

THO 41

STUDIES ON INDIAN SPONGES—I*

TWO NEW SPECIES OF SILICIOUS SPONGES BELONGING TO THE GENERA
ECHINODICTYUM RIDLEY AND *RHADBEREMIA* TOPSENT

(CLASS : DEMOSPONGIAE SOLLAS, ORDER : POECHIOSCLERIDA TOPSENT)

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OUR knowledge of the sponges of the Indian region is still in its infancy. The only area which has been studied somewhat extensively is the Gulf of Mannar by various spongologists like Carter (1880, 1881), Dendy (1905), Burton (1930, 1937) and Rao (1941). Besides these, some occasional reports are there about the sponges of Madras or of Gulf of Kutch ; but such information often is too fragmentary when the vast shore line of about 4800 km of India is taken into consideration.

With the idea of studying the Indian sponges in a comprehensive manner, the present author took up this work in 1964. Collections from various parts of India by the author himself over the years have been supplemented by those forwarded by many other scientists from different parts of the country including Andamans and Laccadive Islands. The Mandapam region, however, has been surveyed in greater detail, with particular stress given to the Palk Bay, since the sponges of Palk Bay is poorly known.

The sponge fauna of the Indian region has been found to be quite rich and varied and its relationship with those of adjacent parts like the Red Sea and the Australian region is quite striking. The taxonomy of those species that are of special interest is presented here, in a series 'Studies on Indian Sponges' of which the present communication forms the first part.

All types described here are deposited in the Reference Collection Museum of the Central Marine Fisheries Research Institute, Mandapam Camp.

Family PHORBASIDAE de Laubenfels

Genus *Echinodictyum* Ridley

Phorbasidae with reticulated skeleton. Megascleres, oxeas in fibres, accompanied by styles projecting partially. Fibres echinated with acanthostyles. Microscleres are absent. Type of the genus is *E. topsenti* de Laubenfels (1936) (S.D.).

Species belonging to this genus so far reported from Indian region include *E. nervosum* (Lamarek), *E. asperum* (Ridley and Dendy, 1887), *E. clathratum* Dendy (1905) and *E. gorgonoides* Dendy (1916).

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Styles of *E. nervosum* reach up to a length of 0.7 mm (Burton and Rao 1932). In *E. asperum* Ridley and Dendy (1887) no mention made about the long styles in the original description. But after examining the holotype, Burton and Rao (1932) confirmed the presence of long styles in the species, as also in their specimens from Andamans (but the measurements were not given). *E. clathratum* possesses long styles (1.3 mm) (Dendy 1905) and *E. gorgonooides* has peculiar tornotoxeas (Dendy, 1916).

The following new species records styles of 4.8 mm length.

Echinodictyum longistylum n. sp.

(Pl. I, Figs. A, B, Pl. II, Figs. 1-3)

Material : Four specimens from Palk Bay washed ashore during strong gales.

Description : Body consisting of a flattened stalk, with a number of foliaceous and spatulate branches bearing longitudinal ridges, arising from the distal part of the stalk. Rarely these branches fuse together. The largest specimen has a height of 90 mm, width of 130 mm with branches 1 to 3 mm thick (No. 129).

Colour, dark gray when dry, and with leathery consistency. Oscules and pores are not visible. Surface hispid due to the presence of long styles. No differentiation between ectosome and endosome. Pigment granules are abundant in the outer part. Endosome is cavernous.

Skeleton consists of main tracts running longitudinally along the stalk and branches. These tracts are not well defined in outline and the connectives, uniting the main tracts, make the entire reticulation rather confusing. Spongin scarce in main tracts but rather abundant in the connectives. Acanthostyles echinate the fibres and are set at an angle. Long styles have their heads buried deep in the main tracts.

Spicules : 1. Oxæas. Coring ; tips sharply pointed, stair-stepped, or blunt. (See Table I).

2. Small oxæas. Slender, rarely straight. Abundant in the dermal part.
3. Styles and subtylostyles. Slightly curved and with hair-like terminations. They project out of the surface at right angles.
4. Small styles. Hair-like, probably younger forms of the former.
5. Acanthostyles. Conical with distinct head, shaft entirely spined or smooth. Head densely spined.

Remarks : Long styles or subtylostyles projecting vertically from the interior is characteristic of this species and taking the length of the styles into consideration, the specific name *longistylum* is proposed here.

Locality, Register Number etc. : Palk Bay, C.M.F.R.I. No. 129 (Type)—20-10-1964 ; C.M.F.R.I. No. 130 A-6-6-1966 ; C.M.F.R.I. No. 130 B-11-4-1964 ; C.M.F.R.I. No. 130 C-8-9-1966 (All washed ashore from the Palk Bay).

TABLE I

Spicular measurements of Echinodictyum longistylum n. sp.

	Length	Width
Oxeas (Large)	0.283-1.703 (0.849)	(0.016)
Oxeas (Small)	0.377-0.660 (0.414)	0.003-0.005 (0.0037)
Styles (or tylostyles)	0.81-4.811 (3.11)	0.006-0.029 (0.014)
Styles (Slender)	0.566-0.899 (0.611)	(0.004)
Acanthostyles	0.067-0.1 (0.088)	(0.006)

Measurements in mm
Averages are given in parentheses.

Family RASPAILIDAE Hentschel

Genus *Rhabderemia* Topsent

Topsent established this genus in 1892, with type *R. guernei*. The genus is characterised by encrusting, massive or tubular habit. Principal spicules are styles with hockey stick-like modifications. Microscleres, contorted sigmas, microstyles and/or thraustoxeas.

The characteristic spiculation of the genus *Rhabderemia* is rhabdostyles, microstyles, toxas and sigmas. Spiny rhabdostyles are met with in a good number of species [*R. spinosa* Topsent (1896), *R. coralloides* Dendy (1924), *R. mutans* Topsent (1927) and *R. fascicularis* Topsent (1927)], whereas smooth forms are recorded in species like *R. pusilla* (Carter, 1876), *R. guernei* Topsent (1892), *R. toxigera* Topsent (1892), *R. indica* Dendy (1905), *R. prolifera* Annandale (1915) and *R. bistylifera* Levi (1961). Microstyles may or may not be granulated either partly or completely; or absent totally. Thraustoxeas are present in most cases, but *R. pusilla*, *R. indica*, *R. prolifera* and *R. bistylifera* are exceptional in this respect. Contorted sigmas are, as a rule, present.

This species, hence, is of great interest for its possession of two kinds of rhabdostyles—acanthose and ordinary—together with other spicules characteristic of the genus.

Rhabderemia acanthostyla n. sp.

(Pl. II, Figs. 4, 5)

Material: Four coral rocks completely encrusted with this species, from Galaxea reef (Gulf of Mammur) from a depth of 1.5 metres. Examined in fresh condition.

Description: Sponge encrusting. Maximum thickness 2 mm; uniformly spreading on the substratum, usually grows on the well-lighted upper zone of coral rocks. Colour is dark brown when living. In alcohol a yellow pigment oozes out immediately after preservation. Consistency, soft and slimy when fresh.

Surface conulose, conules correspond to the vertical tracts of acanthostyles. Pores are in between the conules, minute and contractile, diameter about 0.13 mm; rather abundant. Oscules not seen. Ectosome and endosome are not well differentiated.

The main skeleton consists of vertical tufts of acanthorhabdostyles springing up from the substratum. Rarely, solitary acanthorhabdostyles are found erect on the substratum. Spongin is seen binding together the spicules. Smooth styles (rhabdostyles) also are present, vertically arranged. The contorted sigmas are distributed abundantly in the endosome.

Spicules : 1. Rhabdostyles. Shape as in those of *R. indica* Dendy. Length varies from 0.084 to 0.258 (average, 0.158 mm) and width from 0.002 to 0.004 (average, 0.003 mm); rarely met with.

2. Acanthorhabdostyles. Resemble the above-mentioned type in general structure but stout and spiny all over except at the curved head. Length varies from 0.109 to 0.315 (average, 0.196 mm) and width from 0.006 to 0.012 (average, 0.009 mm); fairly abundant.

3. Contorted sigmas. Shape as in the other typical species of *Rhabderemia*. Scattered throughout the endosome but rarely present in the ectosome also. Size 0.012 to 0.025 (average, 0.016 mm).

This species is of much interest because of the combination of acanthorhabdostyles and smooth rhabdostyles. The characteristic sigmas of *Rhabderemia* are well represented.

Locality, Register Number etc. : Gulf of Mannar (Galaxea Reef) C.M.F.R.I. No. 131 (Type); C.M.F.R.I. No. 131 A; 131B; 131C—26-2-1967.

SUMMARY

Two new species of sponges *Echinodietyum longistylum* (Family Phorbasidae de Laubenfels) and *Rhabderemia acanthostyla* (Family Raspalliidae Hentschel) are described herein.

ACKNOWLEDGEMENT

The author expresses his sincere thanks to Dr. S. Jones, Director of this Institute for his valuable guidance and suggestions and also to the Ministry of Education for awarding a Senior Research Scholarship from 1964 to 1967. Sincere thanks are also due to Mr. C. Mukundan for reading through the manuscript and offering several suggestions. The help and encouragement given by Dr. Willard D. Hartman, Peabody Museum (Natural History), New Haven, Conn., U.S.A. is also gratefully acknowledged.

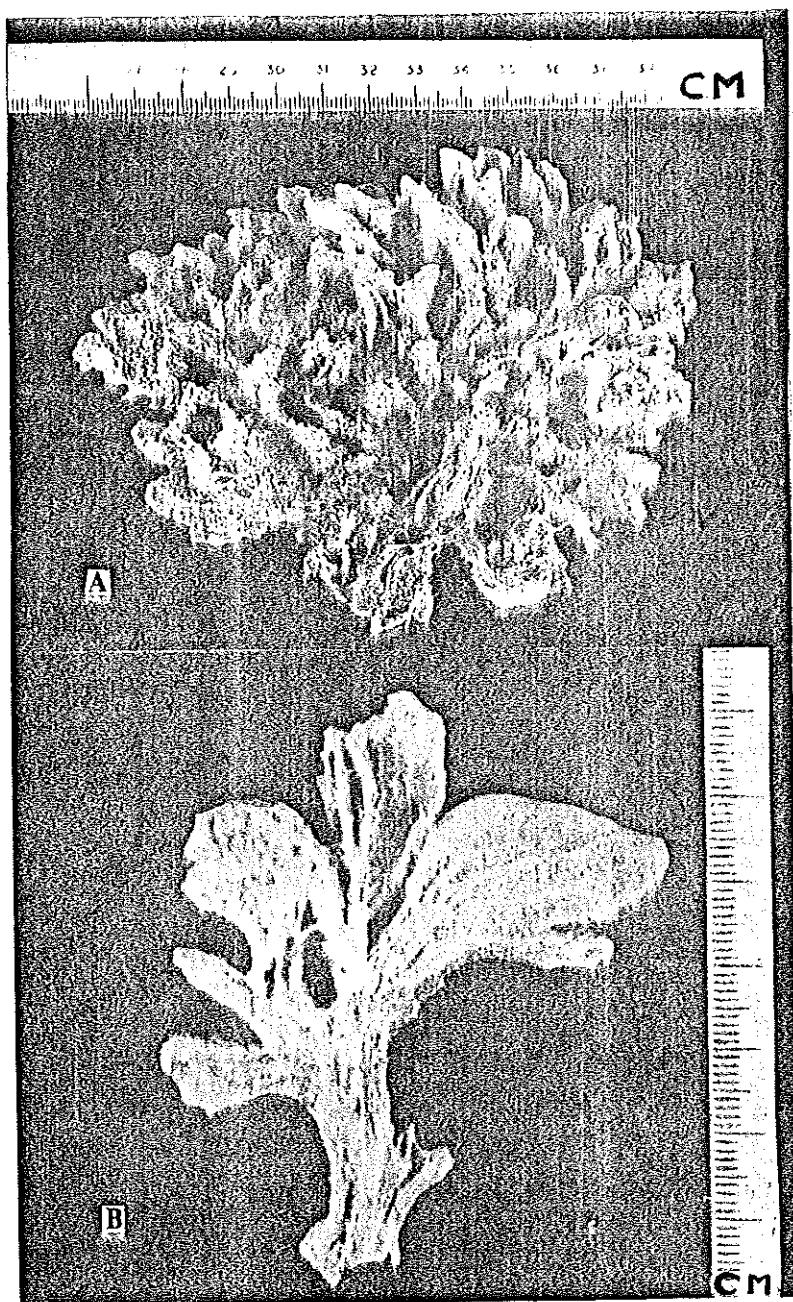


PLATE I. *Echinodictyum longistylum* n.sp. A—Entire view of the type.
B—A branch of the type.

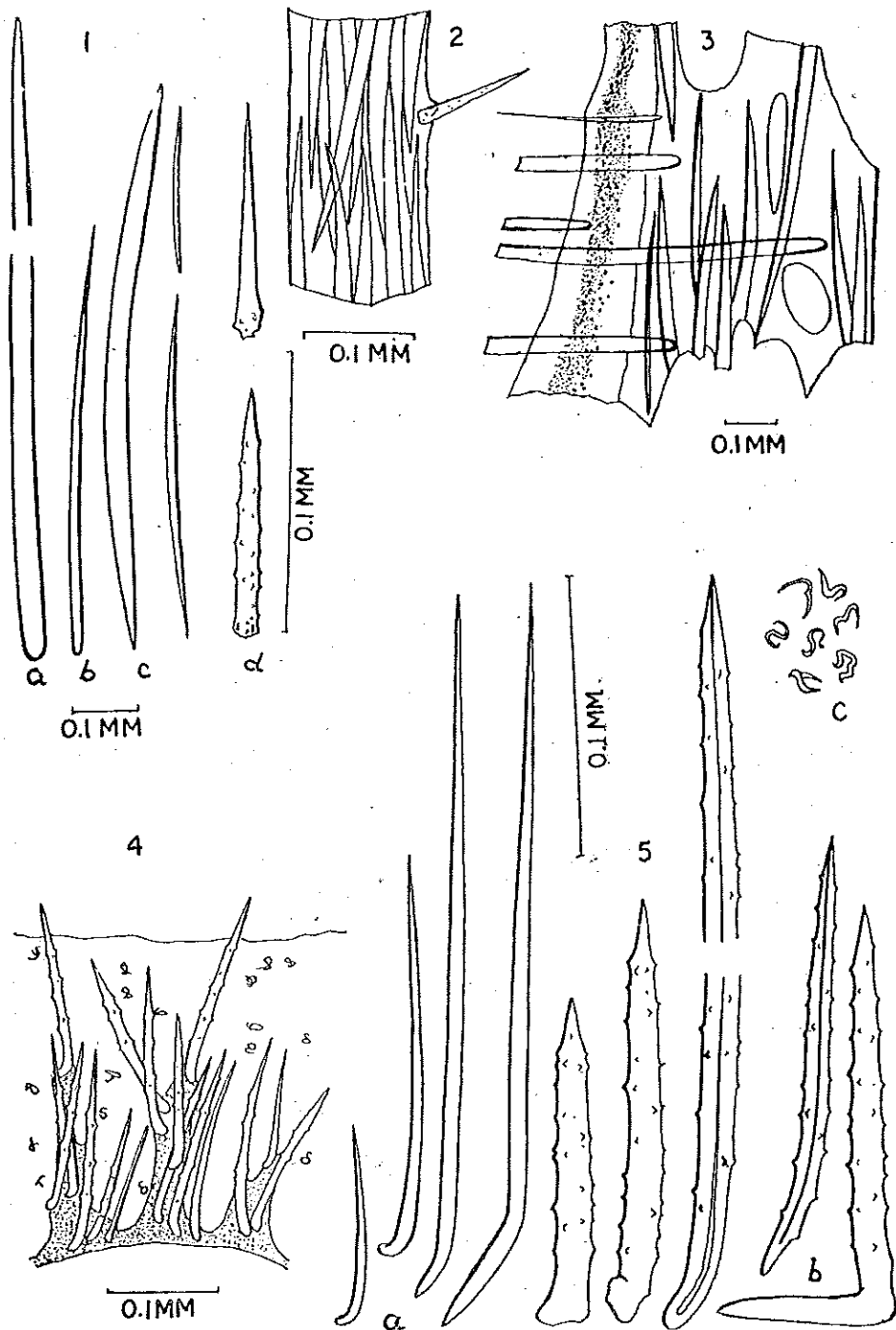


PLATE II, Figs. 1, 2, and 3. *Echinodictyum longistylum* n.sp. a. style; b. small style; c. oxeas (two types); c. acanthostyles. Fig. 2, A portion of fibre enlarged. Fig. 3 L.S. of branch. Figs. 4 and 5. *Rhabdermia acanthostyla* n.sp. Section showing the arrangement of spicules Fig. 5 a. Rhabdostyles; b. acanthorhabdostyles; c. contorted sigmas.

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