

specimens of *Euplectella aspergillum*, particularly one in the Museum of Liverpool, are in this condition, and I am not yet prepared to say whether all may not be thus soft at a particular stage of growth."

Higgin found that a rigid, firmly united, siliceous framework was only present on the under portion of the sponge, while the upper part appeared quite pliable. In the inferior portion the skeletal spicules were provided with a siliceous sheath, and were firmly connected by means of this; above, on the other hand, this union of the spicules was entirely absent.

According to Higgin, large four-rayed spicules form a fundamental quadrate network. The arms of these spicules lie in exactly longitudinal and transverse directions, and are apposed to one another. The arms of the cross spicules, which are about 2 cm. long, stretch across three or four meshes, and the longitudinally directed arms are still longer. Close to the four-rayed spicules (and united with their arms in a bundle-like manner), are simple, long, rod-like needles with thorny ends. The long arms of the three-rayed, and less frequently also of the four- or six-rayed spicules, are employed in the formation of the oblique fibrous bands. In these spicules two approximately equal arms extend in one straight direction, while the third, or the remaining two or four arise transversely, either straight and at right angles, or slightly bent. The spindle-like swollen extremities of the arms are thickly covered with fine spines. In the description of the simple spicules Higgin does not add anything to the researches of Claus and Carter, but corroborates the opinion already expressed by Semper, that the entire skeleton of *Euplectella aspergillum* always consists in the young state of isolated spicules, which, only at a later stage, become partially fused, and more or less firmly united by the deposition of layers of siliceous substance. This process of fusion begins in the inferior portion of the lattice-like tube.

A communication by Bowerbank<sup>1</sup> gives a more minute account of the arrangement of the loose spicules in the tissue of *Euplectella aspergillum*. There is here to be noted an important advance in our knowledge of the dermal skeleton. Bowerbank first recognised that, for the support of the dermal layer, the whole surface is provided with a system of radially directed, floret-like, six-rayed spicules, and that each of the centrally directed longest rays of these is apposed to a more deeply seated six-rayed spicule, while the four lateral rays are applied to the corresponding lateral rays of the four adjoining spicules of similar formation, and thus form a regular network of approximately equal quadrate meshes, while the distal ray, which is of about the same length as the lateral rays, projects radially outwards. Each of these freely projecting, radial, distal rays, bears terminally one of these elegant structures which are designated by Bowerbank "floricom-hexradiate spicules." These appear in no other region of the soft body of this sponge, and are regarded as protective weapons against small worms, &c. The quadrate meshes

<sup>1</sup> *Proc. Zool. Soc. Lond.*, p. 503, 1875.