

4. Note on a new and primitive type of Compound Ascidian.

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During some dredging operations in the neighbourhood of Plymouth which I have recently been enabled to carry on by means of a Government grant given me by the Royal Society Committee, I met with specimens of a new and interesting Compound Ascidian, which forms the subject of the present note.

The specimens of this Ascidian were found in moderately shallow water (5 to 15 fathoms) attached to stones and shells upon which they formed small, inconspicuous encrusting colonies freely coated with sand-grains. The colonies possess a thin, spreading carpet-like base of test-substance traversed by stolonial tubes from which zooids spring up at irregular intervals. Sometimes the zooids are entirely free, but usually they are united into small clumps consisting of several individuals the tests of which are partially fused together. The zooids project from the basal carpet of test to a variable extent; as a rule their height is between six and ten millimetres. They possess a dilated and somewhat globular thoracic region and an elongated, semicylindrical abdominal region, which is always more slender than the thoracic portion. The zooids bear two distinct apertures, the oral and cloacal openings, of which the former is the larger. Each aperture is bounded by six well-marked lobes of triangular or semicircular shape. In the larger groups of zooids there is a distinct tendency to an arrangement of the individuals in such a way that the cloacal apertures are situated towards the centre of each clump, the oral apertures towards the periphery.

The test for the most part is covered with sand-grains, whereby the colonies are rendered highly inconspicuous. The adhesion of sand-grains is of interest in considering the process by which the clumps are formed. In the majority of the clumps examined the sand-grains form a complete sheath around each zooid; they not only adhere to the test of the zooids upon their external faces, but they also separate the individual zooids of a clump from one another. The existence of foreign particles between the zooids of the clumps shews clearly that these have been formed by a process of fusion or conecrescence.

In general structure the Ascidi-zooids agree with those of the majority of the Distomidae. The body when removed from the test is seen to be divided into two regions, the thorax and abdomen, which are connected by a slender oesophageal stalk. A mature zooid is from 3—4 millimetres in length. The musculature is well-developed. In

the thoracic region it consists of both longitudinal and transverse fibres united into bundles that form a strong, square-meshed lattice-work; the longitudinal bundles appear to be arranged in six main groups, corresponding to the number of the oral lobes. In the oesophageal and abdominal regions longitudinal bundles are present but transverse muscles are altogether absent. The ganglion is large and spherical, and the subneural gland is well developed. The buccal tentacles are about thirty in number. The pharynx possesses three rows of straight and elongated stigmata, and two moderately broad horizontal membranes with perfectly straight edges.

In young zooids I have been unable to discover any trace of oviduct or vas deferens; but in mature zooids both are present. The ova are large, and undergo their development in the atrial cavity. There is no special oviducal or cloacal diverticulum for their reception.

The characters of this Ascidian necessitate the definition of a new genus and species of the family Distomidae.

Archidistoma, gen. nov.

Colonies encrusting, consisting of a spreading basal portion from which arise zooids at irregular intervals. Zooids either entirely free or partially fused together to form clump-like aggregations. Oral and cloacal apertures distinct, six-lobed. Musculature in the thoracic region consisting of both longitudinal and transverse bundles. Oviduct and vas deferens present in mature zooids. No incubatory diverticulum of the cloaca.



Fig. 1. *Archidistoma aggregatum*.
A small colony, enlarged.

Archidistoma aggregatum, sp. nov.

Clumps composed of a small but variable number of zooids. Test arenaceous. Tentacles about thirty in number. Pharynx possessing three rows of straight, elongated stigmata; horizontal membranes between the rows of stigmata; no intermediate supporting membranes. Ova large, containing much food-yolk.

Archidistoma aggregatum is a connecting link between the true Distomidae (*Distoma*, *Cystodites*, *Distaplia*, *Oxycorynia*, *Colella*) and

the Clavelinidae (s. str.). Hitherto no true Distomid¹ has been known to possess free zooids — that is zooids not completely embedded in a common test; this new Ascidian, however, combines the structural characters of the Distomidae with a social form of colony which is only slightly removed from that of the Clavelinidae.

Further, *Archidistoma aggregatum* is of especial interest because it exhibits the first stage in the evolution of the coenobitic type of colony from the Social Ascidian type, in which the zooids are entirely free and irregularly placed; in *Archidistoma aggregatum* the clumps of zooids (primitive coenobia) have no common cloaca, but the cloacas of the individuals are usually situated towards the centres of the groups.

Fig. 2.

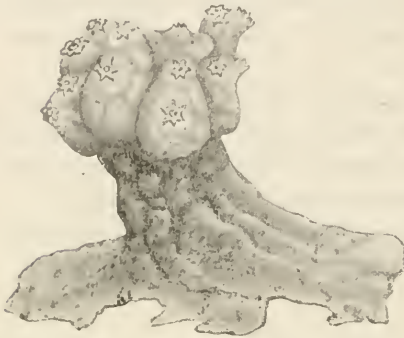


Fig. 2. *Archidistoma aggregatum*.

Part of another colony, enlarged; shewing the partial freedom of the zooids of a clump, and the tendency of the cloacal apertures towards a central position.

The second stage is exhibited in such a Compound Ascidian as *Synoicum turgens* or *Circinalium concrescens* in which each of the isolated

clumps of zooids possesses a common central cloaca.

Marine Biological Laboratory, Plymouth, July 31st. 1891.

6. Die Beziehungen von *Goniopelte gracilis* Cls. = *Clytemnestra* Hendorffi Poppe zu *Goniopsyllus rostratus* Brady = *Sapphir rostratus* L. Car, sowie deren Stellung im System.

Von C. Claus, Wien.

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Kurze Zeit nach Publication meiner Schrift über *Goniopelte gracilis*, eine neue Peltidie (Arbeiten d. zoolog. Instituts. Wien. 9. Bd. 2. Hft.) erhielt ich Poppe's Beitrag zur Kenntnis der Gattung *Clytemnestra* Dana durch die Güte des Verfassers übersandt. Die nahe Verwandtschaft der in dieser Schrift näher beschriebenen und an guten Abbildungen erläuterten ostindischen *Clytemnestra Hendorffi* Poppe mit der mediterranen *Goniopelte gracilis* leuchtete aus beiden Be-

¹ The position of *Chondrostachys* is uncertain, but its nearest affinity seems to be with *Stereoclavella* rather than with *Orycorynia*. *Diazona* is separated from the Distomidae by the presence of internal longitudinal bars in its branchial sac.

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