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Notes on Some Japanese Algae VII.

By

YUKIO YAMADA

With Plates XXX–XXXIII.

Caulerpa filicoides sp. nov.

Plate XXX, 2.

Frons delicata, rhizomatis cylindraceis repentibus dichotomis vel lateraliter ramosis, radicibus brevibus numerosis obtectis. Folia verticillata, superimposita vel simplicia, basi dichotome ramosa, ramis alternato-pinnatis distichisque, pinnis plus minus decompositis, apice mucronatis.

Japanese name. *Hime-sida-duta.*

Hab. Miyako-zima and Naha, Ryûkyû.

Frond delicate; rhizome cylindrical, about 350–400 μ thick, creeping, dichotomously or laterally branched, with many short roots. Leaves verticillate on the erect shoots, one–many storied, dichotomously branched near the base; branches alternato-pinnate and distichous, with pinnae once or twice decompound, and mucronate at the apices.

In 1931 I collected some specimens of *Caulerpa* at Naha and referred them to *C. verticillata* distinguishing it from the typical plant as a distict forma, *acuta.* Those specimens are much smaller than the specimens collected last spring in Miyako-zima. Upon examination of the former it was noticed that they must not be considered a form of *C. verticillata,* but that they represent an independent species. The branching of the segments of the adult leaves is always alternato-pinnate and distichous, and the ultimate branchlets are mucronated at the apices as mentioned above in the diagnosis.

Every verticillation formed by the leaves (usually 4 in number) is usually cup-shaped, and sometimes digitate, some leaves being shorter than the other.

Asperococcus bullosus LAMOUROUX

Plate XXXI, 1, Text-fig. 1.

Essai (1813) p. 62, pl. 6, fig. 5; BORNET et THURET, Ét. Phyc. (1873)

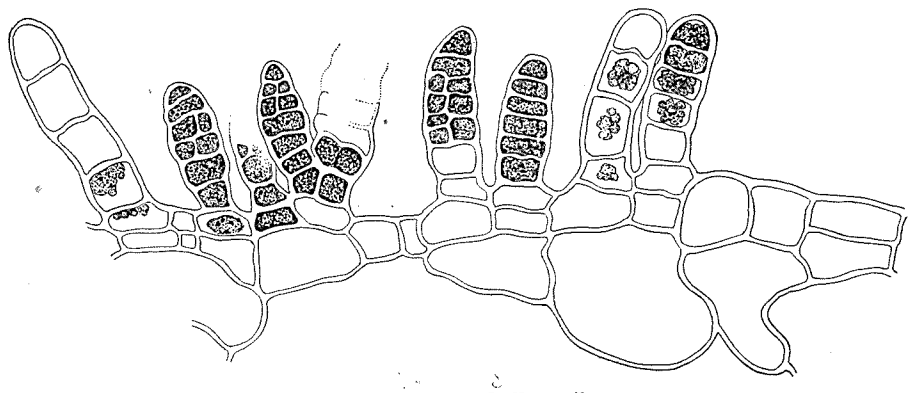

Fig. 1. *Asperococcus bullosus* LAMX.
A cross-section of the frond, showing plurilocular sporangia. ×380.

p. 16, pl. 6; DE TONI, Syll. Alg., Vol. 3 (1895) p. 493.

There are three dried specimens of this plant at hand, of which one is 12 cm long and 2 cm thick, while the other two are much smaller. They have many plurilocular sporangia. It is reported that this kind of sporangium occurs very rarely in the Atlantic specimens, and is then always produced on the small fronds.[1] Examination of the present material and discovery of many plurilocular sporangia, leads one to believe it to be a species of *Asperococcus* other than *A. bullosus* LAMX. However, other characteristics agree fairly well with those of *A. bullosus* LAMX., and so the present specimens are here reported under this specific name.

Dr. HARIOT[2] has identified a specimen collected by Dr. SAVATIER at Yokosuka, Japan, with *Asperococcus bullosus* LAMX. On examination of this specimen now preserved in the herbarium of the Muséum National d'Histoire Naturelle in Paris, the present writer came to the conclusion that the Yokosuka specimen was a young individual of *Colpomenia sinuosa* DERB. et SOL.

Dictyota alternifida J. AGARDH

Plate XXXII.

Anal. alg., cont. I (1894) p. 80; DE TONI, Syll. alg. vol. 3 (1895) p. 279.
Japanese name. *Nankai-amidi.*

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1) BUFFHAM, T. H.: The pluril. zoosporang. of Asperococcus bullosus and Myriotrichia clavaeformis. Journ. of Bot. vol. 29, 1891.

2) HARIOT, P.: Liste des alg. mar. rapport. de Yokosuka par M. le Dr. SAVATIER, Mém. de la Soc. nat. des Sci. natur. et mathem. de Cherbourg, vol. 27, 1891.

Hab. Markjok, Palao Isl.

In identifying our specimens it was the writer's privilege to be able to make a comparison between them and the original specimens at Lund.

In the above locality the present plant was found in the lagoon. It is a sublittoral alga.

Nereia intricata sp. nov.

Plate XXXIII.

Frons usque ad 15 cm. alta, intricata, compressa, in inferiore parte 1–2 mm. lata, alternatim vel pseudodichotome ramosa, anastomosans, pilis 3–4 mm. longis, ca. 20 μ crassis. Sporangia ignota.

Japanese name. *Umi-bossu.*

Hab. Miyako-zima.

Frond up to 15 cm. high, intricate, attaching to each other or substratum and other things here and there, compressed, 1–2 mm. wide in the lower portion, alternately or pseudodichotomously branched; hairs about 3–4 mm. long, about 20 μ thick. Sporangia unknown.

The present alga seems most probably to be referable to *Nereia* although all specimens available are sterile, and to be distinguished specifically from the well known species, *N. filiformis* ZANARD. by its not cylindrical, but compressed branches which are rather profusely intricate, adhering here and there to each other and also to other things.

This is for the first time that the present genus is added to our marine flora.

Nereia intricata grows on the coral reefs in the sublittoral zone.

Stilophora rhizodes J. AGARDH

Plate XXXI, 2.

"Symb., I (1841) p. 6", Spec. Alg. vol. 1 (1848) p. 85; HARVEY. Phyc. Brit., pl. 70 (1846); REINKE, Atl. deut. Meeresalg. (1892) p. 55, pl. 36.

Japanese name. *Himo-makura.*

Hab. Bingo-nada, Bingo Prov.

To the present species are referred two dried specimens which were sent from Assistant Professor I. TAKI of the Marine Biological Station at Mukô-zima, Hirosima Prefecture. They bear unilocular sporangia, and one of these specimens grows on the frond of *Hydroclathrus cancellatus* BORY.

This is also the first time to find the present genus on our coast, and it seems interesting to the writer from the view point of distribution.

Gloioderma minutula WEBER VAN BOSSE

Plate XXX, 1.

Liste des alg. du Siboga, vol. 4 (1928) p. 457.

Japanese name. *Hime-hisibukuro.*

Hab. Palao, Marianne Isls.

A few specimens which are to be referred to the present species were found on a shell of *Tridacne* taken up by a diver from the sublittoral zone, about 2 fathoms deep.

Haloplegma Duperreyi MONTAGNE

Plate XXXI, 3.

"Cell. exot. Cent. III, no. 69, t. 7, fig. 1"; KUETZING, Spec. alg. (1849) p. 672, Tab. Phyc. vol. 12 (1862), t. 62, figs. a–c; DE TONI, Syll. alg. vol. 4 (1904) p. 1365.

Japanese name. *Benigôsi.*

Hab. Miyako-zima, Ryûkyû; Garanbi and Kasyôtô, Formosa.

Thanks to the kindness of Dr. G. HAMEL in Paris the writer could make comparison of the present specimens with the West-Indian ones for ascertaining their specific identity.

In Ryûkyû and Formosa the present alga grows almost always on the shady sides of rocks or coral reefs lying in exposed places.

Hypoglossum minimum sp. nov.

Text-fig. 2.

Frons minuta, parte basale complanata adfixa, rhizoideum defecta, simplex, raro ramosa lanceolata vel spathulata (interdum irregulariter angusta) apice rotundata; ad nervum centralem a tribus cellularum stratis composita. Cystocarpia in parte superiore, ad nervum centralem producti; spermatia in utrisque partibus nervi centralis fere seriatim formata. Tetrasporangia in parte superiore frondis rotundatim vel nonnihil irregulariter disposita.

Japanese name. *Hime-benihanori.*

Hab. Naha, Ryûkyû.

Frond minute, about 1–4 mm high, attached to the frond of other algae by means of the flattened base, without rhizoid, simple or rarely ramified. Upper parts of the frond spathulate or lanceolate (sometimes irregularly narrowed) with round apex. Midrib composed of three layers of cells

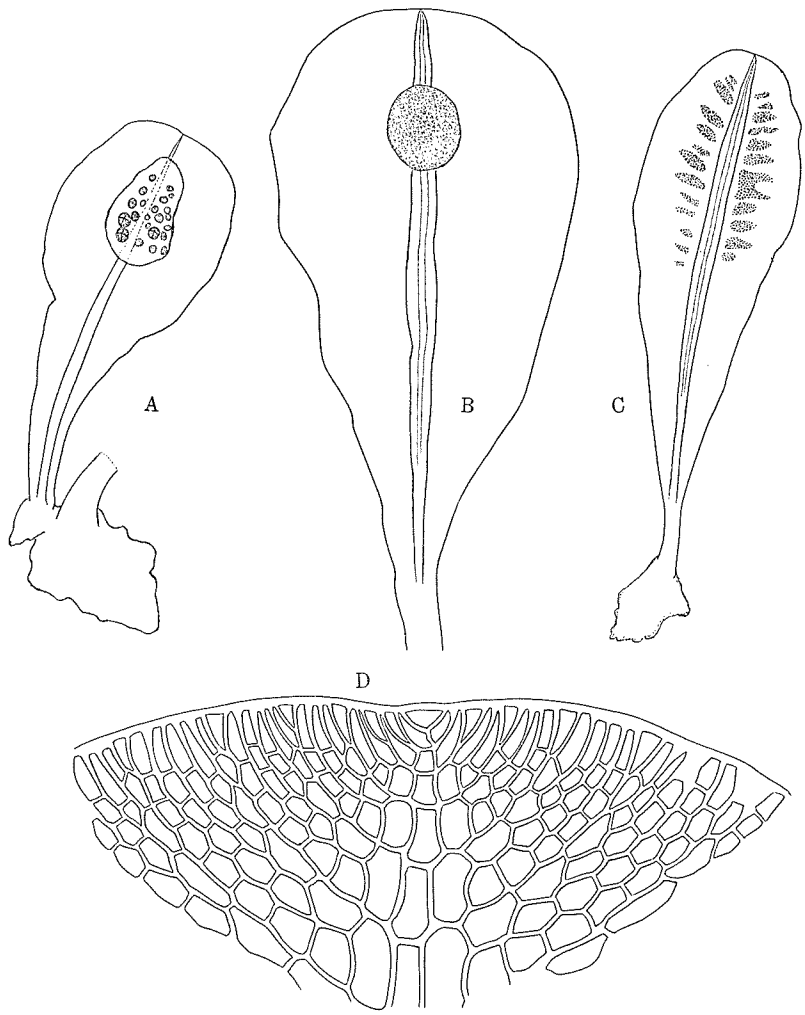


Fig. 2. *Hypoglossum minimum* YAMADA.
A. Tetrasporic plant. B. Cystocarpic plant. C. Antheridial plant.
D. Terminal part of a plant.
A–C. ×ca. 40. D. ×ca. 380.

while other parts of the frond are one-layered. Cystocarps produced in the upper parts occurring on the midrib; spermatia on both sides of the mid-rib forming somewhat parallel patches. Tetrasporangia forming a round or somewhat irregularly shaped group.

The present species was found on the frond of a species of *Carpopeltis*,

and as mentioned above in the diagnosis it is peculiar in its small size and in having no rhizoid.

Martensia flabelliformis HARVEY

Text-fig. 3.

List of Friendly Isl. alg. no. 11; J. AGARDH, Spec. alg. vol. 2 (1863) p. 826; SVEDELIUS, Ueber den Bau u. die Entw. der. Florideengat. Martensia (1908) p. 35; WEBER VAN BOSSE, Liste des alg. du Siboga, vol. 3 (1923) p. 385.

Japanese name. *Etuki-ayanisiki.*

Hab. Kasyôtô, Formosa; Yonakuni-zima, Ryûkyû archipelago.

In Kasyôtô this alga grows on the bottom of shallow rock pools.

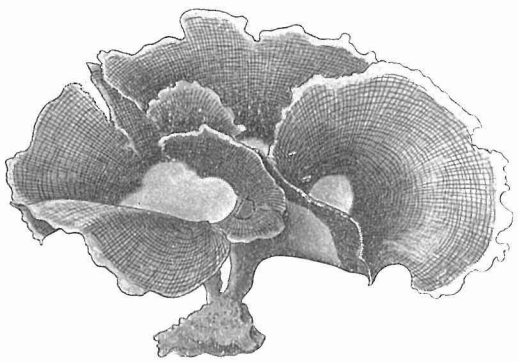


Fig. 3 *Martensia flabelliformis* HARV. ×1.5

Murrayella squarrosa (HARVEY) SCHMITZ

Die Gatt. Lophothalia (1893) p. 228; DE TONI, Syll. alg. vol. 4 (1903) p. 1024; SETCHELL, Tahitian alg. etc. (1926) p. 102.

Japanese name. *Nagamigusa.*

Hab. Miyako-zima, Ryûkyû; Daibanratu, Formosa.

Our specimens agree in general with the description of the present species, although the distinction between this species and Atlantic *M. periclados* SCHM. is not very clear to the present writer.

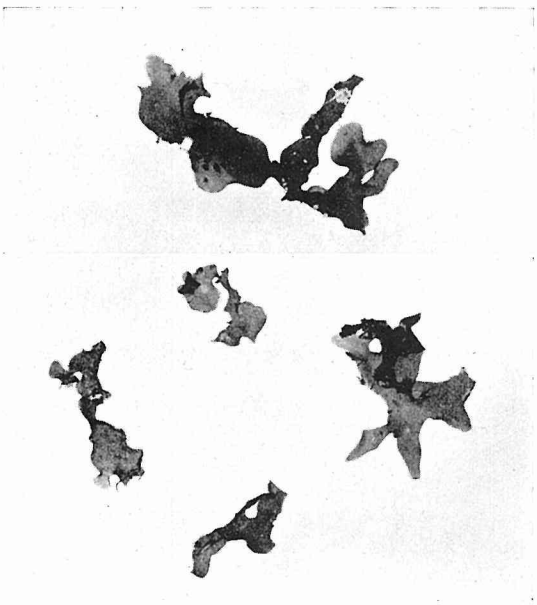
In Ryûkyû specimens many stichidia were found which are about 130–140 μ thick while BÖRGESEN[1] reported them to measure 105 μ in the West Indian specimens.

1) BOERGESEN: Mar. alg. West-Ind., Rhodophyc. p. 316.

PLATE XXX

PLATE 30

1. *Gloioderma minutula* WEBER VAN BOSSE. ×1
2. *Caulerpa filicoides* sp. nov. ×1



1

2

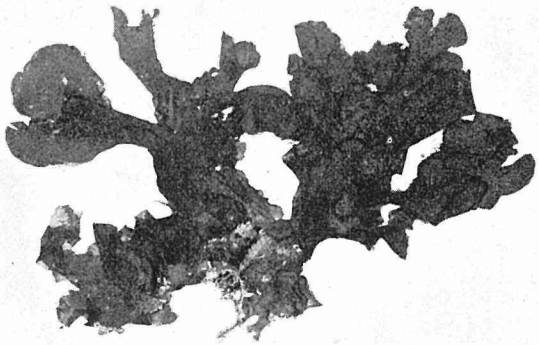
PLATE XXXI

PLATE 31

1. *Asperococcus bullosus* LAMX. ×1
2. *Stilophora rhizodes* J. AG. ×1
3. *Haloplegma Duperreyi* MONT. ×1

1

2



3

PLATE XXXII

PLATE 32

Dictyota alternifida J. AGARDH. ×1

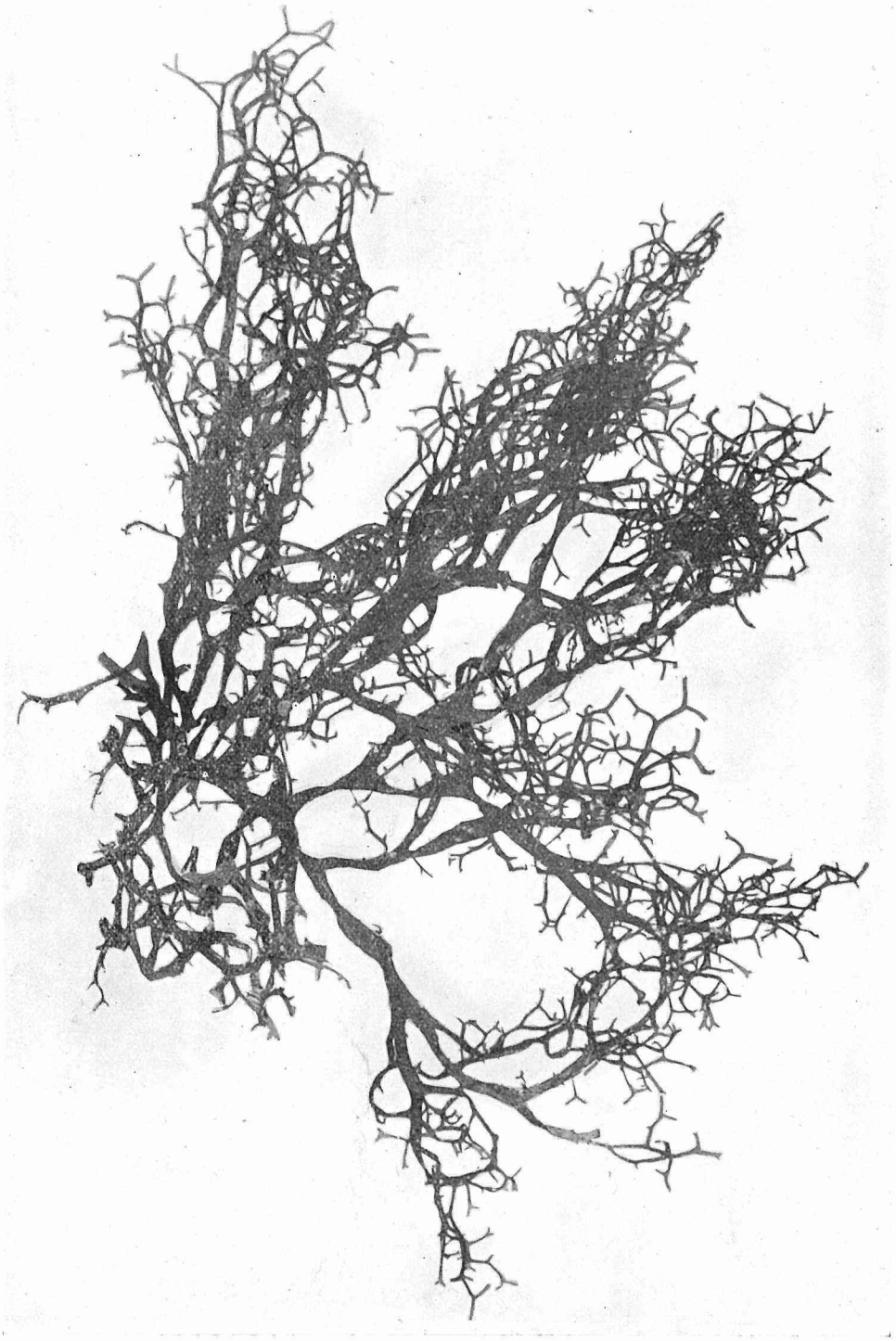
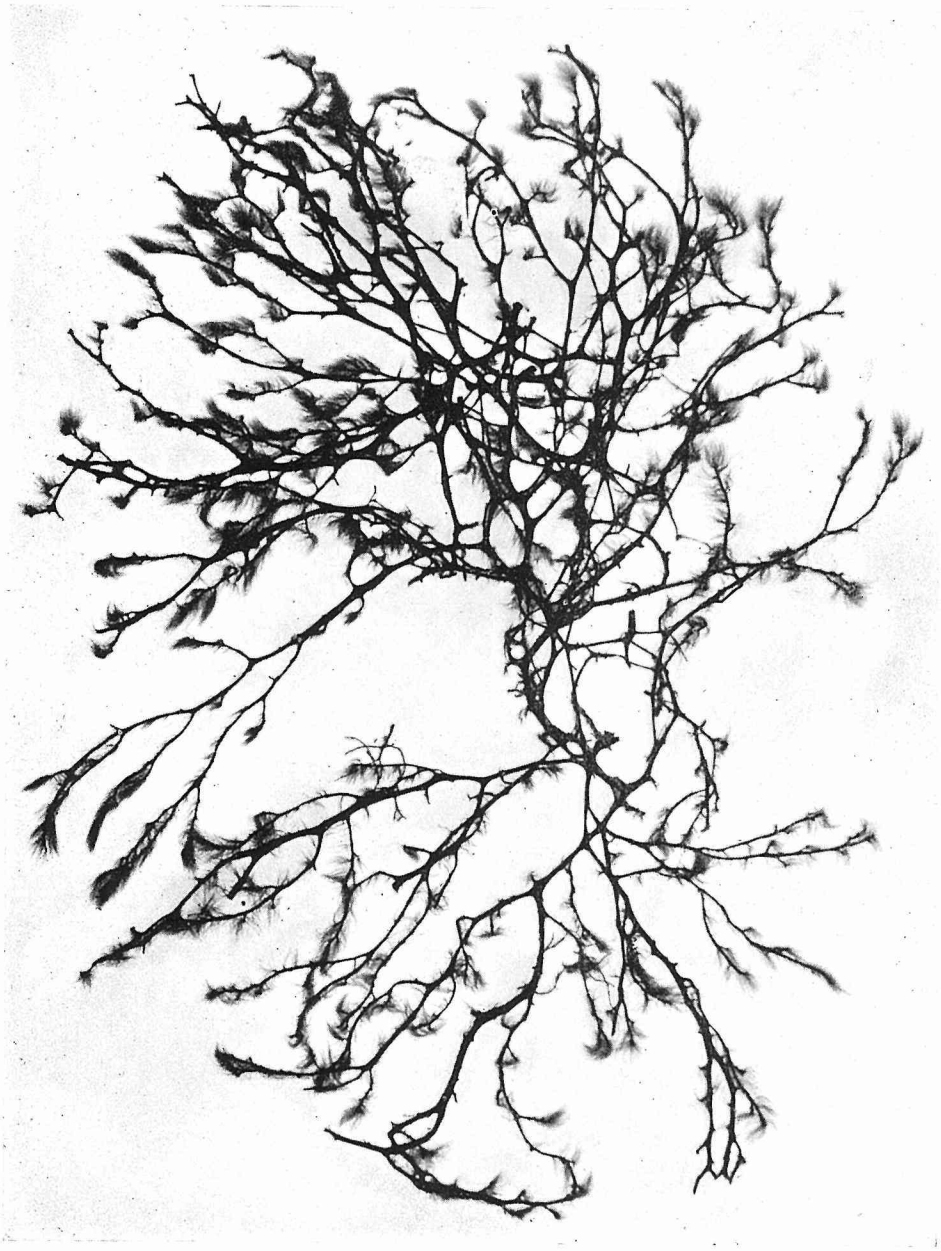


PLATE XXXIII

PLATE 33

Nereia intricata sp. nov. ×1