



XXXIX.—A remarkable Styelid tunicate from Spitzbergen

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before the base. Elytra gradually widened from the base, rugulose.

Length $3\frac{1}{10}$ mm.

Hab. INDIA, Nilgiri Hills, alt. 3500 ft. (*ex coll. Andrewes*).

One female. Less elongate and more convex than *H. nilgiriensis*, bluish-black above, the prothorax more closely punctured at the sides. The ♂ probably has flabellate antennæ. The general facies is that of the African *H. mashunus* and *H. lacinosus*.

74 (a). *Hapalochrus diremptus*, sp. n.

♀. Elongate, much widened posteriorly, moderately shining, finely pubescent; metallic green, the head brassy, the legs and antennæ black; the head and elytra, and the sides of the prothorax to some extent, densely, finely, conspicuously punctured, the disc of the prothorax much smoother. Head (with the eyes) about as wide as the prothorax, the eyes prominent; antennæ moderately long, rather stout, the joints from the fourth onwards obliquely subquadrate and somewhat dilated. Prothorax small, convex, strongly transverse, deeply, transversely grooved posteriorly. Elytra very long, flattened on the disc anteriorly, at the base not broader than the prothorax, rapidly widening thence to the apex, the latter broadly rounded.

Length $3\frac{1}{2}$ mm.

Hab. S. INDIA, Belgaum (*ex coll. Andrewes*).

One female. Extremely like the Abyssinian *H. cinerascens* (type ♀, No. 42 of my earlier papers), differing from it in the more prominent eyes, the shorter pubescence, and the rather strong puncturing, this being particularly noticeable at the sides of the prothorax. In a combined arrangement of the African and Asiatic forms, *H. diremptus* should follow *H. cinerascens* and be numbered 42 (a).

XXXIX.—*A remarkable Styelid Tunicate from Spitzbergen.*

By Dr. AUGUSTA ÄRNBÄCK-CHRISTIE-LINDE, Riksmuseum, Stockholm*.

Ypsilocarpa clipeata, gen. et sp. n.

The unique type-specimen is in the collection of Tunicata of the Swedish State Museum, Stockholm.

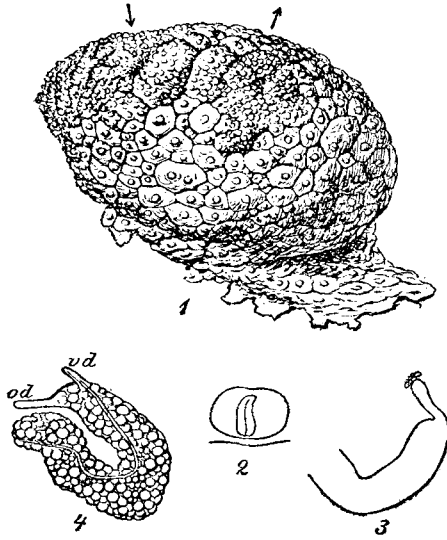
* This article is an extract from my paper on the family Styelidæ, which will soon be published.

Locality.

N.W. Spitzbergen, Smeerenburg Bay. Depth 25 fathoms. Bottom, stones and clay. One specimen collected, along with *Styela rustica*, by the Spitzbergen Expedition, 1872-73, August 27, 1872.

External Appearance.

The *body* is ovoid and somewhat compressed baso-apically; the test is spread out over the object to which the animal is attached. The *apertures* are situated on the dorsal surface,



Ypsilocarpa clipeata, gen. et sp. n.

- Fig. 1.—External view, $\times 6$ diam.
- Fig. 2.—Dorsal tubercle, $\times 33$ diam.
- Fig. 3.—Part of the intestine, with rectum, $\times 6$ diam.
- Fig. 4.—Gonad, $\times 6$ diam. *od*, oviduct; *vd*, vas deferens.

about $2\frac{1}{2}$ mm. apart, and, in this preserved specimen, scarcely raised over the surface, and not easily detected. They are surrounded by elevations of the test, which are covered with numerous minute tubercles (text-fig. 1).

The *test* of this preserved example is of a yellowish-grey colour and very firm. Its surface is divided all over into irregular polygons; this striking character clearly distinguishes the species from other Arctic Styelids. In the middle of each polygon is a minute, translucent, vesicle-like elevation. On larger polygons there are two such structures, and here and there, especially in the vicinity of the siphons, they are more closely scattered, and are there of a somewhat smaller size, though more prominent (text-fig. 1).

The surface is free from adherent foreign material.

The specimen measures 6 mm. in length (baso-apical) and 8 mm. in breadth (dorso-ventral).

Internal Structure.

The *test* is moderately thick and of a tough consistency. Its outer layer consists apparently of a very thin transparent membrane of a chitin-like aspect and of somewhat greater thickness around the vesicle-shaped elevations on the polygons. The inner surface of the test is smooth and whitish.

The *mantle* adheres to the inner side of the test and the *mantle musculature* is not very strongly developed.

The *tentacles* are simple and of differing size, the largest numbering about seven or eight.

Atrial tentacles are present; they are numerous and slender, thickly scattered over the narrow velum.

The *dorsal lamina* is plain-edged and rather broad.

The *dorsal tubercle* is rounded and small, though prominent. The aperture is elongate and feebly curved (text-fig. 2).

The *branchial sac* is of a characteristic structure. It is provided with three well-developed folds on each side with wide longitudinal vessels; the second fold is in a rudimentary state, and is represented by three longitudinal vessels, a number which is reduced to two in the bottom of the branchial sac.

On the interspaces between the folds there is one wide longitudinal vessel.

The following scheme shows the approximate number and the distribution of the vessels:—

Dorsal lamina, 1 (9) 1 (3) 1 (7) 1 (5) 1, endostyle.

The *stigmata* are elongated and of the usual form.

The *alimentary canal* is not of great length. The stomach is short and has a horizontal position. Numerous longi-

tudinal plications are visible in its wall. No pyloric cæcum is visible.

The intestine forms a short loop and afterwards bends upwards almost at right angles (text-fig. 3). As appears from the figure, the rectum is short and distinctly marked off from the intestine, from which it rises at right angles.

The margin of the anus is provided with seven small lobes.

The *reproductive organs* consist of one hermaphrodite gonad on each side of the body. The gonad is of great length and characteristically bent into the shape of the letter U (text-fig. 4). In this individual it is well distended with eggs at different stages of development. Macroscopically no male glands could be observed, but from sections it appears that the gonad contains very small glands—in all probability, male glands, though no spermatozoa were observed there,—with ducts, hidden by the mass of large eggs. So far as one can judge from this single specimen, the eggs and the spermatozoa are thus produced at different times.

The ovary and testis each open at the end of the gonad by an elongated duct dorsally directed. Owing to the U-shaped form of the gonad, its distal end with the opening ducts almost touches its proximal end. The main sperm-duct lies upon the inner free surface of the gonad, and ends at some distance from the oviduct. Macroscopically the vasa efferentia were scarcely visible.

Endocarps are present on the inner side of the mantle and in the loop of the intestine.

Remarks.

Ypsilocarpa clipeata is distinctly marked off from other species of Styelidæ by the characters of the gonads and the test. In no other described Arctic genus have the reproductive organs such an arrangement and number as in *Ypsilocarpa*. Though tubercles, elevations, spines, and other peculiarities of the test have often been described, no Arctic Styelid has yet been recorded with a test of similar structure, and no member of the group shows any other such point of agreement as would indicate close relationship to *Ypsilocarpa*.

Styelids collected in other waters present no form comparable with *Ypsilocarpa*, unless it be *Styela squamosa*, dredged to the south of Australia, and described by W. A. Herdman (1882, 'Challenger' Rep. vi., Ascidiæ simplices).

According to that author (p. 152) the test of *Styela*

squamosa is thick and solid, but soft, the surface is smooth, but scaly. It is, however, impossible to get any clear idea of the last-mentioned character from the figure illustrating it (pl. xviii. fig. 1). The dorsal lamina is plain and the larger tentacles are short and stout, resembling the corresponding organs of *Ypsilocarpa clipeata*.

The two species differ as to the branchial sac. In *Styela squamosa* two distinct folds lie on each side; the others are in a rudimentary state. *Y. clipeata* has three well-developed folds on each side, the second is rudimentary.

The apertures are differently placed. In *S. squamosa* they are distant, the branchial is placed at the ventral end and the atrial at the dorsal end of the anterior extremity. In *Y. clipeata* they are close together and placed on the dorsal surface of the body.

Herdman gives no description of the reproductive organs of *S. squamosa*, nor, so far as I know, has this gap been subsequently filled. The description is thus too incomplete to allow of satisfactory comparison, and consequently one cannot for the present draw any conclusions as to the relationships or systematic position of *Styela squamosa*, since the divisions are for the most part based on differences in the reproductive organs.

In his paper on "The Classification of the Styelidæ," A. G. Huntsman (1913, Zool. Anzeiger, xli. pp. 482-501) has divided the genus *Styela* into two groups: one comprises *Styela*, *Katatropa*, *Goniocarpa*, *Botryorchis*; the other *Cnemidocarpa* alone. *Cnemidocarpa* is rightly distinguished from *Styela*, owing to the different relation of the male and female organs to each other. In *Styela* the ovary is elongated and bordered along either side by the male glands. One or two ovaries are present on each side of the body. In *Cnemidocarpa* the male glands are situated between the body-wall and the ovary, and form, together with the latter, one structure. The gonads vary from few to many, are elongated, and placed in a single row on each side.

In discussing the systematic position of *Ypsilocarpa*, the characters of the gonads, the atrial tentacles, the branchial sac, the alimentary canal, the dorsal tubercle, and, though secondarily, the condition of the test should be considered. Each of these organs exhibits characters peculiar to the species.

So far as one can judge from this single individual, the species should be referred to the *Cnemidocarpa* group, and not to the *Styela* group, owing to the relation of the testis to

the ovary. But it does not agree with *Cnemidocarpa* in other respects, even as regards the gonads. *Cnemidocarpa* has from few to many gonads, which are usually straight or tortuous. *Ypsilocarpa* has, on each side, only one gonad, which is of considerable length and bent in the shape of the letter **U**. Such essential differences in the reproductive organs forbid its inclusion in the genus *Cnemidocarpa* as now defined.

Since the classification of the Styelidæ is principally based on the peculiarities of the reproductive organs, a new genus should be established for the species here described. The other important anatomical differences further justify this course.

The genus *Ypsilocarpa* is therefore defined as follows:—

Branchial sac.—Four folds on each side; three are well developed, and one—the second—is in a rudimentary state.

Gonads.—One elongate cylindrical gonad on each side, bent into the shape of the letter **U**, and made up of both ovary and testis.

Atrial tentacles.—The atrial tentacles are thickly scattered over the narrow velum.

Genotype.—*Ypsilocarpa clipeata*, with the same diagnosis. The surface of the test is divided into polygons.

XL.—*On a Collection of Reptiles and Batrachians from the Island of Ceram, Indo-Australian Archipelago.* By MALCOLM A. SMITH, F.Z.S., and JOAN B. PROCTER, F.Z.S.

AMONG a small collection of reptiles and batrachians recently submitted to us for examination at the British Museum of Natural History there appears to be a new snake of the genus *Typhlops* and a new race of the frog *Rana grisea*, van Kampen.

Other species in the collection are also worthy of record, either because they increase the range of their known distribution or because they show some variation in character from the published description.