

SPECIAL PUBLICATIONS FROM THE SETO
MARINE BIOLOGICAL LABORATORY

BIOLOGICAL RESULTS
OF
THE JAPANESE ANTARCTIC RESEARCH EXPEDITION

1.

SPONGES

BY

SENJI TANITA

TOHOKU REGIONAL FISHERIES
RESEARCH LABORATORY
SHIOGAMA, MIYAGI-KEN, JAPAN

SIRAHAMA, WAKAYAMA-KEN
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THE specimens upon which this paper is based were collected by Dr. R. YOSHIDA during the Japanese Antarctic Research Expedition in 1957-'58, and forwarded to me through Dr. TOKIOKA, to whom I am indebted for the opportunity of examining and describing them.

All the sponge specimens are very small in size and some of them were not identified because of their small size and imperfection. Since the majority of the sponge bodies retain only pieces of their basal parts attached to the substrata, their external features and the salient characteristics are not clear. It is hoped that better specimens can be obtained to identify the uncertain ones.

The collection includes the following four species, one Calcarea and three Non-calcarea of which one is new to science.

CALCAREA

Homocoelidae

1. *Leucosolenia gracilis* (HAECKEL)

DEMOSPONGIAE

Suberitidae

2. *Suberites microstomus* RIDLEY and DENDY
3. *Suberites senilis* RIDLEY and DENDY

Choanitidae

4. *Latrunculia antarctica*, n. sp.

Description of the Species.

1. *Leucosolenia gracilis* (HAECKEL)

(Figs. 1, 2)

Ascella gracilis, HAECKEL (1872) p. 44, Pl. 6, figs. 1-7.

Leucosolenia gracilis, BREITFUSS (1897) p. 211; DENDY and ROW (1913) p. 725; TANITA (1942) p. 76.

Only two small specimens are assigned to this species. They were obtained from a depth of 570 meters in Lützow Holm Bay.

The larger sponge (Fig. 1) is a solitary individual in the form of strongly compressed thin-walled tube. It is 5 mm high and 2 mm broad in the broadest part. The oscular portion is damaged. The dermal surface is nearly smooth and the colour in spirit is nearly white.

The smaller one is a fragment of an individual measuring only 1.5 mm in both the height and breadth.

The skeleton of the sponge is composed of only regular quadriradiates (Fig. 2) which are arranged in a single or two layers in the body wall. The spicules appear to be slightly larger than those of the type which were described by HAECKEL, but in other details the present specimens agree well with the type.

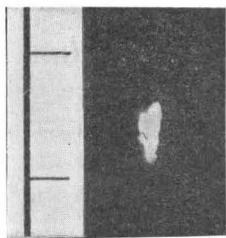


Fig. 1. *Leucosolenia gracilis* (HAECKEL);
from Lützow Holm Bay.

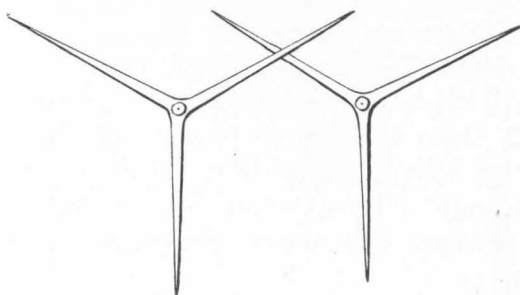


Fig. 2. *Leucosolenia gracilis* (HAECKEL).
Quadriradiates $\times 100$.

Previously known Distributions: — Australia and New Zealand (HAECKEL, BREITFUSS); Pacific coast of North America (HAECKEL).

Locality: — Lützow Holm Bay, 570 meters. Bottom, mud; Feb. 8, 1958.

Remarks: — This species seems to be a deep sea form, though the depth of the locality of the type specimen was not mentioned in the original description.

2. *Suberites microstomus* RIDLEY and DENDY

(Figs. 3, 4)

Suberites microstomus, RIDLEY and DENDY (1887) p. 199, Pl. 41, fig. 3.

Two specimens are assigned to this species. They were obtained from a depth of 500 meters off Cape Cook on Jan. 28, 1958.

Each of the specimens is solitary, hemispherical in form with a very minute osculum on the summit of the body and is attached to a small black stone by the base (Fig. 3). The larger specimen measures 6.5 mm in maximum diameter. The surface of the sponge is fairly even and minutely granulated. Osculum is very minute but distinct, and very slightly raised above the general surface of the sponge. Texture is very firm and dense, with a very strongly developed, fibrous cortex of about 0.7 mm thick. The colour of the specimens in alcohol is pale yellow.

Skeleton: — The main skeleton is composed of stout bands of spiculo-fibre formed of large subtylostylote spicules which radiate to the surface to join

the cortical layer. The cortex is very dense and sharply and abruptly marked off from the underlying tissues. It is strengthened by closely placed fascicles of tylostylote spicules which extend through it. The spicules of the cortex project their sharp ends only very slightly beyond the surface. The inner parts of the sponge are penetrated and strengthened only by the ends of the main skelton fibres.

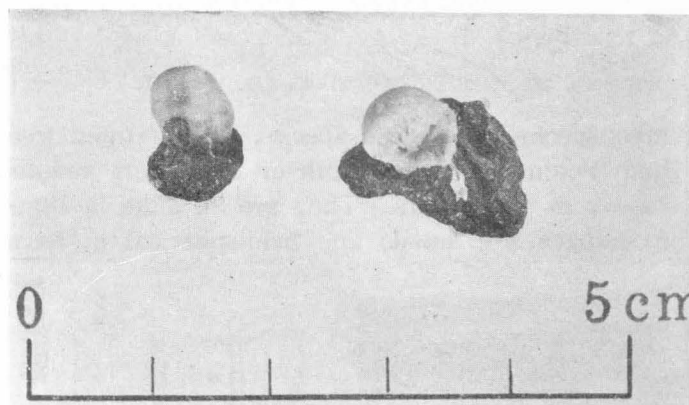


Fig. 3. *Suberites microstomus* RIDLEY and DENDY ;
from off Cape Cook.

Spicules (Fig. 4): — Megascleres only. (1) Subtylostyles (Fig. 4 a) large, stout, straight, gradually and very sharply pointed, with very slightly developed heads, $750-1100\ \mu$ long and $15-18\ \mu$ thick. These spicules occur in the fibres of the main skeleton. (2) Spicules of the cortex are tylostyles (Fig. 4 b). They are much smaller, straight or slightly curved, gradually and sharply pointed, with distinctly marked heads, $250-520\ \mu$ long and $8-13\ \mu$ thick.

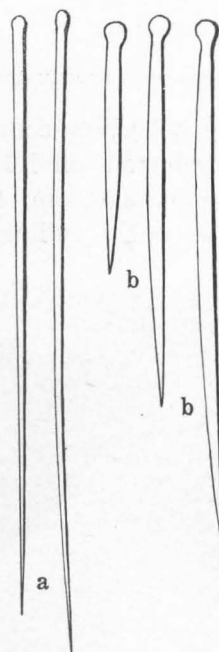


Fig. 4. *Suberites microstomus*
RIDLEY and DENDY.
a, Subtylostyles $\times 50$;
b, Tylostyles $\times 100$.

Previously known Distribution: — Between Kerguelen and Heard Islands ($52^{\circ}4' S.$, $71^{\circ}22' E.$) 150 fathoms (RIDLEY and DENDY).

Locality: — Off Cape Cook, 500 meters. Jan. 28, 1958.

Remarks: — The present species was first described by RIDLEY and DENDY, using one specimen obtained by H. M. S. Challenger from the Antarctic region. Since then, this species has not been reported from any other localities. This is, therefore, the second record of the occurrence of this species in the Antarctic Ocean.

As no figures of the spiculations of this species have been given in the original paper, the writer here illustrates the spicules.

In 1908, KIRKPATRICK described a new variety of this species, *S. microstomus*

var. *stellatus*, based on the sponge from Victoria Land. Afterwards, BURTON (1932) reported on the occurrence of this variety in South Georgia, 245 m. and Palmer Archipelago, 315 m. Judging from these facts, this species seems to be found only from relatively deep water around the Antarctic.

3. *Suberites senilis* RIDLEY and DENDY

(Figs. 5, 6)

Suberites senilis, RIDLEY and DENDY (1886) p. 485; (1887) p. 209, Pl. 45, figs. 1, 1a, 1b.

The collection containing three specimens of this species, two of them were collected from off Lützow Holm Peninsula at the depth of 700 meters and the remaining one from off Cape Cook in 970 meters. They are all alike in shape and in being solitary. The sponges are sessile and hemispherical in form,

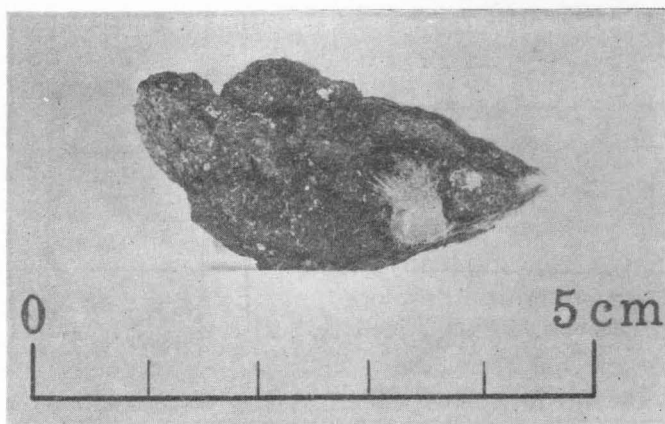


Fig. 5. *Suberites senilis* RIDLEY and DENDY ;
from off Lützow Holm Peninsula.

attached to small stones or to shell fragments (Fig. 5).

Each of the specimens is covered with very long, delicate, projecting spicules like a coating of gray hair and the surface, therefore, is very strongly hispid. A small oscular projection is seen at the summit of the body. The specimens vary from 7 mm to 10 mm in diameter excluding the projecting spicules. The colour in alcohol is pale yellow.

Skeleton: — The skeleton is composed of long, slender, radiating divergent brushes of tylostylote spicules and of much shorter tylostyles. The projecting

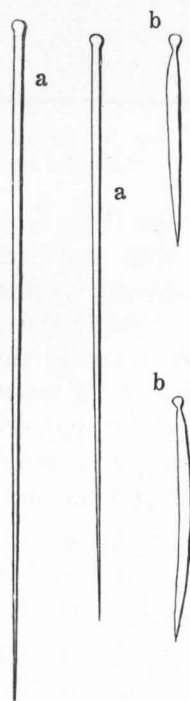


Fig. 6. *Suberites senilis*
RIDLEY and DENDY.
a, Long tylostyles $\times 60$;
b, Short tylostyles $\times 100$.

spicules of the former give rise to its hairy appearance. The latter spicules fill up between the radiating long spicules in the body.

Spicules (Fig. 6): — The spicules are of one kind only, namely tylostyles. The spicules of the radiating brushes (Fig. 6 a) are very long, slender, straight, very sharply pointed at one end, with oval head, but varying much in size, 700–2000 μ or more by 16–26 μ . The shorter ones (Fig. 6 b) with narrow, constricted neck and almost globular head are gradually and finely pointed at the apex and often more or less bent near the neck, stouter than the longer spicules in proportion to their length; they measure 180–320 $\times$ 7–10 μ .

Previously known Distribution: — North Pacific Ocean (26°10' N., 178°0' E.) 2050 fathoms (RIDLEY and DENDY).

Localities: — Off Lützow Holm Peninsula, 700 m. Bottom, sand; Feb. 1, 1958; off Cape Cook, 970 m. Bottom, sand; Feb. 21, 1958.

Remarks: — This is the second report dealing with the occurrence of this species in the world. This form seems to be found only in the deep sea.

4. *Latrunculia antarctica*, n. sp.

(Figs. 7, 8)

This new species is based upon a single specimen which was obtained from the depth of 700 meters at north-west of Cape Cook.

The sponge (Fig. 7) is attached to a small stone and forms a very thin crust. The external form resembles a small round disc with a diameter of 7 mm. The surface is nearly smooth in naked eye and the colour in spirit is pale grey.

Skeleton: — There is a dense dermal crust composed as usual in the genus of a single layer of vertically placed discorhabds. Beneath the crust the skeleton

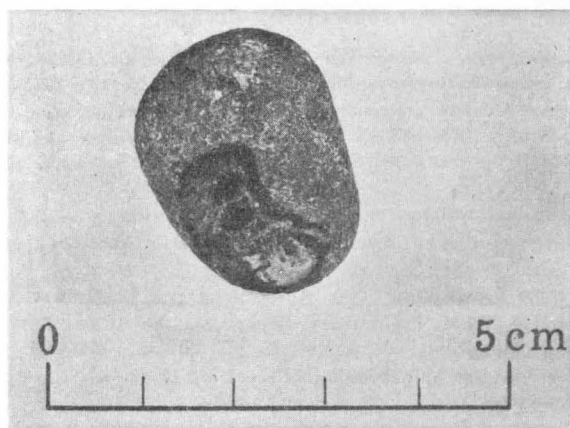


Fig. 7. *Latrunculia antarctica*, n. sp.; from north-west of Cape Cook.

is loose and irregular, composed of slender styles, some of which run towards the surface and the others form an irregular reticulation of the spicules.

Spicules (Fig. 8): — (1) Megascleres. Styles (Fig. 8 a) slender, nearly straight, sharply pointed at one end, more or less distinctly polytylotic, namely, they are slightly swollen in 5–6 places on the shaft; size $520-770 \times 11-16 \mu$. (2) Microscleres. Discorhabds (= Discaster) (Fig. 8 b, c) characteristic of the genus, is roughly spined at base, with two whorls, the first of the greatest diameter and placed vertically to the axis; the second bends towards the apex. The length of the whole spicules varies $52-72 \mu$ and the largest whorl about $36-50 \mu$ in diameter.

Locality: — Northwest of Cape Cook, 700m. Bottom, sand; Feb. 1, 1958.

Remarks: — In external form this species bears a marked resemblance to *Latrunculia claviger* KIRKPATRICK, while in dimensions of spicules it approaches *L. bocagei* RIDLEY and DENDY. The former species, however, differs distinctly from this species in spiculation and the latter differs from the present one not only in external appearance but also in shape of both styles and discorhabds. The most conspicuous features of this species are the presence of polytylotic styles and the shape of discorhabds.

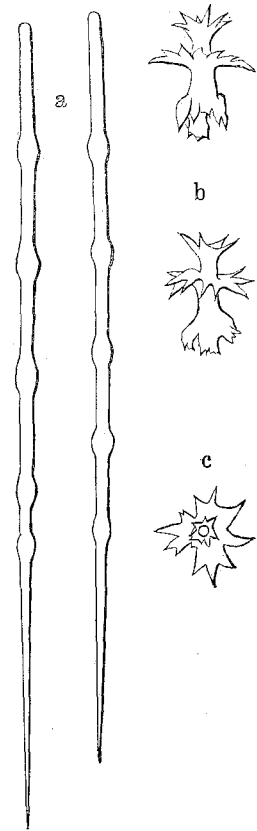


Fig. 8. *Latrunculia antarctica*, n. sp. a, Styles $\times 100$; b, Discorhabds $\times 210$; c, Dorsal view of a discorhabd $\times 210$.

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