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Article/Chapter Title: Tjalfiella tristoma n. g., n. sp. A sessile ctenophore from Greenland

Author(s): Mortensen, T.

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## Tjalfiella tristoma n. g., n. sp.

A sessile Ctenophore from Greenland.

Preliminary Notice

by

Dr. *Th. Mortensen.*

When carrying out fisheries investigations along the West Coast of Greenland with the brig „Tjalfe“ in the summer of 1908 Mr. A. S. Jensen found in the deep Umanak Fjord a locality exceptionally rich in magnificent specimens of *Umbellula lindahlü* Köll. The depth of the locality was 475—575 m. On the stem of some of the *Umbellula* he observed a curious small, jellylike, transparent organism, ca. 1—1½ cm. long, laterally compressed and having at each end an erect funnel, like a small tower. His other duties did not leave him time for studying the animal more closely, only some specimens were preserved in formaline. On his return he asked me to examine the animal and describe it, if it proved to be unknown.

The animal (Fig. 1) at first puzzled me very much. It did not appear like anything known as yet, and it seemed even very hard to determine to which class of animals it belonged. The bilateral body carries along the upper side of its middle part four pairs of roundish knobs, and at each end of the series a larger yellow body, from which a threadlike prolongation passes upwards through the funnel, sometimes projecting through the mouth of the funnel. In the middle of the flattened upper side there is generally a small, slightly prominent knob, in the middle of which a small pore may be observed more or less distinctly.

On the sides a varying number of larger irregularly placed, round knobs are found in the larger specimens. In the sidewalls, especially in the transparent walls of the funnels an irregular, branching canal system is distinct. The basal surface is more or less irregularly folded. The outer surface of the animal is otherwise quite smooth.

It might be suggested that it was either a Coelenterate or a Tunicate. In fact there is something in the shape of the animal recalling the peculiar sessile Salp, *Octacnemus*. But the study of its anatomy soon proved that it had no affinity whatever with the

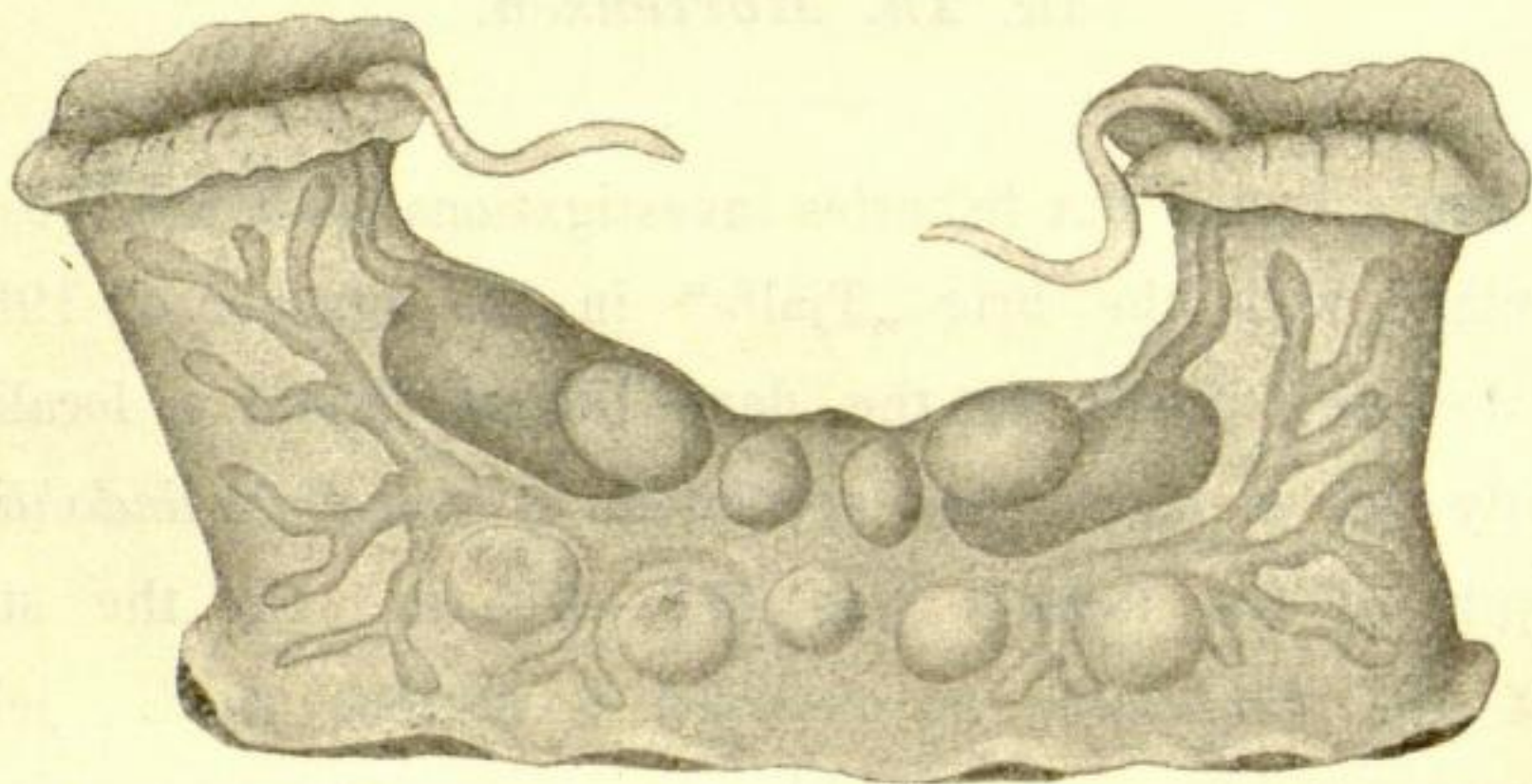


Fig. 1. *Tjalfiella tristoma* Mrtns.

The figure is in so far composed of 2 specimens, as no embryos were developed in the one chosen for representation. <sup>10</sup>/<sub>1</sub>.

Tunicates; but also for a Coelenterate its organisation seemed most unusual and puzzling.

On studying the anatomy of the remarkable animal I observed the interesting fact that it is viviparous. The knobs on the sides proved to contain embryos, one in each, in different stages of development, and the more developed of these proved to be young Ctenophores in the Cydippe-stage, with distinct costæ and combs. Herewith the riddle was solved, and it was now easy enough to recognize in the adult animal a Ctenophore, though of most unusual appearance.

The first thing becoming clear at once, when the animal had been proved to be a Ctenophore, was the yellow body at each end

and its threadlike prolongation; it could be nothing but the tentacle and its base. It was then also found that the tentacle was not placed in the cavity of the funnel itself, but in a separate narrow channel at the inner side of the funnel, the tentacle-sheath. Sections further showed the tentacle to be provided at its surface with colloblasts (lasso-cells), a structure eminently characteristic of the Ctenophora. The tentacles are unbranched.

Another fact at once becoming clear after the Ctenophoran nature of the animal had been made out, was the median pore on the upper side; it is the pore leading to the statocyst. But the four pairs of knobs along the upper side of the animal? Nothing in the typical structure of Ctenophores could give the immediate explanation of them. Sections, however, soon revealed their nature — they are the genital organs, consisting each of two parts, one representing the ovary, the other the testis. The important fact was also found through the sections, that they open to the exterior each through a duct, as is otherwise known among Ctenophores alone in *Ctenoplana*.

That the branching canals in the walls of the body belong to the vascular system, could not be doubtful — but what was the morphological explanation of the two funnels? The developmental stages gave the clue to the question. In the young *Cy-dippe*-stages there is no trace of the funnels, but there is a deep furrow on the oral side, in the transverse (tentacular) plane; in the bottom of this furrow is the mouth-opening. The furrow gradually extends upwards along the sides of the body, so as to include the opening of the tentacle sheath. At this stage the young Ctenophore leaves its lodge in the parent animal and after a probably very short free swimming period fixes itself to the *Umbellula* with the side-lobes of the furrow, the furrow then becoming the basal surface, in the middle of which the mouth-opening is placed. The mouth is then, in fact, closed and the animal, not being parasitic, has to arrange itself in some way so as to get an opening which can perform the normal duties of the

mouth. This is then done in the way that the furrow extends further upwards along each side of the animal; the lips coalesce along their edge so as to form a closed channel, opening towards the exterior at its outer end and remaining in open connection with the ventral furrow in the bottom of which the mouth lies. Gradually the walls of the channel grow upwards, carrying along with them the tentacle sheath, and thus by and by the towerlike funnel is formed.

It should further be added that the costæ disappear completely as soon as the young animal has attached itself; evidently it is then fixed for life, though it may perhaps be able to move slightly along the surface of the body to which it has attached itself.

The full report of this remarkable Ctenophore will appear in the Report on the Ctenophora of the Danish Ingolf-Expedition (Vol. V Part II), presumably in the course of next year (1911). In this preliminary notice I cannot enter on a more full account of the minor anatomical and embryological details of the animal.

Regarding its affinities, it appears to be nearest related to *Ctenoplana*. Apart from the interest which the existence of a new type of such remarkably transformed Ctenophora affords, quite unusual importance must be ascribed to this new form, partly as it is the first viviparous Ctenophore known, but especially because the fact of the young being typical Cydippids seems to prove definitely that the creeping Ctenophores are really the most specialized of all Ctenophores, not the most primitive of them all. This fact decidedly speaks against theory of the derivation of both Ctenophores and Polyclads from forms like *Ctenoplana* and *Coeloplana*.

The animal, which I name *Tjalfiella*, according to the wishes of Mr. A. d. S. Jensen, after the ship on which it was first observed, may be preliminarily diagnosed as follows:

Sessile; the body laterally compressed, with no traces of costæ. The tentacles unbranched. A ventral furrow prolonged at each

end of the body into a comparatively high funnel, the openings being connected with the mouth-opening, which is situated in the middle of the basal surface. Genital organs arranged in four pairs along the upper side of the body, opening to the exterior each through a duct. Viviparous; the young passing through a free-swimming Cydippe-stage.

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