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BY

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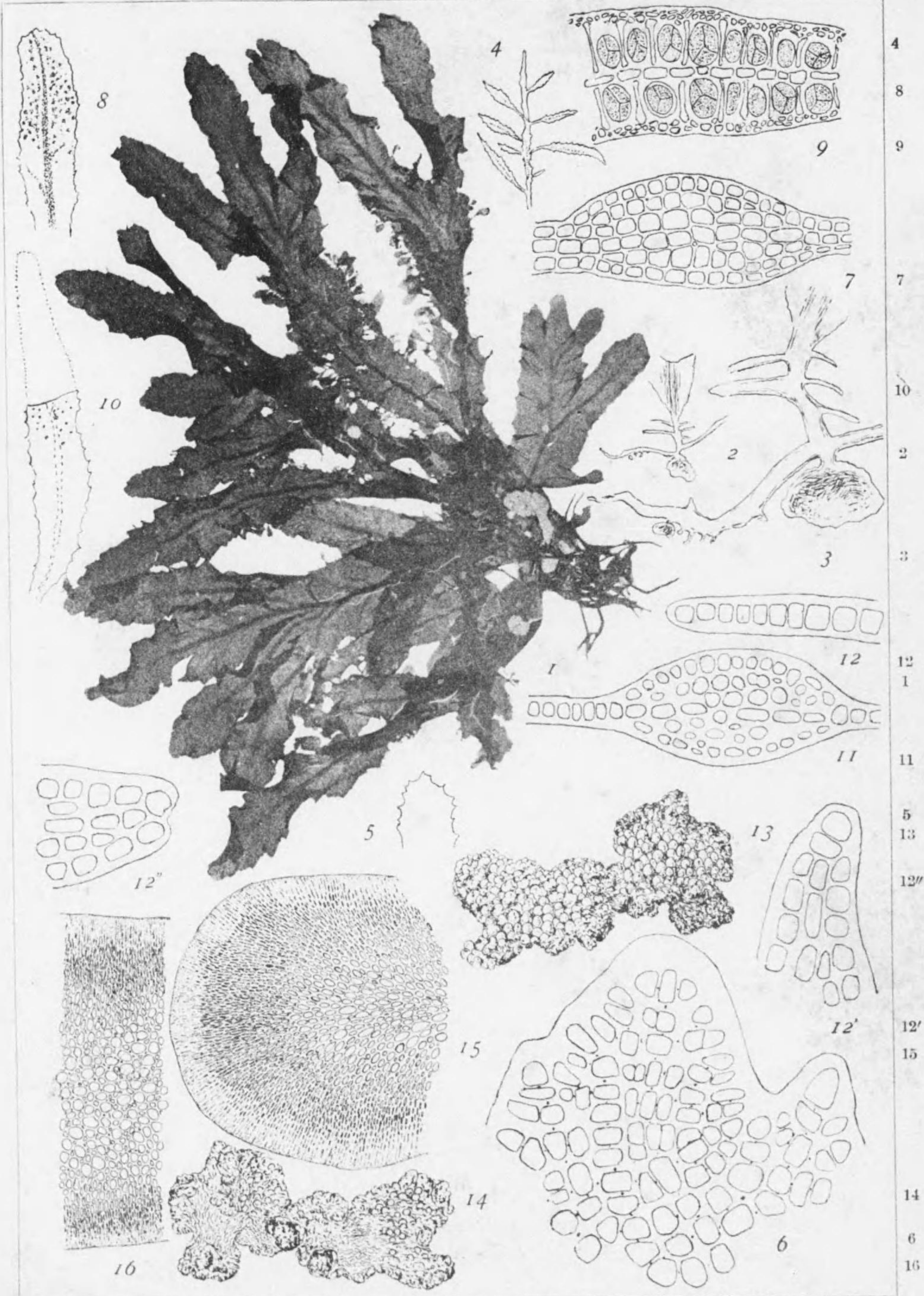
by

THE AUTHOR

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Tokyo

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Heteronema japonica Yamada はすじぎぬ Fig. 1-12.
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39-110



Heteronema japonica Yamada.
 Nom. Japon. Hasudiginu.
 PL. CCLXXXI, Fig. 1-12.

Yamada Notes on some Japanese Algae. I. Journ. Faculty Sc. Hokkaido Imp. Univ. Ser. V, Vol. I, n. 1, p. 34, Text fig. 2, P. VI. f. 5.

*Fron*ds decumbent at base, at least at the beginning of the growth erecto-ascending above, few caespitose, attached to the substratum with a scutate disc, tapering to slender stem-like portion, 10-12 cm. high or more, 10-15 mm. broad, one to two times irregularly branched in pinnate manner from margins, with main segments often taking irregularly parted appearance at the upper portion. Near the basal portion of the frond few slender branches arising on both sides of stem; they grow up either to main branches or main portion of new fronds or to creeping branches by forming root processes from their margins or under surfaces. From the creeping portion new fronds developed which in turn emit similar branches near their bases and in this way the basal portion of frond appearing as if arising from somewhat intricate fibrous roots. Faint midrib traversing through segments in slightly flexuose manner, becoming evanescent beneath the apex, emitting in some fronds inconspicuous somewhat branching alternate veins, but without microscopic veinlets always. Membrane slightly undulated, furnished with fine marginal teeth and in fructified frond fimbriated with minute oval or oblong leaflets which are strongly narrowed at the base like pedicel. *Tetrasporangia* forming minute sori irregularly scattered over the upper parts of the frond. *Cystocarps* small, dot like, scattered over the surface of upper part of frond. Unfortunately cystocarps are too young to study the gonimoblast and the material too scanty to study the development of procarp. Colour



purplish-red. *Substance* thin membranaceous, imperfectly adhering to paper in drying.

Growing apex of the frond has a specialised apical cell and intercalary cell divisions are seen in the row of the first order. Frond consists, in younger parts, of a single layer of cells except the median portion, gradually becoming many-layered, and in thickened parts one or two outermost cell layers at margins of branches are often seen to be a single layer.

Hab.: washed ashore; Pref. Chiba, Enoshima.

On referring the present plant to this genus I followed Yamada. But, considering that Kylin (Stud. üb. d. Delesseriaceen, 1924, p. 104) put *Heteronema* among the genera having "Thallus durchaus mehrschichtig" I came to doubt whether our plant does not suffice this character as the younger part of frond is composed of a single layer and in older part of frond one or two outermost cell layers are in a single layer.

PL. CCLXXX, Fig. 1-12. Fig. 1: tetrasporic fronds of *Heteronema japonica* Yamada, nat. size.—Fig. 2: basal portion of frond, nat. size.—Fig. 3: portion of fig. 2 magd., 12/1.—Fig. 4: young pinnately branched frond developed from creeping portion, nat. size.—Fig. 5: margin of minute proliferated leaflet, to show marginal teeth, ca. 7/1.—Fig. 6: one of the teeth of fig. 5, 500/1.—Fig. 7: cross-section of the median portion of frond, 48/1.—Fig. 8: apical portion of frond bearing tetrasporic sori, nat. siz.—Fig. 9: cross-section of sorus, 100/1.—Fig. 10: upper portion of frond bearing immature cystocarps, nat. size.—Fig. 11: vertical section of young cystocarp, 100/1.—Fig. 12: cross-section of the marginal portion of younger part of tetrasporic frond, 245/1.—Fig. 12'-12'': right and left margins of one and the same cross section of the older part of tetrasporic frond, 245/1.



Sargassum siliquosum J. Ag. きしうもく

Eucheuma crustaeforme Web. v. Bosse.

Nom. Japon.: Samehada-kirinsai.

PL. CCXXXI, Fig. 13-16.

Web. v. Bos. Liste des Alg. du Siboga, Rhodophy., p. 415, f. 165.
—*E. Cottonii* (non Web. v. B.) Okam. Mar. Alg. from Kôtôsho (Botel Tobago) in Bull. Biogeogr. Soc. Japan, Vol. 2, No. 2, 1931, p. 113.

Fronde crustaceous, attaching to the substratum by the under surface, thick, fleshy and flattish, irregularly branching without definite order, with constricted neck here and there, and ending in round apices. Upper surface densely covered with small globular tubercles and some of them visible on the under surface in far less number. Structure that of the Section *Anaxifera* Web. v. Bos.

Hab.: Kôtôsho (Segawa).

Only one small specimen now before us, which has thick flattened frond, probably due to pressure, and though it has no cylindrical part as described by Web. v. B., I refer the present plant to *E. crustaeforme* by the form of the frond having globular tubercles, correcting my early wrong identification of *E. Cottonii* (non Kg.) Okam. *l. c.*

PL. CCLXXXI, Fig. 13-16. Fig. 13: upper surface of *Eucheuma crustaeforme* Web. v. Bos., nat. size.—Fig. 14: under surface of the same, nat. size.—Fig. 15: portion of the cross section of the frond, 15/1.—Fig. 16: portion of the fig. 15, 15/1.

Sargassum siliquosum J. Ag.

Nom. Japon.: Kishyumoku.

PL. CCLXXXII.

J. Ag. Sp. I. p. 316; Sp. Sarg. Austr. p. 121, t. X; Kg. Sp. Alg.

p. 619; Yendo Fucaceae p. 150, Pl. XIII, f. 1; Okam. Alg. from Kôtôsho (Botel Tobago) in Bull. Biogeogr. Soc. Japan, Vol. 2, n. 2, 1931, p. 104; Okam. Nippon Sorui Meii (2nd. Ed.) p. 215.—Photogr. of the specimen from China coll. by Binder in Herbar. Trinity College (taken by Yendo).—*S. ornatum* Grev. Alg. Orient. in Trans. Bot. Soc. Ed. p. 87, t. VI.

Root crustaceous. Primary *i.e.* common stem short and cylindrical (1-2 cm.) which gives rise to some number of elongated main branches. Rachis of main branches slender, subcylindrical below, gradually becoming complanated, giving rise to branches distantly in alternate manner, 3-5 cm. apart in the middle portion of the frond gradually becoming shorter upward. Rachis mostly smooth and slightly flexuose in upper part but in some robust forms I have seen a specimen muricated in the lower part. *Leaves* oblong-lanceolate, ending in a blunt apex, 4-5 cm. long, with well defined scattered cryptostomata, with spinose teeth at margins and very shortly pedicelled as if almost sessile. *Air-vessels* obovate or elliptico-globular, mostly round at apex, with long and broad leafy petiole which is one and half to two times long as air-vessel. *Receptacles* unknown. *Colour* brown, more olivaceous in younger part. *Substance* thin but coriaceous.

Hab.: Kôtôsho (Segawa), Ryukyu, Prov. Kii (Yendo).

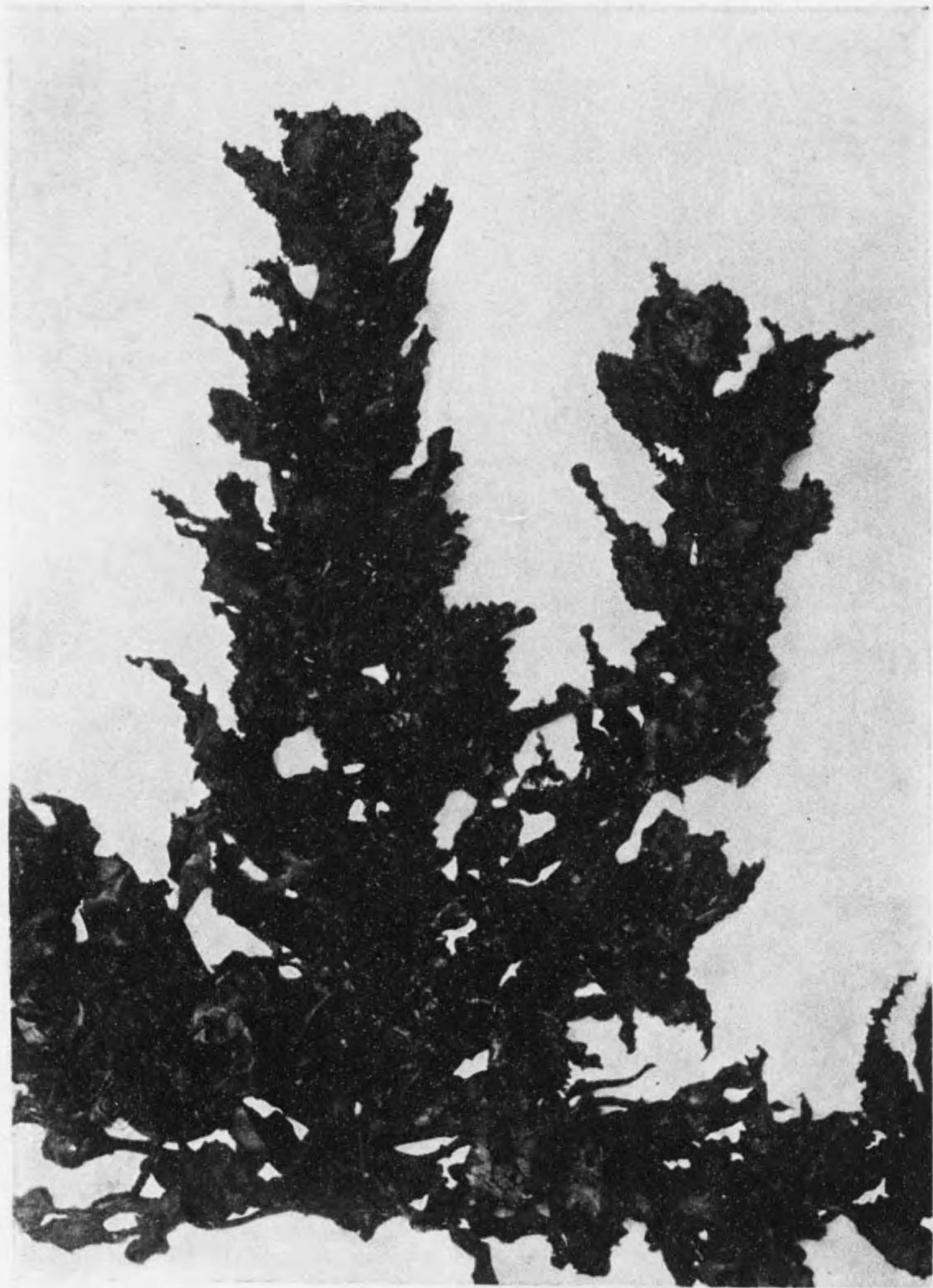
PL. CCLXXX, Fig. 1: frond of *Sargassum siliquosum* J. Ag., nat. size.—Fig. 2: terminal portion of branch, nat. size.—Fig. 3: air vessels, nat. size.

***Sargassum prolongatum* Okam.**

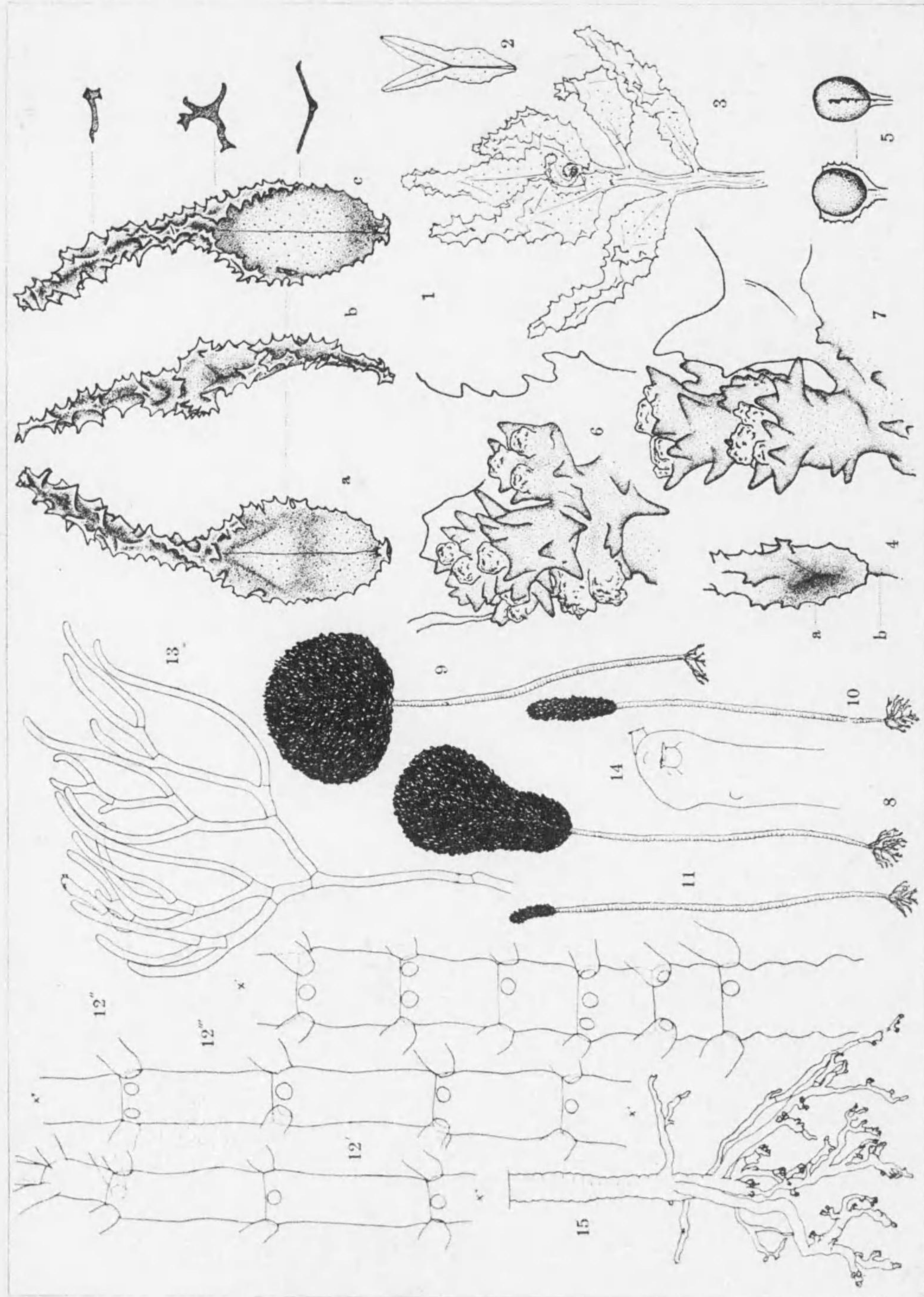
Nom. Japon.: Modiri-moku.

PL. CCLXXXIII; PL. CCLXXXIV, Fig. 1-7.

Okam. Mar. Alg. from Kôtôsho (Botel Tobago) in Bull. Biogeogr. Soc. Japan, Vol. 2, n. 2, 1931, p. 105, Pl. II, Test fig. 1.



Sargassum prolongatum Okam. もちりもく



Sargassum prolongatum Okam. もぢりもく Fig. 1-7.
Chamaedoris orientalis Okam. and Higashi たんぼやリ Fig. 8-15

Diagn.: A few fronds arising from a very short common stem standing on a circular disc, smooth, compressed, giving rise to short lateral branches. Leaves ovate or ovato-lanceolate, tapering to cuneate and almost sessile, symmetrical at base, coriaceous, with slightly elevated midrib, cryptostomated, with dentate margins. The apex of leaves is tapering to a tri- or polygonal prolongation, armed with coarse triangular retrofracted teeth, on the both sides of the base of which slightly concave lobes perpendicular to the lamina are provided. Receptacles densely glomerated cyme, spinulated.

Hab.: Kôtôsho (Segawa).

Descr. A few fronds arising from a common broad circular disc, usually with a very short stem (scarcely 1 cm. long) or often almost sessile, giving rise to some main branches. Fronds attain 17-18 cm. in height in the fructified but still immature ones now before us. The rachis of main branches smooth, compressed, slightly twisted, some 3 mm. broad, giving rise from both edges to short lateral branches (2-3 cm.) at short intervals (*ca.* 1 cm. apart), but owing to the twisting of the rachis they appear like spirally arranged. Leaves coriaceous, ovate or ovato-lanceolate, tapering to cuneate, almost sessile and symmetrical base, with slightly elevated midrib, with small scattered cryptostomata. Margin of lamina is dentate as far as one-half to two-third from the base. Apex of leaf is tapering to a tri- or polygonal prolongation armed with coarse triangular retrofracted teeth. On both sides of the base of the prolongation there are slightly concave lobes perpendicular to the blade. The edge of the lobes is furnished with triangular teeth. Lamina 1-2 cm. by 0.8-1.5 cm. and the prolonged portion 0.5-2.5 cm. long. Leaves arising at the lower portion of main branches are often destitute of the apical prolongation and end in a round or acute apex. At the base of the main branch of a young frond I found two leaves once parted at the apex, 2 cm. long,

5 mm. broad, with midrib, cryptostomata and serrated margin. Receptacles immature, 3 mm. high, glomerato-cymose, angular(?), and spinose.

A distinct species characterised by the peculiar apical prolongation of leaf. It comes in the vicinity of *Sarg. duplicatum*, *S. cristae-folium*, *S. fonanense* Setch. etc. The narrow concave lateral lobes of lamina may be considered as the transverse ligulum of *S. duplicatum* divided into two parts at the apex of lamina, and the armed prolongation as the outgrowth of the middle portion of apex separating the ligules into right and left.

PL. CCLXXXIII. Fronds of *Sargassum prolongtum* Okam., seven-ninth nat. size.

PL. CCLXXXIV, Fig. 1-7. Fig. 1: *a*, leaf viewed from lower surface, $1\frac{1}{2}$; *b*, same viewed from the side, $1\frac{1}{2}$; *c*, same viewed from the upper surface, $1\frac{1}{2}$; with the cross-sections of parts, annexed, $1\frac{1}{2}$.—Fig. 2: parted leaf at the lower portion of frond, $1/1$.—Fig. 3: portion of branch, $1/1$.—Fig. 4: lateral view of leaf, to show one of shallow concave parts, *a*, formed at the base of the prolonged apex; *b*, blade viewed from the side, $2/1$.—Fig. 5: air-vessels, $1\frac{1}{2}$.—Fig. 6: receptacle viewed from surface, $12/1$.—Fig. 7: lateral view of the same, $12/1$.

Chamaedoris orientalis Okam. and Hig.

Nom. Japon.: Tampo-yari.

PL. CGLXXXIV, Fig. 8-15.

Okam. and Higashi in Okam. On the Marine Algae from Kôtôsho (Botel Tobago) in Bull. Biogeogr. Soc. Japan., Vol. 2, n. 2, 1931, p. 98, Pl. 10.

Diagn. Fronds simple, caespitose, erect, with subcylindrical

thoroughly annulated stipe; capitulum obovate or oblong, formed of pseudodichotomous filaments which arise verticillately in 4-6 whirls from about 13 articulations of the central axis, with the length of articulation subaequal to or 2-3 times (or probably more) as diam. and united to each other by tenaculum formed near the apical portion of filaments.

Hab.: On rocks; Kôtôsho (Segawa).

Fronds simple, caespitose, erect, rising from irregularly branched rhizoides, 7-9 cm high. Rhizoids are distantly septate, but not at their insertion. Stem 4-6 cm. long, subcylindrical, tubular, very slightly tapering to both extremities, 1-1.5 mm. thick, thoroughly and closely wrinkled with annular constrictions visible to the naked eyes. The surface of stem is densely covered by algae like *Melobesia*. Stem runs upwards as the central axis of the capitulum, and is septated into 14 articulations, which measure 600-800 μ in thickness. The number of articulation seems to be definite; for, we get the same number in a smaller frond as illustrated in fig. 4 as well as in a larger one as fig. 1. From this, it seems to us the length of capitulum to be due to the change of the length of the articulations, which vary from subaequal to or 3 times (or probably more) as diameter, the upper ones being gradually longer than the lower. The size of capitulum varies from 2.5-7 cm. by 2-4 cm. The larger one measuring 7 by 4 cm. was get in an imperfect sample destituted of stipe. From the shoulder of 13 articulations (excepting the terminal one) verticillate filaments arise with varying number of whirls in 4-5-6, the uppermost having only three. The filaments are ca. 400 μ in diameter, coarse, and we measured one and the same filament which tapers to 345 μ upward from 400 μ at base. Mode of ramification of filaments is pseudodichotomous, here and there having alternato-secund arrangement of branches. Some of the filaments, though very few in

number, form a few tenacula near the apical portion, by which they become united to each other, thus forming an easily inextricable capitulum. The form of capitulum is, as a rule, obovate, but there are oblong, elliptical, subglobose or pyriform ones and the form may be ascribed to the length of filaments. *Colour* green. *Substance* soft and membranaceous becoming coarse and rather harsh to touch in drying, and the plant does not adhere to paper.

A remarkable distinct species having many peculiarities differing from hitherto known monotypic species, *Ch. Peniculum* (Sol.) O. Kuntze which has been thoroughly and precisely studied by Dr. Börgesen in Dan. W. Ind. 1913, p. 56, f. 40-43. It differs from that species in the form of capitulum, thickness and substance of filaments, number of articulations of the axis, number of branching whirls, presence of tenaculum instead of rhizoid-like haptera (Börg. *l. c.* f. 41. *h. i.*) etc.

PL. CCLXXXIV, Fig. 8-15. Fig. 8-11: fronds of *Chamaedoris orientalis* Okam. and Higashi in nat. size.—Fig. 12'-12''': central axis of capitulum, 15/1; the parts marked with x, x' are continuous without any intervening spaces, 15/1.—Fig. 13: verticillate filament, 4.8/1.—Fig. 14: apical portion of filament with tenacula, 30/1.—Fig. 15: basal and rhizoidal portion of stem, 4.8/1.

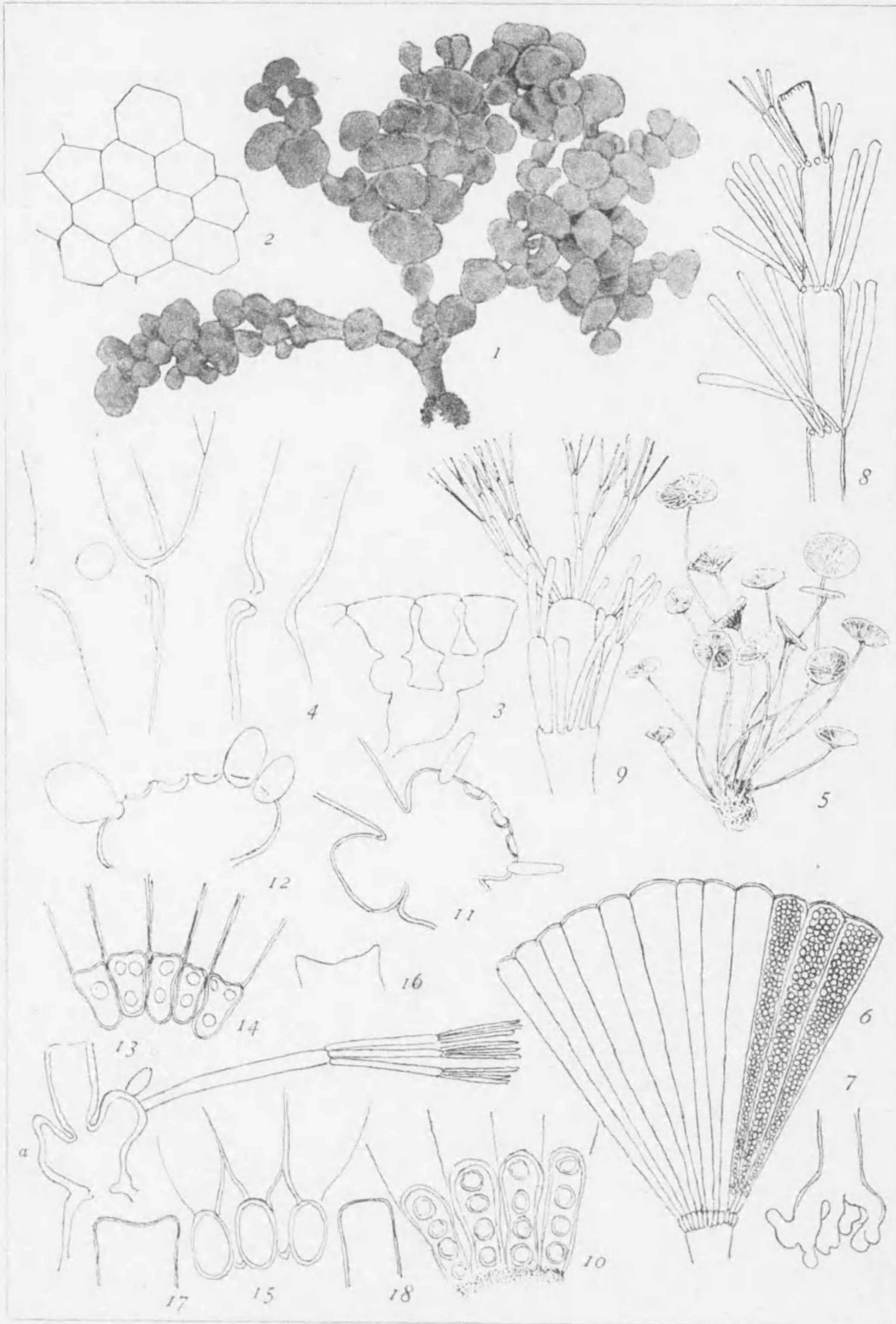
Halimeda Tuna Lam. f. **typica** Barton.

Nom. Japon: Tuna-sabotengusa.

PL. CCLXXXV, Fig. 1-4

Barton Gen. Halimeda (Siboga Exped., 1901) p. 13, Pl. 1, f. 1, 4-6.; Hauck Meeresalg. p. 482, f. 212.

Fronde 9-10 cm. high, thinly incrustated with lime, branching in one plane. *Root* short, more or less bulbous. Lowest joint more or



Halimeda Tuna Lam. つなきぼてんぐき Fig.1-4.
Acetabularia Ryukyuensis Okam. et Yam. かきのり Fig. 5-12

less thick, cylindrical or cuneate, often deeply calcified; thickening sometimes extending to several joints above the root. Other joints slightly calcified, mostly reniform, flat and discoid or transversely oblong, not ribbed, lessening in size toward upper joints, margin entire; height of joint varying from 5-10 mm. and breadth from 10-13 mm., about one mm. thick. Peripheral utriculi hexagonal in surface view; side walls of adjacent upper utriculi in contact for a very short distance. Colour light green.

Hab.: Ryukyu.

PL. CCLXXXV, Fig. 1-4. Fig. 1: frond of *Halimeda Tuna* Lam. f. *typica* Bart. in nat. size.—Fig. 2: surface view of peripheral utriculi, 240/1.—Fig. 3: longitudinal section of peripheral utriculi, 240/1.—Fig. 4: inner strands, 48/1.

Acetabularia Ryukyuensis Okam. and Yamada Sp. nov.

Nom. Japon.: Kasanori.

PL. CCLXXXV, Fig. 5-12.

Acetabularia mediterranea (non Lamour.) Okam. Nippon Sorui Meii 2 nd. Ed.) p. 247.

Diagn.: Fertile disc of moderate size, with long slender cylindrical stalk, only terminal, extended flat or shallowly concave, moderately calcified. Sporangial rays 54-59 in number, with almost truncated or very slightly curved external margin. Corona superior not united to each other with five hair scars; corona inferior oblong, free from each other.

Hab.: Ryukyu; on coral reefs in tide pools near high tide. Spring.

Fronde caespitose, rising from tuberous roots, 4-6 cm. high. Stalk long, slender, cylindrical, moderately calcified, bearing a simple, terminal, almost flat, very shallow, calcified basin. Sporangial rays

54-59 in number, 5-7 mm. long, with almost truncated or very slightly curved external margin, pretty well united by calc, but after decalcification easily separated from each other as far as the base, with the diameter of cap about one cm. (usually less than one cm.). Segments of the corona superior separated from each other by distinct interspaces, thick-walled, oblong viewed from above, curved longitudinally, *i.e.* along the long axis, about 250 μ in length, oblong or depressoglobular in lateral view (*i.e.* in radial longitudinal section), with 5-6 (mostly 5) hair-scars in one row, one behind the other along curved edge of each segment. Segments of corona inferior oblong viewed from below, separated from each other, slightly bent transversely, smaller than the corona superior. When young, stalk is provided at short intervals with many times polychotomous hairs arising in successive whirls as is usual in the plant of this genus.

Plant very much resembles *A. mediterranea* in external habit, differing amongst others in having separated segments of coronae superior and inferior and lesser number of hair-scars.

PL. CCLXXXV, Fig. 5-12. Fig. 5: fronds of *Acetabularia Ryukyensis* Okam. and Yamada, nat. size.—Fig. 6: portion of fertile disc decalcified, viewed from below, 9/1.—Fig. 7: portion of root, 28/1.—Fig. 8-9: apical and lower portions of stalk of a young frond with whirls of sterile hairs, 28/1.—Fig. 10: corona superior seen from above with remains of calc, 100/1.—Fig. 11: radial longitudinal section of disc, showing coronae superior and inferior, the former (250 μ long) provided with hair outgrowth; *a*, the central portion of the disc; *b*, the sporangium; 100/1.—Fig. 12: radial longitudinal section of a corona superior, 120/1.

Acetabularia Calyculus Quoy et Gaim.

Nom. Japon.: Hosoe-gasa.

PL. CCLXXXV, Fig. 13-18.

A. Calyculus Quoy et Gaim., Solms Laubach Monogr. Acetabularia, p. 26, Pl. III, f. 6, 7, 8, 10; Börg. Mar. Alg. Dan. W. Ind. Vol. I, p. 75, f. 1-15; Okam. Icon. Jap. Alg., Vol. II, p. 185, Pl. C, f. 12-13; Id. Nippon Sorui Meii (2nd. Ed.) p. 247.—*A. caraibica* (non Kuetz.) Okam. Icon. Japan. Alg. Vol. II, p. 177, Pl. XCIX, f. 1-9; Id. Nippon Sorui Meii (2nd. ed.) p. 247.

Plant small, 4-5 cm. high, with a delicate terminal disc on moderately calcified slender stem, which has spindle shaped swellings bearing hairscars. Disc delicately basin-shaped in consequence of the curving upwards of all the rays, which are few in number (25-35), thinly calcified and slightly united to each other so as to separate easily to the lowest basal portion. Sporangial rays 2-3 mm. long, more or less deeply emarginated, compressed from the apex to the base, linear-cuneate and tapering toward the abruptly constricted bases where they stand remotely leaving wide spaces between each of them. Segments of the both coronae free, remote from each other, obtuse; those of the upper cuneate or subtriangular seen from above, with two hair-insertions one behind the other, or sometimes three, when they are triangular in arrangement with the point directed inward, very rarely only one. Segments of corona inferior oblong seen from below, very slightly bent transversely (fig. 13, *a*). Spores globose and bright green, free from lime. *Colour* lightly green.

Hab.: Goto Isl., Awadi, Owari, Noto.

In the Icones Vol. II, p. 177 and 185, Pl. XCIX and Pl. C, the writer illustrated the present plant under two different specific names.

Later he came to consider both of them to be one and the same species, and here gives more minute descriptions and further illustrations.

PL. CCLXXXV, Fig. 13-18. Fig. 13: radial longitudinal section of a ray of the disc, showing corone superior and inferior, the former provided with two hair outgrowths, of which one remains short; *a*, corona inferior slightly bent; 100/1.—Fig. 14: corona superior viewed from above, 100/1.—Fig. 15: portion of the disc decalcified, viewed from below, 100/1.—Fig. 16-18: different forms of the tips of sporangia; f. 17 and f. 18 taken from one and the same frond; f. 16, from another frond., 40/1.

Heteronema Kylin 1924 はすじぎぬ屬

NITOPHYLLEAE, DELESSERIACEAE.

このはのり科, うすばのり亞科

體ハ狭ク, 扁平, 全部數層ヨリ成リ, 縁邊ヨリ分岐ス; 中肋ハ存スレドモ, 往々不明ナルコトアリ; 側脈ナシ; 縁邊ニ小鋸齒アリ; 成長端ハ水平ニ分裂セル面ヲ以テ明ニ區別セラレタル頂細胞ヲ戴キ, 第一位ノ列ニ於テ介生分裂スル細胞ヲ存シ, 第二位ノ細胞列ノ枝ハ右又ハ左ノ一ノミ縁邊ノ齒トナリ, 他ノ一ハ小ナルマヽニ殘ル; 囊果及四分胞子囊群ハ體ノ最上部ニ存シ又ハ其部ノ縁邊ヨリ出ル小サキ副枝ニ形成セラル. 一屬ノ名ハ Heteros (異ナリタル) ト nema (絲) トヨリ成ル.

從來 California 及 Washington ヨリ二種アルヲ知ルノミ.

Heteronema japonica Yamada

はすじぎぬ 岡村稱

第 281 圖版, 1-12 圖

體ハ少ナクトモ成長ノ初期ニ於テ基部傾臥シ, 上部ノ方ニ斜上又ハ直立シ, 數條叢生シ, 盤狀附着器ヲ以テ他物ニ附着シ, 體ノ下部細キ莖ノ如キ部分ヲナス, 高サ 10-12 cm. 或ハ尙ホ高ク, 幅 10-15 mm. アリ, 1-2 回不規則ニ兩縁ヨリ羽狀ニ分岐シ, 主枝ハ上部往々不規則ニ分レタル如キ觀ヲ爲ス. 體ノ基部ニ近ク, 莖ノ兩側ヨリ數條ノ細キ枝ヲ出ス; 此枝ハ直ニ主枝トナリテ伸ビ又ハ新ナル體ノ主軸トナリ或ハ其兩縁又ハ裏面ヨリ根様突起ヲ出シテ匍ヘル枝ノ如ク成ル. 匍ヘル枝ヨリ新ナル體ヲ發條シ, 其新條又更ニ其基部ヨリ匍ヘル枝ヲ出ス; 斯クテ體ノ下部ハ宛モ稍錯綜セル纖維狀根ヲ以テ立テルガ如ク觀ユ. 微カナル中肋ハ少シク屈曲シテ存シ以テ頂端下ニ消エ, 或體ニテハ目立タザル側脈ヲ存ス, 側脈ハ稍分岐シ互生ス, 然レドモ顯微鏡

的細脈ハ常ニ存スルコトナシ。膜ハ輕ク波皺シ、縁邊ニ細カキ鋸齒ヲ存シ、實ヲ結ベル體ニテハ小サキ卵形又ハ長楕圓形ノ小葉ヲ縁邊ヨリ密生ス、小葉ハ基部甚シク細クナリテ柄ノ如ク成レリ。四分孢子囊ハ小サキ斑點ヲナシテ體ノ上部ニ不規則ニ散在ス。囊果ハ小サキ點狀ニシテ體ノ上部ノ表面ニ散在ス；不幸ニシテ予ノ標品ハ未熟ナルヲ以テ内部ノ構造ヲ詳ニスル能ハズ。色ハ紫紅色。體ハ薄キ膜質ニシテ、紙ニ附着スルコト充分ナラズ。

體ノ成長點細胞ハ水平ニ分裂スル面ヲ以テ明ニ區別セラレ、第一位ノ列ニ於テ介生分裂スル細胞アリ。體ハ、幼キ部分ニ於テハ、中肋部ヲ除ク外1層ノ細胞ヨリ成リ、漸次數層トナル、而シテ増厚シタル部分ニ於テモ最外縁ノ1-2列ノ細胞ハ往々其斷面ニ於テ1層ノ細胞ヨリ成ルヲ見ル。

產地：打揚品ナリ；千葉縣大東崎、一ノ宮、相州江ノ島。果實：六月。

本種ヲ此屬ニ充ツルニ當ツテ予ハ山田氏ノ説ニ隨ヘリ。然レドモ、Kylinハ“全部數層ヨリ成レル體ヲ有スル、諸屬ノ間ニ Heteronemaヲ配シタルコトヲ考フルトキ、本植物ハ此性質ニ相當セザルニ非ルカヲ疑フ；其ノ幼部ハ1層ノ細胞ヨリ成リ又老成セル部分ノ最外縁ノ1-2列ノ細胞ハ往々1層ヨリ成ルヲ以テナリ。

第281圖版、1-12圖。1：Heteronema japonica Yamada, はすじぎぬ、ノ四分孢子アル體、 $\frac{1}{4}$ 。—2：體ノ下部、 $\frac{1}{4}$ 。—3：2圖ノ一部、 $\frac{12}{4}$ 。—4：羽狀ニ分岐シテ匍へル枝ノ如キ部分ヨリ發條セル幼體、 $\frac{1}{4}$ 。—5：小クシテ副出シタル小葉ノ縁邊ニシテ其鋸齒アルヲ示ス、約 $\frac{5}{4}$ 。—6：5圖ノ齒ノ一ツ、 $\frac{500}{4}$ 。—7：體ノ横斷面、 $\frac{48}{4}$ 。—8：四分孢子囊群ヲ有スル部分、 $\frac{1}{4}$ 。—9：四分孢子囊群ヲ通シテ斷リタル體ノ横斷面、 $\frac{100}{4}$ 。—10：未熟ノ囊果ヲ有スル體ノ上部、 $\frac{1}{4}$ 。—11：未熟ノ囊果ノ縦斷面、 $\frac{48}{4}$ 。—12：四分孢子囊ヲ有スル體ノ幼キ部分ノ横斷面、 $\frac{245}{4}$ 。—12'-12''：四分孢子ヲ有スル老體ノ同一横斷面ノ左右ノ兩端、 $\frac{245}{4}$ 。

Eucheuma crustaeforme Web v. Bos.

さめはださりんさい 岡村稱

第281圖版、13-16圖

體ハ殼狀ニシテ裏面ヲ以テ岩石ニ附着シ、厚ク、多肉ニシテ扁壓、一定ノ順序ナク不規則ニ分岐シ、其處此處ニクビレ、鈍圓ニ終ル。表面ハ密ニ小サキ球狀ノ突起ヲ以テ蔽ハレ、裏面ニモ亦之アルヲ見レドモ其數遙ニ少ナシ。體ノ構造ハ髓部ニ細長キ縦走セル細胞ノ一團ヲ有セザル區分 Anaxifera Web. v. Bos.ニ屬ス。

產地：紅頭嶼(瀬川)

分布：Cargados Garayos; Saya de Malha.

今唯1個ノ標品アルノミニシテ、厚キ扁キ體ヲ有ス、其扁平ナルハ多分壓シタル爲メナルベク、又 Weber 女史ノ記載シタル如キ圓柱狀部ヲ見ザレドモ予ハ球狀ノ突起ヲ有スル體ノ形狀ヨリ之ヲ本種ナリトセリ。

第281圖版、13-16圖。13：*Eucheuma crustaeforme* Web. v. Bos., さめはださりんさい、ノ體ノ表面、 $\frac{1}{4}$ 。—14：同上ノ裏面、 $\frac{1}{4}$ 。—15：體ノ横斷面ノ一部、 $\frac{10}{4}$ 。—16：15圖ノ一部、 $\frac{15}{4}$ 。

Sargassum siliquosum J. Ag.

さしうもく 遠藤稱

第282圖版。

附着器ハ殼狀根ナリ。主幹即チ共同ノ莖ハ短キ圓柱狀(1-2cm)ニシテ長キ數條ノ主枝ヲ發出ス。主枝ノ軸ハ細ク、下部稍圓柱狀、漸次上方ニ扁壓シ、稍距リテ互生ノ枝ヲ出ス(體ノ中央部ニテ3-5cm距リ)、漸次上部ニ相接近

シテ出ヅ。軸ハ概ネ平滑、上部ノ方ニ輕ク雁木狀ニ屈折ス、然レドモ予ハ或旺盛ノ發育ヲナセル標本ニテ軸ノ下部ニ小棘ヲ有スルモノアルヲ見タリ。葉ハ長楕圓形一披針狀ニシテ頂端鈍圓、長サ4-5 cm ニシテ明ニ散在セル毛窠ヲ存シ、縁邊ニ尖レル鋸齒ヲ有シ。極メテ短キ殆ド無柄ナル柄ヲ着ク。氣胞ハ倒卵形又ハ球狀一楕圓形ニシテ、頂端概ネ圓ク、長クシテ廣キ葉狀ノ葉柄ヲ有ス、葉柄ハ氣胞ノ1倍半乃至2倍長シ。生殖器托ハ存セズ。色ハ褐色、幼部ハ幾分Olive色ヲ帶ブ。質ハ薄ケレドモ硬シ。

產地：紅頭嶼(瀬川)

分布：Singapore, Batavia, 支那, Papua, Philippine Isl., Macassar Str., New Guinea, 臺灣, 琉球。

第282圖版. 1: *Sargassum siliquosum* J. Ag., さしうもく, ノ體, $\frac{1}{1}$.—2: 體ノ上部, $\frac{1}{1}$.—3: 氣胞, $\frac{1}{1}$.

Sargassum prolongatum Okam.

もちりもく 岡村稱

第283圖版; 第284圖, 1-7圖。

附着器ハ圓盤狀根ニシテ數條ノ體之ヨリ發出シ、各通常極メテ短キ(辛フジテ1cm長キ)或ハ往々殆ド無柄ナル如キ共同ノ莖ヲ有シ、之ヨリ數條ノ主枝ヲ出ス。體ハ實ヲ結ビタル(但シ未熟ノ)モノニ於テ高サ17-18 cmアリ。主枝ノ軸ハ棘ナク、扁壓、少シクネチレ、幅約3 mm., 其兩縁ヨリ短キ側枝ヲ出ス; 側枝ハ互ニ約1 cm離レテ短キ間隔ヲ有ス; 然レドモ軸ノネジレタル爲メ、枝ハ螺旋狀ニ出ル如ク見ユ。葉ハ硬ク、卵形又ハ卵形一披針狀ニシテ下部楔形ヲナシ、殆ド無柄ニシテ兩縁均齊、少シク隆起セル中肋ヲ存シ小ニ

シテ散布セル毛窠ヲ有ス。葉縁ハ其基部ヨリ半分又ハ $\frac{2}{3}$ 程ノ間鋸齒ヲ存ス。葉ノ頂部ハ三角又ハ多角形ノ錐ノ頭ノ如ク細長ク伸ビ、下方ニ反リタル粗キ三角形ノ齒ヲ有スル狀、蠻人ノ有スル武器ノ如ク又昔時ノ鋸^{モチリ}ノ如シ。此伸ビ出タル部分ノ基部ノ兩側ニ少シク凹ミタル裂片アリテ葉面ト直角ヲナシ、其縁邊ニ三角形ノ齒ヲ存ス。葉片ハ長サ1-2 cm 幅0.8-1.5 cmアリ、伸ビ出タル部分ハ0.5-2.5 cm長シ。主枝ノ下部ニ在ル葉ハ其頂部伸ビルコトナク圓キ又ハ尖リタル頂端ヲナス。一ツノ若キ體ノ主枝ノ基部ニ於テ予ハ其頂部ノ一回分レタル葉二個アルヲ見タリ、其長サ2 cm, 幅5 mmアリ、中肋ヲ存シ、毛窠ヲ有シ、縁邊ハ鋸齒ヲ着ケタリ。生殖器托ハ未熟ニシテ3 mm. 長ク、聚繖狀ニ團塊ヲナシ、角張り(?), 小刺ヲ有ス。

產地：紅頭嶼(瀬川)

葉ノ頂端異狀ナル伸長部ヲナスヲ以テ特徴トス。葉ノ上部ノ兩側ニ在ル凹ミタル裂片ヲ有スルコトハ *Sarg. duplicatum*, ふたへもく, (5卷19頁205圖版)ノ葉ノ頂部ニ在ル凹ミタル裂片ガ二ツニ分レ頂部ノ中央部ガ伸ビ出タル爲メ此裂片ヲ右ト左トノ二ツニ分テタルモノト見ルベシ。

第283圖版. *Sargassum prolongatum* Okam., もちりもく, ノ體, $\frac{1}{1}$.

第284圖版, 1-7圖. 1: a, 葉ノ裏面, $\frac{1}{1}$; b, 側面, $\frac{1}{1}$; c, 表面, $\frac{1}{1}$; 各部ノ横斷面ヲ添ユ—2: 主軸ノ下部ニ在ル分レタル葉, $\frac{1}{1}$.—3: 枝ノ一部, $\frac{1}{1}$.—4: 葉ヲ側面ヨリ見タルモノニシテ伸ビ出タル頂端ノ基部ニ在ル淺ク凹ミタル部分, a, ヲ示ス; b, 葉片ヲ側面ヨリ見タルモノ, $\frac{1}{1}$.—5: 氣胞, $\frac{1}{1}$.—6: 生殖器托ヲ表面ヨリ見タルモノ, $\frac{1}{1}$.—7: 同上ヲ側部ヨリ見タルモノ, $\frac{1}{1}$.

Chamaedoris orientalis Okam. and Hig.

たんぼやり 岡村稱

第284圖版, 8-15圖.

體ハ單條ニシテ叢生シ, 直立シ, 不規則ニ分岐セル根ヨリ立チ, 7-9 cm. 高シ. 根ハ遠ク距リテ隔膜ヲ存スレドモ其起點ニハ之アルコトナシ. 莖ハ長サ4-6 cm. ニシテ稍圓柱狀, 中空, 兩端極メテ僅ニ細ク, 太サ1-1.5 mm. ニシテ全部密ニ肉眼ニ見得ベキ環狀ノクビレヲ存ス. 莖ノ表面ハ Melobesia ノ如キ石灰藻ヲ以テ密蔽セラル. 莖ハ頭部ノ中軸トシテ貫通シ, 14ノ關節ニ分タレ, 太サ600-800 μ アリ. 關節ノ數ハ一定セルモノ、如シ, 何トナレバ10-11圖ニ示ス如キ小サキ體ニテモ 8-9圖ノ如キ大ナルモノト同數ヲ有スレバナリ. 之ニ依テ, 頭部ノ長サハ軸ノ關節ノ長サノ異ナルニ由來スルモノナルヲ知ル, 其長サハ直徑ト畧ホ同長若クハ3倍(多分尙多カルベシ)ニシテ上部ノモノホド下部ノモノヨリ長シ. 頭部ノ大サハ長サ2.5-7cm., 幅2-4 cm アリ; 唯一ツ莖ヲ缺キタルモノニテ長サ7 cm. 幅4 cm. ノモノヲ見タリ. 13箇ノ各關節ノ肩ヨリ(最上部ノモノヲ除キ)絲狀ノ枝ヲ輪生ス, 尤モ各輪ノ數ハ4-5-6ト變化シ, 最上部ノモノハ唯3個ノミヲ有セリ. 絲狀ノ枝ハ直徑約400 μ ニシテ, 粗ク, 同一ノモノニ於テ下部ノ太サ400 μ ヨリ上ノ方ニ345 μ トナレルヲ計リタリ. 絲狀枝ノ分岐法ハ擬叉狀ニシテ處々偏生様互生ノ配列ヲナスモノアリ. 絲狀枝ノ或者ハ其頂部ニ近ク僅少ノ tenacula ヲ形成シテ互ニ結合シ, 枝ハ容易ニ離レ易ク錯綜セル頭部ヲ形成ス; 其之ヲ生ズル枝ノ數ハ決シテ多カラズ. 頭部ノ形狀ハ規則トシテ倒卵形ナレドモ, 長橢圓形, 橢圓形, 稍球狀又ハ洋梨果狀等アリテ其形狀ハ絲狀枝ノ長サニ歸ス. 色ハ綠色. 質ハ軟ニシテ膜質ナレドモ, 乾燥スルトキハ粗クシテ手觸リ硬ク, 紙ニ附着セズ.

產地: 紅頭嶼(瀬川)

從來西印度地方ニノミ知ラレタル一屬一種ノモノナリシガ, 今之ヲ我太平洋南部ニ發見シタルハ甚ダ愉快ナリトス. 頭部ノ形狀, 絲狀枝ノ太サ及質, 軸ノ關節ノ數, 絲狀枝ノ出ル輪數及 haptera ニ代ルニ tenaculum ヲ有スルコトニヨリテ其既知種 *Chamaedoris Peniculum* (Sol.) O. Kuntze. ト異ナリトス.

第284圖版, 8-15圖. 8-11: *Chamaedoris orientalis* Okam. and Hig. ノ體, $\frac{1}{1}$. — 12'—12'': 頭部ノ中軸, $\frac{15}{1}$; \times , \times 印ハ直接互ニ連續スル部分ヲ示ス. — 13: 輪生セル絲狀枝, $\frac{4.5}{1}$. — 14: 絲狀枝ノ頂部ニ tenacula ヲ有スルモノ, $\frac{30}{1}$. — 15: 莖ノ基部ト根, $\frac{4.5}{1}$.

Halimeda Tuna Lam. f. *typica* Barton

つなさぼてんぐさ 岡村稱

第285圖版, 1-4圖.

體ハ高サ9-10 cm, 薄ク石灰ヲ被ムリ, 同一平面ニ分岐ス. 根ハ短ク, 多少膨レタリ. 最下部ノ關節ハ多少厚ク, 圓柱狀又ハ楔形, 往々厚ク石灰ヲ存ス, 而シテ時トシテハ根ノ上部ノ數關節迄厚ク石灰ヲ存スルコトアリ. 殘餘ノ關節ハ少シク石灰ヲ被ムリ, 概ネ腎臟形ニシテ扁平, 圓盤狀又ハ横ニ長橢圓形ヲナシ, 中肋ナク, 上部ノ方ニ漸々大サヲ減ズ, 縁邊全縁ナリ. 關節ノ高サ5-10 mm. 幅10-13 mm., 厚サ約1 mm. アリ. 周邊ノ胞枝(即チ細胞ノ如キモノ)ハ之ヲ表面ヨリ見ルニ六角形ニシテ其互ニ相接スル部分ハ極メテ僅ノ範圍ニ止ル. 色ハ淡綠色ナリ.

產地: 琉球.

分布：地中海，印度洋，北太平洋，南部太平洋。

本種ハ Halimeda cuneata Her., うちさぼてんぐさ, 3卷 202頁, 147圖版, ト酷似スレドモ上部ノ胞枝ノ互ニ接觸スル範圍極メテ少距離ナルヲ以テ之ト異ナリトス。

第 285 圖版, 1-4 圖. 1: Halimeda Tuna Lam. f. typica Bart., つなさぼてんぐさ, ノ體, $1/1$.—2: 表層ノ胞枝ヲ表面ヨリ觀タルモノ, $240/1$.—3: 表層ノ縱斷面, $240/1$.—4: 内部ノ絲, $48/1$.

Acetabularia Ryukyuensis Okam. and Yamada. 新種

かさのり 岡村稱

第 285 圖版, 5-12 圖.

性質：盤狀部ハ中位ノ大サニシテ, 細キ圓柱狀ノ長柄ヲ有シ柄ノ頂上ニ唯 1 個ノ盤ヲ着ク, 盤ハ殆ド扁平唯僅ニ淺キ凹ミヲナシ, 可ナリ石灰質ヲ被ムル. 子囊ナル放射狀部ハ 54-59 アリ, 其外縁殆ド截形ノ如ク極メテ僅ニ穹狀ヲナス. 上冠 (Corona superior) ハ互ニ癒着スルコトナク 5 個ノ毛痕ヲ印ス; 下冠 (Corona inferior) モ亦互ニ離レテ存シ, 長楕圓形ナリ.

產地：琉球, 高潮線附近ノ珊瑚礁ノ潮溜リニ在リ. 春季.

體ハ叢生シ, 塊狀根ヲ以テ直立シ, 高サ 4-6 cm. アリ. 莖ハ細長ク, 圓柱狀ニシテ可ナリ石灰質ヲ被ムリ, 頂端ニ殆ド扁平ニ開張セル盤狀部ヲ戴ク. 盤ハ極メテ淺ク凹ミタル圓キ皿狀ニシテ石灰ヲ存ス. 盤狀部ヲ作レル放射狀ノ子囊ハ其數 54-59 ヨリ成リ, 長サ 5-7 mm. アリ, 上端殆ド截形極メテ僅ニ穹狀ヲナシ, 石灰ヲ以テ可ナリ能ク結合ス, 然レドモ石灰ヲ除キタル後ハ容易ニ其基部迄離ル; 圓盤狀部ノ直徑ハ約 1 cm. (通常 1 cm. ヨリ短シ) ナリ.

上冠ノ各部ハ互ニ間隔ヲ以テ離レ, 厚キ膜ヲ有シ, 上ヨリ見ルトキハ長楕圓形ニシテ縱即チ其長キ軸ニ添フテ穹狀ヲナシ, 長サ約 250 μ アリ, 側面 (即チ放射狀縱斷面) ヨリ見ルトキハ長楕圓形又ハ壓シツブシタル球狀ニシテ 5-6 (概ネ 5) ノ毛痕ヲ縱ニ 1 列ニ存ス. 下冠ノ各部ハ之ヲ下 (即チ外部) ヨリ見レバ長楕圓形ニシテ互ニ離レ, 少シク横ニ屈曲シ上冠ヨリ小ナリ. 成長ノ初期ニ當リテハ莖ハ小距離ニ毛狀葉ヲ輪生シ, 數次相重疊ス, 毛狀葉ハ複又狀ヲナス.

地中海ニ普キ *Acet. mediterranea* ト外形酷似スレドモ, 上下兩冠ノ各部互ニ離ルハコト及上冠ノ毛痕ノ數ノ少ナキトヲ以テ之ト異ナリトス.

第 285 圖版, 5-12 圖. 5: *Acetabularia Ryukyuensis* Okam. and Yamada ノ體, $1/1$.—6: 脱灰シタル盤狀部ヲ下ヨリ見タルモノ, $9/1$.—7: 根ノ一部, $28/1$.—8-9: 一個ノ幼體ノ莖ノ頂部ト下部トニシテ毛狀葉ノ輪生スルヲ示ス, $28/1$.—10: 上冠ヲ上ヨリ見タルモノニシテ, 石灰ノ残留スル部アリ, $100/1$.—11: 盤狀部ノ放射狀縱斷面ニシテ上冠及下冠ヲ示ス; 上冠 (250 μ 長ク) ニ毛及毛痕ヲ見ル; a, 盤狀部ノ中心部; b, 子囊, $10/1$.—12: 上冠ノ放射狀縱斷面, $120/1$.

Acetabularia Calyculus Quoy et Gaim.

ほそえがさ 岡村稱

第 285 圖版, 13-18 圖. (並ニ第 99 圖版及第 100 圖版).

體ハ小ニシテ高サ 4-5 cm., 可ナリ石灰ヲ存スル細莖ノ頂端ニ 1 個ノ纖弱ナル盤狀部ヲ戴キ, 莖ハ紡錘狀ノ膨レヲ有シ其部ニ毛狀葉ノ落チタル痕ヲ印ス. 盤狀部ハ之ヲ構成スル放射狀子囊ノ上方ニ穹狀ヲナス爲メ鉢狀ヲナス, 而シテ放射狀子囊ノ數ハ少ナク (25-35), 薄ク石灰ヲ被リ, 輕ク互ニ接着

シ、其基部迄離ルハコト容易ナリ。子囊ハ長サ2-3mm.ニシテ頂端多少深ク二裂シ、頂端ヨリ基部迄扁壓シ、細長キ楔形ニシテ下部ノ方ニ急ニ細クナリ其部ハ互ニ廣キ間隔ヲ殘シテ相離ル。上下兩冠ノ各部ハ互ニ隔リテ游離シ、長橢圓形ナリ；上冠ハ之ヲ上ヨリ見ルニ楔形又ハ稍三角形ニシテ2個ノ毛痕ヲ印シ、一ハ前ニ一ハ後ニ在リ、時ニ3個アリ然ルトキハ其配置三角形ニシテ三角ノ頂點ハ内ノ方ニ向フ；又極メテ稀ニ唯1個ナルコトアリ。下冠ハ下ヨリ見レバ長橢圓形ニシテ横ニ少シク曲レリ(13圖a)。孢子ハ球狀ニシテ鮮綠色ヲ呈シ、石灰質ナシ。色ハ淡綠色ナリ。

產地：五島有川、今治、淡路都志、尾張野間、能登島。

分布：西印度、印度洋、Australia。

圖譜第二卷、179頁及186頁、第99圖版及第100圖版ニ於テ余ハ本種ノ植物ヲ2種ノ異ナリタル種名ノ下ニ説明シタリシガ、後其同一植物ナルコトニ氣付キタルヲ以テ茲ニ再ビ詳細ノ記載ト圖說トヲ舉ゲタリ。

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