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X.—DESCRIPTION OF A NEW VARIETY OF  
*SPONGILLA LORICATA*, WELTNER.

By R. KIRKPATRICK.

(Plate ix.)

Among the unnamed and undescribed specimens of freshwater sponges in the collection of the Natural History Museum, London, is a very fine example from Burma, belonging to *Spongilla loricata*, Weltner, but representing a new variety of that species. Weltner, who described the species in 1895 (*Archiv. Naturg.*, 61st year, bd. 1, p. 138), had only very scanty material to work with, viz., a few gemmules on shells of *Ætheria* from an unknown locality in Africa; some of the larger skeletal spicules were adhering to the gemmules, but none of the body of the sponge remained. Consequently it would be well to give a fuller description of the sponge from the abundant material now available; and, further, as Dr. Annandale, Superintendent of the Indian Museum, is bringing out a monograph of the freshwater sponges of India, it is desirable to describe the specimen without further delay, so that the information may be incorporated in that work.

I have to thank Professor Dr. Weltner for his courtesy in sending me two micro-slide preparations of the gemmules of the type-specimen.

*Spongilla loricata*, Weltner, var. *burmanica*, var. nov.

1895, *Spongilla loricata*, Weltner, *Archiv. für Naturgeschichte*, 61st year, band i, p. 138.

The specimen consists of seven firm, hard, thin slabs about 7·5 mm. thick and of a pale brown colour; when joined together, the pieces cover an area of a square foot. Mr. E. W. Oates, who collected and presented the sponge, writes that the specimen was found encrusting the vertical and horizontal surfaces of the bottom beam of a lock gate, where it covered an area of six square feet. The beam had been tarred several times before the sponge was discovered.

The portion of the gate on which the sponge was growing was submerged from November to May for eight hours a day at spring tides, but was entirely dry during the six days of neap tides. From May to October it was constantly submerged. The sponge was found in April. Although the canal is subject to the tides, the water at the lock is always fresh. The colour of the sponge during life was the same as in its present condition.



*Description*.—The upper surface of the sponge is coarsely prickly and spinous, and with numerous small cylindrical chimney like oscules rising vertically above the general surface to a height of about 6 mm., the diameter at the orifice being from 2 to 2.5 mm.; the outer wall of the oscules is provided with longitudinal spinous ridges.

The spines are either single and pointed, and from 1 to 2 mm. in height, or broader, and divided only near the summit; or again they may be united into small ridges with slender prickles along the edges.

The under or encrusting surface is level; here and there are gemmules isolated or in groups; and over considerable areas is a reticulate pattern, each mesh of the reticulum having a small circular rim near its centre; these markings are formed by the front walls of the zoëcia of the Polyzoon *Hislopia lacustris*, the circular rims being the orifices of the zoëcia; the posterior walls of the zoëcia have been left behind on the wooden beam.

The dermal membrane is firmly attached, and there is not a differentiated dermal skeleton. The dermal membrane roofs over a fine surface reticulum, the meshes of which are about .2 to .4 mm. in area; groups of these fine meshes are often sunk in concavities between groups of the larger spines; the pores are not visible.

*Skeleton*.—A thin vertical section of the crust in balsam shows vertical pillars continued up as spines. The pillars, which vary from .2 to .4 mm. in thickness, are from 1 to 2 mm. apart; they do not arise from the base, but at a point a little above the base, or even half way up; the section shows, also, traces of horizontal lines of cleavage, marking possibly stages of growth or temporary arrest of growth.

Between the vertical pillars is a fine reticulum with meshes rounded or oval in section, and about .2 to .6 mm. in diameter, the strands being about 2 to 7 spicules thick. The *gemmules* are situated in the encrusting base of the sponge. They are either single and spheroidal and about .8 mm. in diameter, or double and oval and about  $1 \times 1.3$  mm. in diameter. There are three layers—an outer shell of large smooth strongyles similar to those of the general skeletal framework, a middle layer of finely spined microstrongyles, and a thick, inner chitinous coat; the middle layer again is divided into two—an outer one applied to the inner surface of the outer shell, and an inner one embedded in the chitinous shell.

The poral tube (fig. 5), best seen in specimens which have been desilicified with hydrofluoric acid, is nearly cylindrical and  $45 \mu$  in length.

Spicules, megascleres, strongyles (fig. 6), smooth, slightly curved, occasionally a little swollen at the ends,  $270 \times 195$  on an average; very commonly with one or more fusiform swellings.

Microscleres amphidisks (fig. 7), numerous and scattered about in the flesh,  $30-45 \mu$  long, with slender curved smooth shaft, and with 4—5 prongs to each disk.



Microstrongyles of the gemmules (fig. 8) in all sizes up to  $49 \times 7.85 \mu$ ; curved, and with surface granular owing to fine spines.

The main difference between the typical African form and the Burmese variety consists in the former having much larger microstrongyles ( $83 \times 15.7 \mu$ ) with larger and coarser spines (fig. 10); Mr. Highley's careful camera-lucida drawings show clearly the great difference in this respect. Judging from Prof. Weltner's sections of gemmules, these bodies lack the definite outer shell of smooth macrostrongyles, though this may not improbably be due to the breaking down and removal of this layer. A further difference consists in the presence, in the African specimen, of slender, finely spined strongyles (figs. 9, 9a), these being absent in the Burmese form, though perhaps this fact is not of much importance.

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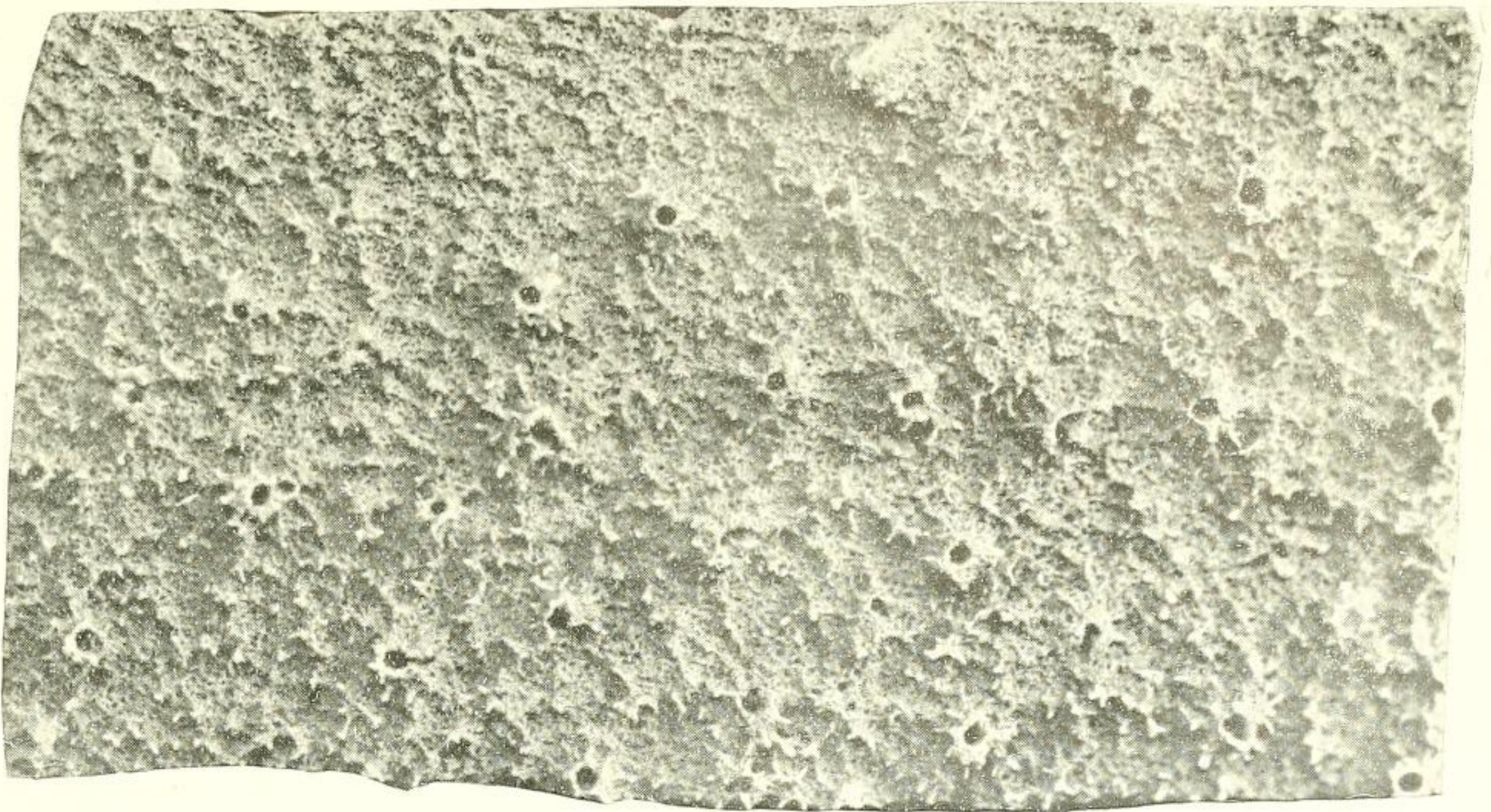




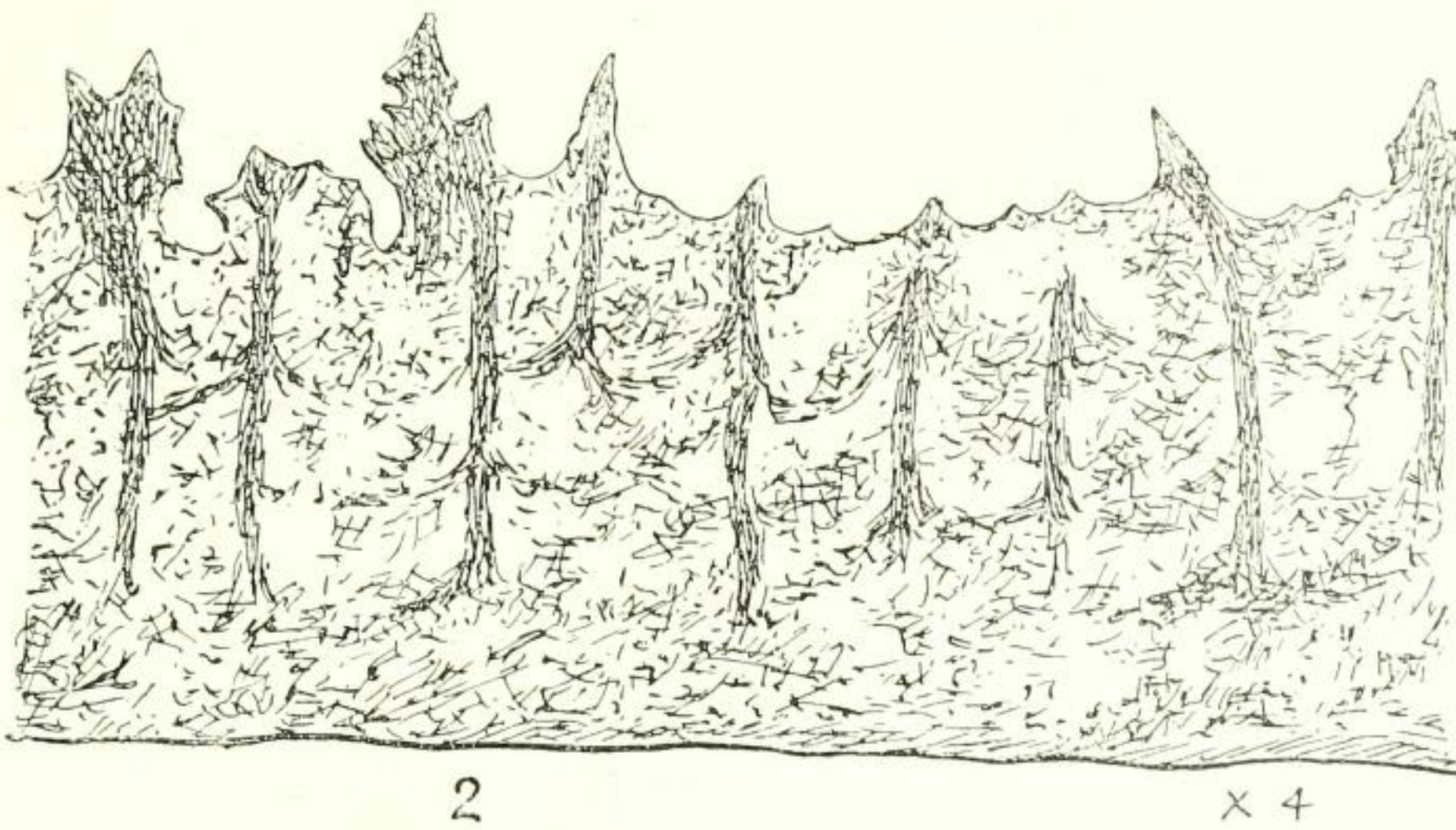
### EXPLANATION OF PLATE IX.

- FIG. 1.—A portion of the sponge. Photo., nat. size.
- FIG. 2.—Vertical section,  $\times 4$ .
- FIG. 3.—Skeletal network,  $\times 45$ .
- FIG. 4.—Gemmule,  $\times 45$ .
- FIG. 5.—Gemmule, desilicified by means of hydrofluoric acid, showing the poral tube,  $\times 45$ .
- FIG. 6.—Strongyle of skeletal framework,  $\times 250$ .
- FIG. 7.—Amphidisk,  $\times 700$ .
- FIG. 8.—Microstrongyle,  $\times 700$ .
- FIG. 9.—Strongyle with knobbed ends (amphityle), and with rough surface, from Prof. Weltner's African specimen,  $\times 250$ .
- FIG. 9a.—End of same,  $\times 425$ .
- FIG. 10.—Microstrongyle of gemmule, from Prof. Weltner's specimen,  $\times 700$ .



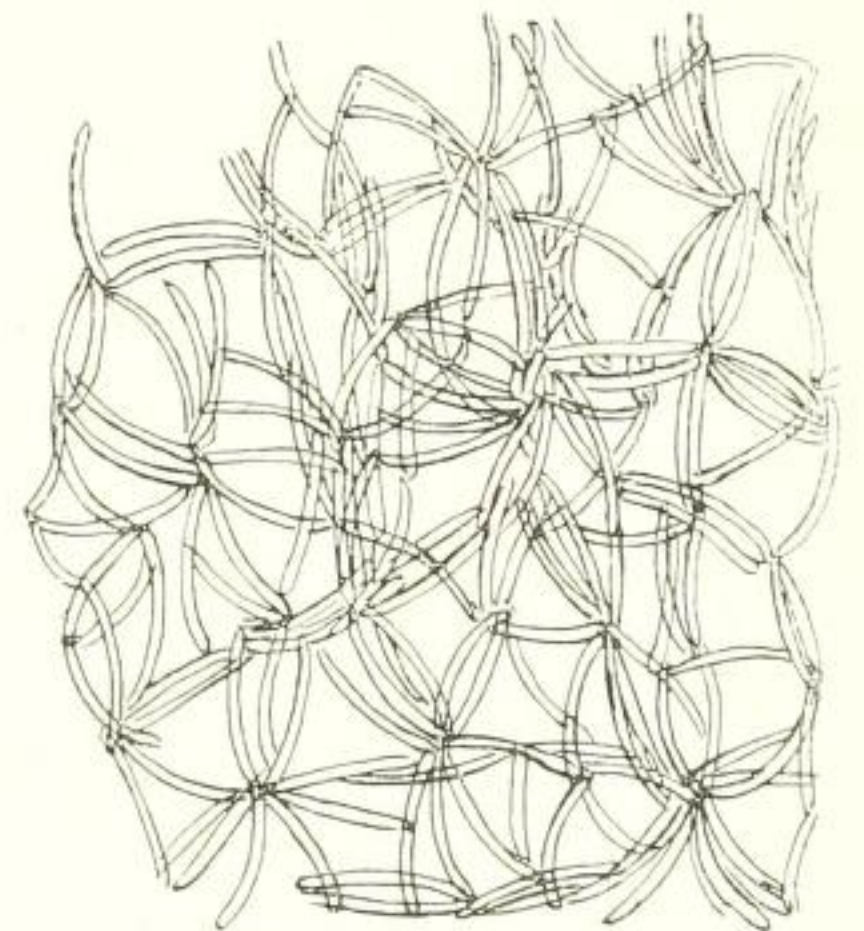


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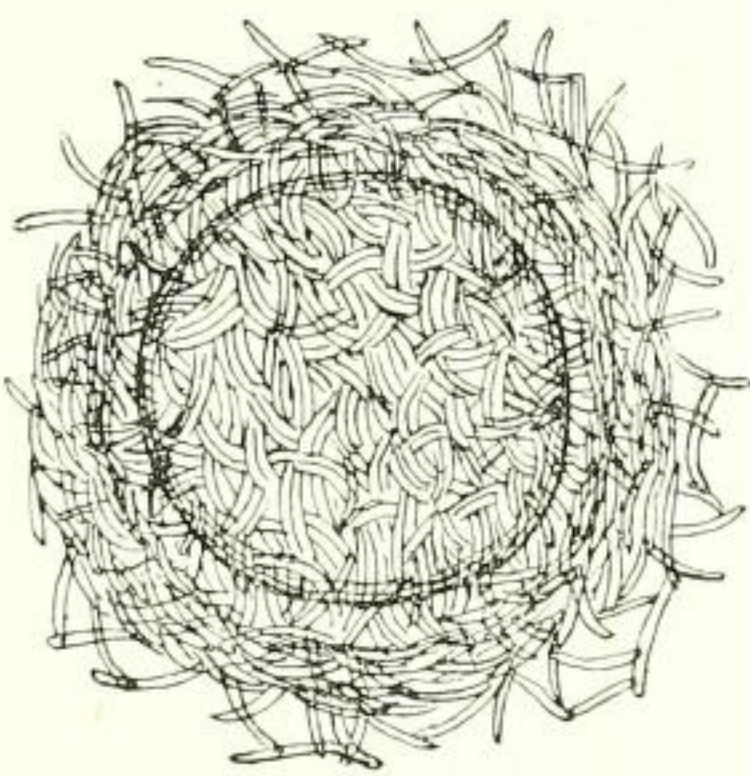
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x 4



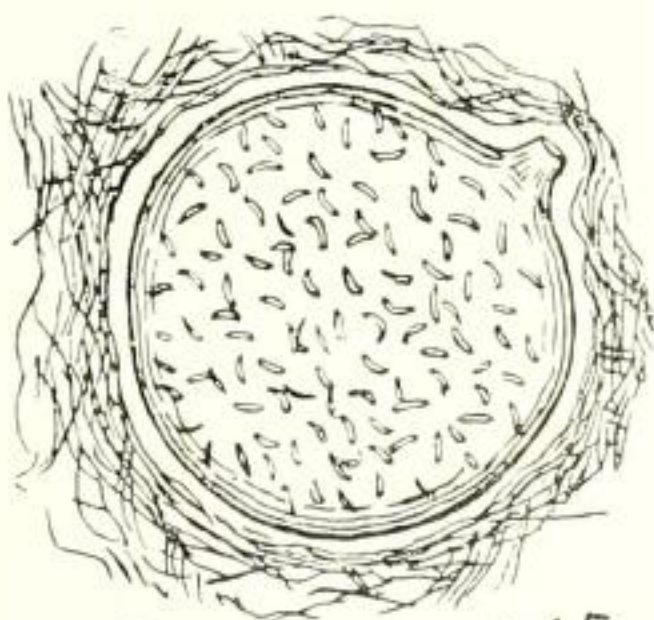
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x 45



4

x 45



5

x 45



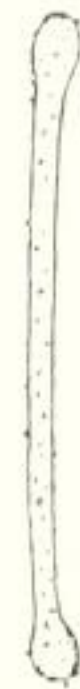
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x 250



9<sup>a</sup>

x 425



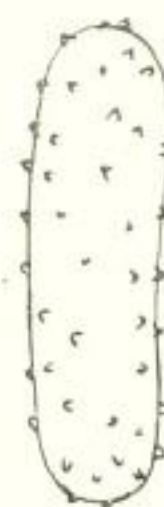
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x 250

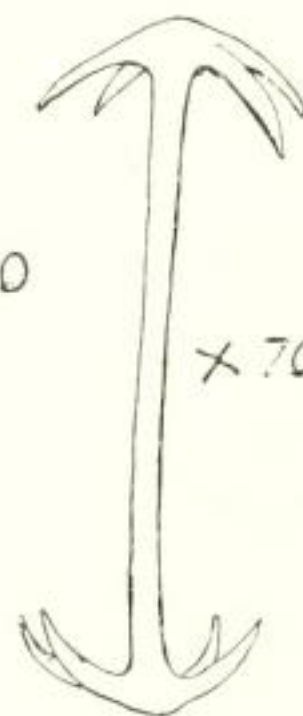


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x 700

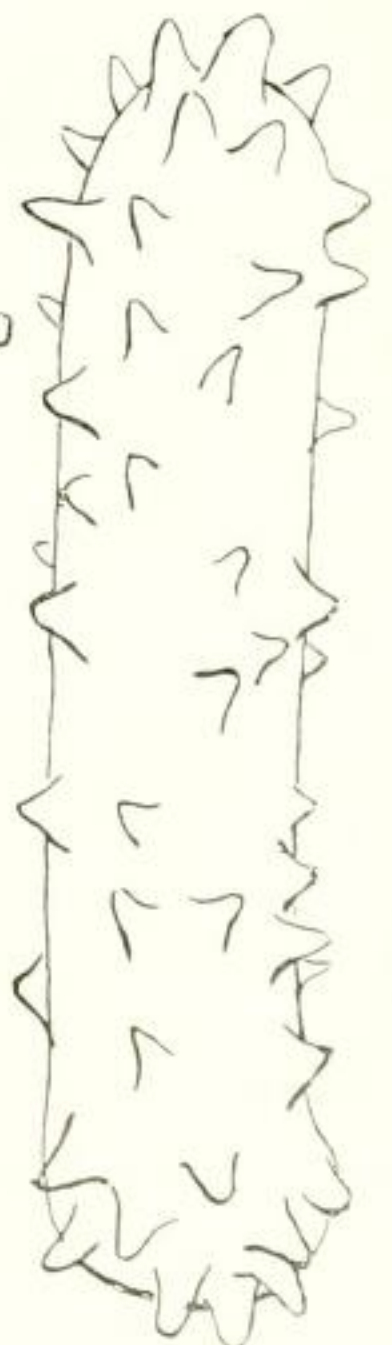


x 700



7

x 700



10

SPONGILLA LORICATA VAR BURMANICA.