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I. — *On a New Anchoring Sponge, "Dorvillia agariciformis."*
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Department, British Museum.

(Read before the ROYAL MICROSCOPICAL SOCIETY, Nov. 9, 1870.)

PLATE LXVI.

DR. J. E. GRAY placed in my hands yesterday morning, with kind permission to describe it, the sponge which, with an accompanying plate in illustration of its structure, I exhibit on the present occasion.

The form is a remarkable one. In external aspect it presents much the appearance of a "button mushroom" just springing from the ground, having several bundles of long filiform spicula depending from its lower surface. It may be said to be divided into two distinct portions: an upper, which takes the form of a hood, and corresponds to the "pileus" in making use of the fungoid comparison; and an inferior, bearing a rough resemblance to the stalk.

The supporting skeleton of this sponge is entirely silicious, having its component elements disposed in the following order. From the interior and basal portions we find radiating in every direction dense fascicles of stout spicula having their external extremity trifid and dichotomously branching, "Bifurcated expando-ternate" Bowerbank, as shown at Plate LXVI., Figs. 6 and 7. The interlacing ramuli of these spicules alone are exposed to the surface in the basal portion of the sponge. The surface of the upper part, however, presents quite a felty appearance, which arises from a mesh-work of anchorate, hexradiate, attenuate, and other varieties of spicula which are superimposed on the outer branching extremities of the trifid forms. The attenuate and anchorate spicula have frequently a definite fascicular arrangement. Immediately beneath the surface of the hood, and connecting it with the lower portion of the sponge, is a beautiful open reticulation of the sarcode, as shown at Fig. 3. Highly magnified, this net-work presents the appearance given at Fig. 4, and is found to be almost completely filled with minute irregularly stellate spicula, isolated and still more highly magnified examples of which are shown at Fig. 5; this reticulation

of the sarcode most likely represents the porous system of the sponge, or in all probability constitutes the more important portion of it. In the firmer bands of sarcode intersecting the reticulation, as represented at Fig. 3, may also be found larger triradiate and quadri-radiate spicula. The minute irregular stellate spicula are abundant in the sarcode throughout the sponge, in which also occur the small hexradiate and delicately echinate forms depicted at Fig. 10.

The rootlike bundles dependent from the base are found to consist for the most part of attenuate anchorate and attenuate linear spicula, having the minute hexradiate and irregularly stellate types interspersed among them.

The oscular system is very distinctly marked on the upper surface of the sponge, and, as may be observed in Figs. 1 and 2, consists of several large and unevenly distributed oval orifices, which give off branches and ramify internally throughout its substance.

In the specimen figured, the largest osculum occupies the centre, having the smaller ones distributed round it; in another example which accompanied it, however, there are four or five large oscula of equal size, and numerous smaller ones all irregularly disposed.

The possession of hexradiate spicula makes it necessary to refer this form to the group of the *Hexactinellidæ*, treated of at length in the November number of the Journal; but the oscular system and other structural characters are so entirely different from what obtains in all the species referable to that group which have hitherto been recorded, that it will be necessary to create a new division or family for its reception. This, however, with fuller particulars of its entire structure, I reserve for a future communication.

The sarcode throughout this sponge is remarkably firm in consistence, and quite distinct from that which characterizes those species of the *Hexactinellidæ* with which we are at present familiar. The diverse forms of spicula seem to indicate that this species constitutes a connecting link between the *Hexactinellidæ* and *Tethyidæ*; further study of it is necessary, however, before pronouncing a decisive opinion on this point.

I propose to distinguish this sponge by the name of *Dorvillia agariciformis*: the generic title, at the suggestion of Dr. Gray, in honour of Mrs. Dorvill, of Kingsbridge, Devonshire, a lady well known for her contributions to natural science, and more particularly for the beautiful figures she drew and etched to illustrate the 'Testacea Britannica,' and for the assistance with her pencil she rendered Col. Montague in his descriptions of sponges and other marine animals communicated to the Linnæan and Wernerian Societies. The specific one is given in consideration of its agaric-like form.

The specimens from which this description is derived have just been purchased by Dr. Gray, for the British Museum, with many

other British marine invertebrata; the locality from whence they were obtained is not yet known, except that they were taken at a depth of 540 fathoms.

EXPLANATION OF PLATE LXVI.

- FIG. 1.—*Dorvillia agariciformis*, viewed laterally, enlarged $\frac{1}{2}$ diameter.
 „ 2.—The same, as seen from above, nat. size.
 „ 3.—Under surface of the upper portion or hood, showing where it becomes continuous with the basal part, the netted structure of the sarcode $\times 3$ linear.
 „ 4.—A fragment of this netted portion, highly magnified, and showing the numerous minute irregularly stellate spicula interspersed through it.
 „ 5.—Three of the minute irregularly stellate spicula $\times 500$ linear.
 „ 6.—One of the large bi-ternately terminating spicula, of which the greater portion of the skeleton is constructed, $\times 20$ linear.
 „ 7.—The same, viewed from above. 7a.—Portion of a simple porrecto-ternate spiculum from the same region, equally magnified.
 „ 8.—One of the smooth anchorate spicula, abundant in the dependent root-lets and on the superior surface of the sponge, $\times 40$ linear.
 „ 9.—The anchorate termination of a variety of the same.
 „ 10.—Minute, rigid, delicately echinate hexradiate spicula, common in the sarcode of the sponge, $\times 100$ linear.
 „ 11.—An attenuate, flexuose, hexradiate spiculum, from the upper and superficial surface, $\times 50$ linear.
 „ 12.—The upper portion of an attenuate spinulate spiculum, from the same region, $\times 50$ linear.
 „ 13.—A simple attenuate, common on the superior and superficial layer, $\times 50$ linear.
 „ 14.—Portion of an attenuate adpressly spined spiculum, similar to what obtains in the genus *Pheronema*.
 „ 15.—An attenuate linear spiculum, showing its tendency to develop into an hexradiate form, $\times 50$ linear.
 „ 16, 17.—Triradiate spicula, from the reticulated layer of sarcode shown at Fig. 3, $\times 100$ linear.
 „ 18.—A quadriradiate spiculum, from the same region, $\times 100$ linear.
 „ 19.—A minute clavate and profusely echinate spiculum, from the sarcode, $\times 100$ linear. (This form is too scarce to be considered absolutely characteristic.)

* This spiculum is probably an interloper, as may also eventually prove to be the case with the form represented at Fig. 11. The great depth at which this sponge was taken, and the nature of the mud with which it is associated, makes it reasonable to anticipate that *Pheronema* flourished in its vicinity. The spined anchorate form of spiculum common to the last-named genus has also been detected.



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