

VII. *Description of a new Genus and Species of Sponge* (Euplectella¹ *Aspergillum*, O.).

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Communicated January 26, 1841.

MR. CUMING has entrusted to me for description one of the most singular and beautiful, as well as the rarest, of the marine productions with which his researches in the Philippine Islands have enabled him to enrich the zoological collections of his native country. This production forms part, however, of a member of the lowest class of organized bodies, being the skeleton or framework of a species of Sponge, belonging to the cylindrical and reticulate, or 'Alcyonoid' family. It is a hollow, subcircular, slightly conical, and gently curved case or tube, resembling a delicate cornucopia with the apex removed. It measures eight inches in length, two inches across the base, and one inch and a quarter across the apex, which is truncated. The base or wider aperture of the tube is subelliptical, and is closed by a cap of coarse and somewhat irregular network, gently convex externally, the circumference of which is divided from the walls of the cylinder, like the base of the *Aspergillum* or water-pot shell, by a thin projecting plate, standing out like a ruff or frill. This marginal plate varies in breadth from one to three lines. The parietes of the circular cone consist also of a network of coarse fibres, but these exhibit great regularity of disposition, and intersect each other at definite and nearly equal distances throughout the course of the cone: they consist of longitudinal, transverse, and oblique fibres, the latter being of two kinds, winding spirally round the cylinder, but in opposite directions. The strongest fibres are longitudinal and transverse; they are arranged at intervals of about a line and a half, and mark out square spaces of the same diameter: these spaces are kept of pretty equal size throughout the cone, from the circumstance of the longitudinal fibres diminishing in number as the cone decreases in size: the mode of diminution is not, however, by abrupt termination, but by the gradual convergence and final interblending of two contiguous longitudinal fibres, and the regularity of the interspaces is therefore disturbed at the intervals of such converging fibres. The fibre resulting from this union of two fibres bears a proportionate thickness to the additional material entering into its composition: the nature of such material is demonstrated at the apex of the cone by the resolution of the longitudinal fibres into their component filaments, each fibre dividing at about two-thirds of an inch from their extremity into a fasciculus or pencil of extremely delicate, rather stiff, glistening, elastic threads. The transverse

¹ Der. εὖ, *well*, πλέκω, *I weave*.

fibres, in like manner, are resolved at the truncated apex of the cone into their component filaments, which intersect those proceeding from the longitudinal fibres, as well as similar pencils from the oblique fibres, the whole forming an irregular silky tuft which almost closes the apical aperture of the cone.

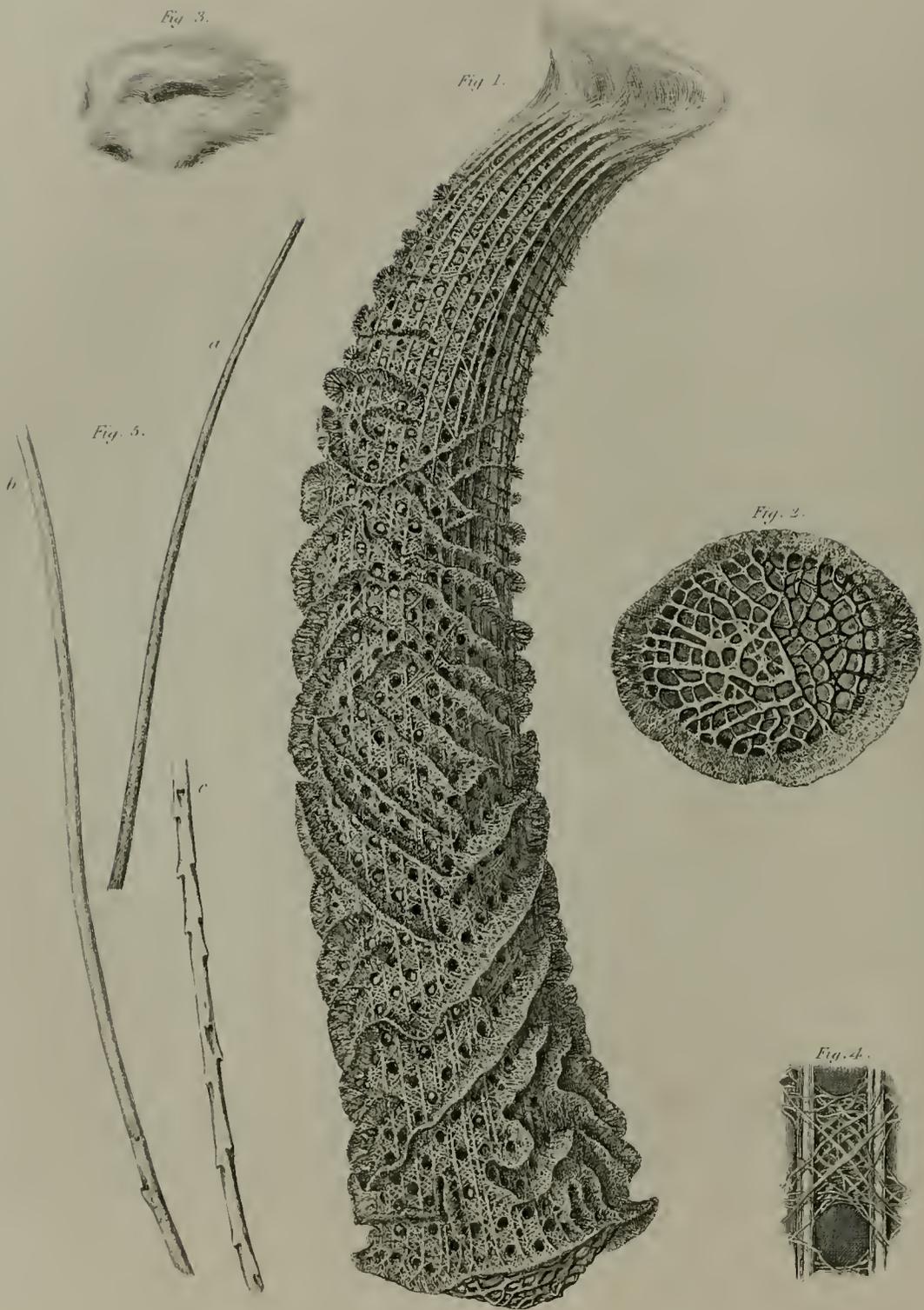
The longitudinal fibres are external to the transverse ones, to which they are connected by both the spiral fibres and by smaller and less regular intersecting fibres at the angles of the squares; the area of each square is thus reduced more or less to a circular form¹. At about one or two inches from the apex these connecting reticulate fibres begin to rise in the form of narrow ridges from the general surface of the network, and nearer the apex on the convex than on the concave side of the bent cone: these ridges at first are short and interrupted; they are then more extended but irregular in their course, some being transverse, others undulated or curved; but as they approach the base of the cone they are continued into broader ridges, which follow with more or less regularity the course of the oblique spiral fibres; the broadest of these ridges measures two lines and a half: their structure presents an extremely fine and irregular network, disposed for the most part in two plates, which converge as they recede from the general wall of the cone, and coalesce in a sharp and well-defined edge. The component fibres of these reticulations, like those of the main network, are resolved into the fine silky filaments above mentioned: the fibres of the coarse irregular network which closes the basal aperture of the cone, and which constitutes the main characteristic of this Alcyonoid sponge, appear to be directly continued from, and, as it were, to include all those which enter into the composition of the longitudinal transverse and oblique fibres of the wall of the cone; the frill-like ridge above mentioned defining the line of transition from the one to the other. The inner surface of the reticulate parietes of the cone is even; not interrupted by any ridges or processes like those on the outer surface.

The number of the longitudinal fibres at the base of the cone is sixty; that at the smaller end, where they begin to resolve themselves into their constituent filaments, is thirty: the diameter of the longitudinal fibres is about one-fortieth of an inch; that of the transverse fibres is somewhat less: the oblique fibres, where they are most regular, average one-sixtieth of an inch; the longitudinal fibres, where they begin to resolve themselves into their component filaments, expand in the direction of a line passing to the centre of the cone, and not in the direction of the plane of its circumference, maintaining, in the latter respect, nearly the same breadth to their entire unraveling; whilst in the other dimension they equal one line in breadth before they are wholly decomposed.

Small portions of a finely reticulate plate were loosely attached to some parts of the internal surface of the cone: the fibres of these pieces consisted of minute filaments, irregular in their course, branching, anastomosing, and sending off abrupt processes like thorns.

¹ Pl. XIII. fig. 4.





Euplectella aspergillum. Cuvier

The component filaments of the parietal fibres are chiefly of two kinds ; the one¹ simple, cylindrical and smooth, the others² barbed at pretty regular distances through their whole extent, like the hair of certain caterpillars : I have also observed a few long filaments, which were simple at one extremity and barbed at the other³. These component filaments consist of a material like the dried gluten of marine plants, containing a small proportion of azote, and burning away to a charry silicious residuum.

If the basal aperture of the cone were open, the resemblance to some of the known reticulate Alcyonoid sponges would be very close, especially to that called *Alcyonellum gelatinosum* by M. De Blainville⁴ (*Alcyonellum speciosum*, Quoy et Gaimard⁵) : its closure by the reticulate convex frilled cap, in the present instance, establishes the generic distinction ; and in the exquisite beauty and regularity of the texture of the walls of the cone, the species surpasses any of the allied productions that I have as yet seen or found described. I propose, therefore, to name it *Euplectella Aspergillum*.

Since the foregoing description of the *Euplectella* was penned, that unique specimen has been purchased by my friend William John Broderip, Esq., whose cabinet it now graces. It has been entrusted, with his wonted liberality, to Mr. George B. Sowerby, Jun., during the long period which has been devoted to the engraving of so delicate and complicated a subject, and I cannot conclude without expressing my obligations for the facilities thus afforded to the accomplished artist, and for his zealous and successful endeavours to achieve a faithful representation of the *Euplectella*.

PLATE XIII.

Fig. 1. Side view, natural size.

2. Basal extremity.

3. Apical extremity.

4. Single interspace or open cell and surrounding finer mesh-work, magnified.

5. Component filaments magnified 150 diameters : *a*, Smooth filament ;
c, Toothed filament.

¹ Pl. XIII. fig. 5, *a*.

² *Ib.* fig. 5, *c*.

³ *Ib.* fig. 5, *b*.

⁴ Manuel d'Actinologie, 8vo. 1834, p. 529.

⁵ Zoologie de l'Astrolabe, 8vo. 1833, p. 302 ; Planches, Fol. Zoophytes, pl. 26. fig. 3. If the recognition of the generic or specific identity of the specimen here figured be impracticable, by reason of its mutilated condition, the generic name applied to it cannot be adopted while the Lamarckian genus of freshwater polypes, *Alcyonella*, is retained in zoology.