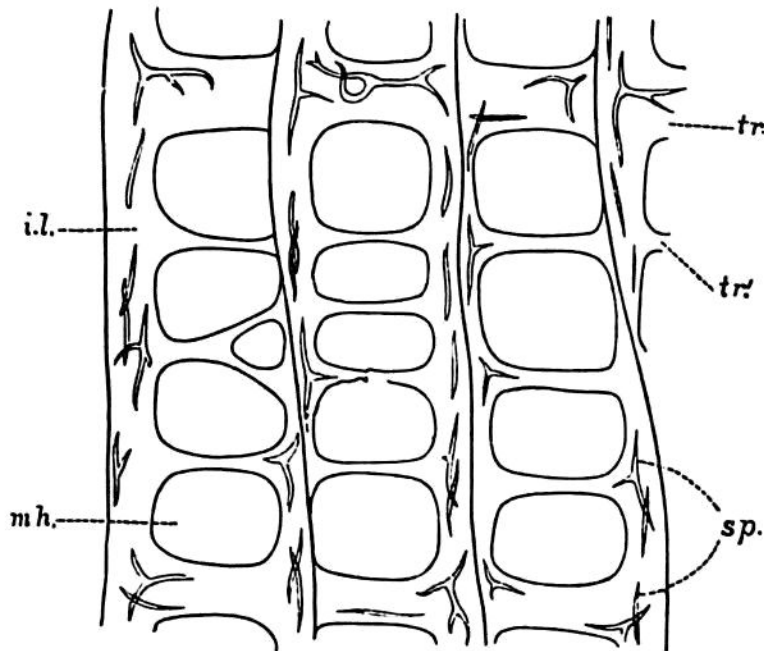


FIG. 28.—Part of the branchial sac of *Culcolus wyvillii*.

*i.l.* internal longitudinal bars; *m h.* mesh; *tr.* transverse vessels; *sp.* spicules.

determines the exact number of lobes, and why the number should become changed in certain groups.

In the Appendiculariidæ, and probably in the Prototunicata, the Protothaliacea, and the Protoascidiacea, the apertures were simply rounded or slightly bilabiate. In *Doliolum* they have become ten or twelve-lobed. In the Salpidæ and in *Octacnemus* they are circular or bilabiate; finally, in *Clavelina*, *Perophora*, and *Hypobythius*, all simple forms closely allied to the ancestral Protoascidiate occupying the point E. (table, p. 150), the apertures are simply rounded. In *Ecteinascidia*, however, a slight lobing of the apertures has commenced. In some cases it is not visible, in others six indistinct lobes around the atrial aperture, and seven or eight around the branchial aperture, can be made out.

In the great majority of the Compound Ascidiæ derived from the branch F. (table, p. 150) the branchial aperture is provided with six well-marked lobes, while the atrial may be six-lobed, or bilabiate, or simply rounded, or, finally, may be provided with a single very large anteriorly placed lobe known as the atrial languet. In one group of the Polyclinidæ, however, consisting of the genera *Parascidia*, *Fragarium*, *Circinalium*, and *Morchellioides*, the branchial aperture is very distinctly eight-lobed. In the remarkable *Cælocormus*, again, the branchial apertures are five-lobed.

In nearly all the Ascidiidæ amongst Simple Ascidiæ the arrangement of the