

STUDIES ON INDIAN SPONGES—VI

TWO NEW RECORDS OF SILICIOUS SPONGES  
(POECILOSCLERIDA : TEDANIIDAE) FROM THE INDIAN REGION

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In continuation of the earlier communications in this series on the studies on Indian sponges (Thomas 1968) two species belonging respectively to the genus *Acarinus* Gray (1867) and *Acanthacarinus* Levi (1952) are recorded from the Indian region.

Gray (1867) established the genus *Acarinus* with type *Acarinus innominatus*, founded on a figure by Bowerbank (1864, fig. 292). Since the original description was poor, Carter (1871) redescribed this West Indian specimen found in the British Museum.

There are only three species viz., *A. ternatus* Ridley (1884), *A. tortilis* Topsent (1892) and *A. topsenti* Dendy (1921) coming under this genus so far reported from the Indian Ocean. The previous records of *A. ternatus* are from Bombay (?) (Ridley, 1884) and Ceylon (Dendy, 1905, Burton and Rao, 1932); *A. tortilis* from Okhamandal (Dendy, 1916) and *A. topsenti* from Cargados Carajos (Dendy, 1921) and South Arabian Coast (Burton, 1959). A fourth species, *A. thielei* Levi, previously reported only from Red Sea (Levi, 1958) and Australian region (Thiele 1902, Hentschel 1912), is reported here. The present record, hence, helps in filling up the gap in its distribution in the Indian region.

The other genus, *Acanthacarinus* Levi, is represented in the present collection by the species *Acanthacarinus souriei* Levi (1952). It is known previously from tropical West Africa (Levi, 1952), Gulf of Guinea (Levi, 1959), Mediterranean (Vacelet, 1961) and Jamaica (Hechtel, 1965). The present discovery of this species from the Gulf of Mannar thus, helps in extending its distribution to the Indian region.

Family Tedaniidae Ridley and Dendy

Genus *Acarinus* Gray

The characteristic spiculation of this genus consists of large styles arranged in a plumose pattern, with peculiar echinating cladotylots of one or more types. The dermal spicules are tyloles. Microscleres are represented by isochelas and toxas.

*Acarnus thielei* Levi

(Figs. 3 a-g, 4)

*Acarnus thielei* Levi, 1958, p. 35, fig. 33 (Synonymy).

*Material*: One specimen from Palk Bay. It was washed ashore during heavy winds. Preserved in 60% alcohol.

*Description*: It was growing attached to the lower surface of coral rock by a broad base. From the main part of the body arise two finger-shaped branches (?) ending blindly. Total height of the specimen, 23 mm. and width (basal) 17 mm.

Colour, orange when collected, gray in 60% alcohol.

Consistency, rough and friable. Oscules and pores, not present.

The surface is highly hispid and this hispidity is due to the presence of cladotylotes projecting out from the interior. The specimen was in a decayed condition when collected and hence details regarding the ectosome and endosome could not be studied in detail.

The main skeleton is a typical reticulation of welldeveloped fibres cored by main styles and echinated by cladotylotes set at an angle to the fibre. Spongin is pale yellow in colour, and in some parts the amount deposited is quite large. The main fibres are connected together by secondaries (connectives) in an irregular scalari-form pattern. In these connectives usually the number of coring spicules is less (2 to 4) than in the main fibres. Coating of spongin usually very thick in connectives. Diameter of the main fibre comes to about 0.12 mm. and that of the connectives nearly 0.05 mm., but subject to considerable variation.

*Spicules*: 1. Styles. Straight or slightly curved, sharply and gradually pointed. Swellings are rarely present on the shaft. No trace of head is seen. Length varies from 0.301 to 0.452 (0.396 mm. average) and width from 0.013 to 0.024 (0.017 mm. average).

2. Cladotylotes (a) 'Palm tree' type. With three recurved hooks at the tip. Head well developed; globular or irregular. Shaft smooth and uniformly thick throughout. Total length varies from 0.188 to 0.245 mm. (0.205 mm. average) width of the shaft from 0.008 to 0.012 (0.009 mm. average).

Head—0.012 to 0.016 (0.015 mm. average) in diameter.

Length of the terminal teeth—0.025 to 0.037 (0.031 mm. average).

'Chord' length—0.031 to 0.037 (0.034 mm. average).

(b) 'Rose-stem' type. With three sharp and recurved teeth at the apex, stem with recurved spines. Not so abundant as the former. Head oval or irregular and without spines.

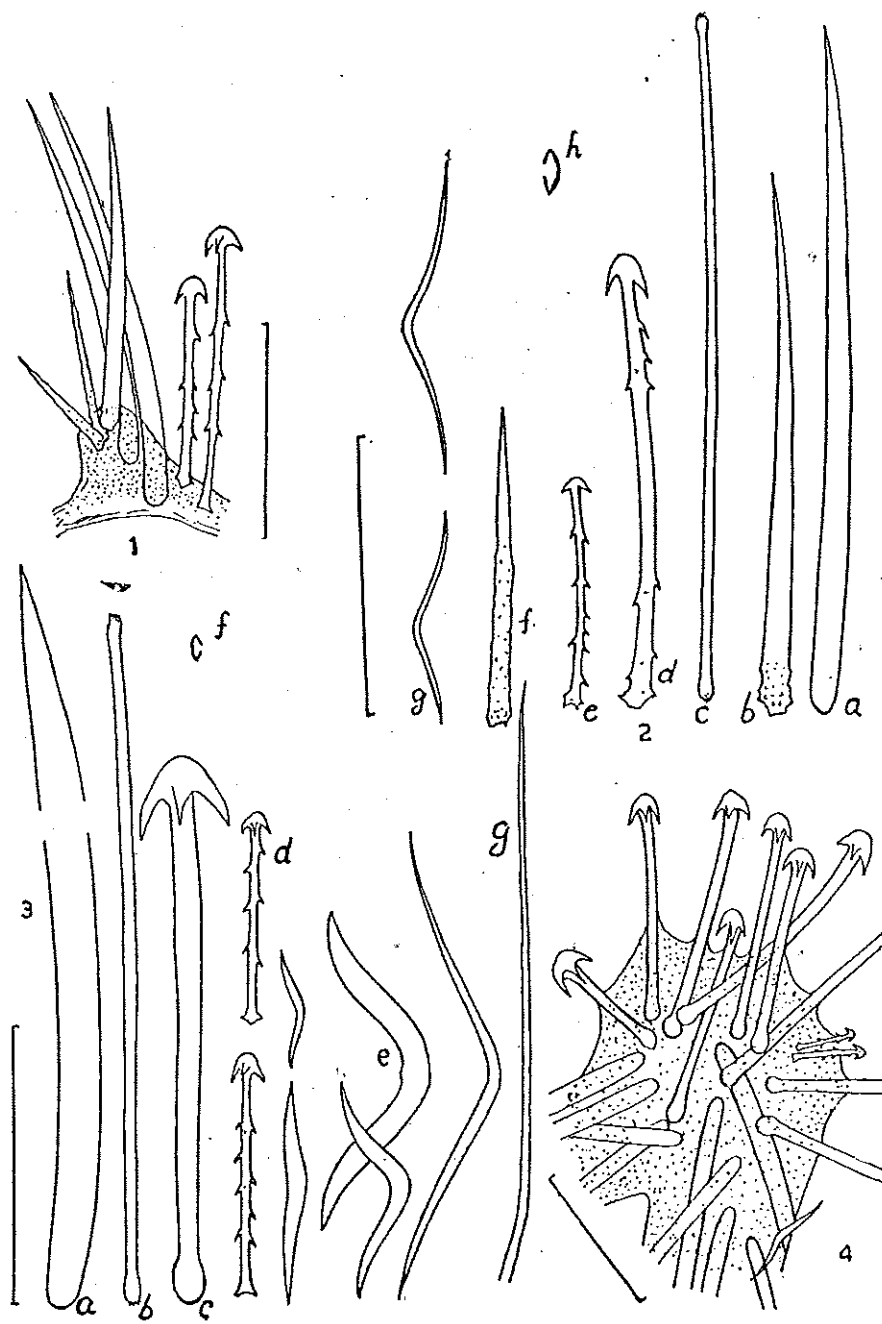
Total length—0.075 to 0.096 (0.084 mm. average).

Length of the terminal teeth—0.008 to 0.016 (0.011 mm. average).

Width of the shaft—0.003 to 0.004 (0.003 mm. average).

'Chord' length—0.010 to 0.016 (0.013 mm. average).

Width of the head—0.006 to 0.008 (0.0067 mm. average).



Scale 0.1 mm. throughout.  
 FIGS. 1 & 2 a-h: *Acanthacarnus sourei* Levi.  
 FIGS. 3 a-g & 4: *Acanus thielei* Levi.

3. *Tylotes*. Slender, straight or slightly curved. Head conspicuous and with 2 to 5 spines.

Length—0.207 to 0.283 (0.243 mm. average).

Width—0.002 to 0.004 (0.003 mm. average).

4. Texas. Two distinct types are present. (a) Small and thick. (b) Long and slender ('*Oxeas*' of Dendy, 1905).

Smaller forms with a rounded curve in the middle portion, tips curved slightly towards the outer part; often with a swelling in the central part. Length varies from 0.0252 to 0.155 mm. and width up to 0.008 mm. Long slender forms have a central angle of about 150°. The arms nearly straight with their tips curving slightly outwards. Length varies from 0.084 to 0.584 mm. and maximum width 0.003 mm.

5. *Isochelas*. Minute, chord length varies from 0.008 to 0.010; rarely represented.

*Distribution*: Red Sea, Indian Ocean, Australian region.

*Locality, Register Number, etc.*: Palk Bay—CMFRI—S. 44—30-8-1965 (washed ashore from shallow waters).

#### Genus *Acanthacarnus* Levi

Differs from the genus *Acarnus* Gray in the possession of acanthostyles. Type of the genus is *Acanthacarnus souriei* Levi (1952).

#### *Acanthacarnus souriei* Levi

(Figs. 1, 2a-h)

*Acanthacarnus souriei* Levi, 1952, p. 54.

Levi, 1959, p. 132, fig. 25.

Vacelet, 1961, p. 42.

Hechtel, 1965, p. 40.

*Acanthacarnus levii* Vacelet, 1960, p. 267, fig. a-i.

*Material*: Two specimens. Examined in fresh condition.

*Description*: Both are encrusting. The first (CMFRI—S. 45) was growing on the under surface of the coral rock and the area occupied, about 8 sq. cm. and the second (CMFRI—S. 45A) spreading on a coral at its lateral side. Total height of the specimen, 1 mm.

Colour, blood red in living condition. Oscules and pores were not visible. Surface hispid due to the presence of projecting styles.

Spicules are all arranged vertically on a basal coating of spongin. At places, from the spongin, arise so many finger-like projections where the spicules are arranged in plumose fashion. In other parts, the spicules are erect on the substratum. Colour of the spongin is pale yellow.

*Spicules* : The spicular measurements of *A. souriei*, as given in earlier reports are shown in Table I.

1. Styles. Slightly curved and sharply pointed. Head sometimes with spines or perfectly round. Length varies from 0.201 to 0.282 (0.241 mm. average) and width from 0.004 to 0.008 (0.007 mm. average). Head up to 0.008 mm.

2. Tyloles Dermal. Head conspicuous and spiny. Straight or slightly curved. Length varies from 0.143 to 0.284 (0.258 mm.) and width 0.004 mm. average. Head slightly larger than the rest of the body but not double its width.

3. Cladotylotes ('Rose-stem'). Two types are usually seen.

(a) Larger type. Shaft with spines and base with rudimentary teeth. The other end with four recurved sharp teeth. Length varies from 0.080 to 0.187 (0.151 mm. average) and width from 0.004 to 0.006 (0.005 mm. average) (excluding spines). Length of a tooth about 0.010 mm. and chord length 0.016 mm. 'Chord' length of rudimentary teeth of the base up to 0.012 mm., but often less.

Small cladotylotes resemble the larger in general structure, but the length noted, varies from 0.054 to 0.071 mm. and width of the shaft 0.0021 mm. average, 'chord' length 0.0063 mm. They may be the younger forms of the former type. (In *A. levii* Vacelet (1960) the cladotylotes are divisible into two sets).

4. Acanthostyles. Abundant. Conical in shape and spined all over, with spines concentrated more on the head. Tips sharply pointed. Length 0.093 mm. average and width varies from 0.003 to 0.005 mm.

5. Isochelas. Well represented, chord length varies from 0.014 to 0.016 mm.

6. Toxas. Two types are present. (a) Slender forms with sharp curve at the centre; and (b) stouter forms with rounded curve at the centre. Length varies from 0.081 to 0.168 mm. and width 0.004 mm. average. Fairly abundant.

*Remarks* : It is interesting to note that the specimen (CMFRI—S. 45) has only one type of cladotylotes viz., the larger.

*Distribution* : Atlantic Ocean, Mediterranean, Indian Ocean.

*Locality, Register Number etc.* : Gulf of Mannar—CMFRI—S. 45—21-4-1966, Palk Bay—No. CMFRI—S. 45A—6-3-1966.

*Depth* : 1-2 Metres.

#### SUMMARY

The occurrence of two species of silicious sponges, *Acarinus thielei* Levi and *Acanthacarinus souriei* is reported here from the Palk Bay and the Gulf of Mannar. These are new records for the Indian region.

TABLE I

*Spicular measurements of A. souriei Levi recorded by different authors (Measurements in mm.)*

S. No.	Reference	Styles	Tylotes	Cladotyles	Acanthostyles	Isochelas	Texas
1.	<i>A. souriei</i> Levi, 1958	0.275-0.325 × 0.005-0.008	0.275-0.300 × 0.003-0.005	0.120-0.180 × 0.006	0.070-0.090 × 0.004-0.005	0.015	0.100-0.160
2.	<i>A. souriei</i> Vacelet, 1961	0.315-0.430 × 0.006-0.009	0.260-0.460 × 0.003-0.004	0.080-0.210 ×0.002-0.006	0.055-0.115 ×0.0035-0.0045	0.013- 0.016	0.040-0.160
3.	<i>A. souriei</i> Hechtel, 1965	0.24-0.381 × 0.003-0.005	0.119-0.357 0.003-0.007	0.070-0.205 ×0.003-0.005	0.068-0.104 ×0.003-0.008	0.017-0.021	0.050-0.330 ×0.002
4.	<i>A. levii</i> Vacelet, 1960	0.390-0.480 × 0.006-0.009	0.280-0.408 ×0.003-0.0045	(1)0.1-0.14 ×0.0035-0.004 (2)0.18-0.21 ×0.0045-0.006	0.100-0.110 ×0.003-0.0045	0.015	(1) 0.020-0.140 ×0.0005-0.003 (2) 0.075-0.195 ×0.0015
5.	<i>A. souriei</i> Thomas, 1968	0.201-0.284 (0.241) ×0.004-0.008 (0.007)	0.143-0.284 (0.258) × (0.004)	(1)0.054-0.071 ×(0.002) (2)0.080-0.187 ×0.004-0.006	(0.093) × 0.003-0.005	0.014- 0.016	0.081-0.168 ×0.004

Averages are given in parantheses.

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