

**ON EUPLECTELLA ASPERGILLUM, ALSO
ON A NEW FORM OF GLOBIGERINA;
PHOSPHORESCENT ANIMALCULES;
SEA-SAWDUST; NEW FORMS OF
FORAMINIFERA AND POLYCYSTINA**

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On euplectella aspergillum, also on a new form of globigerina; phosphorescent animalcules; sea-sawdust; New Forms of Foraminifera and Polycystina by William Chimmio

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WILLIAM CHIMMO

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A NEW FORM OF GLOBIGERINA; PHOSPHORESCENT ANIMALCULES;
SEA-SAWDUST; NEW FORMS OF FORAMINIFERA
AND POLYCYSTINA.

BY

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EUPLECTELLA ASPERGILLUM

(“VENUS'S FLOWER-BASKET”).

REGADERA (*Spanish*), Watering-pot.

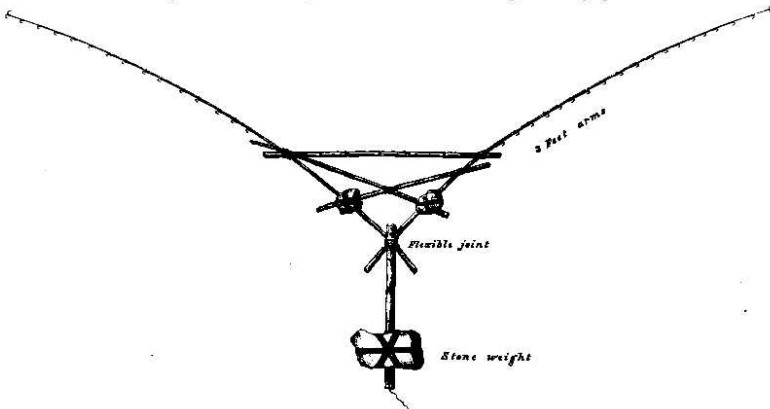
THE only spot in the world (as yet known) which produces that delicate and exquisite sponge *Euplectella aspergillum* is about six miles south of Zebu (one of the Philippine Islands), off a point called Talisay; the depth is great—120 to 140 fathoms (=840 feet); and this is the only place where this beautiful sponge is found by the native Bisayas, who fish for it during strong currents and smooth water with an ingenious trap formed, in the shape of the letter Y (see woodcut, p. 4), of two long slender and four shorter bamboos, lashed together and loaded with a big stone, and dragged along over the bottom like a dredge, having numerous fish-hooks fixed on the outside of the arms of the Y close together, which entangle and hook the Regadéra, tugging it up by the roots and very frequently wounding it, which may be seen in almost every specimen. They are then hung up to the branches of a tree to bleach in rain and sunshine; the spongy sarcode dies, dries, and falls off, leaving the white and exquisite skeleton or framework.

None but those on the spot, and who actually see this beautiful sponge brought to the surface, torn by the roots from its bed of soft dark mud by the tiny hooks of the Bisaya's trap, can possibly form an idea of the mode of growth, the progression, and final decay of this fairy-like structure. They are called by the natives, who first found them, the “Regadéra” (watering-pot); they grow on a bank, or rather in a hole of very dark mud, which contains many growing upright like a plant, although some have been taken which have fallen down from accident or natural decay; the frame then becomes blackened and discoloured from lying on the mud.

The Euplectellas are of various forms, but most generally partake of that of a cornucopia—about 12 inches in length and 2 inches in diameter at the top,

tapering to the root. Some few (three or four) have been found 2 feet in length, but these are very rare (Plate III.); others are double, two springing from the same root (Plate II.); others have a smaller one, and even two, sprouting or shooting from the same root (Plate III. fig. 3). Some have been found only an inch in length (Plate III. fig. 4); and another species has been found (Plate III. fig. 1) in the shape of a cucumber.

On being brought to the surface they are rigid, tough, and flexible; but when dry are rather brittle, but still retain much strength. Many specimens



Trap used by the natives for catching the Regadéra.

have been injured by some accidental cause; but their structure is then renewed, showing an awkward and unsymmetrical form.

Only three specimens of 2 feet in length have been as yet found; these are very beautiful, and sold for £4 each. The first pair of Euplectellas (found a few years since) sold for \$50, the second \$15, and finally \$5 a pair; they are now cheap and abundant in their bleached state*. Live specimens are not

* Since writing this (four years ago) the bed is becoming exhausted.

easily procured; the natives cannot understand why they are preferred to the clean ones. They play many pranks with them, mending wounded parts, putting in parasites which never belonged to them, but which the natives consider necessary, "as they patch them up," putting on false roots, and many other dodges, which must always be looked for when purchasing them. The natives have a great aversion to showing you the place where the *Euplectellas* are dredged, or going with you, or in any way assisting to procure them, fearing that your motive is to deprive them of this means of livelihood.

About nineteen specimens out of twenty brought to the surface contain one or more parasites—Crustacea of at least four species (as will be seen in Plate V.). The parasite is supposed to enter the frame of the sponge while young or as spawn, and before the roof is crowned over, taking up its abode and becoming a prisoner for life. It was at first supposed, and is by some still believed, that this creature assists in the structure of the *Euplectella*; persons who have bleached specimens are careful to show you the "insect that produced the framework." The natives also believe it, and take care never to bring you one without it. It is needless to add that the crustacean has nothing whatever to do with it, further than finding it a safe and convenient dwelling, enters it, and there remains; it is simply to the *Euplectella* what the hermit crab is to its shell—a convenient dwelling, ready made!

I have stated before the difficulty, and, indeed, almost impossibility, of getting a native to go with you or show you where or how to obtain a live specimen; and it was not until I obtained an order from the Governor of Zebu, who said he would also accompany me, that I was able to get a man from Talisay Point to show me the spot. I dredged and toiled from seven in the morning till five in the evening, with all the conveniences and appliances of a steam-cutter, dredges, and even the traps used by the natives themselves. I had three of the best men from Talisay. One said, "there was too much wind;" another, "the current was insufficient;" a third, that "the line was too large." Perhaps they were all correct; but I was not repaid by a single specimen, and I returned to my ship thoroughly disheartened and disappointed.

Next day I passed over the spot in the ship, put over a trap I had made on board, and succeeded in taking two imperfect specimens and three smaller ones about an inch in length. I learned from this, however, two facts—that the structure is always closed at the top, and that its origin is a bud or shoot,

or gemmule. We were now prevented from further toil by the sudden death of one of our petty officers, and had to return to Zebu to bury him.

* * * * *

On passing over the same ground next day a canoe hailed us, and a native, holding up something in his hand, shouted out "*Regadéra!*" He came alongside; and I was well repaid for all my trouble by getting a magnificent perfect specimen (Plate I.) just hauled up from 110 fathoms, embraced in the arms of three splendid starfish (*Comatula rosacea*), one orange-yellow, the others deep Indian red. The arms of the starfish, ten in number, were 7 inches in length and branched, with numerous shorter ones about half an inch long, hugging and taking special care of their prize.

Having had a perfect specimen (alive) of the *Euplectella* before me, I will endeavour, as well as I am able, to give some account of it. I first placed it in salt water; but there was nothing to be gained from this except seeing the starfish hug more closely their companion, and to see the little parasitic Crustacea darting about in their prison. I then dropped all into some spirit; the starfish lost their brilliancy, and tinted the whole vase a beautiful amber-colour, light on top, darker at the bottom.

This specimen was $11\frac{1}{2}$ inches in length by $2\frac{1}{2}$ in diameter at the top, in the form of a cornucopia (Plate I.), the framework covered with a thick sarcode of brown spongy gelatinous material. The root was a mass of thickly matted spicules, barbed, about 2 inches in diameter, and entangling together mud, shells, wood, and many other things.

The framework itself (Plate IV. fig. 1) consists of longitudinal or vertical ribs of siliceous hairs deposited together into glossy threads. These are crossed transversely or ribbed by bands at regular distances; these are again crossed and recrossed and matted together, causing the apertures to assume a hexagonal form. This frame is then diagonally crossed with irregularly spiral frills of interlacing fibres; these are again recrossed diagonally and irregularly, the whole forming a very strong framework of most beautiful and exquisite siliceous spicules.

The top of the *Euplectella* is crowned with a lacework of even whiter material, very much resembling ladies' tatty-work well washed. The apertures are of various forms, unlike those of the upright frame; they are oval, triangular, and irregular; and the masses of threads are denser and whiter than those of the frame.

Plate IV. fig. 1 shows the general construction of the whole frame—vertical ribs of siliceous threads packed together, crossed at right angles by similar ones, then intertwined by numerous smaller knotty ones binding the whole framework; the squares thus formed are $\frac{1}{10}$ of an inch square, but the smaller ones reduce the figure to a hexagonal form.

Plate IV. fig. 2 shows the arrangement of the frill which crosses these squares diagonally; the frill is $\frac{1}{10}$ to $\frac{1}{8}$ of an inch wide; many of the parts contain rounded apertures or canals, and are wonderfully laced together.

Plate IV. fig. 3 shows the crown, which is denser and whiter than the frame, formed in irregular figures. It is still somewhat doubtful whether this is closed in when the *Euplectella* arrives at its full growth, or continues growing with it. I have dredged one only 4 inches in length with the crown perfectly formed; but I have also taken three scarcely an inch in length which have small rounded apertures, and the process of netting or crowning over had not commenced. If the former is the case it is not difficult to account for the Crustacea entering at their full growth (some more than an inch in length); but I have taken five Crustacea out of one form without an aperture of any sort to admit them, except as spawn or when very young.

Plate IV. fig. 4 is a portion of the root, which is thickly matted together, and is wonderfully provided for holding and firmly fixing in the mud, to prevent being washed away by currents or other accidental causes, by having each fibre thickly barbed, which does not happen in those fibres of the upright column; when these barbs get into the fingers they cause an irritating pain, and cannot be easily taken out. These roots are 2 to 3 inches in diameter, and entangle numerous ocean shells, Foraminifera, &c.

Among the former were found :—

Hyalæa, three species.
Cornucopia.
Pecten.
Dentata.
Spirillini.
Creseis aciculata.
Cuviera columella.

Among the latter were :—

Globigerina of many sorts.
Spirolocutina.
Spirillina.
Cristellaria; very perfect.
Astromma.
Dentalina; perfect.
Textularia.
Polymorphina.
Biloculina.
 Bivalves; minute.