

In *Pyrosoma* the sac is formed by a series of transverse interstigmatic vessels, and of internal longitudinal bars intersecting at right angles.

In *Doliolum* the stigmata may either be confined to the posterior region of the sac, as in *Doliolum mülleri*, or may extend forward, as in *Doliolum denticulatum*.

In *Salpa* the branchial sac is greatly modified and reduced to a branchial "band," which represents the dorsal lamina. The systems of vessels uniting this dorsal band to the endostyle are entirely absent, so that each half of the sac is converted into a single large stigma.

In the Appendiculariidæ there are only two stigmata, one on each side of the endostyle, near the posterior end. They lead by atrial canals, which represent the right and left sides of the peribranchial cavity, to the exterior. The endoderm cells lining the branchial sac are ciliated, and larger cilia are present along tracts corresponding to the peripharyngeal bands and the dorsal lamina, and around the edges of the two stigmata.

The Peripharyngeal Bands (Pericoronal Ridges, Ciliated Arcs).

The position of the peripharyngeal bands at the anterior end of the branchial sac has already been pointed out. They lie at the base of the branchial siphon, and the anterior band, or, as Julin calls it, the internal lip of the groove, forms a complete ring, bounding the præbranchial zone posteriorly. The posterior band or external lip, on the contrary, is complete only at the sides. At the ventral end its right and left halves turn posteriorly, and become directly continuous with the marginal ridges of the endostyle; while dorsally they are continued into the anterior end of the dorsal lamina.

The peripharyngeal bands are formed of ridges of connective tissue continuous with that of the mantle, and covered on their free surfaces with epithelium, which changes gradually from low columnar in the groove to cubical and then squamous on the outer slopes, where the ridges become continuous with the præbranchial zone on the one hand, and with the inner surface of the branchial sac, on the other. The cells covering the floor of the groove, and those along the most prominent parts of the ridges, bear very short cilia, while the anterior and posterior slopes of the ridges and the sides of the groove are not ciliated.

The Endostyle (Hypobranchial Groove).

This organ forms the ventral edge of the branchial sac, and extends from the peripharyngeal bands anteriorly to the posterior end of the sac. It is a groove bounded by parallel lips, often of considerable height, and projecting into the cavity of the branchial sac (fig. 8). The groove is lined by a modification of the epithelium of the interior of the branchial sac, and is in some parts cubical, and in others columnar and ciliated.