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STUDIES ON INDIAN SPONGES—II*

TWO NEW SPECIES OF SILICIOUS SPONGES BELONGING TO THE GENERA *Aka* DE LAUBENFELS AND *Damirina* BURTON

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DURING an extensive collection of sponges from the coral rocks of the Gulf of Mannar, the author has come across two new species of sponges. The first one, *Aka diagonoxea*, is a boring sponge and the other, *Damirina papillata*, usually grows with its base rooted deep in the coral. Detailed descriptions of these species are given here.

All specimens are deposited in the Reference Collection Museum of the Central Marine Fisheries Research Institute.

Family CLIONIDAE Gray

Genus *Aka* de Laubenfels

de Laubenfels proposed this new name in 1936 for *Acca* Johnson (1899) with type *Acca insidiosa*. Johnson originally described three species, *A. insidiosa*, *A. rodens* and *A. infesta* from Madeira. Of these, the first was found boring into the shells of *Ostrea* and *Chama* ; the second into the coral *Dendrophyllia ramea* and the third from a shell attached to another sponge. The other species transferred to this genus by de Laubenfels include *Cliona nodosa*, *C. labyrinthica*, both by Hancock (1849), and *C. coralliophaga* Stephens (1915). *Aka trachys* de Laubenfels (1954), from West Central Pacific, has acanthoxeas.

Aka diagonoxea n. sp.

(Figs. 1-5)

Material : Three coral rocks excavated by this sponge.

Description : Sponge boring, chambers found inside the corals are large (20 mm diameter) and irregular in outline. Fistules projecting from the substratum long, 20-50 mm ; diameter 2-4 mm, and branching dichotomously or polychotomously. Pore bearing fistules short and stumpy. Pores terminal, 0.046 mm diameter. Oscules terminal, single, 2-3 mm in diameter.

The chambers formed inside the coral communicate with adjacent ones by two types of openings (1) wide openings of about 3 mm diameter and (2) small openings

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in groups. It is observed that in some advanced stages these openings are located on pillar-like structures projecting into the interior of the chamber in a radial pattern. Such structures are brought about by the dissolution of calcareous matter just around the pore.

Colour of fistule brown or pale white. The pulpy mass inside the chamber is yellow in colour. Fistules hard and breakable.

Dermal membrane is thin and transparent, brown pigment granules are present abundantly in some places. Oxeas are tangentially arranged. No spongin is present in the dermal part.

The main skeleton consists of well developed fibres running longitudinally up through the interior. Towards the basal part of each fistule, these fibres fuse together and form compound fibres, whereas at the terminal parts they become more diffused. Average width of a fibre is 0.75 mm ; mesh size 0.207 mm. Spongin visible and pale yellow in colour. Thickness of the wall of the fistule, 0.8 mm average.

Spicular arrangement of the pulpy mass of the interior is rather vague. Oxeas are distributed irregularly. Calcareous particles of about 0.005 mm diameter are present crowded together at certain places.

Spicules : Oxeas. Sharply and abruptly pointed ; with two bendings. Strongylote (about 3%) or stylote (about 8%) modifications are also noted. Length varies from 0.109 to 0.130 (0.123 mm average) and width from 0.007 to 0.008 mm.

Remarks : The nearest relative of this species is *Aka labyrinthica* (Hancock, 1849) boring into the shells of *Tridacna gigas* from unknown locality.

The double angulated oxeas, the larger diameter of chambers, long fistules etc. are all distinguishing features of this species.

Locality, Register Number etc. : Gulf of Mannar, C.M.F.R.I. No. 134—30-9-1964; C.M.F.R.I. No. 133 (type)—20-6-1965 ; C.M.F.R.I. No. 134—21-9-1966. Depth : 1-3 Metres.

Family ADOCIIDAE de Laubenfels

Genus *Damirina* Burton

Adociidae with an isodictyal reticulation of verticillately spined acanthostrongyles and dermal tornotes. Microscleres are totally wanting. Type of the genus is *D. verticillata* Burton (1959).

Burton (1959) placed this genus in the subfamily Myxillinae, but a more suitable place of this genus is in the family Adociidae de Laubenfels (1936), somewhere near the genus *Damiria* Keller. The renierine affinity of the genus *Damiria* is well established by the previous workers like Weltner (1898) and Lundbeck (1905). There is considerable similarity between the genus *Damirina* Burton and *Damiria* Keller in general composition of skeletal elements. The main spicules are acanthostrongyles in the genus *Damirina* Burton.

Damirina papillata n. sp.

(Figs. 6-8)

Material : Several fistules. They were growing erect on a coral rock, with their base rooted deep in the coral. Fistules are removed from the substratum and preserved in 60% alcohol.

Description : Sponge boring (?) into coral rock, with fistules growing upright from the surface. Height of the fistules, 3-8 mm and diameter 1-2 mm.

Colour is yellow in living condition and deep brown in 60% alcohol. Consistency is friable.

Oscules terminal, opening always smaller than the lumen of the interior. Pores small and irregular, average diameter 0.1 mm, scattered irregularly. A definite dermal membrane supported by tangentially arranged tornotes with microspined ends is present.

The endosomal skeleton consists of longitudinally running bands of acanthostrongyles beneath the dermal layer of smooth tornotes. These longitudinal bands are connected together by secondaries so as to make a reticulation with triangular meshes. Each arm of the mesh, thus, is composed of 2 to 3 spicules arranged side by side. Amount of spongin is rather negligible.

Spicules : 1. Tornotes. Dermal ; straight or slightly curved, heads microspined and slightly inflated. Length varies from 0.159 to 0.277 (0.21 mm average) and width from 0.001 to 0.005 (0.004 mm average).

2. Acanthostrongyles. Straight or slightly curved. Spines verticillately arranged ; 10 to 15 whorls. Length varies from 0.117 to 0.176 (0.142 mm average) and width from 0.006 to 0.012 (0.009 mm average) (including spines).

Remarks : The verticillately spined strongyles found here resemble the one described by Carter (1880, pl. 5, fig. 29) from the excavations of *Tisiphonia penetrans* (=*Jaspis penetrans*) Carter.

The present species differs from the type of the genus, *D. verticillata* Burton, in the smaller dimensions of the spicules.

Locality, Register No. etc. : Gulf of Mannar, C.M.F.R.I. No. 128—4-5-1967. Depth : 3 metres.

SUMMARY

Two new species belonging to the genera *Aka* de Laubenfels (1936) and *Damirina* Burton (1959) are described under the names of *A. diagonoxea* and *D. papillata*.

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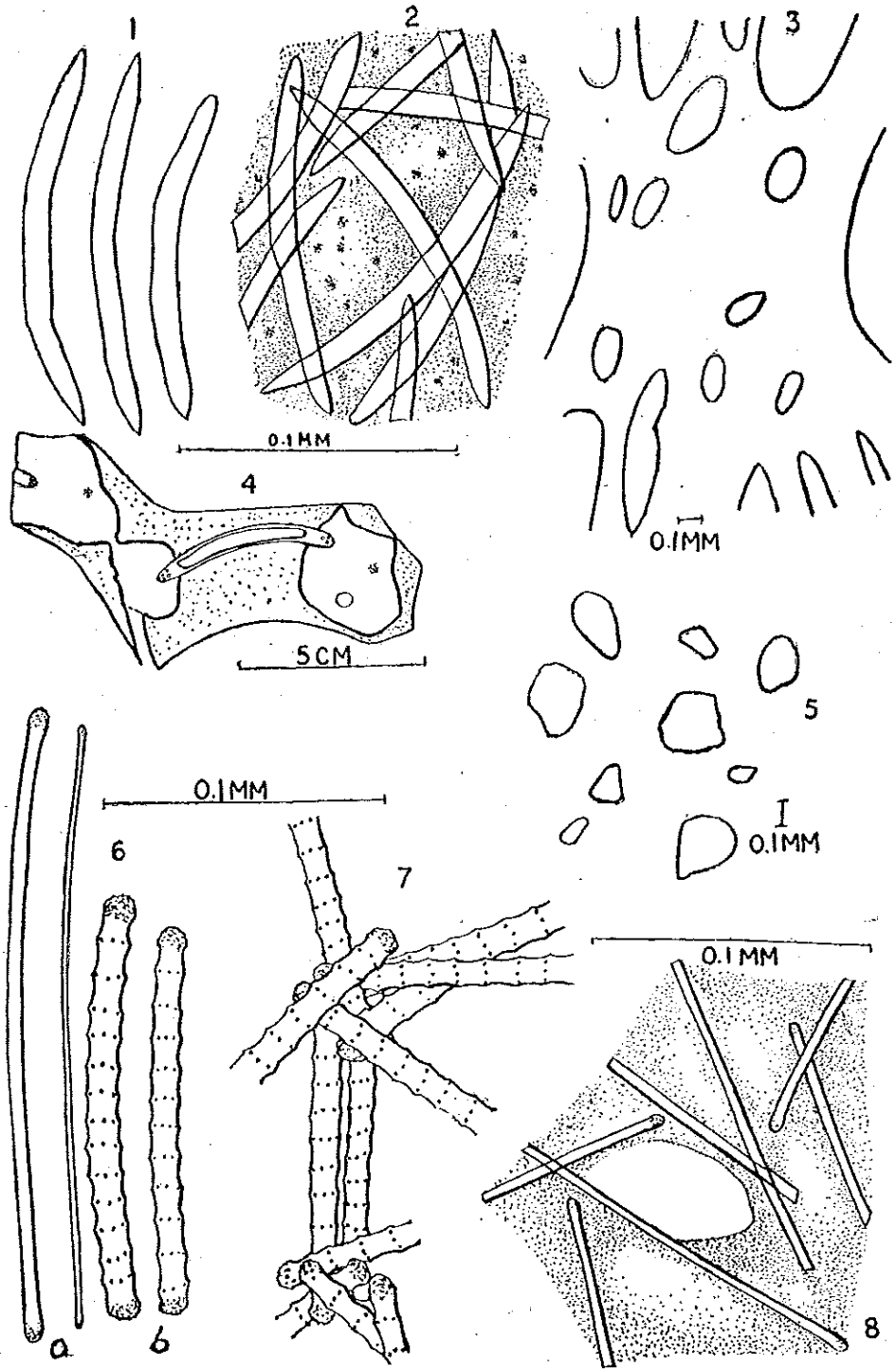

FIGS. 1-5. *Aka diagonoxea* n.sp. 1, Oxeas ; 2. Dermal skeleton ; 3. Main skeleton (only outline is given) ; 4. Boring pattern ; 5. Enlarged figure of the openings found at the tip of pillar-like structures. FIGS. 6-8. *Damirina papillata* n.sp. *a*. Tornotes *b* Acanthostrongyles ; FIG. 7. Main skeleton. FIG. 8. Dermal skeleton

study of sponges. I am thankful to Mr. C. Mukundan for going through the manuscript critically suggesting several improvements. The financial support given by the Ministry of Education, Government of India, is also acknowledged.

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