**Abstract**

Several specimens of Stylasterina from the Antarctic Sea near the Syowa Base of Japanese Antarctic Research Expedition were described by the present writer. The following six species were discriminated, ***Errina*** cfr. ***antarctica*** (GRAY), ***Errina laterorifa*** EGUCHI, n. sp., ***Errina*** sp., ***Sporadopora mortenseni*** BROCH, ***Allopora bithalamus*** BROCK, *Primnoisis antarctica* (STUDER), and among hem ***Errina laterorifa*** EGUCHI was first investigated by the present writer.

# I. INTRODUCTION

Several specimens of Stylasterina, some corals and fragments of spicules of Gorgonids were collected by the bottom trawling in the sea north of the Syowa Base of the Japanese Antarctic Research Expedition by the member of the Expedition in 1957 and 1958. The present writer had an opportunity to study the collection.

Stylasterina is the most dominant group in the collected material, and the genera *Errina*, *Sporadopora* and a species of *Allopora* are well represented. Genera *Errina* and *Sporadopora* are known to be geographically distributed in the southern hemisphere, although a few species of *Errina* are exceptionally found in the north Atlantic equatorial region.

The following five species were identified:

*Errina* cfr. *antarctica* (GRAY)
*Errina laterorifa* EGUCHI n. sp.
*Errina* ? sp.
*Sporadopora mortenseni* BROCH
*Allopora bithalamus* BROCH

A few specimens were worn, but most were in the living state when dredged up. The description of species of Stylasterina and one exceptional Octocoralla follows.

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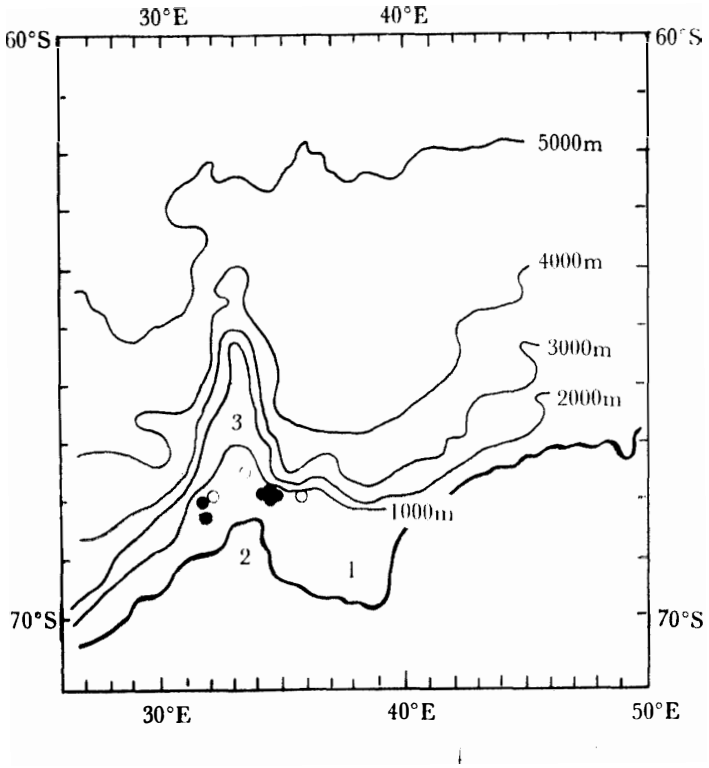
# II. LOCALITIES OF STYLASTERINA

1958, SOYA Stations.

Off Cape Cook, 68°09.7′S, 34°34.0′E, 830 m, 26 Jan. 1958.
Gunnerus Bank, 68°10.0′S, 34°04.0′E, 620 m, 27 Jan. 1958.
Gunnerus Bank, 68°09.7′S, 34°34.0′E, 830 m, 27 Jan. 1958.
Off Cape Cook, 68°14.7′S, 33°37.0′E, 500 m, 28 Jan. 1958.

Braid Bay, 68°29.7′S, 32°02.7′E, 590 m, 31 Jan. 1958.
Gunnerus Bank, 68°17.4′S, 31°46.9′E, 590 m, 1 Feb. 1958.
N.W. off Cape Cook, 68°17.4′S, 31°46.9′E, 700 m, 1 Feb. 1958.
W. off Cape Cook, 68°17.4′S, 31°46.9′E, 590 m, 1 Feb. 1958.

1957, UMITAKA-MARU Stations.
Specimen No. 10 Loc. 67°51.5′S, 33°13.5′E, 600-630 m.
No. 20 〃 〃 〃 〃
No. 30 〃 68°07.0′S, 32°00.0′E } 570 m.
68°05.5′S, 32°01.0′E }




1. Lützow-Holm Bay
2. Cape Cook
3. Gunnerus Bank
● Sōya St.
○ Umitaka-Maru St.

*Fig. 1. Locality map of Stylasterina in the neighbouring sea of the Cape Cook, Antarctica.*

| | | | | |
|---|---|---|---|---|
| Specimen | No. 40 | Loc. | 67°51.5′S, 33°13.5′E, | 630-680 m. |
| | No. 50 | 〃 | 67°51.5′S, 33°13.5′E, | 630-680 m. |
| | No. 6 | 〃 | 68°07.0′S, 32°00.0′E | 570 m. |
| | | | 68°05.0′S, 32°01.0′E | |
| | No. 7 | 〃 | 68°12.0′S, 35°52.0′E, | 870 m. |

The stations listed above are in the sea off Cape Cook, near Gunnerus Bank and its neighbourhood (Fig. 1).

## III. DESCRIPTION OF SPECIES

Class HYDROZOA HUXLEY, 1859
Order STYLASTERINA HICKSON, 1899
Family Stylasteridae GRAY, 1847
Subfamily Erininae HICKSON, 1912
Genus Errina GRAY, 1835 Genotype: *Errina aspera* (LINNÉ)
(=*Millepora aspera* LINNÉ, 1767)

***Errina* cfr. *antarctica*** (GRAY), 1872 (Plate I, Figs. 2a, 2b, 3)
Synonym:

*Porella antarctica*, GRAY, 1872, Proc. Zool. Soc. London. 1872, p. 746. Plate LXIV, Fig. 4.

*Labiopora antarctica*, MOSELEY, 1878, Philos. Trans. Roy. Soc. London. Ser. B, 5, p. 476, 480.

〃 〃 RIDLEY, 1881, Proc. Zool. Soc. London. 1881, p. 105.

*Errina antarctica*, HICKSON, 1912, Proc. Zool. Soc. London. 1912, p. 887.

〃 〃 〃 1912, Bull. de Mus. d'Hist. Nat. Paris. 1912, p. 2.

*Errina antarctica* forma *typica*, BROCH, 1942, Skr. Norske Videnskapsakad (Oslo). 1942, no. 3, p. 42, Fig. 11, Plate IV, Fig. 12.

*Errina antarctica* forma *kerguelensis* BROCH, 1942, op. cit. p. 44, Fig. 12.

Two small branchlets illustrated here are rather well preserved. Their surfaces are more or less regularly covered with spiniform projections (grooved spines); branches are more or less cylindrical, the specimen (Figs. 2a, 2b) is circular in transverse-section, 2 mm in diameter, and 10 mm long with a short branchlet of 3 mm long.

Gastropores, 0.25-0.3 mm in diameter of circular opening, are arranged in regular rows on both sides of a branch; the tip of gastrostyle is visible as a white projection in the centre of opening. Dactylopores show varying features. A few small dactylopores with a circular rim are present, but larger dactylopores (nariform dactylopores) are numerous, having prominent spines which tend to be arranged in longitudinal rows. In a few places grouping of the spines is faintly

indicated, but otherwise they occur quite individually and have their grooved spines turned away from the apex of the branchlet. Ampullae are hemispherical, 3/4 mm in diameter, with 2-3 granules on the hemispherical dome. Deep-seated ampullae are also visible in the section of branchlet.

The second specimen (Plate I, Fig. 3) in a small harder and stony branchlet, 1.5 mm in diameter and 6 mm long; somewhat serially arranged gastropores, accompanying dactylopores with grooved spines, and cleft-like apertures of dactylopores are also turned away from the apex of the branchlet. Otherwise it agrees fairly well with the first specimen (Fig. 2). Both specimens show finely perforated surface of coenosteum and minute circular warty projections.

In every respect, as described above, the specimens agree fairly well with the typical form of *Errina antarctica,* however, the colour of our specimens differs from the latter, being white, and in this respect the specimens are more like forma *kerguelensis* BROCH of the Heard Island (south of the Kerguelen Islands). According to BROCH and others the colour of Stylasterina is not an important characteristic of the speciess.

Several specimens referrable to the species were found, but most of them were badly worn for specific identification.

**Localities:** SOYA St. 3, W. N. off Cape Cook, 68°19.2′S., 31°21.2′E., 700 m deep, 1st Feb. 1958 (specimen no. 3); SOYA St. 6, Gunnerus Bank, 68°10.0′S., 34°04.0′E., 620 m deep, 27th Jan. 1958 (specimen nos. 10, 1); SOYA St. 4, Braid Bay, 68°29.7′S., 32°02.7′E., (350 m ?) 590 m deep, 31st Jan. 1958 (specimen nos. 7, 8); SOYA St. 7, Off Cape Cook, 68°09.7′S., 34°34.0′E, 830 m deep, 26th Jan. 1958 (specimen nos. 2, 15).

**Distribution:** Near the Cape Cook and Gunnerus Bank, 590-830 m deep; Cape Horn (HICKSON; BROCH); Heard Island (south of Kerguelen Island, 57°S, 73°E) (HICKSON; BROCH).

***Errina laterorifa*** EGUCHI, **n. sp.** (Plate II, Figs. 1-5)

Colony branching; branches are two facial; front face with numerous dactylopores and few gastropores. Section of branchlet is circular; gastropores are linearly arranged on both sides of the branch; gastropore acompanying with a few dactylopores encircling the rim of the gastropore-orifice and are slightly protruding above the general surface of coenosteum. Diameter of pores 0.4-0.7 mm, usually 0.4-0.5 mm, often oval in shape; pores are rather shallow, as the terminal point of the gastrostyle is observable by lens; gastrostyle is elongate conical, (or elongate pine cone shaped). Dactylopores in two forms, mostly circular with slightly elevated collar-like rim, while some have slit-like apertures protected by spiniform process or horse-shoe shaped bulges. Their arrangement is quite irregular. Surface of coenosteum is minutely granulated, and with numerous minute circular pores, yet otherwise rather compact. Branchletes are 11.5 mm long, 3×3.5 mm in section; diameter of gastropores, 0.37×0.44; 0.43

×0.68; 0.5×0.56 mm respectively; diameter of dactylopores, 0.18-0.25 mm; colour pink.

**Remarks:** The above is the description of the type specimen (a small piece of pinkish branchlet (Fig. 1)). Beside the specimen in Fig. 2 (Plate II) there is another dichotomous branching colony, one of the dichotomous stem has 3 additional branchlets in the same plane as flabellate manner with many gastropores, dactylopores and ampullae. Most of the ampullae are ruptured and their concave holes show extremely irregular aspect of the terminal branchlets. The second specimen is more or less corroded and the surface of coenosteum vermiculated with numerous slit-like elongate fissures or pores. On lateral side we can see the serial arrangement of incomplete cyclosystems which are formed of more or less bulging gastropores with encircling few dactylopores. It may probably be the same species. The three additional specimens illustrated here (Figs. 3-5) agree in the arrangement of gastropores and incomplete cyclosystems, although several irregularly disposed dactylopores without spines are observed on one face of branches. They are not different essentially from one another.

The present species is easily distinguished from all the known species of the genus *Errina* by larger gastropores and better developed incomplete cyclosystems. It is an intermediate type between the genera *Errina* and *Allopora* and the genera *Errina* and *Distichopora*. By the presence of the characteristic dactylopores distributed irregularly it is easily distinguished from the representatives of other genera.

**Localities;** UMITAKA-MARU St. 68°12.0′S, 35°52.0′E, 870 m deep, 2 specimens; UMITAKA-MARU St. 68°07′S-68°05′S, 32°00′E-32°01′E, 570 m deep., 4 specimens.

**Distribution:** Antarctic sea, near Cape Cook and Gunnerus Bank, 570-870 m.

***Errina* ? sp.** (Plate II, Fig. 6)

A much worn specimen of branching colony formed of subcircular sectioned dichotomous branchlets. Gastropores, dactylopores and ampullae are grouped on terminal branchlet, but no projecting dactylopores. Some dactylopores group around each gastropore forming incomplete cyclosystem. Gastrostyle is elongate conical, with pointed terminal. Surface of coenosteum vermiculate, with minute pores in narrow furrows. On the dark brown surface of the colony, the white inner structure is partially observed. It may probably be a worn specimen of the above-described pink coloured forms. The arrangement of gastropores is very characteristic to the present specimen.

**Locality:** UMITAKA-MARU St. 68°12.0′S, 35°52′E, 870 m deep, 1 specimen.

Genus Sporadopora MOSELEY, 1879 Genotype: *Polypora dichotoma* MOSELEY, 1876 (=*Sporadopora dichotoma* (MOSELEY))

***Sporadopora mortenseni*** BROCH, 1942 (Plate I, Fig. 4)

Synonym:

*Sporadopora mortenseni* BROCH, 1942, op. cit., p. 29, Texi-fig. 8, Plate III, Fig. 9.

A more or less worn terminal branch is illustrated here (Fig. 4). Branching in one plane (flabellate); 20 mm long, 2.5 mm in diameter; section of branchlet is circular. The colour is greyish white. Three branchlets are broken at the top, and the mode of branching may probably be dichotomous, and subdividing in a plane (Fig. 4). Gastropores and dactylopores are scattered quite irregularly over the surface of branch, and minute pores are also seen between them, although their distribution is not uniform. These small pores are the openings of the canal system intersecting the coenosteum. Gastropores are circular of slightly oblong, larger pores measure 0.3-0.4 mm but usually slightly small in size. No projecting rim of the gastropores observed. Gastropores penetrate deeply into the branch and communicate with irregular central, longitudinal canals which are primeval or fused gastropores. Gastrostyle is a thick needle-shaped or like a flame of candle in appearance, and is attached to the lateral face of gastropore. Dactylopores vary somewhat in size and are quite irregularly scattered between the gastropores. Otherwise the surface of the coenosteum is quite smooth, and no trace of projections surrounding the mouth of the gastropores or dactylopores is found. Ampullae circular in section are deeply immersed and not visible externally. The canals of the coenosteum in the present specimen are extraordinarily wide as described by BROCH and also coinciding with *Sporadopora dichotoma* MOSELEY from off the mouth of Rio de la Plata at a depth of 600 fathoms.

**Remarks:** The above is a description of the illustrated speciman. Except for the slight deviation that the gastropores of the present specimen are slightly smaller and their distribution on the branch is unequal on the back and front sides, the description of *Sporadopora mortenseni* BROCH from 65 fathoms near the Three King Island, New Zealand, agrees well with our specimen. The second species *S. dichotoma* MOSELEY is an allied species, but has a raised margin of gastropore and the branches are oval or oblong in cross-section.

**Localities:** SOYA St. 6, Gunnerus Bank, 68°09'S, 34°12'E, 830 m deep, 27th Jan. 1958; SOYA St. 7, Off Cape Cook, 68°09'S, 34°35'E, 830 m deep, 26th Jan. 1958.

**Distribution:** Three King Islands, New Zealand, 65 fathoms deep (type specimen); Gunnerus Bank and off Cape Cook, near Lützow-Holm Bay, Antarctica, 830 m deep.

Subfamily Stylasterinae GRAY, 1847

Genus Allopora EHRENBERG, 1834 Genotype: *Allopora oculina* EHRENBERG, 1834 (= *Millepora norvegica* GUNNERUS, 1763)

***Allopora bithalamus*** (BROCH) (Plate I, Figs. 1a, 1b, 1c, 1d)

Synonym:

*Stylaster* (*Allopora*) *bithalamus* BROCH, 1936, Skr. Norske Vidensk. Akad. Oslo, Matem. Naturv. Kl., p. 75, Text-fig. 25, Plate XII, Fig. 34.

A specimen of branch illustrated here (Figs. 1a, 1b) measures some 40 mm high and 32 mm broad, and branches rather irregularly, however, the front and back sides can be easily distinguished by the absence of cyclosystems on the back side. In Fig. 1a three branches are subdividing, and two of which are united in the upper part forming a network pattern; moreover, there are broad, domed wormliving tubes; the domed covering is thin. There is a tendency of branching in one plane.

Cyclosystems are found on all sides of the branches although they are more frequent in front view and always circular in shape, terminal cyclosystem elevated slightly at the margin to form cylindrical elevations, which is soon imbedded in the well developed coenenchym of branches, and often the lower margin of the cyclosystem is elevated. Diameter of cyclosystems is generally 1.0-1.4 mm, sometimes slightly larger.

Gastropore is deep, and has two chambers; the upper chamber curves cylindrically, the lower chamber is separated from the former by the sharply projecting wall which is situated almost at the same height as the top of the gastrostyles.

Gastrostyle is very short and broad conical in shape, its maximum breadth being nearly one half of the height; the upper conical part shows a fine latticework and is echinulated (Fig. 1d). Dactylopores situating at the upper edge of the Gastropores wall are connected with the gastropores by a very shallow cleft, and are very deep; dactylostyles are also well developed.

The number of dactylopores in the cyclosystems is shown in the next table:

| Number of dactylopores in cyclosystems | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of cyclosystems | 1 | 2 | 5 | 18 | 23 | 12 | 4 | 0 | 1 | 1 |
| 〃 〃 (BROCH's) | | | 3 | 17 | 34 | 29 | 11 | 4 | — | 2 |

The colour of the colony is dark grey or light brown, but the inner part is white. Surface of coenosteum is finely vermiculated, and to the naked eye it seems velvety.

**Remarks:** The above is the description of the illustrated specimen, which agrees with the original description of *Stylaster* (*Allopora*) *bithalamus* BROCH from 51 fathoms deep of "Tafel Buch".

We have several other branching specimens safely referrable to the species, although some variations are observed in the shape of colony and other characteristics.

**Localities:** SOYA St. 1, Gunnerus Bank, 68°09'S, 34°12'E, 830 m deep, 27 Jan. 1958; SOYA St. 6, Off Cape Cook, 68°09'S, 34°35'E, 830 m deep, 26 Jan. 1958; SOYA St. 7, Gunnerus Bank, 68°10'S, 34°04'E, 620 m deep, 27 Jan. 1958.

**Distribution:** It is the most dominant species of Stylasterina in the Antarctic sea near the Japanese Base (Syowa Base). Type specimen is from the "Tafel Bucht" 33°57′S, 18°15′E, 51 fathoms deep. 620-830 m deep, off Cape Cook and Gunnerus Bank.

## *Appendix*

Class ANTHOZOA EHRENBERG, 1834
Subclass OCTOCORARIA HAECKEL, 1866
Order Gorgonacea LAMOUREUX, 1816
Suborder Scleraxonia STUDER, 1887
Family Isididae LAMOUREUX, 1812
Subfamily Mopseinae GRAY, 1870
Genus Primnoisis STUDER, 1887 Genotype: *Isis antarctica* STUDER, 1878

***Primnoisis antarctica*** (STUDER) (Plate I, Fig. 5)
Synonym:
*Isis antarctica* STUDER, 1877, Monat. K. P. Ak. Wiss. Berlin, 1877, p. 661, Plate V, Fig. 32.

A small fragment of spicule, 12 mm long, with more or less distorted longitudinal ridges and furrows is reffered to the present species. The original description of the species is brief, but the three tree-like small branchlets turned vertically to the axis of the main branch remind one of the spicule figured by STUDER.

**Localities:** SOYA St. 6, 68°10′S, 34°04′E, 620 m deep (Gunnerus Bank); SOYA St. 7, 68°09.7′S, 34°34′E, 830 m deep (Off Cape Cook).

## Literatures


BAYER, F. M. (1956): Octocoralla, in Treatise on Invertebrate Paleontology, Pt. F, Coelenterate. F. 166–231.

BOSCHMA, H. (1956): Milleporina and Stylasterina, in Treatise on Invertebrate Paleontology, Pt. F, Coelenterata, F. 94–106.

BROCH, H. (1936): Untersuchungen an Stylasteriden, Teil 1. Skr. Norske Videnskapsakad (Oslo), Mat. Naturv. Kl., 1936, No. 8.

BROCH, H. (1942): Investigations on Stylasteridae, Pt. 2. Skr. Norske Videnskapsakad (Oslo), Mat. Naturv. Kl., 1942, No. 3.

HICKSON, S. J. (1912): On the Hydrocoralline genus Errina. Proc. Zool. Soc. London. 1912, pp. 876–896, Plates 94–96.

HICKSON, S. J. (1912): Notes on some Stylasterina in the Museum d'Histoire Naturelle de Paris. Bull. de Mus. D'Hist. Nat. Paris, 1912, p. 2.

MOSELEY, H. N. (1878): Structure of the Stylasteridae. Philos. Trans. Roy. Soc. London, Ser. B., 5, pp. 476, 780.

NAKASEKO, K. (1959): On superfamily Lioshaeridae from Sediments in the Sea near Antarctica, Pt. 1. Biol. Results Jap. Ant. Res. Exped. 2, May 1959, p. 3.

NIINO, H. (1958): On the bottom deposits of the sea around Cape Cook, Prins Harald Coast, Antarctic region (in Japanese). Jour. Tokyo Univ. Fisheries, Special ed, 1, No. 3, pp. 250–254.

STUDER, H. (1877): Ubersicht der Steinkorallen aus der Familie der Madreporaria aporosa, Eupsammida und Turbinorina, welche auf der Reise S. M. S. gazelle um die Erde gesammelt wurde. Monat. K. P. Ak. Wis. Berlin, 1877, p. 661.

UCHIO, T. (1960): Benthonic Foraminifera of the Antarctic Ocean. Biol. Res. Jap. Ant. Res. Exped. 12, May, 1960, p. 4, Fig. 1.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