

XV NOTES ON FRESHWATER SPONGES

By N. ANNANDALE, D.Sc., F.A.S.B., Superintendent, Indian Museum.

NO. XV.—SPONGES FROM SHELLS OF THE GENUS *Aetheria*.

The curious shells of the genus *Aetheria* ("Freshwater Oysters," as Reeve has aptly called them) offer on their roughened and often corrugated surface a favourable nidus for the growth of sponges, while the fact that, like the true oysters (*Ostrea*), they are firmly fixed by the lower valve to solid bodies, renders them still more suitable in this respect. The genus is confined to tropical Africa and is represented in the collection of the Indian Museum by only two lots of shells, one of which is labelled as being from the Nile, while the other is of uncertain *provenance*. The former represents a form of *A. caillaudi*, Fér., the species to which the latter, which has been examined by Mr. H. B. Preston, also in all probability belongs. This species is found only in the basin of the Nile, from which the first of the two sponges here described certainly and the second probably, therefore, comes.

At least one freshwater sponge (*Corvospongilla loricata*, Weltner) has already been described from a shell of *Aetheria*, and I have little doubt that others would be discovered in the same position if a careful examination were to be made of the shells of this genus already preserved in museums.

The only Indian species of the family Aetheriidae (*Mulleria dalyi*, Smith) is found in the tributaries of the R. Kistna. It was originally described from Mysore and has recently been collected in the Western Ghats by Mr. F. H. Gravely. I have examined specimens from both localities, but, although the shells closely resemble those of *Aetheria* in external characters, I can find on them no trace of either sponges or polyzoa.

Spongilla (*Eunapius*) *aetheriae*, sp. nov.

Sponge.—Only the basal part of the sponge remains and even from it all but the gemmules and their dense cage of spicules has disappeared. It was, however, evidently an encrusting form.

Skeleton.—All that remains of the skeleton is a dense but quite irregular network of macroscleres enclosing the gemmules. No trace of spicule fibres can be detected in it.

Spicules.—The skeleton-spicules are smooth, slender, sharply pointed amphioxi, on an average about 0.296 mm. long by 0.0136 mm. in greatest transverse diameter. The gemmule-spicules

resemble them in every respect except that they are smaller and relatively more slender, their corresponding average measurements being 0.136 mm. by 0.004 mm., and that they show a greater tendency to irregularity, a considerable proportion of them being either somewhat sinuous as a whole or else bearing a globular swelling in the middle, or exhibiting both peculiarities.

Gemmules.—The gemmules form a pavement-layer which adheres to the shell by means of a basal membrane and of the cage of macroscleres in which they are included. Each has a single straight bottle-shaped vertical tubule in the middle of the upper surface, which is usually free to some extent from the investing macroscleres. The cellular pneumatic layer is thick and well developed and its polygonal compartments are large and distinct. The gemmule-spicules form a single somewhat irregular layer which lies on and near the surface of the pneumatic layer; some spicules being entirely, others partially embedded in it, and some lying on the surface.

Type.—No. Z. E. V 6034/7 *Ind. Mus.* (microscope-slide).

Habitat.—On shell of *Aetheria caillaudi* from the Nile.

This sponge is an interesting one as it is intermediate between the widely distributed *Spongilla carteri* of Asia, E. Europe, Mauritius and possibly tropical Africa and my own *S. ambigua* from S. Africa, resembling the former in the shape of its gemmule-spicules and the latter in the structure of its gemmules. It is one of the very few Spongillidae that have smooth amphioxous microscleres.

Together with the gemmules of *S. aetheriae* were others belonging to a species of *Stratospongilla* or *Corvospongilla* (more probably the latter) which the new species had evidently overwhelmed by its growth. These gemmules and their spicules resemble those of *C. burmanica* (Kirk.), but I cannot find a single macrosclere or free microsclere other than those of *S. aetheriae* associated with them. It is evident that they represent neither *C. loricata*, Weltner, which was originally found on a shell of the same genus, nor *C. scabrispiculis*, which is described below.

Statoblasts of *Plumatella* occur in considerable numbers on the shell on which the type of *S. aetheriae* were found, and also the remains of a Ctenostomatous polyzoon probably belonging to the genus *Hislopia*, which has not hitherto been recorded from Africa although it is widely distributed in Asia.

Corvospongilla scabrispiculis, sp. nov.

Sponge.—The external form, etc., of the sponge is unknown. It encrusted shells of a mollusc of the genus *Aetheria* and was apparently hard but friable and of a dark colour. A stout basal chitinous membrane is present.

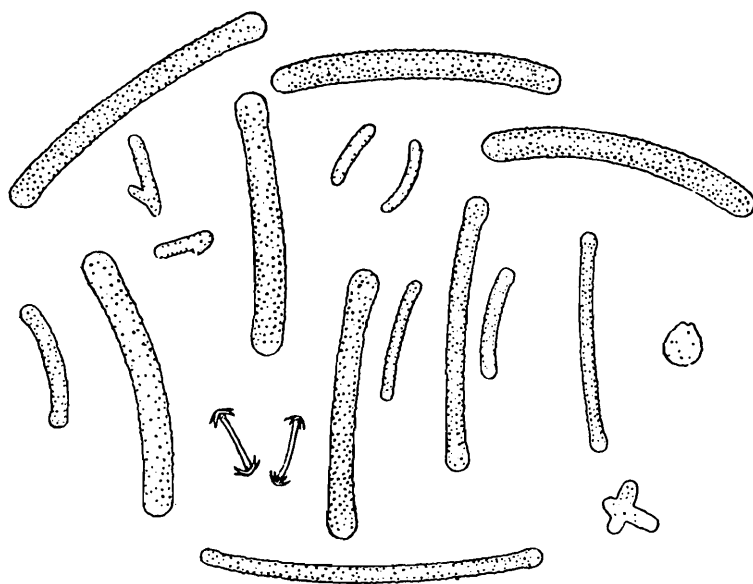
Skeleton.—The only part of the skeleton that can be described is the basal part. The structure of this is that of a stout network formed of spicules enclosed in a chitinous membrane continuous

with the basal membrane, which also contains spicules in considerable numbers.

Spicules.—The macroscleres are small and moderately slender, varying greatly in size but not exceeding 0.147 mm. \times 0.0168 mm. Their ends are blunt and often more or less inflated. Their surface is covered uniformly with minute rounded prominences, but they do not bear sharp outstanding spines. As a rule the main axis is curved, but never very strongly.

The gemmule-spicules are very like those of the skeleton but smaller, and as a rule relatively less slender. They are never more than 0.0842 mm. long by 0.0126 mm. broad but vary greatly in size and proportions. Deformed spicules and irregular spheres are not uncommon among them.

The only free spicules are the minute amphidiscs characteristic



Spicules of *Corvospongilla scabrispiculis*, \times 240.

of the genus. Their shafts are very slender, either straight or curved and as a rule about 0.025 mm. long. The terminal spines are fairly short and less retroverted than in some species.

Gemmules.—The gemmules, which are very numerous, form, together with the cages in which they are held, a regular pavement-layer and adhere firmly. Each is enclosed in a separate loculus which has a roof of spicules and membrane and a floor formed of the basal membrane of the sponge. The walls and roof are composed of two layers of macroscleres lying parallel to the surface of the sponge and crossing one another without protruding from the membrane. There is a circular aperture in the roof through which the foraminal tubule of the gemmule protrudes. Each gemmule has a thick chitinous outer coat in which its proper spicules are embedded horizontally and somewhat sparsely; it bears a single

straight, vertical tubule and is itself spherical or subspherical and from 0.23 to 0.35 mm. in diameter. It is of a bright-golden colour when clean but with its cage appears of a dirty brown. The diameter of the cavity of each cage is about 0.5 mm. and there is no pneumatic substance between the walls and the gemmule.

Type.—No. Z.E.V 5504/7 *Ind. Mus.*

Habitat.—Tropical Africa, probably the Nile basin.

The new species differs from most of its congeners in having rough instead of smooth skeleton-spicules, and also in their small size. In these characters it agrees with *C. micramphidiscoides*, Weltner,¹ from Central Africa; but the spicules of that species are of different shape and proportions and the macroscleres sometimes bear long spines, while amphioxi as well as amphidiscs occur free in the parenchyma. A noteworthy feature of *C. scabrispiculis* is the tendency displayed by both skeleton- and gemmule-spicules to be inflated at the extremities. A similar tendency occurs in some of the gemmule-spicules of the type-species of the genus, *C. loricata* (Weltner);² but I have not observed it displayed to anything like the same extent in the macroscleres of any species in which the macroscleres are smooth, although it occasionally occurs in a slighter degree.

¹ "Süßwasserschwämme (Spongillidae)," in *Wiss. Ergebn. Deutsch. Zentral-Afrika-Exp.* 1907-1908, vol. IV (Zool. ii), pp. 477-481, figs. 1-11 (1913).

² Kirkpatrick, *Rec. Ind. Mus.*, vol. II, pp. 97-99, pl. ix, fig. 9a (1908).