

CHINESE MARINE ALGAE.

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THERE has recently been submitted to me by Mr. W. R. Maxon of the herbarium of the U. S. National Museum, a small collection of marine algae from China, gathered by Mrs. Spencer Lewis in the summer of 1915, at Pei Tai Ho, Gulf of Pechili, Chihli Province. The algae are mounted on small cards, and were apparently selected for their beauty and attractiveness, but the preparation was well and carefully done, and the plants are in excellent condition for examination. The following is the list, in systematic order and with the serial numbers corresponding to the specimens.

- 33. *Enteromorpha intestinalis* (L.) Grev.
- 35. *Enteromorpha prolifera* (Fl. Dan.) J. Ag.
- 34. *Enteromorpha plumosa* Kütz.
- 32. *Cladophora* sp.?
- 29. *Codium fragile* (Suringar) Hariot.
- 30, 31. *Bryopsis pennata* Lamour.
- 27. *Colpomenia sinuosa* (Roth) Derbès & Solier.
- 25. *Chordaria flagelliformis* (Fl. Dan.) Ag.
- 26. *Chordaria Cladosiphon* Kütz.
- 28. *Dictyota indica* Sonder.
- 8. *Goniotrichum elegans* (Chauvin) Le Jolis.
- 1, 52, 59. *Gelidium australe* J. Ag.
- 19. *Gracilaria multipartita* (Clementi) Harv.
- 20. *Gracilaria confervoides* (L.) Grev.
- 36. *Campylaeophora hypneoides* J. Ag.
- 18. *Laurencia obtusa* (Huds.) Lamour.
- 4, 5. *Antithamnion cruciatum* (Ag.) Näg.
- 10–17. *Ceramium Boydenii* Gepp.
- 7, 24. *Ceramium japonicum* Okamura.
- 6. *Pleonosporium Borreri* var. *fasciculatum* (Harv.) Holmes & Batters.
- 8, 9. *Symphycycladia gracilis* (Martens) Falk.
- 22, 23. *Grateloupia affinis* (Harv.) Okamura.
- 37, 38. *Grateloupia filicina* (Wulf.) J. Ag.

- 39. *Grateloupia ramosissima* Okamura.
- 21. *Polysiphonia ferulacea* Suhr.
- 48. *Isoptera regularis* Okamura.
- 2, 3. *Dasya pedicellata* Ag.
- 41-47. *Corallina officinalis* L.
- 40. *Melobesia* sp.?
- 47. *Sargassum* sp.?

In all 27 determined specifically, 3 only as to genus. Not an extensive list, but 17 of the 27 are reported for the first time from China. If we except the genus *Sargassum*, for reasons to be stated later, only 28 can be safely retained from older lists, giving a total of 45. *Polysiphonia ferulacea* is epiphytic on *Gracilaria confervoides*, *Goniotrichum elegans* on *Symphyclocladia gracilis* and *Colpomenia sinuosa* on *Gelidium australe*. The *Gelidium* is a quite slender and delicate appearing plant, but apparently not distinct from the coarser form of California and Australia. *Laurencia obtusa* is taken in a broad sense; in all probability several species now pass under that name, but we are not in a position clearly to distinguish them; *L. botryoides* and *L. thuyoides*, recorded on the Chinese coast, probably should be included in *L. obtusa*, in this sense. *Antithamnion cruciatum*, *Pleonosporium Borreri* var. *fasciculatum* and *Dasya pedicellata*, well known North Atlantic plants, now appear for what seems to be the first time in the Pacific. In each case the characters are quite those of the Atlantic plant.

Our previous knowledge of Chinese marine algae is very scanty. The first work of importance is that of Martens¹ in which are included previous records; unfortunately most of the older records are rather uncertain and cannot safely be compared with the present list. The next list is by Debeaux.² This includes 26 species from Chefoo and Hongkong. The author was not a specialist in algae, and most of his identifications were made by René Lenormand, and unless confirmed from other sources, cannot be safely accepted. More recently Mrs. Gepp has published a list³ containing 22 named species, 2 of them with an "(?)" and 6 only generically determined, from Wei-hai-wei and Swatow.

¹ Georg v. Martens. Die Preussische Expedition nach Ost-Asien. Botanische Theil. Berlin, 1866.

² O. Debeaux. Algues marines recoltées en Chine pendant l'expédition française de 1860-62. Actes Soc. Linn. de Bordeaux, Vol. xxx, 1875.

³ Ethel S. Gepp. Chinese marine algae. Jour. of Bot., Vol. XLII, p. 161, 1904.

A general list of the marine algae of China, to include all that seem sufficiently authenticated to the writer from these four sources, is quite meager for so long a coast, and especially in contrast with our knowledge of the flora of Japan. For the latter we have, in addition to a number of papers by European authors, many publications of recent years by Japanese phycologists, Yendo, Okamura, and others. The *Icones of Japanese Algae*, of which the fourth volume is now being issued by Okamura, is an illustrated work of the first rank, and is indispensable to any student of North Pacific algae. In this list, as given below, the important genus *Sargassum* is omitted; even more than with other genera it is impracticable to assimilate the different records. In Agardh's monograph¹ localities are given vaguely, as "Mari Japonico et Chinensi." Grunow's posthumous notes² would probably give the needed information, but having been issued during the late war, are not accessible in this country. Abbreviations used in the list for Chinese localities are, C, Cheefoo.³ H, Hongkong. P, Pei-tai-ho. S, Swatow. W, Wei-hai-wei. To show relationships, a note on the further distribution of each species is added.

GENERAL LIST OF THE MARINE ALGAE OF CHINA.

<i>Rivularia atra</i> Roth.	W.	General.
<i>Ulva Lactuca</i> L.	C. S.	General.
<i>Enteromorpha intestinalis</i> (L.) Grev.	C. P.	General.
<i>Enteromorpha prolifera</i> (Fl. Dan.) J. Ag.	P.	N. Atlantic.
<i>Enteromorpha plumosa</i> Kütz.	P.	N. Atlantic.
<i>Codium fragile</i> (Suringar) Hariot.	C. P. W.	Pacific.
<i>Bryopsis pennata</i> Lamour.	P.	Warm waters.
<i>Ectocarpus siliculosus</i> (Dillw.) Lyng.	W.	General.
<i>Leathesia difformis</i> (L.) Aresch.	C. S. W.	N. Atlantic.
<i>Colpomenia sinuosa</i> (Roth) Derbès & Solier.	P.	Warm waters.
<i>Chordaria flagelliformis</i> (Fl. Dan.) Ag.	C. P.	N. Atl. & Pac.
<i>Chordaria Cladosiphon</i> Kütz.	P.	Australia.
<i>Chordaria firma</i> Gepp.	W.	Endemic.

¹ J. G. Agardh. *Species Sargassorum Australiae*. Kgl. Svenska Vet.-Akad. Handl. Stockholm, Vol. XXIII, No. 3, 1889.

² A. Grunow. *Additamenta ad cognitionem Sargassi*. Verh. k.k. Zool.-Bot. Ges. Wien.

³ The different forms used for the same Chinese name present some difficulty, but it is assumed that Cheefoo, Tschifu and Tché-fou, refer to the same place.

<i>Cystophyllum Thunbergii</i> (Mert.) J. Ag.	C. W.	Japan.
<i>Cystophyllum fusiforme</i> Harv.	W.	Japan.
<i>Cystophyllum Swartzii</i> (Ag.) J. Ag.	C.	Japan.
<i>Dictyota indica</i> Sonder.	P.	W. Indies.
<i>Dictyota dichotoma</i> (Huds.) Lamour.	W.	Warm waters.
<i>Goniotrichum elegans</i> (Chauv.) Le Jolis.	P.	General.
<i>Gelidium australe</i> J. Ag.	P.	Australia, Pac.
<i>Gymnogongrus japonicus</i> Suringar.	S.	Japan.
<i>Cystoclonium armatum</i> Harv.	W.	Japan.
<i>Gracilaria multipartita</i> (Clementi) Harv.	P.	General.
<i>Gracilaria confervoides</i> (L.) Grev.	C. P. W.	General.
<i>Campylaephora hypneoides</i> J. Ag.	C. P.	Japan.
<i>Champia parvula</i> (Ag.) Harv.	W.	N. Atlantic.
<i>Acanthophora orientalis</i> J. Ag.	S.	Australia, Asia.
<i>Laurencia obtusa</i> (Huds.) Lamour.	C. P.	Warmer waters.
<i>Polysiphonia ferulacea</i> Suhr.	P.	Warmer waters.
<i>Polysiphonia japonica</i> Harv.	W.	Japan.
<i>Polysiphonia urceolata</i> (Lyng.) Grev. (?)	W.	N. Atl. & Pac.
<i>Rhodomela subfusca</i> (Woodw.) Ag.	W.	N. Atlantic.
<i>Rytiphloea sinensis</i> Debeaux.	C.	Endemic.
<i>Symphyocladia gracilis</i> (Mart.) Falk.	C. P.	Japan.
<i>Dasya pedicellata</i> Ag.	P.	N. Atlantic.
<i>Isoptera regularis</i> Okamura.	P.	Japan.
<i>Leveillea bidentata</i> Martens.	C.	Endemic.
<i>Antithamnion cruciatum</i> (Ag.) Näg.	P.	N. Atlantic.
<i>Ceramium Boydenii</i> Gepp.	P. W.	Japan.
<i>Ceramium japonicum</i> Okamura.	P.	Japan.
<i>Pleonosporium Borreri</i> var. <i>fasciculatum</i> (Harv.) Holmes & Batters.	P.	Europe.
<i>Grateloupia affinis</i> (Harv.) Okamura.	P.	Japan.
<i>Grateloupia filicina</i> (Wulf.) J. Ag.	C. P. S.	Warmer waters.
<i>Grateloupia ramosissima</i> Okamura.	P.	Japan.
<i>Corallina officinalis</i> L.	C. P.	General.

SPECIES RECORDED FROM CHINA BUT UNVERIFIED AND IMPROBABLE.

REPORTED BY MARTENS.

Ectocarpus littoralis.
Haplosiphon filiformis.
Spermatocnusus australis.
Laminaria saccharina.
Haliseris polypodioides.
Polysiphonia spinescens var. *sinensis*.
Griffithsia corallina
Gelidium cartilagineum.
Lophura floccosa.
Gastroclonium uvarium.
Hypnea nigrescens.

REPORTED BY DEBEAUX.

Padina Pavonia.
Rytiphloea capensis.
Champia Kotschyana.
Gelidium cartilagineum.
Gelidium corneum var. *sericeum*.
Rhodymenia palmata var. *sinensis*.
Dumontia filiformis var. *tenuis*.
Bryopsis plumosa.
Bryopsis arbuscula.
Enteromorpha compressa.

REPORTED BY GEPP.

Halosaccion microsporum.

NORTH EASTHAM, MASSACHUSETTS.

DICRANOWEISIA CRISPULA IN THE WHITE MOUNTAINS.—Lesquereux and James's Manual of the Mosses of North America (1884, p. 57) gives no record of this species from eastern North America. Mr. R. S. Williams in North American Flora (xv, 96, 1913) credits it to "Greenland; Labrador; Mt. Marcy, New York," leaving the impression that it does not occur in New England. It was found by Prof. A. W. Evans and the writer Aug. 3, 1917 by the Cold Brook of King's Ravine in the White Mountains of New Hampshire. Cold Brook emerges from the ice-filled talus of the head of King's Ravine a short distance above the little falls popularly known as Mossy Falls, and it was just below this place of emergence, between it and the falls that a vigorous fruiting tuft of the moss grew. Careful search of the northern part of the Presidential Range in the summers of 1917 and 1918, including a trip to the Ice Gulch further north in Randolph¹ failed to discover it elsewhere, and it is certainly not an abundant plant in the White Mountains. There is however one earlier specimen at present in the Herbarium of the New York Botanical Garden, of which Mrs. Britton has kindly sent me a portion. It was collected in August, 1889 in

¹ Though *Tetradontium Brownianum* (Dicks.) Schwaegr. has long been known from the White Mts., in view of its limited number of New England stations it is perhaps worth recording that it occurs in the Ice Gulch. It was found in limited quantity on a few loose rocks in cold parts of the Gulch July 27, 1917, by Prof. Evans, Prof. A. S. Pease and the writer.



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