

List of Marine Algae collected in Caroline and Mariana Islands, 1915.

By

Kintarō Okamura, *Rigakuhakushi*.

With Pl. I and 9 text figs.

In 1904 I have studied marine algae from Caroline Islands and Australia and have enumerated them in the "List of Marine Algae collected in Caroline Islands and Australia."¹⁾ In the present year (1915) I have had a chance to study the materials collected by several gentlemen chiefly in Caroline Islands. The materials were partly preserved in formalin and alcohol and partly in herberial form. The name of collectors and localities are as follows.

By Mr. Y. OKUDA	Angaur, Truk, and Saipan	Jan., 1915.
„ Mr. T. KOSHIDA	Ponape, at Bay of Rangal	12, Dec., 1914.
„ Mr. N. YANAGI	Ponape, Kusai, and Saipan	May, 1915.
„ Mr. S. FUJITA and K. AOKI	Truk	Feb.-March, 1915.
„ Mr. S. MAYEDA	Yap	22, May, 1915.
„ Mr. K. MIYAKE	Truk	7 & 29, May, 1915.
„ Mr. Y. OKADA	Palao	25, July, 1915.
„ Mr. K. SHIMAZAKI	Yap	Feb., 1915.
„ Mr. AMENOMIYA	Truk	15, March, 1915.

The present list numbers 28 species of Chlorophyceae, 11 sp. of Phaeophyceae and 22 sp. of Rhodophyceae, among which three are new to science namely *Dilophus repens*, *Haliseris repens* and *Halarachnion calcareum*. Of the novelties, *Halarachnion calcareum* is only species of the genus known to be impregnated with lime in the inner tissue of the frond.

1) Botanical Mag. Tokyo, Vol. XVIII, No. 209, p. 77-96, 1904.

The geographical distribution shows that a great resemblance exists between the algological flora of Caroline Islands and that of the Indian Ocean and the Malay Archipelago as well as that of Ryukyu. Of species enumerated in the list 40 species are found in Ryukyu and Japan; and from this result we may safely state that the algological flora of Caroline Islands extends northward up to Ryukyu and southern parts of Japan proper, owing to the influence of "Kuroshiwo" or Japan current.

I wish here to express my sincere thanks to those gentlemen who have put their collections in my disposal and to Prof. Yendo for the kind help in the determination of two species.

CHLOROPHYCEAE.

Enteromorpha sp.

Saipan (YANAGI).

Bryopsis plumosa (HUDS.) AG.; HARV. Phyc. Brit. t. III.

A small fragment, scarcely one cm. long.

Truk (OKADA).

Dist.: Widely distributed in warmer seas.

Caulerpa Webbia f. *tomentella* (HARV.) WEBER VAN BOS.

Monogr. p. 270, Pl. XXI, fig. 4; OKAM. Icon. Jap. Alg. Vol. III, p. 69, Pl. CXIX.

Truk (MIYAKE).

Distr.: Friendly Isl.; Mauritius Isl., Japan, Ryukyu.

Caulerpa boryana HARV. Char. of New Alg. from Japan, 1859, p. 332; WEBER v. BOSSE List d. alg. du Siboga p. 97.

Syn. C. *anceps* HARV. OKAM. Icon. Jap. Alg. Vol. III, p. 94, Pl. CXXV; C. *Stahlia* WEBER v. BOSS. Monogr. p. 282, Pl. XXII, f. 34,

The specimen which was kept in alcohol presents no bullation of the short pedicel, which was studied by Prof. YENDO¹⁾ in the materials of our country.

Ponape (YANAGI), Palau (OKADA).

Distr.: Java, Japan, Ryukyu.

1) YENDO: On *Caulerpa anceps* Harv. p. 156, fig. 4. (Bot. May. Tokyo, Vol. XVII, 1903).

Caulerpa taxifolia (VAHL) AG. f. *typica* SVED. OKAM. Icon. Jap. Alg. Vol. III, p. 38, Pl. CX.

Palau (OKADA).

Distr. : Ceylon, Ryukyu.

Caulerpa plumaris C. AG. f. *brevipes* (J. AG.) WEBER v. Bos. Mong. p. 294.

Ponape, Saipan (YANAGI), Truk (FUJITA).

Distr. : all tropical seas.

Caulerpa Freycinetii var. *typica* (C. AG.) WEBER Monogr. Pl. XXV, fig. 4-5 ; OKAM. Icon. Jap. Alg. Vol. III, p. 18, Pl. CV.

Kusai (YANAGI).

Distr. : West Indies ; Red Sea ; Ind. Ocean ; Pacific, Ryukyu.

Caulerpa cupressoides var. *typica* (VAHL) WEBER Monogr. p. 327, Pl. XXVII, f. 1-3, Pl. XXVIII, fig. 1.

Palau (OKADA), Ponape (YANAGI).

Distr. : West Indies ; Indian Ocean ; Pacific ; Japan.

Caulerpa racemosa var. *clavifera* f. *macrophysa* WEBER Monogr. p. 361, Pl. XXXIII, fig. 1-5 ; OKAM. Icon. Jap. Alg. Vol. III, p. 66, Pl. CXIX.

Ponape and Kusai (YANAGI), Yap (S. MAYEDA), Palau (OKADA and OKADA), Truk (AMENOMIYA).

Distr. : all tropical seas.

var. *uvifera* WEBER Monogr. p. 362, Pl. XXXIII, fig. 6, 7, 23.

Truk (MIYAKE).

Distr. : Red Sea, Ceylon, Celebes, West Indies, Ryukyu.

var. *laete-virens* WEBER Monogr. p. 366, Pl. XXXIII, fig. 8, 16-22 ; OKAM. Icon. Jap. Alg. vol. III, p. 67, Pl. CXIX.

Palau (OKADA).

Distr. : West Indies, Rocher St. Paul ; Ceylon ; Australia, Japan.

var. *Chemnitzia* WEBER Monogr. p. 370, Pl. XXXI, fig. 5-8.

Ponape and Kusai (YANAGI).

Distr. : Malabar coast, Red Sea, Malay Archip., Ceylon, Ryukyu.

Caulerpa peltata var. *stellata* WEBER Monogr. p. 377, Pl. XXXII, fig. 8.

Turk (MIYAKE).

Distr. : Friendly Isl.

Caulerpa lentillifera J. AG. ; WEBER Monogr. p. 380, Pl. XXXIV, fig. 1-2.

Truk (AMENOMIYA).

Distr. : Red Sea ; Madagascar.

Caulerpa Okamurai WEBER Monogr. p. 385, fig. 9 ; OKAM. Alg. from Ogasawarajima (Bot. Mag. Tokyo, Vol. XI, p. 5, Pl. I, fig. 13-14. Ponape (YANAGI), Truk (OKUDA).

Distr. : Japan, Ogasawara-jima and S. Pacific.

Udotea argentia ZANAR. var. *spumosa* GEPP. Codiaceae of Siboga Exped. p. 126, 144, figs. 15, 25a, 61, 62.

Truk (FUJITA).

Distr. : Indian Ocean and the Pacific.

Chlorodesmis Hildebrandtii A. and E. S. GEPP Codiaceae p. 16, 137, fig. 74, 75.

Ponape (YANAGI), Truk (MIYAKE).

Distr. : Indian Ocean.

Halimeda cuneata HERING. f. *typica* BARTON Halimeda p. 16, fig. 7. Truk (FUJITA and MIYAKE), Palau (OKADA).

f. *digitata* BARTON Halimeda p. 16, fig. 9.

Ponape (YANAGI), Yap (MAYEDA), Truk (MIYAKE).

f. *undulata* BARTON Halimeda p. 16, fig. 10.

Ponape (YANAGI), Truk (MIYAKE).

Distr. : Several forms in Indian and Pacific Oceans. f. *typica* Ryukyu & Japan.

Halimeda Opuntia LAM. f. *typica* BARTON Halimeda p. 20, fig. 19. Saipan and Kusai (YANAGI), Truk (MIYAKE, MAYEDA, FUJITA), Palau (OKADA).

f. *triloba* Decne., BARTON Halimeda p. 20, fig. 20.

Ponape (YANAGI), Truk (FUJITA).

f. *elongata* BART. Halimeda p. 21, fig. 24.

Truk (FUJITA).

f. *Renschii* BARTON Halimeda p. 21, fig. 22, 22a ; OKAM. Icon. Jap. Alg. Vol. III, p. 208, Pl. CXLVIII, fig. 8-12.

Truk (OKUDA).

Distr. : Several forms in all tropical seas ; f. *Renschii* in Ryukyu, and f. *typica* probably also.

- Halimeda macroloba* DECNE.; BARTON *Halimeda* p. 24, Pl. III, fig. 33-38; OKAM. *Icon. Jap. Alg.* Vol. III, p. 210, Pl. CXLIX, fig. 1-8.
Ponape (YANAGI), Truk (FUJITA and OKUDA).
Distr.: Madagascar; Red Sea; Ceylon, Singapore; Malay Archipelago, Philippine, Friendly Isl., Fidji, Ryukyu, Australia, Cape Flattery.
- Halimeda incrassata* LAM. f. *monilis* BARTON *Halimeda* p. 27, fig. 40.
Truk (FUJITA and MIYAKE).
- f. *ovata* BARTON *Halimeda* p. 27, figs. 42, 47.
Truk (MIYAKE).
- f. *pusilla* BARTON *Halimeda* p. 28, fig. 44.
Truk (MIYAKE).
Distr.: Several forms West Indies, Pacific and Indian Oceans.
- Valonia utricularis* AG. Kütz. *Tab. Phyc.* VI, t. 86, 2 b-d; KUCKUCK, über d. Bau. u. Fortpfl. v. *Halicystis* u. *Valonia* (*Bot. Zeit.*) 1907, p. 166.
Truk (MAYEDA).
Distr.: Mediterranean; Madeira, W. Indies, Indian Ocean.
- Dictyosphaeria favulosa* (MERT. ?) DECN.; KG. *Tab. Phyc.* VII. t. 25, f. 1; DE TONI *Syll. Alg.* I. p. 371; OKAM. *Icones Jap. Alg.* Vol. I, p. 205, Pl. XL.
Yap (SHIMAZAKI).
Distr.: Florida, Ind. Ocean, Red Sea, Reunion Isl.; Ceylon, Sandwich Isl., Friendly Isl., Merid. Australia, Japan.
- Dictyosphaeria Versluysi* WEB. v. BOS. *Alg. d. Siboga* I, p. 64, Pl. II, fig. 6.
Saipan (YANAGI).
Distr.: Malay Archipelago.
- Spongocladia vaucheriaeformis* ARESCH.; HAUCK *Alg. dell' Oceano Indiano* p. 236, Tav. II.
Ponape and Saipan (YANAGI).
Distr.: Maurice Isl.; Singapore; New Guinea; Ryukyu.
- Boodlea coacta* MURR. et DE TONI *Journ. Linn. Soc. Bot.* XXV, 1889; OKAM. *Illustr. Mar. Alg. in Japan* p. 41, Pl. XV.—*Cladophora coacta* DICKIE in *Journ. Linn. Soc. Bot.* XV, 1876, p. 451.
Truk (OKUDA), Yap (SHIMAZAKI).
Distr.: Mangaia Isl.; Ryukyu, Japan.

- Boodlea Siamensis* RBD. in Flora Koh Chang p. 107; WEB. v. B. Alg. d. Siboga p. 68, fig. 11.
 Palau (OKADA).
 Distr.: Koh-Chang; Red Sea; Dar es Salam; Samoa; Tongatabu.
- Boodlea van Bosseae* RBD. IN WEBER v. BOS. Liste d. Alg. d. Siboga p. 70, f. 12.
 Yap (SHIMAZAKI).
 Distr.: Ind. Ocean, Malay Archipel., Lucipara Isl., Mauritius, Seychelles, Diego Garcia.
- Microdictyon pseudohapteron* A. and E. S. GEPP Mar. Alg. and Mar. Phaner. on the Sealark Exped. p. 375, Pl. 47, f. 1-4; OKAM. Icones Vol. II, p. 105, Pl. LXXX, f. 8-12.
 Yap (SHIMAZAKI).
 Distr.: Ind. Ocean; Ryukyu.
- Anadyomene Wrightii* HARV.; DE TONI Syll. Alg. I, p. 367; OKAM. Icones Vol. I, p. 198, Pl. XL, f. 6.
 Yap (SHIMAZAKI).
 Distr.: Ind. Ocean (Ceylon), Ryukyu Isl., Ogasawarajima.
- Tydemania expeditionis* WEB. v. B. Alg. d. Siboga p. 116, Pl. V, fig. 4.
 Ponape (YANAGI).
 Distr.: Malay Archipelago; Ryukyu.

PHAEOPHYCEAE.

Sphacelaria sp.

- A sterile fragment.
 Ponape (YANAGI).

Colpomenia sinuosa (ROTH) DERB. et SOL. OKAM. Icon. Jap. Alg. Vol. I, p. 86, Pl. XIX, fig. 11-12, Pl. XX, fig. 10-12. *Hydroclathrus sinuosus* ZANARD. Icon. Phyc. Adriat. I, p. 109.

Ponape (YANAGI).

Distr.: Mediterranean Sea; Atlantic Ocean; Red Sea; Indian Ocean; New Holland, Ryukyu; Japan.

Hydroclathrus cancellatus BORY; HARV. Phyc. Austr. tab. 98; OKAM. Icon. Jap. Alg. Vol. I, p. 18, pl. IV, fig. 11, pl. V, fig. 7-13.

Ponape (YANAGI), Truk (OKUDA, MIYAKE, AMENOMIYA).

Distr.: Tropical Atlantic; Red Sea; Indian Ocean; Malay Archipelago; New Holland; Ryukyu; Japan.

Turbinaria ornata J. AG. Sp. Alg. I, p. 266, BART. Syst. Struct.

Account of Turbin. p. 219; *Fucus turbinatus* var. *ornatus* Turn.

Fuc. Vol. I, p. 50, t. 24, f. c-h.

Ponape (YANAGI), Truk (MIYAKE, FUJITA), Palau (OKADA).

Distr.: Indian Ocean, Malay Archipelago, Pacific Ocean, Ryukyu.

Sargassum cristaeifolium AG.; J. AG. Sp. I. p. 325.

Ponape and Saipan (YANAGI), Palau (OKADA).

Distr.: Ceylon, Manila, Sunda Isl., Japan.

Dilophus radicans n. sp. Pl. I, fig. 1-6.

Diagn.: Fronds narrow, linear, ancipito-compressed, forming loosely entangled mass, rooting and creeping on other algae, irregularly and distichously branched in opposite and alternate manner, patent; inner cells four layers, not areolated in surface view.

Entangled among the fronds of *Laurencia*; Ponape (Yanagi).

Fronds narrow linear, slightly ancipito-compressed (0.2-0.5 mm., scarcely one mm. broad), forming loosely entangled depressed mass, creeping on the frond of another alga, emitting tufted or scattered root fibres from places where the frond comes in contact with the substratum. Branches arising irregularly in opposite and alternate manner, distichous, patent, standing on roundish axils. Lower portion of frond slenderer, becoming a little wider above, and acuminate at apex. Young branches are almost tooth-like. Cross-section of main branches elliptical showing four layers of cells in the median portion of the section, with a few cells at both margins. Cortical cells rect-

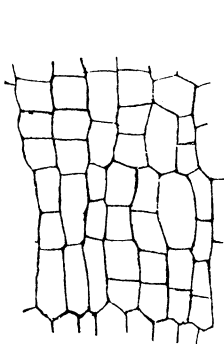


Fig. 1

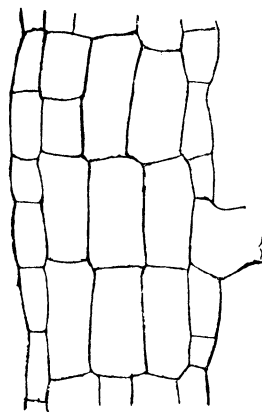


Fig. 2

Fig. 1. Surface view of frond of *Dilophus radicans* n. sp., $\frac{152}{1}$.

Fig. 2. Longitudinal section of frond, $\frac{152}{1}$.

angular, with the length subequal to or twice as long as broad, not areolated, (Text Fig. 1) ; inner cells isodiametric, short and twice as long as broad. (Text fig. 2). Fruits unknown.

A distinct species in the section *Ancipites* J. Ag.

Dictyota sp.

Sterile fragments of narrow-linear, patent found.

Ponape (YANAGI).

Dictyota patens ?

Sterile frond of widely parted rather broadly linear frond with marginal teeth and coalesced to each other by emitting root fibres from undersurfaces.

Ponape (YANAGI).

Haliseris repens OKAM. n. sp. Pl. I, fig. 7-18.

Diagn. : Fronds entangled and creeping on other algae by emitting scutate root-fibres from midrib of undersurface and from margin, narrow linear, irregularly dichotomous with very patent axils, proliferous from margins, thin, 2 cell-layers thick.

On fronds of *Gelidiopsis variabilis* ; Truk (MIYAKE).

A few small fragmental specimens entangled on the fronds of *Gelidiopsis variabilis*, narrow linear, 1-7 cm. long, creeping by emitting root fibres from undersurface of the midrib and from margins, irregularly dichotomous with very patent and round axils, often proliferating from margins, but not from surface; veins of proliferated segments are not continuous at the beginning with that of branches. Tips of root fibres expanded into scutate disc, 1-3 mm. in diameter. Frond 2 cell-layers thick except the midrib portion. Cells arranged in concentric rows in younger portions where simple or branched hairs are abundantly emitted from margins.

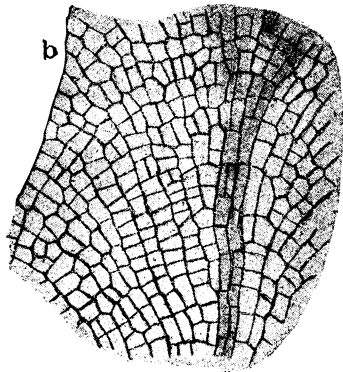


Fig. 3. Surface view of frond at the portion marked *b* in the Plate I, fig. 15, $\frac{83}{1}$.

Padina pavonia (L.) LAM. ; DE TONI Syll. Alg. III, p. 243.

Angaur in Truk (OKUDA, MIYAKE), Yap (MAYEDA), Ponape and Kusai (YANAGI), Ponape (KOSHIDA) ; Palau (OKADA).

Distr. : Widely distributed in warmer seas.

Gymnosorus corallis (AG.) J. AG. Anal Alg. Cont. I, p. 11; *Zonaria collaris* AG. in KUETZ. Tab. Phyc. IX, t. 76, f. II. ; OKAM. Icon. Jap. Alg. Vol. I, p. 109, Pl. XXIV, fig. 1-5.

On the shell of *Pteroceras chiragula* (L.) LAM. Yap (MAYEDA).

Distr. : Indian Ocean, Ryukyu.

FLORIDEAE.

Gelidium pusillum var. *conchicola* PICC. et GRUN. ; DE TONI Syll. Alg. IV, p. 147.

Fronds finely filiform, creeping and sending up mostly simple branches, slightly narrowed at nodes scarcely 2 mm. high; tetraspores in spatulate or lanceolate ramuli.

On the shell of *Trochus niloticus*; Yap (MAYEDA).

Distr. : Red Sea.

Gracilaria radicans

HAUCK Ueber ein. v. Hildebr. in Roth. u. Ind.

Ocean gesam. Alg. in Hedwigia, 1886, p. 165.

Determined by Mr. YENDO.

Saipan (OKUDA).

Distr. : Madagascar ; Red Sea.

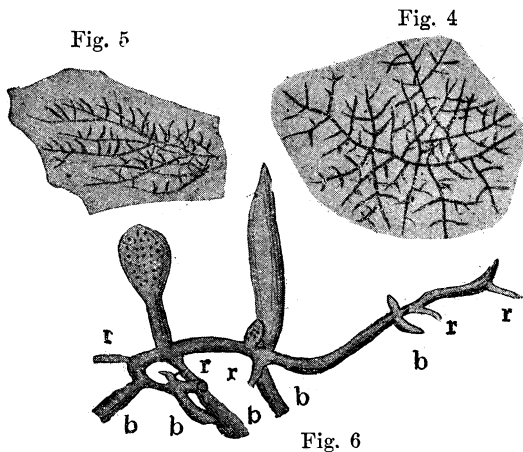


Fig. 4. Frond of *Gelidium pusillum* var. *conchicola* Picc. et Grun. on the shell of *Trochus* viewed from above, $\frac{1}{1}$.

Fig. 5. The same seen obliquely showing erect ramuli, $\frac{1}{1}$.

Fig. 6. Portion of tetrasporic frond; b, ramuli, r, roots, $\frac{12}{1}$.

Corallopsis Cacalia J. AG. Sp. II, p. 583.

Palau (OKADA).

Distr. : Red Sea, Pacific.

Ceratodictyon spongiosum ZANARD. ; ENGL.-PRANTL. nat. Pflanzenfam., I, 2, Algae, p. 388 ; OKAM. Icon. Jap. Alg. Vol. II, p. 1, Pl. LI-LII.—*Marchesettia spongioides* HAUCK Sopra Alc. Algh. d'. Oceans Ind. p. 236, Pl. III.

Truk (AMENOMIYA).

Distr. : Indian Ocean, Pacific, Ryukyu, Japan.

Hypnea pannosa J. AG. Epicr. p. 565 ; KÜETZ. Tab. Phyc. XVIII, t. 27 ; OKAM. Icon. Jap. Alg. Vol. I, p. 47, Pl. X, fig. 18-20.

Ponape (YANAGI).

Distr. : Mexico, Mauritius Isl., Ceylon, Tonga, New Caledonia, Ogasawara-jima.

Champia parvula

(AG.) J. AG. Epicr.

p. 303 ; OKAM. Icon.

Jap. Alg. Vol. II, p.

89. pl. LXXVI.

Ponape (YANAGI),

Truk (MIYAKE).

Distr. : Atlantic,

Mediterranean,

Adriatic, Aust-

ralia, Japan.

Champia compressa

HARV. Ner. Austr.

p. 78, tab. XXX.

A small fragmentary specimen 16 mm. high, 1.3 mm. broad, with branches coalesced to each other by disc-shaped root-like processes. For the sake of study I have given the illustrations.

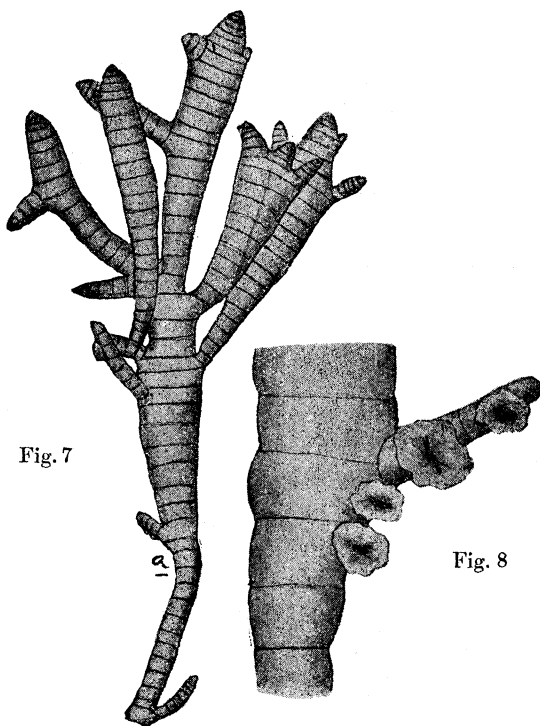


Fig. 7

Fig. 8

Fig. 7. Frond of *Champia compressa* Harv. (16 mm by 1.3 mm), $\frac{17}{1}$.

Fig. 8. Portion of frond marked a in the fig. 7, showing root-like discs, $\frac{17}{1}$.

Entangled among the fronds of *Gelidiopsis acrocarpa*; Truk (MIYAKE).

Distr.: Cape of Good Hope, New Caledonia, Ceylon?, Friendly Isl. ? New Holland ? Japan.

Martensia fragilis HARV.; J. AG. Sp. Alg. III, p. 829, SVED. Martensia p. 11, fig. 8, 9-28.

A small fragment.

Truk (MIYAKE).

Distr.: Ceylon, Pacific.

Laurencia intricata LAMOUR. Ess. tab. 3, fig. 8-9, J. AG. Sp. Alg. II, p. 750.

Ponape (YANAGI).

Distr.: Cuba Isl., Pacific.

Laurencia papillosa (FORSK.) GREV.; J. AG. Sp. Alg. II, p. 756, Epicr. p. 652, KUETZ. Tab. Phyc. XV, t. 62.

Saipan (YANAGI), Truk (OKUDA).

Distr.: Atlantic, Mediterranean and Adriatic, Red Sea, Pacific, Japan.

Acanthophora orientalis J. AG. Sp. Alg. II, p. 820; KUETZ. Tab. Phyc. XV, t. 77, f. 7 d-e, OKAM. Icon. Jap. Alg. Vol. I, p. 35, Pl. VIII.

Saipan (YANAGI, OKUDA), Ponape (KOSHIDA), Palau (OKADA).

Distr.: Zanzibar; Malay Archipelago; Northern Australia, Tonga Archipelago, Mariana, Japan.

Symphycladia marchantioides (HARV.) FALKENB. Rhodom. p. 277, t. 2, f. 18-23, t. 4, f. 20-24; OKAM. Icon. Jap. Alg. Vol. I, p. 152, Pl. XCIII.

Truk (OKUDA).

Distr.: New Zealand, North of Australia, Japan.

Leveillea jungermannioides (MART. et HERING.) HARV.; FALKENB. Rhodom. p. 392, t. 6, f. 1-13, t. 14, f. 18-27; OKAM. Icon. Jap. Alg. Vol. I, p. 148, Pl. XCII.

Ponape (YANAGI).

Distr.: Red Sea, Indian Ocean, Australia, Ryukyu, Japan.

Roschera glomerulata (AG.) WEBER-VAN BOSSE Mar. Alg. 'Sealark' Expedition, p. 289: *Tolypiocladia glomerulata* (AG.) SCHMITZ in ENGL. u. PRANTL. Natur. Pflanzenfam. p. 442, FALKENB. Rhodom. p. 177, t. 21, f. 27-29.

Ponape and Kusai (YANAGI), Palau (OKADA).

Distr. : Zanzibar ; Indian Ocean ; Malay Archipelago, Ryukyu, Japan.

Spyridia filamentosa (WULF.) HARV. Phyc. Brit. t. 46, J AG. Epic. p. 268, KUETZ. Tab. Phyc. XII, t. 42, f. a-b ; OKAM. Icon. Jap. Alg. Vol. III, p. 109, Pl. CII.

Palau (Okada).

Distr. : W. Indies ; Mediterranean ; Red Sea ; Indian Ocean ; Malay Archipelago ; Ryukyu ; Japan.

Ceramium clavulatum AG. HAUCK Meeresalg. p. 113 ; *Centroceras micracanthum* KUETZ. Tab. Phyc. XIII, t. 18, f. a-d ; OKAM. Illustr. Mar. Alg. Jap. Vol. I, p. 47, Pl. XVII.

Yap (SHIMAZAKI), Ponape and Kusai (YANAGI).

Distr. : All tropical seas ; Japan.

Halymenia lacerata SOND. Alg. Trop. Austr. p. 63, HEYDR. Beitr. Algenfl. v. Kais.-Wilhel. Land p. 481, tal. 26, fig. 20.

Only one sterile frond wanting of root, but plucked up almost from the base, 6 cm. heigh. Main segment 2 cm. long, 1.5 cm. broad, give rise to many branches near to each other on all rounds, some arising within the margin, and branches dissolve into many lesser ones which are densely tufted, ciliato-dentated at margin and tapering to fine points. Structure of frond exactly like that described and illustrated by HEYDRICH in his *l. c.* In the Text fig. 9 I have given the illustration of the cross-section for the sake of comparison with the structure of the next standing new species.

Yap (MAYEDA).

Distr. : Cape York in Australia, Finschhafen in New Guinea.

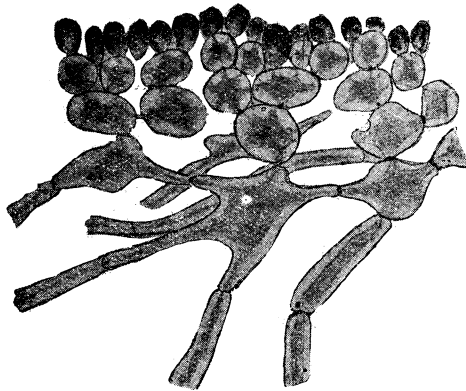


Fig. 9. Cross-section of frond of *Halymenia lacerata* Sond., showing the structure of frond, $\frac{357}{1}$.

Halarachnion calcareum n. sp.

Diagn. : Frond membranaceous, containing calcareous substance in the inner tissue, irregularly lobed, roughly dentate along margin, proliferated from upper surface with small lobes or provided with warty elevations or short ridges. Cystocarps minute dot like scattered over surface. Substance thickish and soft-gelatinous.

On rocks in low tide. Ponape (YANAGI).

Fronds wanting of root, probably fixed to the substratum by holdfast at lower margin or based portion of frond and is said by the collector of this alga to be procumbent. Fronds membranaceous, irregularly lobed, lobes roughly and subremotely dentate along margin, proliferating from upper surface simple and mostly small lobes or provided with warty or sometimes a little elevated ridges or wrinkles.

Frond internally consists of very loosely interwoven filaments enclosed with chalky substance and toward the surface the filaments give rise to short dichotomous moniliform filaments which form the cortical layer. Cystocarp is formed in a cavity previously prepared beneath the cortex where a pore is afterward formed. At the bottom of the cavity there is a large auxiliary cell which is produced from a larger inner cortical cell. In fully formed cystocarp, the auxiliary cell is connected with cortex by some 5 or more elongated cells radiately arising from the auxiliary cell and those cells embrace the nucleus within. Substance thickish and soft-gelatinous. Colour pinkish.

Chondrococcus Hornemanni (MERT.) SCHMITZ ; De Toni. Syll. Alg. IV, p. 1674 ; *Desmia coccinea* ZANARD. Plant. Mar. Rubr. p. 55, n. 78, t. 9, f. 1.

Yap (MAYEDA).

Distr. : Cape of Good Hope ; Red Sea ; Mauritius Island ; Ceylon ; New Holland ; Ryukyu ; Japan.

Amphiroa fragilissima (L.) LAM. f. *cuspidata* WEBER v. BOSS.

Corall. of the Siboga-Expedit. p. 90. (Determined by Mr. YENDO).

Truk (MIYAKE).

Distr. : Indian Ocean.

Gelidiopsis acrocarpa (HARV.) SCHMITZ ; DE TONI Syll. Alg. IV, p. 411. Truk (MIYAKE).

Distr. : Ceylon ; E. Africa ; Ovalau ; New Holland ; Ryukyu.

Gelidiopsis pannosa (GRUN.) SCHMITZ ; DE TONI Syll. Alg. IV, 410.

Yap (SHIMAZAKI).

Distr. : Samoa Isl. ; Ryukyu.

Explanation of figures in Plate I.

Fig. 1-6 : *Dilophus radicans* n. sp.

1 : portion of frond slightly magd. ; all roots omitted in the figure.

2 : piece of frond, almost in nat. size ; breadth a little broader.

3 : frond of fig. 2 magd., showing root-fibres produced from the undersurface, $\frac{3}{1}$.

4 : growing apex, magd.

5 : cross-section of frond, $\frac{48}{1}$.

6 : root fibres emitted from margin, $\frac{88}{1}$.

Fig. 7-18 : *Haliseris repens* n. sp.

7 : small frond but almost perfect, $\frac{1}{1}$.

8 : frond of fig. 7 magd. (1-3 mm. broad), $\frac{3}{1}$.

9, 10 : two pieces of frond, $\frac{1}{1}$.

11 : frond of fig. 10 magd., $\frac{3}{1}$.

12 : root-fibres emitted from margin, $\frac{152}{1}$.

13 : root-fibres emitted from midrib of the under-surface, $\frac{34}{1}$.

14 : one of root-fibres from midrib, $\frac{152}{1}$.

15 : young frond bearing hairs, $\frac{12}{1}$.

16 : surface view of frond at the portion marked *a* in fig. 15, $\frac{48}{1}$.

17-18. One and the same cross-section of frond showing midrib and marginal portions, $\frac{152}{1}$.

Fig. 19-21. *Halarachnion calcareum* n. sp.

19 : frond, wanting of holdfast, $\frac{1}{1}$.

20 : cross-section of frond showing young auxiliary cell, *a*, $\frac{353}{1}$.

21 : cystocarp ; *a*, auxiliary cell, $\frac{353}{1}$.

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Fisheries Institute, Tokyo, November, 1915.