

sing; for its diameter is often six times as large as the thickness of the coating. Unfortunately the only specimen known has been much bleached, so that it is impossible to say whether the almost total absence of all detached siliceous bodies may be looked on as a distinguishing character of this genus. Judging from the structure of the tissue, this sponge might perhaps be ranged in the same genus with *Farrea orca*, Bowerb.; but as only fragments are known of the latter, which possibly might belong to *Euplectella cucumer*, Owen, in whose roots they were found, for the present *Farrea orca* and *Eurete simplicissima*, S., must be considered different species. A careful examination of the tissue of *Euplectella cucumer* would settle the question. Detailed descriptions will shortly appear in the 'Zeitschrift für wissenschaftliche Zoologie.'

XLVII.—Note on *Hyalonema* Schultzei, Semper.

By Dr. J. E. GRAY, F.R.S. &c.

AFTER studying the translation of Dr. Semper's description of *Hyalonema Schultzei* made for me by his wife, Frau Anna Semper, to whom we are indebted for the beautiful figure of the Philippine *Holothuria*, and considering the additional information that Dr. Semper has most kindly communicated to me personally during his stay in London, I have come to the conclusion that it is very doubtful if *Hyalonema Schultzei* really belongs to the genus to which Dr. Semper refers it, and if it is not rather a true Sponge, a species of *Euplectella*, or, may be, of a new genus of sponges very nearly allied to *Euplectella*. Unfortunately only a single specimen has as yet been obtained, and it is without any polypes, if it ever had any, which I doubt. It certainly differs in many most important particulars from what I have given in my paper in the October Number of the 'Annals' as the character of the group *Hyalonemadæ*.

The long spicules of *H. Schultzei*, which have been compared to the spicules of *Hyalonema*, are like those of *Euplectella*; they have a cup-shaped knob or anchor at the tip, and a series of recurved spines on the part near the tip, like those figured by Owen (Linn. Trans. xxii. t. 21. f. 6 & 7.) These spicules agree with those of both the species of *Euplectella* known, and are quite unlike those of *Hyalonema*, which are always imperfect at the end, without any anchor or projecting spines, but with rings of small spines directed towards the middle of the spicules, as described in my late paper.

It is said that the upper ends of the long spicules of *H.*

*Schultzei* spread over the surface of the barrel-shaped body of the sponge, and do not form a conical pencil like that which is inserted into one of the sides of the cup-like sponge that is sometimes parasitic on the tip of the *Hyalonema* from Japan.

The body of *H. Schultzei* is somewhat like in form, and resembles in texture, the body of *Euplectella cucumer* of Prof. Owen. Indeed *H. Schultzei* of the Philippines seems to differ chiefly from *Euplectella* from the same country in the long spicules with the recurved spines and cup-like anchor termination being directed from the body, as if they formed a stem by which it was anchored in the mud or sand, instead of being bent upwards towards the upper part of the tubular sponge, forming a ruff or fringe round its body, as they are generally seen in the more perfect specimens received from the Island of Zebu.

We are very imperfectly informed how the *Euplectella aspergillum* is attached to the bottom of the sea in which it grows. Most specimens from Zebu have a greater or less quantity of dry mud enclosed in a large number of small fibres at the base, as in Prof. Owen's plate (Linn. Trans. xxii. t. 21. f. 1), looking as if the sponge had grown with a small, more or less expanded, circular disk, formed of the spicules, on the mud, which with some mud is artificially moulded by the collectors into the form in which we generally receive them; but this disk seems a very small and insecure means of attachment at the bottom of the sea, however quiet the water in which they live may generally be.

Prof. Owen, when describing *Euplectella cucumer* (Linn. Trans. xxii.), observes that the specimen had fortunately been preserved along with the foreign bodies to which it was attached by the terminal filaments; such a mode of attachment may now, therefore, be added to the generic characters of *Euplectella* as defined *l. c.* p. 117. On the plate is figured the "foreign sponge and other bodies to which it is attached" (p. 123); and in the figure some of the long "barbed filaments with their terminal anchors" at the base of the barrel-shaped body of the sponge are bent up like those seen on the specimen of *E. aspergillum* from the Philippines, while others bend down so as partly to cover the mass of foreign bodies above referred to, to which it is attached.

Since I have read Dr. Semper's paper, and have discovered that *Hyalonema* lives with its siliceous spicules sunk like roots in the sand or mud, it has occurred to me whether *Euplectella* may not use the elongated, barbed and anchor-ended spicules sunk in the sand for the same purpose, or that they may surround a mass of foreign bodies, like those figured as at-



tached to *Euplectella cucumer* in the plate above referred to, as a mooring to keep them in their place at the bottom of the sea—that the collectors artificially bend up, for the purpose of packing, the barbed anchor-bearing spicules round the body of the sponge—and that what Dr. Semper considers the stem, which he compares to the coil of *Hyalonema*, may be only a bundle of the spicules which it has in common with other species of the genus *Euplectella*.

The consideration of these questions is important, not only as regards the use of the peculiar barbed spicules of the genus *Euplectella*, but also in comparing them with the spicules of *Hyalonema*, and particularly as regards the relation that *H. Schultzei* has to the sponge *Euplectella* or the coral *Hyalonema*, to which it has been referred. It is important to settle this question before we use this animal as an argument to determine the situation of the genus *Hyalonema* in the general system of nature.

Dr. Semper objects to my remark, at page 275, that “the coil had lost its bark and animals,” like the specimens that are sent from Japan and dredged up in Portugal—observing that “it never had any animals,” which is quite consistent with the theory of its being a sponge nearer to *Euplectella* than to *Hyalonema*, and proves, if my theory is correct, that it cannot belong to the latter genus.

Of all modes of introducing ambiguity and confusion into science, none is half so effectual as the use of ambiguous names. One name for one animal is the first principle of natural science. Dr. Semper states that it cannot be a *Euplectella*, as the body of that sponge is reticulated, the longitudinal spicules being crossed in the bundle by horizontal and oblique ones, while the body of *H. Schultzei* is only formed of longitudinal spicules without any transverse ones, and only kept in their place, so as to form an elongate oval cup, by the sarcode. All these particulars are utterly at variance with all the characters that I have given to the true Glass-rope or *Hyalonema*, and so much more similar to those that belong to *Euplectella* that I am induced to propose for the present that it be regarded as a new genus of sponges of the family Euplectelladæ, for which I would propose the name of *Semperella*. It may appear precipitate to propose a generic name for a sponge that I have not seen; but it is absolutely necessary; for already so many things have been called *Hyalonema* that it requires the greatest attention, when one sees the name mentioned, to know what part of the Glass-rope the writer is speaking of, or if he is speaking of a sponge not having the slightest affinity to the Glass-rope.

If this theory is correct, it will add another synonym to the genus *Hyalonema*, which already has many significations.

1. *Hyalonema*, Gray, Brandt, Bocage. The coil and polypes. The sponge, regarded as parasitic, named *Carteria*.
2. *Hyalonema*, Valenciennes, Milne-Edwards, Max Schultze, Wyville Thomson, Perceval Wright, Huxley. The sponge and coil, the coil being regarded as a part of the sponge (*Carteria*, Gray). Polype regarded as a parasitic species of *Palythoa*.
3. *Hyalonema*, Bowerbank, W. Carpenter. The sponge, coil, and bark. The bark or polypes regarded as a skin of the coil and sponge, which they consider part of the same organization.

*Excluded Species.*

4. *Hyalonema*, sp. (*boreale*), Lovén, Wyville Thomson. A sponge (*Ficulina*, Gray) belonging to the family Halichondriadae.
5. *Hyalonema*, sp. (*boreale*), Bocage = a sponge (*Lovénia*, Bocage) belonging to the family Tethyadae.
6. *Hyalonema*, sp. (*Schultzei*, Semper) = *Semperella*, Gray. A sponge of the family Euplectelladae.

No doubt great part of this confusion has originated in the very strong predisposition of zoologists and physiologists to believe that siliceous spicules can only be secreted by Protozoa or sponges, and plants, as Diatoms, the grasses, *Equisetum*, &c., though M. Haime says that he discovered siliceous spicules in the bark of *Leitopathes*, and Dr. Wyville Thomson says that silica is present in the axis of *Gorgonia*, and Dana that it forms 23 per cent. of the chemical constituents of certain Madreporae.

SEMPERELLA may be thus defined:—

A tubular vase-shaped sponge, with the tube closed with a convex lid, and the wall of the tube formed of elongated, slender, subcylindrical, thread-like, siliceous spicules, which are kept in the vase-like form by the sarcodae. The base contracted, some of the thread-like spicules of the tube and others being produced into a stem, which is sunk in the mud. The radical filaments barbed near the end, and with a cup-shaped anchor at the tip.

*Semperella Schultzei* = *Hyalonema Schultzei*, Semper.

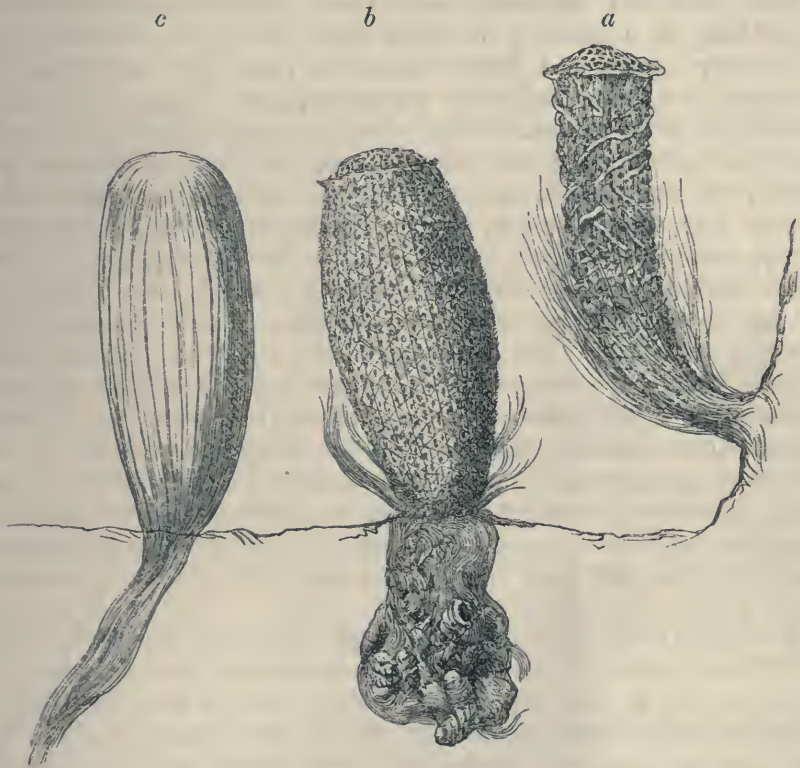
The different shape of the body of *Euplectella aspergillum*



and of *E. cucumer* may indicate that they grow in different situations and circumstances.

*E. cucumer* most probably grows in the mud, kept in its place by a mooring of stones, as figured in Professor Owen's plate.

The curved form of *E. aspergillum* would lead one to believe that it most probably grows on the side of a perpendicular rock; but I have no proof that this is the case, except the form. If it grew from a horizontal surface, the top of the tube or cloaca would not be uppermost and the *Euplectella* in the upright position natural to all sponges and other animals and plants that live on the bottom of the sea.



a. *Euplectella aspergillum*, Owen.

b. *Euplectella cucumer*, Owen.

c. *Semperella Schultzei*, Gray, from an outline by Dr. Semper.

This sponge cannot be the young state of *Euplectella aspergillum*, which is also from Zebu. We have a young specimen of that species, not more than 2 inches high, in the British Museum, which was sent with the adult. It is nearly cylindrical, and has distinct horizontal bundles of spicules across the longitudinal ones, as in the adult state of the genus, which are entirely wanting in *Semperella*.