

## HEMIMYCALE COLUMELLA (BOWERBANK): A SHORT DESCRIPTION AND HISTORY OF THE SPECIES

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(Text-figs. 1-3)

These notes arise from the difficulty met with in identifying a pinkish encrusting sponge which has been frequently collected by hand from rocks at 5-10 fathoms. The sponge was at first identified, by a process of elimination, with the deep water genus *Inflatella*. Fortunately some preparations were shown to Dr Lévi at Roscoff to whom the species was at once familiar as *Stylotella columella* (Bowerbank). It was then found that this species had been described originally by Bowerbank from an Exmouth specimen, and subsequently by Topsent from both south and west coasts of France. Topsent found the unusual, if not unique, character of this sponge in possessing, besides siliceous spicules, a great abundance of calcareous granules. These granules are almost certainly the 'gemmules' described and figured by Bowerbank. De Laubenfels in 1928 collected one specimen from Plymouth Sound which he identified as *Stylotella columella*; but proposed (1932) that the species should be included in the genus *Prianos* Gray. Burton in 1934 renamed the species *Hemimyscale columella*, figuring the spicules as styles. Arndt (1935) returned to *Stylotella* and retained Burton's figure of the spicules. As the styles have been found, so far, only as a small minority amongst the spicules, it has been thought worth while to provide a further description; and to discuss the differing views on the systematic position of the species.

The sponge consists of a crust, normally several millimetres thick, the surface of which is rather slimy and bears numerous shallow circular pits. These pits are very conspicuous while the sponge is alive and growing on a rock, and each consists of a group of pores. The oscules are rather infrequent, occurring on small conical papillae; they contract and close within 15 sec of a slight disturbance. The oscules are usually indistinguishable in preserved specimens. There is a distinct dermal layer or membrane which contains only scattered spicules except around the projecting rim of each pit. This rim, also slightly contractile, is supported all the way round by a single layer of numerous radially placed spicules. The main skeleton is composed of vertical fibres or bundles of spicules. The fibres often break up into smaller branches

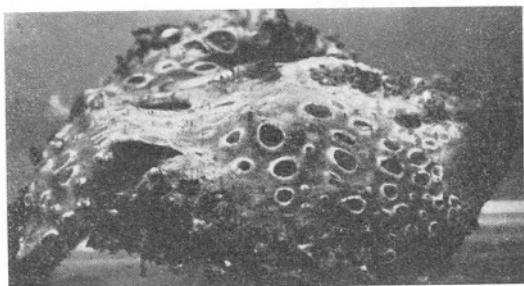


Fig. 1.

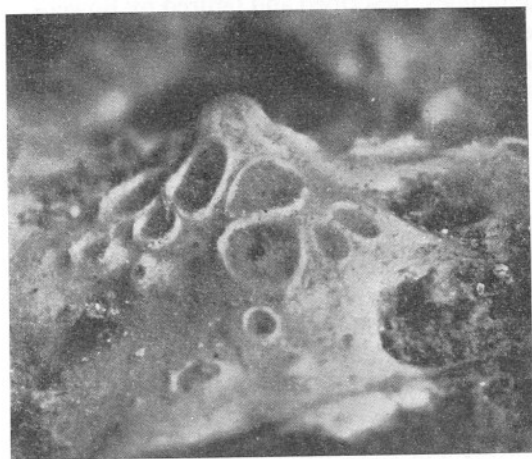


Fig. 2.

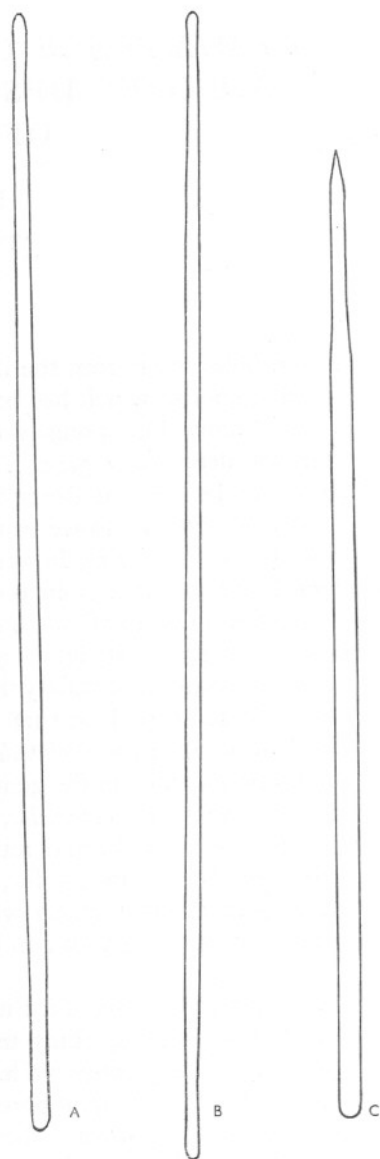


Fig. 3.

Fig. 1. Living *Hemimyscale columella*. Approx. natural size.

Fig. 2. Side view of the same colony, enlarged, showing an oscule.

Fig. 3. A, strongyl, 355 by 6  $\mu$ ; B, strongyl, 385 by 5  $\mu$ ; C, style, 325 by 8  $\mu$ .

or give off side branches which interlock with those of neighbouring fibres. The spicules consist of strongyles with a very slight constriction near one or both ends (Fig. 3), of the following dimensions: twenty spicules measured at random ranged from  $330$  to  $420\mu$  with a mean length of  $373\mu$ ; ten spicules had a mean breadth of  $5.85\mu$ , ranging from  $5$  to  $6\mu$ . Styles were also present though definitely rare: with a sample of fifteen, the mean length was  $340\mu$  and the range from  $290$  to  $380\mu$ . The mean breadth of five styles was  $7.6\mu$  and the range from  $6.5$  to  $9\mu$ .

With specimens from Naples, Topsent (1925) found the spicules sometimes entirely subtylostrongyles, but showing all gradations from subtylostrongyles to subtylostyles.

The pointed ends of the styles were often (Fig. 3) constricted rather sharply at a short distance from the point instead of tapering evenly. Topsent (1925) described the styles of three different species of *Stylotella* as having similar constrictions towards the pointed end but with a series of two or three steps in contrast with the single step of *Hemimyscale columella*.

The species was first described as *Desmacidon columella* by Bowerbank (1874, p. 243); although the form of the sponge was termed massive, the arrangement and shape of the spicules agreed fairly well with that of the Plymouth specimens. The chief character which Bowerbank stressed was the gemmules. These bodies varied greatly in size and were 'exceedingly abundant, in some parts as to completely obscure the tissues beneath them'. This describes exactly the appearance of the calcareous granules in my own preparations. Although the gemmules which Bowerbank figured were considerably larger than any which I have seen, they are identical in appearance with the largest granules in a preparation of de Laubenfels' specimen. There seems no reason to doubt that Bowerbank's gemmules were also calcareous granules. Of the eleven species of *Desmacidon* described by Bowerbank only *D. fruticosum* remains in the genus.

*D. columella* was changed in 1891 by Topsent to *Stylinos columella*. *S. jullienni* was designated in 1892 as the type species of this genus; as this species had a skeleton composed solely of styli, the inclusion of the species *Desmacidon columella* seems at first sight hardly justifiable. Topsent, however, considered that the strongyles showed an intergrading series with the styles; this does not occur in preparations from Plymouth specimens, and, whether it takes place or not, *D. columella* seems sufficiently different from *Stylinos jullienni* and the other species of *Stylinos* for it to be included in a separate genus. Burton regards *S. jullienni* as a species of *Myscale* (verbal communication), and, therefore, since *Desmacidon columella* clearly cannot be absorbed into the genus *Myscale* as well, though, as will be shown later, it possesses some mycalid affinities, another name must be found for it.

Later, in 1894, Topsent rejected *Stylinos* as synonymous with *Stylotella* Lendenfeld (1885), whose definition was: sponges of soft texture, the spicules

being styli only, singly or in bundles. *Stylotella* was revised in 1914 by Hallman who designated *S. agminata* as the type species. This species was very doubtfully assigned to the Suberitidae; while the other species described by Lendenfeld and those of Topsent were excluded from the genus, with no suggestion as to their true position. Topsent, however, continued to use *Stylotella* as an axinellid genus, noting in 1934 that Hallman's work 'leaves no doubt at all on this subject'! Moreover, Burton considers *S. agminata* to be a species of *Hymeniacidon* (verbal communication), and therefore as far as *Desmacidon columella* is concerned, he is in agreement with Hallman in rejecting *Stylotella* as the generic name. Meanwhile, in 1932 de Laubenfels had proposed to change *Stylotella columella* to *Prianos columella*, a genus which he had resurrected for Californian species. *Prianos* was introduced by Gray (1867) for *Reniera amorpha* O. Schmidt (1864). Its validity was doubted by Vosmaer 1885 and later (apparently unknown to de Laubenfels) Topsent, 1925, p. 710, found *R. amorpha* to be a true *Reniera* but synonymous with *R. cratera* O. Schmidt (1862). It is thus impossible to agree with de Laubenfels in accepting *Prianos* as a valid genus; nor in the similarity, which he suggests, between Schmidt's *Reniera* species and the species *Desmacidon columella* in having spicules 'in confusion'. For with *Reniera amorpha* Schmidt described the spicules as linked to form an irregular network by spongin, and in *Desmacidon columella* the spicules are grouped to a very large extent into branching polyspicular fibres without spongin.

Burton (1934) introduced the name *Hemimycale* for Bowerbank's *Desmacidon columella* but described the spicules as styles with occasional strongyles. Dr Burton has been kind enough to examine my preparations and now agrees as to the relative rarity of the styles. *Hemimycale* is therefore the first valid name for the species *Desmacidon columella*; but it has not been generally accepted. Arndt (1935), though using Burton's description, returned to *Stylotella* which was placed in the *Biemnidae*. Lévi (1950) notes *Stylotella columella* as fairly common in the vicinity of Roscoff, and following Topsent retains the species in the Axinellidae. Dr Lévi has since found that larvae of *Desmacidon columella* resemble those of *Mycale* species; thus as a generic for the former species, *Hemimycale* is both acceptable and appropriate.

#### SUMMARY

*Hemimycale columella*, a siliceous sponge with a simple skeleton composed chiefly of strongyles, also possesses numerous calcareous granules. The history of the sponge since its discovery by Bowerbank is reviewed and reasons given for rejecting the earlier genera in which it was placed: *Stylinos* Topsent, *Stylotella* Lendenfeld, Hallman and *Prianos* Gray. *Hemimycale* Burton is re-established.

I am much indebted to Dr Lévi for his assistance and guidance, and for permission to publish his observations on the larvae. I am also grateful to Dr M. Burton for his help, especially on the synonyms of various early genera.

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