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STUDIES ON INDIAN SPONGES—VII

TWO NEW RECORDS AND A NEW SPECIES OF THE GENUS *PLAKINA* SCHULZE (CARNOSIDA : HALINIDAE) FROM THE INDIAN REGION

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OF the three species belonging to the genus *Plakina* Schulze (1880) considered here, two (*Plakina monolopha* Schulze and *P. trilopha* Schulze) are new records from the Indian region and the third *P. acantholopha* is new to science.

Genus *Plakina* Schulze (1880) is considered to be very primitive in many respects, and in the type, *P. monolopha*, the simplest adult type of canal system in Demospongiae is met with. The other species included in the genus by Schulze are *P. dilopha* and *P. trilopha*. Previous records of *P. monolopha* include Mediterranean (Schulze, 1880 ; Topsent, 1896, 1925, 1934 ; Sara, 1958), Atlantic Ocean (Arndt, 1927 ; Burton, 1932), Pacific Ocean (de Laubenfels, 1951 ; Bergquist, 1961 ; Thiele, 1899) and Antarctic (Burton, 1929 ; Lendenfeld, 1907) and here it is recorded for the first time from Indian region.

Lendenfeld (1907) recognizes two subspecies, *antarctica* from Antarctic and *eurasia* from the Northern hemisphere. A chief difference, according to him, is the slightly larger spicules of the former.

P. trilopha, similarly, has a very limited distribution. Here also, as in *P. monolopha*, Lendenfeld (1907) recognizes two subspecies, *antarctica* possessing larger spicules to be different from *mediterranea* with smaller spicules. But this division is not maintained by subsequent workers. *P. trilopha* has been previously recorded from Mediterranean (Schulze, 1880 ; Topsent, 1934 ; Sara and Siribelli, 1962), Antarctic (Burton, 1929 ; Topsent, 1901) and Pacific Ocean (Bergquist, 1961). The present discovery of these two species from Indian Ocean, hence, is of great interest for it extends their distribution considerably.

Sollas (1888) defined the genus thus : 'Incrusting sponges, with one or more oscular tubes projecting from the free surface. Ectosome not differentiated. Chamber-system eurypylous. Mesoderm scanty, entirely collenchymatous. The spicules are tetractinose, triactinose, and diactinose asters and candelabra.

Type *Plakina monolopha* Schulze (1880).

Plakina monolopha Schulze

(Fig. 1)

Plakina monolopha Schulze, 1880, p. 407, pl. 20, figs. 1-7 ; pl. 22, figs. 22-29.
Topsent, 1891, p. 231.
Topsent, 1896, p. 549, pl. 21, figs. 1, 2,; pl. 22, fig. 12.
Topsent, 1925, p. 629.
Arndt, 1927, p. 137, t. fig. 1.
Burton, 1929, p. 414.
Burton, 1932, p. 262.
Topsent, 1934, p. 7.
de Laubenfels, 1951, p. 267, fig. 17.
Sara, 1958, p. 225.
Bergquist, 1961, p. 47.

Placina monolopha Sollas, 1888, p. 278.

Material : One specimen from Palk Bay collected in a dry condition.

Description : Sponge encrusting, on the under surface of a coral rock. Maximum thickness 1 mm. ; was occupying an area of 10×5 mm. Surface papillate. Pores and oscules not visible.

Colour, pale chocolate, when dry. Soft but friable.

The general anatomy of this species has been well worked out by Schulze (1880). The simplest canal system of the Demospongiae is found in this species. The upper wall (spongophare) of the primitive rhagon has become folded to form a number of lobes. The flagellated chambers are euryplous and they open into the original continuous gastral cavity, which has been folded, thus forming an excurrent canal. The space in between the adjacent folds of the spongophare thus becomes the incurrent canals and the opening of the gastral cavity, the oscule. No trace of cortex formation is present. This species is hermaphrodite.

Spicules : 1. Diacts (Microxeas). Length varies from 0.063 to 0.109 (0.091 mm. average) and width from 0.002 to 0.006 (0.005 mm. average).

2. Microtriods and microcalthrops. More or less of the same size. Length of ray varies from 0.021 to 0.042 (0.034 mm. average) and width from 0.002 to 0.005 (0.004 mm. average).

3. Monolophous calthrops. One ray with 2-4 branches the rest unbranched. Abundantly met with in the outer parts. Unbranched ray 0.016 mm. long.

Distribution : Atlantic Ocean, Mediterranean Sea, Pacific Ocean, Indian Ocean and Antarctic.

Locality ; Register Number, etc. : Palk Bay—CMFRI—S. 149—6-1-1965.

Depth : 3 Metres.

Plakina trilopha Schulze

(Fig. 2)

Plakina trilopha Schulze, 1880, p. 427, pl. 21, figs. 12-13.
Lendenfeld, 1903, p. 121.
Burton, 1929, p. 414.
Burton, 1932, p. 262.
Topsent, 1934, p. 7.
Bergquist, 1961, p. 47.
Sara and Siribelli, 1962, p. 26.

Placina trilopha Sollas, 1888, p. 279.
Topsent, 1901, p. 30, pl. 3, fig. 1.

Material : Two specimens from Galaxea Reef (Gulf of Mannar) collected in a semiputrified condition.

Description : Sponge thinly encrusting, surface smooth. Pale white in colour. Soft and compressible. Oscules not visible.

The structural details of this species have been well worked out by Schulze (1880). Ectosome somewhat better developed than that in *P. monolopha*, and is traversed by pore canals. This species is hermaphrodite.

Spicules : 1. Diacts (Microxeas). Total length varies from 0.063 to 0.105 (0.088 mm. average) and greatest width from 0.002 to 0.006 (0.0042 mm. average).

2. Microtriods and microcalthrops. Length of the ray, maximum 0.029 mm. and width 0.004 mm. average.

3. Trilophous calthrops. Tri or tetralophous, size 0.025×0.021 mm. average.

Distribution : Mediterranean Sea, Antarctic Ocean, Western Pacific, Indian Ocean.

Locality ; Register Number, etc. : Gulf of Mannar—CMFRI-S. 150—6—3-1967.

Depth : 3 Metres.

Plakina acantholopha sp. nov.

(Fig. 3)

Material : One specimen collected from coral rock, brought ashore from Palk Bay.

Description : Sponge thickly encrusting, 1 to 2 mm. thick, surface smooth and with polygonal depression.

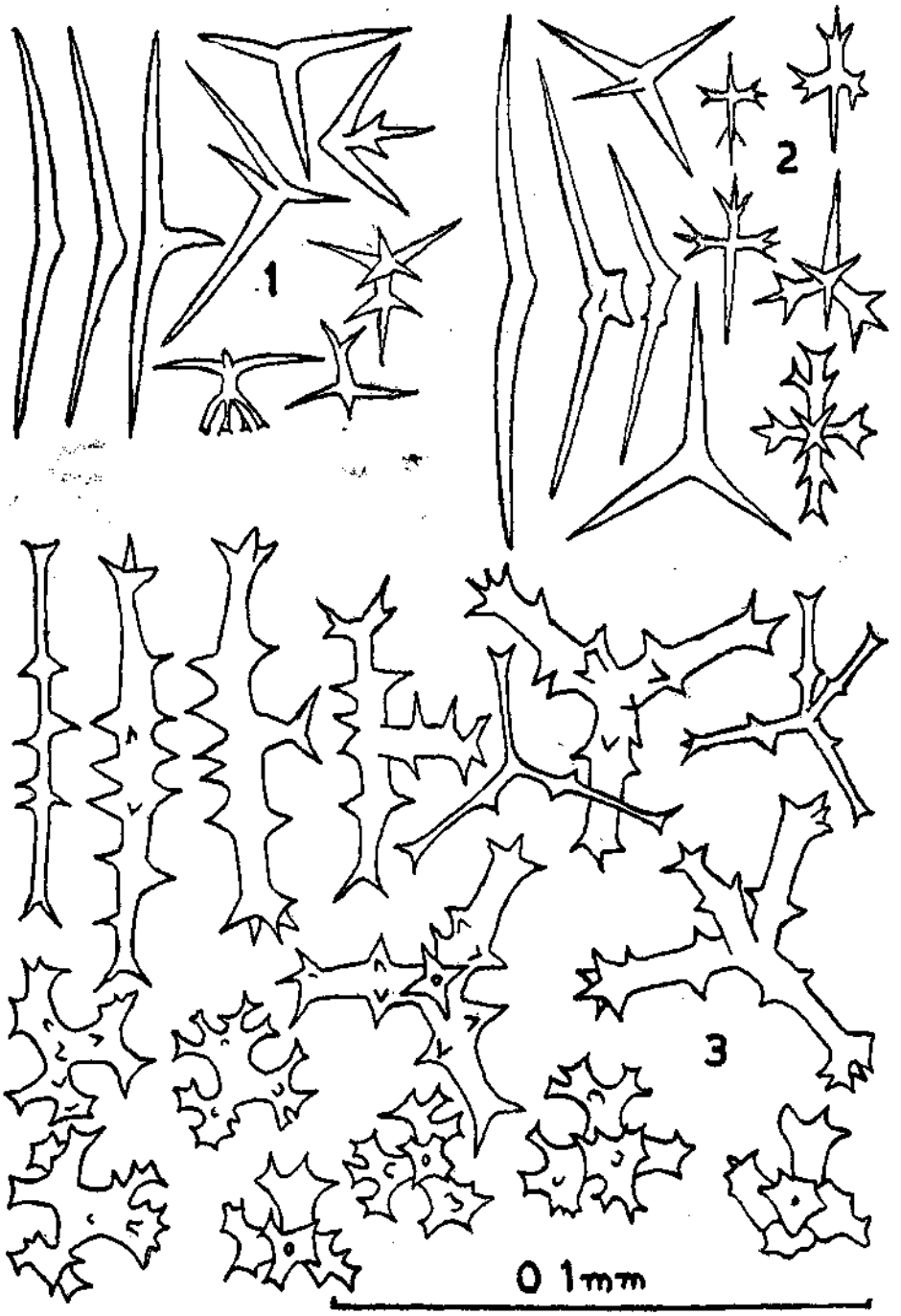

FIG. 1. *Plakina monolopha* Schulze. Diacts, Triods, and Calthrops.
FIG. 2. *Plakina trilopha* Schulze. Diacts, Triods and Calthrops.
FIG. 3. *Plakina acantholopha* n. sp. Diacts, Triods and Calthrops.

Colour, chocolate in dry condition and highly friable. (Usually specimens of this genus have a fleshy consistency, but the friability noted here may be due to its dry nature).

Oscules are not present ; pores are scattered throughout the surface, 0.2 to 0.6 mm. diameter, situated at the base of funnel-like depressions.

Ectosome : The differentiation between ectosome and endosome is not distinct. At the surface, the trilophous calthrops are abundantly present.

Spicules : 1. Diacts (oxeas). Straight or slightly curved ; ends with 2 to 5 spines arranged like a crown. Body with sharp conical spines distributed irregularly. Normally at the central part, as in other species of the genus *Plakina*, rudimentary rays are present and these may lead to the triods gradually. Length varies from 0.054 to 0.084 (0.066 mm. average) and width from 0.006 to 0.008 (0.007 mm. average) (excluding spines).

2. *Microtriods and microcalthrops.* Rays with a crown of spines at their tips and with a whorl at a short distance from the origin of each ray. Calthrops have also the same arrangement of spines. Spines conical, sharp pointed or blunt. Length of ray varies from 0.021 to 0.033 (0.028 mm. average) and width (in between the whorl of spines and the point of origin of the ray) from 0.004 to 0.006 (0.005 mm. average).

3. Tetralophous calthrops. All the rays are divided into short and stumpy branchlets, all beset with spines. These spicules are mainly seen at the surface. When well developed, size 0.021×0.021 mm., fairly abundant.

Remarks : This is an interesting species of the genus *Plakina* Schulze. All the diacts, triacts and tetracts are ornamented with spines and this character is unique in this genus, and taking the spination of the ray into consideration the specific name *acantholopha* is proposed here.

There is much similarity between this species and those coming under the genus *Placinolopha* Topsent (1897), especially to *P. spinosa* Kirkpatrick (1900) from Funafuti. (*P. spinosa* is the type of *Acanthoplakina* Burton, 1959).

The similarity between the spicules of the present species and the one figured by Bowerbank (1864, pl. 10, fig. 36) is quite striking.

Locality ; Register Number, etc.: Palk Bay—CMFRI—No. 147—20-2-1967.

Summary

Plakina monolopha and *Plakina trilopha* Schulze (1880) are recorded here from the Indian region. Another species *A. acantholopha* is described here as new to science.

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