

In the line leading from the Protothaliæ to the existing Doliolidæ the muscle bands have become distinctly circumscribed so as to form a definite number of com-

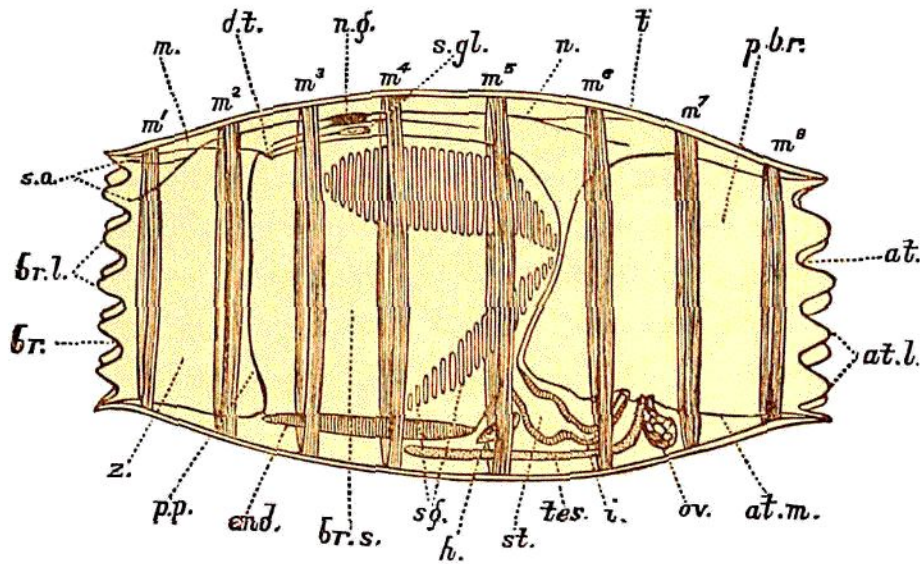


FIG. 15.—Diagram of the Gonozoid of *Doliolum*, from the left side.

*at.* atrial aperture; *at.l.* atrial lobes; *at.m.* membrane lining peribranchial cavity; *br.* branchial lobes; *br.l.* branchial lobes; *br.s.* branchial sac; *d.t.* dorsal tubercle; *end.* endostyle; *h.* heart; *i.* intestine; *m.* mantle; *m¹—m⁸*, muscle bands; *n.* nerve; *n.g.* nerve ganglion; *ov.* ovary; *p.br.* peribranchial cavity; *p.p.* peripharyngeal band; *s.o.* sense organs; *s.gl.* subneural gland; *st.* stomach; *sg.* stigmata; *t.* test; *tes.* testis; *z.* zona præbranchialis.

plete circular bands surrounding the body like a series of hoops (Fig. 15). In all other essential points the structure has remained unaltered. *Anchinia*<sup>1</sup> I would place upon a side branch from the base of the line leading to *Doliolum* (see table, p. 120).

The line of ancestors leading to the Salpidæ is longer, and a good deal more modification has evidently taken place. The muscles in the mantle have become circumscribed to form definite bands; but these are irregularly placed, and in some cases are incomplete, while in others they branch. A well-developed but exceedingly clear and gelatinous test has been formed, and the alimentary and reproductive viscera have become concentrated (except in *Cyclosalpa*) at the posterior end of the body to form a rounded, opaque, highly-coloured mass, the so-called "nucleus" of the *Salpa*. The branchial sac has undergone great modification—probably as the result of the rapid and constant passage of streams of water through it—and at the present day its side walls, where the stigmata were probably placed in the ancestral Protothaliæ and still are in some species of *Doliolum* (Fig. 15), have been converted into huge openings, leaving merely the dorsal edge of the sac in the form of a vascular band (the dorsal lamina or "gill") traversing the large open respiratory cavity (Fig. 16, *d.l.*). All these changes

<sup>1</sup> For the structure of *Anchinia* and its close relationship to *Doliolum*, see Kowalevsky and Barrois, *Journ. de l'Anat. et de la Physiol.* tom. xix. 1883. Also Uljanin, *Fauna und Flora des Golfes von Neapel*, Monogr. x, *Doliolum*, 1884.