SOME NEPHTHEID OCTOCORALS FROM KII COAST, MIDDLE JAPAN[1)2)]

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With Plate II and 6 Text-figures

The present paper is a continuation of the study of octocoral fauna around the Kii coast and concerned with a collection of the Nephtheidae (Nephthyidae), exclusive of the genera *Dendronephthya*, *Stereonephthya* and "*Eunephthya*" (=*Capnella*) which have already been published. The material so far obtained comprises a new species of *Litophyton* (*Lithophytum* auct.) and five known or unknown species of *Nephthea* (*Nephthya* auct.). All of them are recorded here for the first time from Japanese waters.

As to the nomenclature of both the genera *Litophyton* and *Nephthea*, I follow an opinion expressed by ROXAS (1933) that any emendation of spelling of older names as has been done by EHRENBERG, KÜKENTHAL and most later workers is unnecessary and is not required by any rules of nomenclature, even if linguistically incorrect, and it is to be hoped that this decision will be generally accepted. Hence, the family name Nephthyidae VERRILL should be replaced by Nephtheidae in favour of the oldest generic name *Nephthea*.

1. *Litophyton viscidum* n. sp.

(Fig. 1; Pl. II, Fig. 5)

Nom. Jap. Numeri-tosaka (nom. nov.).

A single colony of the holotype was found growing on the back of a sponge crab *Dromidia unidentata* (RÜPPEL), which usually carries a monoascidian in our seas. Thus, the stalk of the colony is deeply hollowed out at the base and broadly flattened to form a capitulum at the top from which arise numerous fingerlike lobes. The capitulum shows a spread of 8×6 cm and the stalk with a height of about 2.5 cm slopes outwards to the edge of the capitulum. The lobes, crowded towards the edge, are

1) Contributions from the Seto Marine Biological Laboratory, No. 238.
2) Supported by a grant in aid for fundamental scientific research from the Ministry of Education.

generally short and divide into smaller, conical, secondary and tertiary branches, up to about 10–15 mm in total length and 5–15 mm in basal diameter at the contracted state. Polyps are uniformly arranged all over the lobes and on the capitulum, though scarcely at its centre.

Polyps are non-retractile, tubular, about 0.65 mm high and 0.45 mm in diameter. Tentacles are about 0.3 mm long and 0.1 mm wide at base, and provided with three blunt-ended pinnules on either side, which are longer distally. Spicules are absent from polyp body and tentacles.

The stalk is rigid, with thick canal-walls densely filled with short robust spindles with low warts, bluntly pointed at both ends, about 0.18–0.2 mm long and 0.03 mm

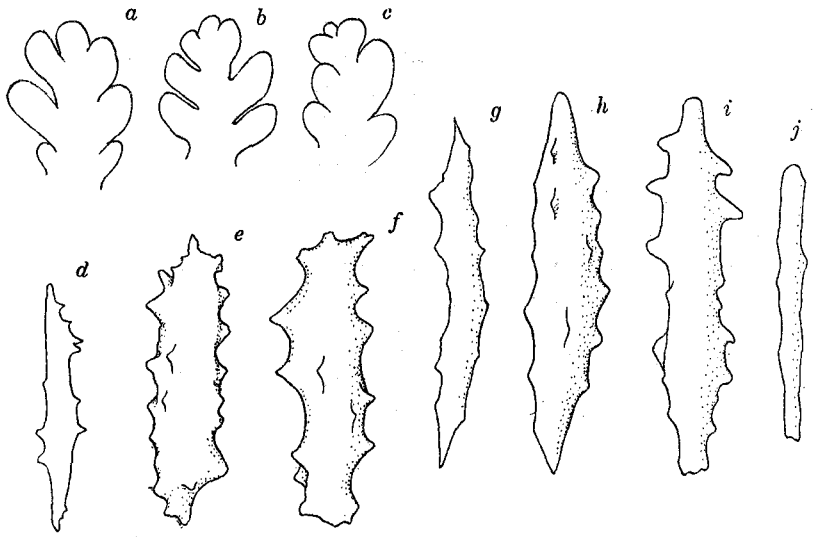

Fig. 1. *Litophyton viscidum* n. sp.
a–c, Tentacle; *d–f*, spicules from stalk coenenchyma; *g*, from cortex of lobes; *h*, from stalk cortex; *i–j*, from coenenchyma of lobes and branches.
(*a–c*, ×55; *d–f*, ×210; *g–j*, ×335)

wide. In the stalk cortex are straight spindles, scarcely warted, with almost similar size to those of the interior. The capitular surface and branch cortex are sparsely scattered with slender spindles, about 0.1×0.016 mm～0.15×0.008 mm. The canal-walls of the lobes contain a few straight, slender rodlets, about 0.065–0.16 mm long and 0.008–0.01 mm wide, smooth or slightly warted.

In life the colony is light brown in color, and flabby and very slimy to the touch. Hence the specific name.

Another small colony, from the same locality, with a spread of 4.8×4.1 cm and a height of 2 cm, shows a similar mode of growth, but lies on oyster shells.

Locality. Seto. Two specimens, November 9, 1950, T. YAMAMOTO coll.

Remarks. This species rather approaches the genus *Lemnalia* in its external appearance and in the dense spiculation in coenenchyme. The arrangement of polyps and the slimy texture of colony, place it in the genus *Litophyton.* Also the sclerites in the cortex and coenenchyme are all sparsely warted spindles peculiar to *Litophyton.*

2. *Nephthea chabrolii* AUDOUIN

(Fig. 2)

Nephthea chabrolii AUDOUIN, Expl. pl. Savigny, 1828, p. 49 (repr. by SHANN, 1912, p. 511, pl. LXI, figs. 1–5 & pl. LXII, fig. 6).
Nephthya chabrolii KÜKENTHAL, 1903, p. 157 (with synonymy).

Nom. Jap. Tizimi-tosaka.

Six colonies of light brown color preserved in alcohol agree well with this well-known species. The majority of them are 5–10 cm long, with a polyparium expanse of about 3–8 cm. From a short main stem arise 2–5 short stout branches which

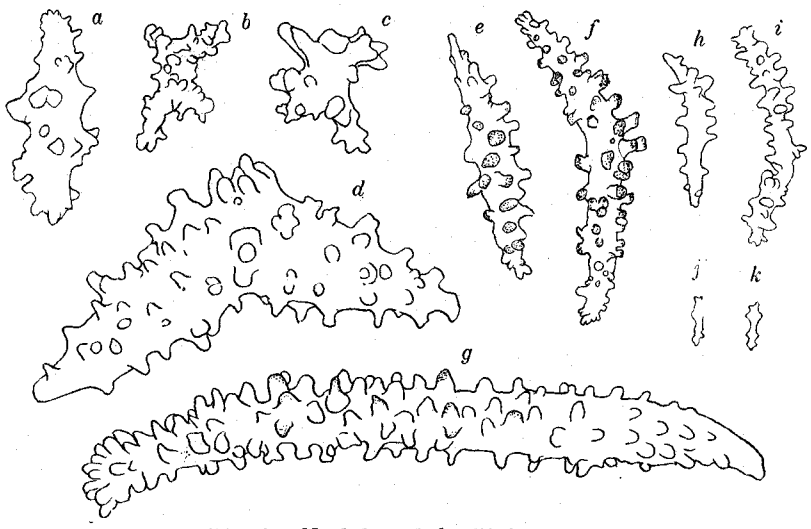

Fig. 2. *Nephthea chabrolii* AUDOUIN.
a–d, Spicules from stalk cortex; *e–f*, from cortex of lobes; *g*, from supporting bundle of polyp; *h–i*, from lateral side of polyp; *j–k*, from inside of polyp. (All ×100)

may either subdivide or give off directly to lobes. Lobes conical, with round tip, about 5–10 mm long and 3–5 mm wide. Polyps closely set on lobes, their head about 0.5–0.7 mm high and 0.7–0.8 mm wide, borne at a right angle to polyp stalk, about 0.3–0.35 mm long.

Polyp spicules on the outside and lateral sides are heavily warted spindles, about 0.2–0.4 mm long and 0.045 mm wide; they are arranged in indistinct double rows, about 6–8 in a row and many tiny rods may occur upwards between them. Those

situated on inside are smaller, less-warted spindles, 0.08–0.1 mm long and 0.008–0.015 mm wide. S. B. spicules are slightly curved warty spindles, rather strong, up to 1.2 mm long and 0.13 mm wide, usually covered with much more warts towards the tip in stronger ones.

On upper cortex of stem and lobes are long, slender, warty spindles, about 0.2–1.0 mm long and 0.05–0.08 mm wide, with prominent warts jagged at tip. On basal cortex are heavily warted (though not jagged at tip), stout, curved spindles, tri- and quadriradiates, about 0.35–1.0 mm long and 0.08–0.2 mm wide; besides smaller irregular forms about 0.08–0.2 mm across may be found. In canal-walls are similar spindles and irregular thorny forms.

Localities. Seto. Three specimens; Kii-ôsima. Six specimens, September 5, 1934.

Previously recorded from Red Sea and Pacific Ocean (East Indies, New Guinea, China Sea and Philippines), but not from Japan.

3. *Nephthea crassa* KÜKENTHAL

(Fig. 3; Pl. II, Fig. 2)

Nephthya crassa KÜKENTHAL, 1903, p. 167, pl. VIII. fig. 16 & pl. IX, figs. 61–62.

Nom. Jap. Numeri-tizimitosaka (nom. nov.).

Apart from the mode of growth, six specimens from the same locality seem to agree with KÜKENTHAL's *N. crassa*, especially in spiculation. The colony is composed of several stems of different sizes, which arise directly from a common base. Largest one of the main stems attains about 7 cm in total height and 4 cm in diameter at the base. Sterile stalk is rigid, fleshy, and longitudinally striated. It gives off numerous branches at different levels on which the lobes are situated. Lobes are somewhat rounded cone, not definitely longer than wide except the larger terminal ones, the majority being 2–3 mm long and 2 mm wide.

Polyps club-shaped, very small, about 0.35–0.7 mm wide, with a very short stalk. Polyp spicules are rather irregularly arranged in rows; they are very thorny spindles with high warts, about 0.08–0.2 mm long. S. B. spicules never projecting and not much different from spicules on lateral sides in form and size. Cortex of lobes is covered densely with many small stars, double-stars or irregular-formed thorny spicules, about 0.05–0.17 mm (on the average 0.1 mm) in diameter. On lower cortex of stem are similar spicules. In canal-walls are plump spindles with sparsely set blunt-ended warts, measuring 0.2×0.04 mm, 0.3×0.06 mm, 0.38×0.07 mm and 0.4×0.08 mm; interior of lobes lacks spicules.

In life, the colony is plumberous brown in color owing to the occurrence of zooxanthellae in endoderms, and very slimy to the touch.

An epizoic barnacle *Acasta alcyonicola* is found embedded in the stalk[1]

1) In describing this barnacle, the host was provisionally named as "*Capnella* sp.".

(UTINOMI, 1953).

Localities. Kusimoto. Five specimens taken with lobster-nets, January 29, 1952 and December 6, 1953, T. YAMAMOTO coll.

Ezura, Tanabe Bay. One specimen taken with lobster-nets, April 30, 1951, T. YAMAMOTO coll.

Previously recorded from Port Denison (Australia).

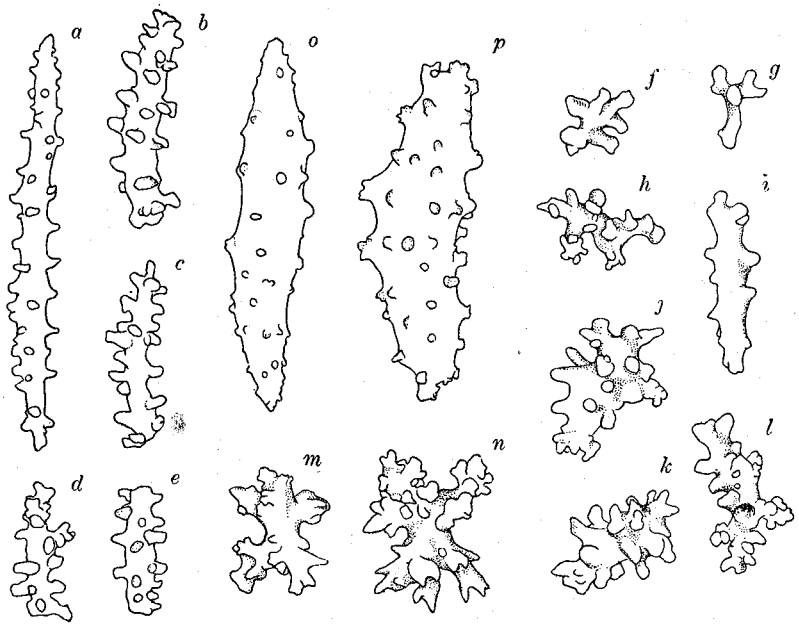

Fig. 3. *Nephthea crassa* KÜKENTHAL.
a–e, Spicules from polyp; *f–l*, from upper cortex; *m–n*, from basal cortex; *o–p*, from stalk coenenchyma. (All ×150)

4. *Nephthea erecta* KÜKENTHAL

(Fig. 4; Pl. II, Fig. 3)

Nephthya erecta KÜKENTHAL, 1903, p. 154, pl. VII, fig. 8 & pl. IX, figs. 45–47; THOMSON & DEAN, 1931, p. 85.
Nephthea erecta ROXAS, 1933, p. 410.

Nom. Jap. Tati-tizimitosaka (nom. nov.).

All the colonies are low, bushy in form and show the maximum height of 9 cm. From a membranous base arise several main stems giving off 2–5 branches upwards which give rise to many polyp-bearing twigs or lobes. Each lobe is generally elongate conical, 3–9 mm long and 2–3 mm wide, and bears small polyps all over the surface, though not closely packed.

Polyp head inturned, oval in lateral view, about 0.6–0.7 mm long and 0.5–0.6 mm wide, with a stalk less than 0.3 mm long. Polyp armature consists of 8 chevroned rows of narrow spicules, the number of which in each row cannot de definitely counted. S. B. of the entheathing type, composed of slender spindles with high prominent warts, about 0.6–0.8 mm long and 0.047 mm wide, which do not extend beyond

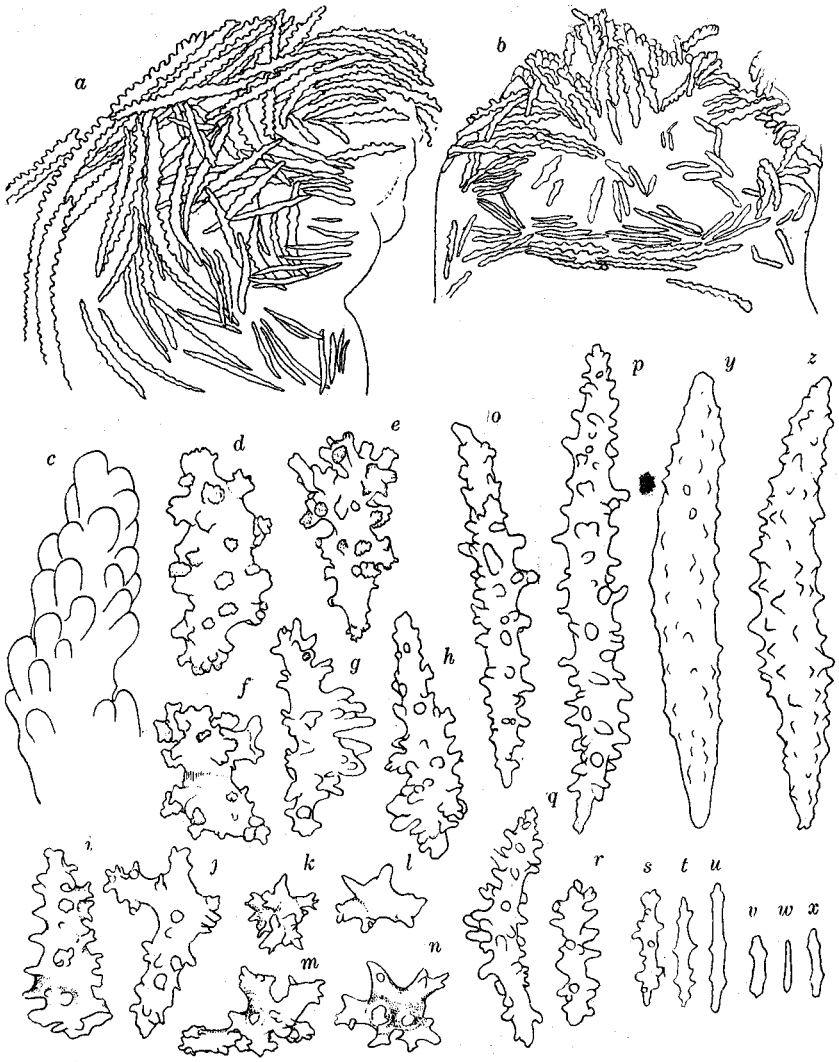

Fig. 4 *Nephthea erecta* KÜKENTHAL.

a, Polyp, lateral side; *b*, polyp, oral side; *c*, polyp-bearing lobe; *d–h*, spicules from upper cortex; *i–m*, from basal cortex; *o–p*, from supporting bundle of polyp; *q–r*, from outer side of polyp; *s–u*, from lateral side of polyp; *v–x*, from inner side of polyp; *y–z*, from canal-walls.

(*c*, ×6; *a–b*, ×55; *d–z*, ×100)

polyp head. On the inside of polyp stalk smaller, narrow rods, either smooth or slightly warted, about 0.06–0.09 mm long and 0.01 mm wide, are transversely arranged just below smaller point spicules of polyp head; they spread round the lateral sides and then the supporting bundle, measuring about 0.1–0.25 mm long and 0.015–0.02 mm wide on lateral sides.

On cortex of lobes and branches are mostly very thorny spicules of irregular shape, including straight or curved, warty spindles, slightly foliate or irregularly knobbed club-like forms, about 0.17–0.23 mm long and 0.12–0.14 mm wide, while on the basal cortex are mostly smaller star-shaped or irregular bodies with a diameter of 0.05–0.25 mm. Besides, a few larger stout spindles with prominent warts up to 0.8×0.15 mm may be found. In canal-walls are found only weakly warted spindles up to 1.5 mm long, but the majority are smaller, about 0.3–0.5 mm long and 0.05–0.06 mm wide, with low conical warts.

In life, the colony is not slimy and is dark greyish brown in color. Specimens in spirit are, however, creamy white.

Localities. Kii-ôsima. Eight specimens, September 5, 1934.

Kusimoto. Two specimens, December 6, 1953, T. YAMAMOTO coll.

Previously recorded from Tonga Islands, East Indies and Philippines.

5. *Nephthea capnelliformis* THOMSON & DEAN

(Fig. 5; Pl. II, Fig. 4)

Nephthya capnelliformis THOMSON & DEAN, 1931, p. 90, pl. X, fig. 1 & pl. XXIII, fig. 7.

Nom. Jap. Daruma-tizimitosaka (nom. nov.).

About ten flaccid colonies from the same localities are generally small, low, bushy in form and greenish brown in color. The surface of the colony is rather rough to the touch.

From a low flattened base several short stems arise. These give off very short branches on which the lobes are situated. Lobes are rather rounded conical, about 5 mm long and 3 mm wide and carry many small polyps closely crowded together. Polyps are very small, oval in lateral view and curved inwards. Polyp stalk very short and rather broader than head, so that not definitely demarcated between them. Polyps, head and stalk altogether, are on an average 0.8–0.9 mm long and 0.5–0.6 mm wide.

Polyp armature is very dense on the outer side of head and round the stalk, numerous slender strongly-warted curved spindles or pseudoclubs being arranged radially. Spicules on the outer (abaxial) side of polyps including those forming the supporting bundle are generally large, about 0.15×0.02 mm～0.45×0.05 mm, covered with prominent warts which are larger on outside than on inside, They are sometimes arranged indistinctly in double rows, about 6 or 7 in a row. Those on the inner

(adaxial) side are much smaller, rather smoother forms, at most 0.7×0.07 mm. They are very few in number in point rows. Those on the lateral side of polyp stalk are somewhat longer and transversely or obliquely arranged. Tentacular spicules are scale-like and slightly jagged at edges, about 0.09 mm long. Thus the polyp armature comes nearly close to that of the genus *Capnella*.

In cortex of upper branches are short spindles with prominent, simple, bi- or trifid warts, about 0.35×0.04 mm~1.1×0.08 mm. In lower cortex are slightly larger and stouter spindles or triradiates thickly covered with small conical warts, about

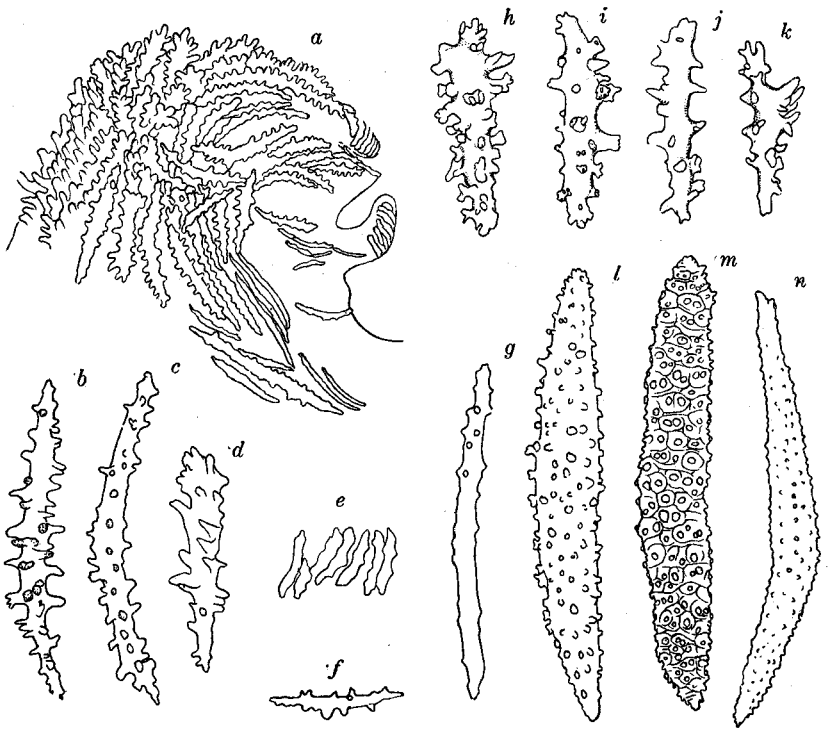

Fig. 5. *Nephthea capnelliformis* THOMSON & DEAN.
a, Polyp, lateral side; *b–d*, spicules from outer side of polyp; *e*, from tentacles; *f*, from inner side of polyp; *g*, from polyp stalk; *h–k*, from upper cortex; *l–m*, from stalk cortex; *n*, from canal-walls. (*a*, *l–n*, ×55; *b–k*, ×100)

0.6×0.1 mm~1.2×0.17 mm. In coenenchyme are pointed spindles densely covered with fine warts, measuring about 0.3×0.03 mm, 0.5×0.05 mm and 0.8×0.07 mm.

Localities. Entrance of Tanabe Bay, 10–30 m. Seven specimens, September 26, 1953, T. YAMAMOTO coll.

Kusimoto. Four specimens, December 6, 1953, T. YAMAMOTO coll.

Remarks. Younger shrubby forms appear somewhat different from the type, but a distinctly stalked example such as illustrated in Pl. II, Fig. 4, approaches nearly

closely to it in the mode of growth. The *Capnella*-like polyp armature, the ill-defined polyp stalk and also the general spiculation seem especially typical, though somewhat allied to those of *N. brassica* KÜKENTHAL from Tonga Islands and Philippines.

6. *Nephthea setoensis* n. sp.

(Fig. 6; Pl. II, Fig. 1)

Nom. Jap. Suginoha-tizimitosaka (nom. nov.).

A limp colony of a light yellowish green color, with a height of 8.5 cm, gives off numerous short branches on one side of the stem. The lobes on branches or directly issuing from the stem are elongate, though variable in length from 5 mm to 15 mm

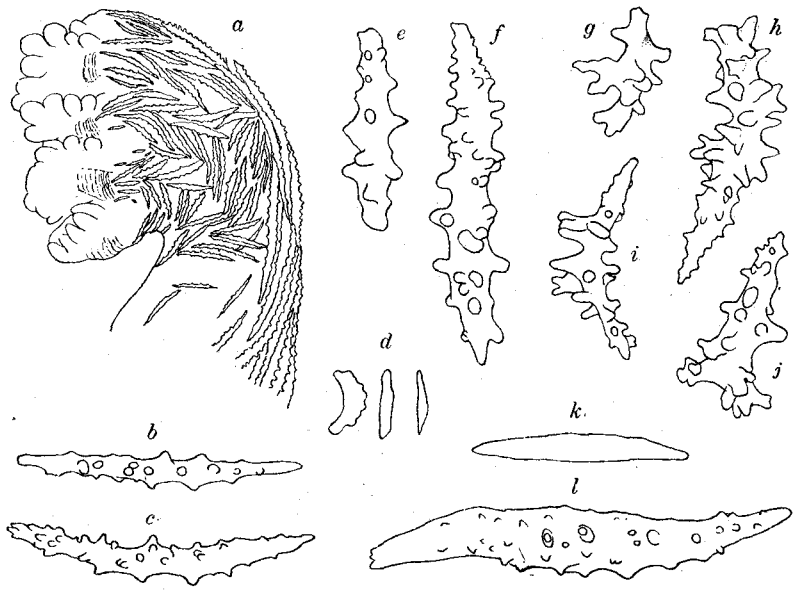

Fig. 6. *Nephthea setoensis* n. sp.
a, Polyp, lateral side; *b–c*, spicules from polyp; *d*, from tentacles; *e–f*, from upper cortex; *g–j*, from stalk cortex; *k–l*, from canal-walls.
(*a*, ×33; *b–l*, ×100)

and in width from 2 mm to 5 mm. Polyps are rather large, club-shaped, with incurved head which is borne almost at a right angle to the stalk; polyp head about 1 mm long and 0.7 mm wide, and polyp stalk about 0.6 mm long.

Polyp spicules are almost symmetrically arranged definitely in 8 double rows, 4 to 6 in a row. Spicules on the outside and lateral sides are slender spindles with low warts, about 0.3–0.45 mm long, while on the inside are somewhat smaller, smoother spindles, about 0.25 mm long. S. B. not developed, composed of many slender spindles with prominent warts, about 0.5–0.9 mm long (not over 1 mm long) and 0.05 mm

wide, and not protruding beyond polyp head. Tentacles about 0.55 mm long and 0.26 mm wide, with 7 pairs of pinnules on either side.

In upper cortex of branches are all spindles with round-tipped prominent warts, about 0.17–0.5 mm long and 0.03–0.06 mm wide. In lower cortex are short thorny spindles covered with very high warts, measuring about 0.17×0.035 mm, 0.5×0.07 mm and 0.75×0.09 mm. These sometimes lead to almost club-like or star-like, rough warty forms as derivatives of the spindle type. Canal-walls are filled only with spindles covered with less-prominent warts, less than 1 mm long, the majority being much smaller and smoother spindles as large as 0.2×0.03 mm, 0.3×0.035 mm and 0.55×0.08 mm.

An example of the barnacle *Acasta alcyonicola* UTINOMI mentioned above was also found embedded in the stalk of this species.

Locality. Ezura, Tanabe Bay. One specimen, April 30, 1951, T. YAMAMOTO coll.

Remarks. This specimen comes near *N. cupressiformis* KÜKENTHAL in the mode of growth and the general spiculation, but differs from it in the abundance of smooth spindles shorter than 1 mm in the canal-walls and in the symmetrically arranged point rows and non-projecting supporting bundle. *N. amentacea* STUDER also is probably an allied species.

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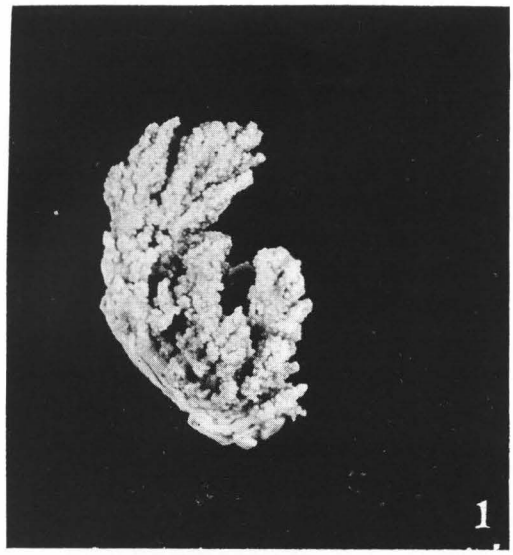
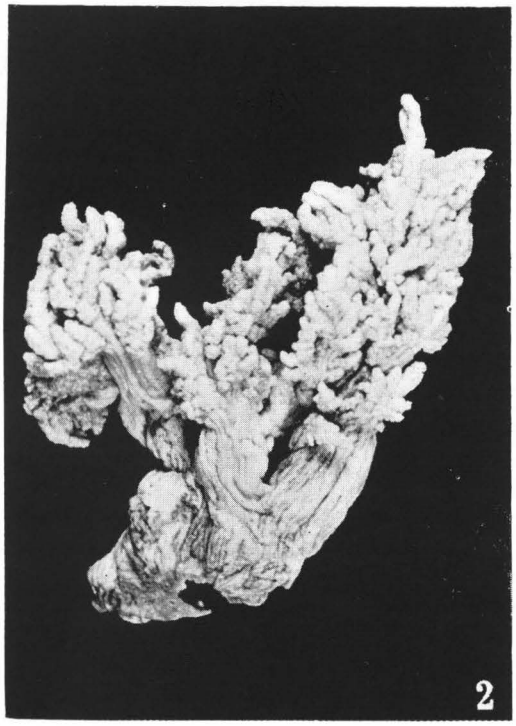
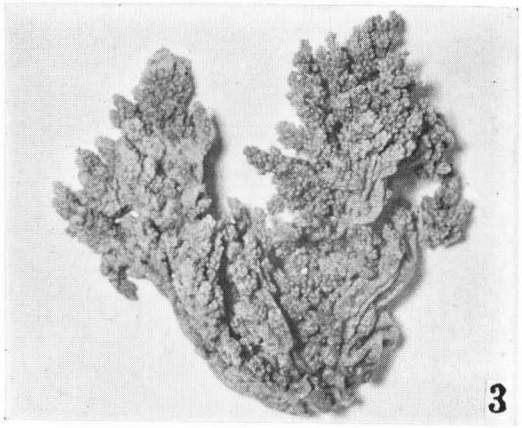
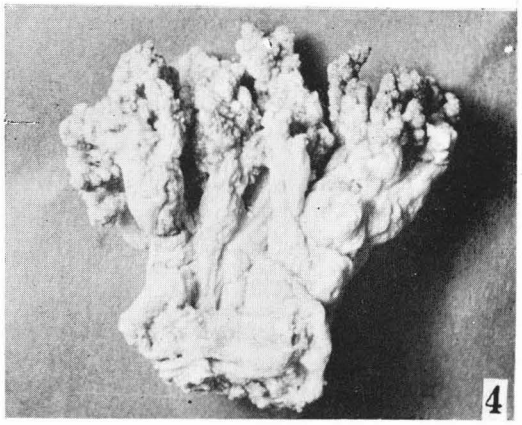
EXPLANATION OF PLATE II

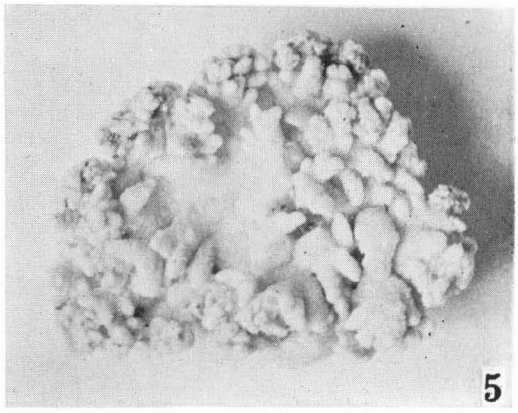
Fig. 1. *Nephthea setoensis* n. sp. (Holotype) ×3/4.
Fig. 2. *Nephthea crassa* KÜKENTHAL. natural size.
Fig. 3. *Nephthea erecta* KÜKENTHAL. ×2/3.
Fig. 4. *Nephthea capnelliformis* THOMSON & DEAN. ×2/3.
Fig. 5. *Litophyton viscidum* n. sp. (Holotype) ×2/3.











H. UTINOMI: SOME NEPHTHEID OCTOCORALS FROM KII COAST.