

FRESHWATER SPONGES FROM THE
T'AI HU (GREAT LAKE) OF THE
KIANGSU PROVINCE, CHINA

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The freshwater sponges (Spongillidae) of the Chinese Empire have as yet received but little attention from naturalists and only four species have recorded, namely, *Spongilla* (*Stratospongilla*) *Sinensis* from Foochow, *Spongilla* (*Euspongilla*) *lacustris*, *Spongilla* (*Stratospongilla*) *clementis* (of which my *S. yunnanensis* is a synonym) and *Indospongilla coggini* from Yünnan. As no less than seven species occur in Lake Biwa in Japan, there can be little doubt that the number to be discovered by a careful search in the lakes of China would be considerable. The only locality in the Empire that I have had an opportunity of examining personally is the T'ai Hu near Soochow, where I spent a week in December, 1915. The fact that the water was very high and muddy made the search for sponges difficult, but the minuteness of all the species found is noteworthy and perhaps indicates a characteristic feature of the fauna. These species are three in number, each representing one of the three subgenera or divisions of the genus *Spongilla*. All appear to be new to science. They may be described as follows:—

SPONGILLA (EUSPONGILLA) MICRON, sp. nov.

The sponge forms small patches not more than 1 mm. thick on the leaves of *vallisneria spiralis* and occasionally coats the stems and leaves of other water-plants. It has a faint yellowish tinge (due mainly to the gemmules) in life and becomes practically colourless in spirit. The surface is hispid but otherwise smooth. All the orifices are extremely minute. There is a very fine horny basal membrane.

The skeleton forms a dense irregular network of spicules. Spicule-fibres can be distinguished, especially in a vertical direction, but their course is short, they are feebly differentiated and very fragile. There is little or no horny substance

present in the skeleton. The gemmules are spherical, of small size, not exceeding 0.26 mm. in diameter and of a light yellow colour. They have a thick "granular" coat and a single foramen armed with a short, straight tubule. Their spicules, which are very numerous, lie for the most part tangentially and more nearly vertical than horizontal, but a few can be detected on the external surface that are parallel to it.

The skeleton-spicules are smooth, sharply and gradually pointed, and very small and slender. They do not exceed 0.175 mm. in length and 0.0087 mm. in thickness.

The flesh-spicules which are scattered sparsely in the external parts of the sponge, are minute, spindle-shaped, slender, pointed at both ends and irregularly armed with minute spines. They are more slender and as a rule a little shorter than the gemmule-spicules.

The gemmules-spicules are also small and slender. They are as a rule slightly curved and armed sparsely but almost uniformly with short recurved spines. These are rather larger at the extremities than elsewhere. Their greatest length is about 0.035 mm.

Type.—The type will be preserved in the Indian Museum, Calcutta. A co-type has been presented to the Shanghai Museum.

Locality. Mouth of Moo Too Creek and Tong Dong Ding, T'ai Hu, Kiangsu Province, China (December, 1915).

Spongilla micron is closely allied to *Spongilla alba*, Carter, and to *S. nana*, Annandale. From both it differs in the minuteness and slenderness of its spicules; from the latter it may also be distinguished by the greater regularity of its skeleton-spicules. It also resembles the Japanese *S. semi-spongilla*, Annandale, but lacks the green corpuscles of that species.

SPONGILLA (STRATOSPONGILLA) STANLEYI, sp. nov.

The sponge forms minute lichenoid patches less than 1 mm. thick on the lower surface of stones and on the shells of Gastropod molluscs (*vivipara*). The external surface is smooth and rounded and all the orifices are very minute. The colour in life is dirty white. The skeleton forms a dense and rather irregular network composed of slender radiating spicule-fibres bound together by single spicules and rather indefinite, very slender transverse fibres. Even the radiating fibres are never more than four, and often not more than two spicules thick.

The gemmules adhere at the base of the sponge in a single layer of regular arrangement. They are circular as seen from above, flattened at the base and arched above. Each possesses a single foramen situated on the centre of the upper surface on a little tubercle. The pneumatic coat is thin, consisting of relatively large but irregular air-chambers. The whole of the gemmules of each sponge are covered by a dense mass of irregularly arranged spicules. The gemmules vary somewhat in size, but are always minute, not exceeding 0.18 mm. in diameter. The skeleton-spicules are small, rather slender, smooth, nearly straight and somewhat abruptly and bluntly pointed. They rarely exceed 0.1 mm. in length and are about 0.008 mm. thick. There are no flesh-spicules.

The gemmule-spicules are minute, but relatively somewhat stout, sparsely and irregularly spined and very abruptly but sharply pointed. Their extremities often have the appearance of triangular spearheads. They are slightly curved as a rule. Their length does not exceed 0.045 mm.

Type.—The type will be preserved in the Indian Museum, Calcutta. A co-type has been presented to the Shanghai Museum.

Locality.—Si Dong Ding, T'ai Hu, Kiangsu Province, China; on village landing-stage. (December, 1915).

Most of my specimens, though they were actually submerged, had probably undergone complete dessication, and in some the only part of the sponge that remains is the pavement-layer of gemmules with the mass of microscleres covering them.

I have much pleasure in naming this very distinct little sponge after Dr. Arthur Stanley, the energetic curator of the Shanghai Museum, to whose hospitality and assistance I have been much indebted throughout my short visit to China.

SPONGILLA (EUNAPIUS) CONIFERA, sp. nov.

The sponge forms a film less than 1 mm. thick and never more than a few centimetres long. The specimens were growing on the leaves of *Vallisneria spiralis* and the breadth of the sponge seemed to depend on that of the leaves. The natural colour was slightly brownish owing to the presence of brown gemmules, the other parts being practically colourless though somewhat opaque. The surface is smooth and all the orifices are extremely minute.

The gemmules lie free singly in the parenchyma. They have a conical form and a flattened base and are still smaller than those of the other species found in the same lake. The

base and sides are covered with a single layer of relatively large and regularly arranged air-chambers, but on the upper surface there are several or many layers of similar chambers, among which, on this surface only, the few gemmule-spicules are scattered. There is a single, relatively long and slender, straight foraminal tubule, which traverses the mass of air-cells on the upper surface in a vertical direction. The greatest transverse diameter of the gemmule is not more than 0.14 mm.

The skeleton forms a close and regular network, the strands of which consist for the most part of single spicules. Slender spicule-fibres, never more than 3, (rarely more than 2) spicules thick, can, however, be detected; they usually run obliquely through the sponge. There is little or no horny substance present.

The skeleton-spicules are small, slender, smooth, straight or slightly curved, somewhat spindle-shaped in outline and obtusely pointed. They are never longer than 0.2 mm. or broader than 0.00875 mm.

There are no flesh-spicules.

The gemmule-spicules are extremely minute (not more than 0.03 mm. long), and very few in number. They are relatively slender, sharply pointed at both ends and irregular or sparsely spiny in outline. Their curvature is always feeble.

Type.—The type will be preserved in the Indian Museum, Calcutta, and a co-type in the Shanghai Museum.

Locality.—Mouth of Moo-Too creek, T'ai Hu, Kiangsu Province, China, with *S. micron*. (December, 1915).

The structure of the gemmule of this species is very characteristic and the several parts of the organism are considerably smaller than those of any other species of the subgenus as yet described.