Zoology Part LXXVI: Report on the TUNICATA. Third Part.-Pelagic Tunicates. By Professor William A. Herdman, Bound in Volume 27,

The body is elongated and more or less fusiform, with the branchial and atrial apertures at the opposite ends of the body. These openings are not surrounded by a number of lobes as in many other Tunicata, but are usually tubular or bilabiate. Each leads into a large space, the branchial sac and the peribranchial cavity, and these are in free communication at the sides of the median dorsal lamina or "gill" (Fig. 7, *d.l.*), which is a narrow vascular band running obliquely from the dorsal and anterior to the ventral and posterior end of the cavity. The water therefore has a free passage through the body of the animal—in at the branchial aperture through the branchial sac, past the sides of the dorsal lamina into the peribranchial cavity, and out by the atrial aperture.

The test is well developed, and in most species is thick but soft and transparent. It may become thicker and firmer in some parts, and usually there is a protecting shield of this nature over the visceral mass near the posterior end of the ventral surface (Fig. 7, *t'*).

The mantle adheres closely to the inner surface of the test. It has its musculature in the form of a variable number (generally from six to eight) of muscle bands which run transversely across the dorsal surface of the body and die away on the sides, so that the ventral part of the mantle has no musculature. Thus the muscle bands do not form complete rings as they do in the genus *Doliolum*, but are merely curved bands partly encircling the body. In many cases certain of the bands join or closely approach one another (see Pl. VI. fig. 5), generally in the median dorsal line; and all such arrangements of the muscle bands as well as their number are constant in the species and in the aggregated and solitary forms, and constitute one of the most important characters in the identification of specimens.

The branchial sac is a large cavity, but its lateral walls are entirely absent. The endostyle (Fig. 7, *end.*) indicates its ventral edge, and the dorsal lamina (*d.l.*) or "gill," its dorsal, so that in a lateral view, such as Fig. 7 represents, its boundaries are perfectly definite; but there are no side walls joining the endostyle to the dorsal lamina and separating the branchial sac from the lateral parts of the peribranchial cavity. There are therefore in connection with this branchial sac no transverse or longitudinal vessels, and no stigmata. It is exactly as if in an ordinary Ascidian all the stigmata on each side of the sac had coalesced to form a single large aperture. The so-called "gill" of *Salpa*, then, evidently corresponds to the dorsal lamina of the Ascidian with the large dorsal blood-sinus which lies behind it.

The anterior end of the "gill" or dorsal lamina is prolonged ventrally to form a prominent tentacular organ, the languet, which projects freely into the anterior end of the branchial sac. It is probably a sense organ (Fig. 7, *l*). The nerve ganglion is placed near the front of the body in the median dorsal line. It is short and rounded, and gives off nerves from the sides as well as from its anterior and posterior ends (see Pl. VIII. fig. 15); an otocyst (?) and a pigment spot are found in connection with the

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