Notes on Algae New to Japan. VI.

By

Kichisaburo Yendo.

Liagora leprosa J. Ag.


This species may not be reported as new to Japan in strict sense as there are two specimens in the Trinity College, Dublin, collected by Charles Wright in Loochoo and determined by Harvey as L. leprosa J. Ag. Yet I mention it here since the occurrence of the species within our boundary has never been known to public. It is to be noted here that the original in the Agardhian Herbarium at Lund, as well as the specimens from Loochoo and Friendly Islands in Dublin, resemble in the external appearance with the figure shown in Kützing’s Tab. Phyc. VIII, Taf. 90, fig. II, k. Harvey’s Ner. Bor. Amer. Pl. XXXI, C is hardly applicable to the species in the external appearance and in structure. The frond is fastigiately dichotomously rami-fied with upper segments gradually narrowed. In the dried specimens, entire part of frond is coated with pulvinated grains of lime.

Locality. Loochoo (Wright, Harvey); Goto(!); Amakusa(!); Cape Nomo(!); Bōshū(!).

Distribution. Vera Cruz, Atlantic coast of Mexico; Friendly Islands; Guadeloup?
Liagora annulata J. Ag.


=Liagora coenomyce Harv. (non Dcne.) : Herb. T.C.D.

=Liagora viscidula Harv. : Friendly Alg. No. 47.


The present species has also been collected by Wright in Loochoo and identified by Harvey with L. coenomyce Dcne. under which a specimen is kept in the Trinity College, Dublin. In the Agardhian Herbarium, a specimen of the same source sent from Harvey is in the species cover of L. annulata J. Ag. This is undoubtedly the specimen noted by J. Agardh, but erroneously assigned to Indian Ocean in his Anal. Alg. Cont. III, p. 107. The plant resembles in its external appearance to a small form of L. viscidula Ag., from which, however, may be readily separated by the fine annulations in the lower parts of frond.

Okamura enlists L. rugosa Zanard. from Loochoo and Bonin Islands in his Nippon Sorui Mei-i, Ed. II, i.e. I have not seen his specimens. Judging from the remark given by him, his specimens seem to be identified with the present species.

Locality. Loochoo (Wright, Harvey), (S. Narita, No. 38).;? Bonin Islands (Okamura).

Distribution. Tropical parts of the Pacific Ocean.

Gymnogongrus leptophyllus J. Ag.

Epicris, p. 211.—De Toni: Syll. Alg. IV, p. 245.

=Gymnogongrus Griffithsi Coll., Hold. et Setch.: Phyc. Bor.-Amer., No. 239 (non alior).

This plant has been hitherto passing among Japanese algologists as a well-grown form of Gymnogongrus japonicus Sur. The latter, however, may be separated from the former by having more regularly flabellate ramification with shorter segments. When there is no lateral proliferations in the lower segments of frond, which is often the case, the plant is hardly
distinct from a smaller form of *G. furcellatus* J. Ag. from the Peruvian coast.

**Locality.** Amakusa (D. Kobayashi, No. 256); Shima Prov. (Herb. Imp. Mus. No 10); Shimoda(!); Same Harbour (N. Takahashi); Hidaka Prov.(!); Muroran (N. Takahashi); Ugo Prov. (Y. Kudo); Echigo Prov. (T. Obara, No. 17; R. Kobayashi, No. 28; M. Nakamura, No. 83); Hiuga Prov. (T. Ito, No. 28).

**Distribution.** California.

**Iridaea laminarioides** Bory.

The first species of *Iridaea, I. laminarioides*, has been described by Bory in 1828 on a material from the Pacific side of South America. Several species have been later on added by J. Agardh, Suhr, Harvey, etc., from California, Cape Horn, Cape of Good Hope and New Zealand. In 1840, the gigantic book of Postels and Ruprecht appeared in which they described 15 “species” of *Iridaea* as new to science, all from the North Pacific. Thus a considerable number of *Iridaea* species have been assigned to the whole range of the Pacific coasts of North and South America. Prior to these reports, in 1809, Turner has already described a plant, much resembling to *I. laminarioides* Bory, under *Fucus cordatus* from a collection by Menzies on Banks Island, British Columbia. Ruprecht seems to have passed over Turner’s description until his Tange des Ochot. Meetes has been printed. This is understood from the facts that his handwriting reading “*Iridaea cordata* (Turner ?)” is found on a label attached to a specimen collected by Wosnesensky in 1845 and that nothing is stated about the specimen in his paper just alluded to. The specimen, indeed, is hardly distinct from the type of *I. cornucopiae* P. et R.

In 1851, J. Agardh arranged all the then known species of *Iridaea* in his Species Genera et Ordines Floridearum. In it he mentioned *Fucus cordatus* Turn. as a valid species under *Iridaea* and gave a suitable generic position for, or expressed his opinion on, each of the described member. Still, the descriptions
given to the species of *Iridaea* by the former writers were by no means complete or satisfactory, and the distinctions between many of them were hardly apprehensive. What we could roughly estimate of the number was that there occur in the North Pacific several forms of *Iridaea* passing by degrees to *I. cordata* (Turn.) and in the South Pacific, also several, resembling to *I. laminarioides* Bory. This conception, however, was overthrown by Setchell and Gardner who have jointly treated these two species as mere forms of one and the same species. The combination as they have done may be open to criticism but it is not to be denied that too many species of *Iridaea* have been established by the old writers.

In Japan, species of *Iridaea* are used for sizing the textiles and for other purposes. They are collected in large quantities and dried in the sun. The *Iridaea* harvest is one of the important seaweed industry in the northern Japan. In the markets they are classified into various grades according to the sources, size of fronds, luster, etc. Study of species of *Iridaea* is hence of industrial importance in Japan.

It is not the aim of the present paper to criticise all the North Pacific species of *Iridaea*. I have but to report here the occurrence in Japan of some species and forms already described. It is to be understood that we have some more forms not unable to determine at present or certainly not yet described; and also that the forms here related may be dealt with in some other way when we have thoroughly revised all species of *Iridaea* hitherto known.

*var. cornucopiae* J. Ag.


= *Chondrus phyllocarpus* Rupr.: Tange des och. Meeres, p. 316.

= *Iridea laminarioides* f. *parvula* Kjellm.: Beringhafv., p. 31.—


1) Alg. of N. W. Amer., p. 299.
This is the most predominating form of *Iridaea* on the coasts of northern Japan. Consequently, the greater part of the dried *Iridaea* in the markets belong to this variety. The illustration of the plant given by Po Tels and Ruprecht, l.c., shows a larger extreme among the type specimens in the Herbarium of the Academy of Science of St. Petersburg. Kjellman’s *f. parvula* is described on an average form (fig. 1), and *Iridaea phyllocarpa* P. et R. is described from a second-year form of this plant with the older frond withered on the margin and new foliages proliferating from it (fig 2).

Locality. Coasts of Northern Japan.

Distribution. East coast of Kamtchatka.
var. cordata Setch. et Gardn.

Alg. N. W. Amer., p. 299.


As far as is known to me this variety seems to come down to the southern Kuriles but rarely, if ever, to Hokkaido proper. It approaches to f. punicea Setch. et Gardn. on one side and to I. pulchra Kütz. on the other.

A second-year form of var. cornucopica, agreeing with I. phyllocarpa P. et P.

In nat. size.

Setchell and Gardner referred the variety to Miss Tilden's specimens distributed in her American Algae as No. 328 and No. 329 under I. laminarioides and I. heterocarpa respectively. The specimens in the copy in my possession have very little affinity with what I take for this variety. J. Agardh has once synonymized I. lilacea P. et R. under I. cordata. But the type specimen
of the former in St. Petersburg does not point a near relationship to the latter.

**Locality.** Ochotsk and Pacific side of the southern Kuriles.

**Distribution.** North-western coast of North America, from Alaska to Washington.

**var. Laminarioides** J. Ag.


= **Iridaea laminarioides adulta** Bory: Voy. Coqu., p. 105, Pl. 11, fig. 1, D.

= **Iridaea laminarioides** Kütz.: Spec., p. 726.—Id.: Tab. Phyc. XVII, Taf. 8, fig. c-d.

= **Iridaea heterococca** Kütz.: Tab. Phyc. XVII, Taf. 11.

= **Iridaea cordata** Kütz. (non Turn.): Tab. Phyc. XVII, Taf. 6.

= **Iridaea laminarioides** f. typica Setch.: Phyc. Bor.-Amer. No. XVI.


This variety is pretty sharply distinguished from the others by having elongated lanceolate, simple or furcated frond. The lobes may be frequently broadened into ovate shape, tending to approach to var. cordata. Yet the apices of the lobes are more or less acute and never round as in the latter.

In Japan, this variety does not reach to such a large size as found on the Californian coast, but measuring in average 15-20 cm in the total height. It is much more common in the northern parts of the Japan Sea than on the Pacific side.

**Locality.** Otaru Bay(!); Rebun Island(!); Sakhalin.

**Distribution.** West coast of North and South America, from Puget Sound to Chili.

**Iridaea pulchra** Kütz.

In Bot. Zeitg., 1847, p. 24.—Id.: Spec., p. 725.—Id.: Tab. Phyc. XVII, Taf. 5, fig. c-d.—De Toni: Syll. Alg. IV, p. 194.—Yendo: Kaisan Shokubutsugaku, p. 603, fig. 169 (fig. sinistr.).

This species has been established by Kützing in 1847, on a material from Kamtchatka. Since that time no one seems to
have endorsed the description or reported its occurrence in other locality. In De Toni's Syll. Alg., 1 c., it is found among "species inquiridæ." I have, however, already noted in the work cited above that a form of Iridæa which should be referred to the present species is found among the dried article of Iridæa in the markets. An examination of the type specimen in the herbarium of Madam A. Weber van Bosse erased my old question concerning the species and assured me its occurrence within our boundary. The plant has various characteristic points and is easily distinguished from other known species of Iridæa. It is to be counted as a valid species.

The plant is beautiful crimson purple in colour when fresh and remains slightly changed after drying. Younger frond is, when dried without mounting on paper, more or less translucent and like a parchment paper, with labyrinthic surface as figured by Kützing due to unequal contraction. In older ones the substance is thick and cartilaginous and the surface is smooth. The base of frond is narrow cuneate, generally abruptly expanding upwards into long ovate blade, which may be simple or bilobed, with undulated margin. The cuneate basal portion is often dichotomously ramified with the diverging points narrowed, as in other allied species. In large specimens it is not seldom to find the margin of frond irregularly lobed.

Unfortunately the specimens in my hand are all cystocarpic. Had a soriferous specimen been found and proved it a Rhodoglossum, the species must be placed close by R. folidérum J. Ag. Both are much alike in appearance and separable only by the shape of base of frond.

Locality. Hakodate(1); Mutsu Prov.(1); Rikuzen Prov.(1). Distribution. Kamtchatka.

Sarcodia Montagneana J. Ag.


= *Meristotheca papulosa* J. Ag.: Herb. Agardh. (Arabian Specimen only).


The present plant is frequently found cast ashore on the coast about Misaki, Sagami Prov. The frond is highly variable in its general aspect, sometimes flabellate with almost parallel linear segments, sometimes palmately lobed with broad ones. Numerous intermediate forms to link the extremes are also met with. Very often it takes an appearance of a well-grown form of *Gracilaria Curtissiae*, *G. Textorii* or another species under the subgenus *Podeum*. But the zonate tetraspores and the filamentous structure of medulla will at once tell the species.

Careful comparisons of the specimens under *S. Montagneana* J. Ag. and *S. ceylanica* Harv. in the Agardhian Herbarium and in the Herb. Trinity College, Dublin, I can not but regard them to belong to one and the same species. *S. palmata* Sond., though I have not seen its type specimen, is very likely described from a dwarfed form of this plant. The cystocarps in papillous processes are neither constant nor peculiar to Sondér's plant. And *S. capensis* Ag., which is established on a fragmentary specimen, appears to me to be also a form of this plant with long linear segments. It has been already noted by Cotton,¹ after my observation at Lund, that the specimens under *Meristotheca papulosa* J. Ag. in the Agardhian Herbarium contain at least three different species. One of them "ex litt. merid. Arab." (specimen No. 34174) is undoubtedly a dwarfed form of *S. Montagneana* J. Ag. Lastly I may mention here that *Gracilaria polycarpa* J. Ag. from New Zealand has a strong resemblance to a form of this species. But as I have not examined the structure of it I am not able to state anything further.


Distribution. New Zealand; Australia; Ceylon; Arabia; Cape of Good Hope?

¹) *Kew Bulletin Miscell. Inform* 1914, No. 6, p. 221.
Hypnea cornuta J. Ag.


= Gigartina cornuta Lamx. mscr. (sec. J. Agardh).
= Chondroclonium cornutum Kütz.: Spec., p. 741.

My specimens are tetrasporic and agree quite well with the type of H. cornuta J. Ag. at Lund. In general appearance the plant resembles a form of H. musciformis Lamx. But the short, conical, simple or stellate, rigid, spiny processes beset on branches and branchlets soon distinguish it from the latter species.

The definitions of H. cornuta J. Ag. and H. Valentie Mont. in J. Agardh's Spec. II, p. 449 and p. 450 respectively, as well as in his Epicris, p. 563 and p. 564, do not point any practical difference between both to separate them specifically. The specimens in the Agardhian Herbarium under the names also appear to me to belong to one and the same species. Consulting the description and figures of Fucus Valentie given by Turner, the specimens under H. Valentie as determined by J. Agardh may hardly be applied to Turner's plant. In Spec. II, p. 450, J. Agardh notes that he has not seen Turner's specimen but he described the species by the material which he has received from Montagne under H. Valentie. I have, therefore, to choose the name H. cornuta J. Ag. in determining my specimens, reducing H. Valentie Mont. as a synonyme of it. What, then, Fucus Valentie Turn. can be, is a question to be solved in future.

In the Herbarium of the Academy of Science of St. Petersburg there is a specimen collected by T. Makino in Ugo Prov., Japan, and determined by Kjellman as H. Valentie Mont. It appeared to me to be H. seticulos J. Ag.

Locality. Goto, Hizen Prov. (K. Urabe, No. 12); Nagato Prov. (J. Nikai, No. 2602); Bōshū (F. Sugiyama); Ohara, Kadzusa Prov. (!).
Distribution. Guinea; St. Thomas Island; Manila; Canary Islands; Red Sea.

**Hypnea flagelliformis** GREV.


?= *Hypnea Harveyi* Kütz.: Spec., p. 760.—Id.: Tab. Phyc. XVIII, Taf. 28, fig. I.

I identify our specimens with this species after consulting the original in the Agardhian Herbarium. The species is characterized by having thick axial stem (in one specimen about 3 mm in diameter) and sparing lateral branches nearly as thick as the axial. The matured parts of frond is densely coated with slender, simple or divaricated spinules of about 1 mm in average length. Tetrasporangia are formed at a lower part of spinule, moderately swollen, leaving a short sterile portion as pedicel. As the species has not been published with illustration, the figure accompanied, though brief, may help to catch the peculiarity of the species (Fig. 3).

**H. simpliciuscula** OKAM. which is described and illustrated in De Toni’s Sopra tre nuove Algae mar. Giapon, p. 343, t. II, fig. 26-30, has a close resemblance to the present species. Its stichidial spinules, however, greatly differ in shape from those of our plant. In his Nippon Sorui Mei-i, Ed. I, p. 41, Okamura himself has brought his species under *H. seticulosa* J. Ag., and in its second edition it is nowhere mentioned.

Locality. Echigo Prov. (R. Kobayashi, Nos. 12, 26, 46; M. Nakamura, No. 84).

Distribution. India.

**Chrysymenia Enteromorpha** H Arv.


= *Halosaccion Wrightii* HArv.: Charac. of New Alg., p. 332.—
a. A fully matured specimen in natural size.
b. Terminal portion of a lateral branch, with numerous stichidia. x 20.
Harvey's type specimen of Halosaccion Wrightii is a sterile plant, measuring but a few centimeters in height. I have collected the same plant at the type locality at various seasons of the year. I have a strong ground to believe that Harvey's type is a young and small form of what is known from Florida under Chrysymenia Enteromorpha Harv. The Japanese plant agrees with it in the structure of frond as well as in the fructification. A point of doubt to me, which is not yet solved, is that the Floridan form starts, according to Harvey, as a simple oblong saccate frond, 1-2 inches long and half an inch in diameter at the beginning of its development. The smallest Japanese specimen I have seen is about 3 inches in height and has already decompound ramification, with the diameter of its principal stem about 1 line. The full-grown plants from our seas have the principal stem one third of an inch in diameter and can never be separated, so far as I could observe, from the Floridan form. The structure of cystocarps coincides in its important points with what J. Agardh has stated on Chrys. uvaria in Florid. Morfol., Tab. XVI.

I can not restrain myself but to note here on the close resemblance between the present species and Halymenia? chondriopsis J. Ag. The general aspect of J. Agardh's type specimen is very much alike with a copiously branched form of Chrys. Enteromorpha and has nearly the same structure of frond.

I take this opportunity to remark a few words on Halosaccion japonicum Harv. which has been collected at the same time and the same locality with H. Wrightii. To my astonishment, its type in the Herb. Trinity College, Dublin, and the co-type in the Agardhian Herbarium, are nothing but Chordaria abietina Rupr. ! To the latter specimen there is found a label.
attached, reading as follows:—"Halocoelia japonica Harv. Herb. J. Ag. tillhör icke släktet Halosaccion; det är fucoide med Chordariace-structur. Det undersökta exemplaret har sporangia unilocularia. F. Kjellman." Okamura has transferred the species to the genus Chylocladia, calling it Ch. japonica Okam. But his amendment, as I was told from him, is not based on any reliable specimen of Halosaccion japonicum Harv.

Locality. Otaru Bay(!); Suttsu (S. Narita, No. Y. 14); Hakodate (Wright, Harvey),(!); Rikuzen Prov. (Miss Wainwright, No. 65.), (Okamura); Iwaki Prov. (Okamura); Yokosuka (Savatier, Hartiot); Ise Prov. (Okamura); Shima Prov. (Okamura); Mikawa Prov. (Okamura); Hōki Prov. (Okamura); Funan, Corea (Okamura). I have not seen the specimens from Yokosuka determined by Hartiot. But the occurrence of this species in the warmer parts of Japan, as reported by Okamura also, is very doubtful to me. The plant has an appearance easily confusable with a form of Rhabdonia robusta J. Ag. which is common in middle parts of Japan.

Distribution. Florida.

**Hooperia Baileyana J. Ag.**


=Chondrothamnion divaricatum Kütz.: Tab. Phyc. XV, Taf. 83, fig. c-f.

(For other references; see: De Toni, l.c.).

Our specimens have all arching, unilateral ramification, agreeing with var. a described by Harvey. In Phyc. Bor-Amer. No. 886, as in Farlow's Mar. Alg. New Engl., p. 154, the species is mentioned under a synonymous position of Lomentaria uncinata Menegh. Farlow has done so on the authority of Zanardini. I have not seen Meneghini's specimen and
can not enter the discussion whether both are to be combined together or the present plant is worthy of claiming an independent generic position for itself. The genus is characterized by having no fibrous tissue inside the cavity, and our specimens show this peculiarity. It may be here mentioned that in the Agardhian Herbarium at Lund there is no specimen under the generic name of *Hooperia*. A specimen, however, collected at Fort Hamilton by Hooper and determined as *Chylocladia Baileyana* by J. Agardh, is to be found in its species cover associated with *Chylocladia uncinata*.

Locality. Iragawa, Uzen Prov. (A. Sato, Nos. 40, 49, 55); Noto Prov.?


**Laurencia heterocladia** Harv.

? = Laurencia excelsa Kütz.: Tab. Phyc. XV, Taf. 63, fig. c-d.
? = Laurencia cymosa major Kütz.: l.c., Taf. 72, fig. c-d.

Male, female and stichidial plant are found among the Hidaka specimens. They fully coincide with the description and the type specimen. Harvey did not observe anything about the antheridia. In my specimens they occur at the terminal points of ramuli, three or four aggregating together forming a tuberculous mass. They belong to the "pinnatifida" type.1) Falkenberg2) groups this species among those which have the principal stem two-edged. But as Harvey defines, l.c., this is not constant. Exact cylindrical stem throughout the entire length of the plant is frequently met with.

The illustrations in Kützing's Tab. Phyc. XV, Taf. 63, fig. c-d and Taf. 72, fig. c-d under *L. excelsa* and *L. cymosa major* respectively appear to me to be referrable to this plant. The

1) Falkenberg: Rhodomelaceen, p. 247.
former is doubtfully referred to *L. tasmanica* Hook. et Harv. and the latter to *L. virgata* J. Ag. by J. Agardh. I have not seen Kützing's type specimens of these two species. But as far as the illustrations show, there seems a better reason in combining them with the present. The type of *L. tasmanica* Hook. et Harv. has not the stichidial ramulets, as a rule, in the cymose manner as in *L. heterocladia* Harv. It is a noticeable fact that the figure of *L. excelsa* Kütz. in Tab. Phyc., i.e., is indeed applicable to the co-type of *L. tasmanica* Hook. et Harv. in the Agardhian Herbarium, but better to the type of *L. heterocladia* in the Herb. Trinity College, Dublin. *L. virgata* J. Ag., in its description, appears to stand close by the present species. But in the Agardhian Herbarium the specimens under it are by no means uniform and specimens exactly similar to some of them are found under *Chondriopsis subopposita* J. Ag.; those from Cape of Good Hope are especially hardly distinct from this species. Taking the original of *L. obtusa* var. *virgata* Ag. as the type of *L. virgata*, the Australian plant may be separated from it by having remarkably thick axial stem. Anyhow there are strong resemblances between *L. heterocladia* Harv., *L. flagellifera* J. Ag., *L. corymbosa* J. Ag., *L. tasmanica* Hook. et Harv., *L. paniculata* J. Ag., *L. obtusa* var. *squarrosa* Grun., *L. obtusa* var. *majuscula* Harv., *L. virgata* J. Ag., *L. excelsa* Kütz., *L. cymosa major* Kütz, and *Chondriopsis subopposita* J. Ag. It is a hope of the present writer that a botanist in a favourable position to study the types of these species will try to sharply define them than they now stand. Harvey¹ has already said:—"I fear the species of * Laurencia* have been too much multiplied."

The plant distributed as No. 1093, Phyc. Bor.-Amer., under *L. paniculata* J. Ag., in the copy in my possession, is far from the type of the species but may be safely identified with the present. J. Agardh refers Kützing's Tab. Phyc. XV, Taf. 72, fig. a-b under *L. arbuscula* to this species. As he has already remarked, the figure is shown with too regular pinnation to be

---

¹) Phyc. Austr., Pl. 148
combined with *L. heterocladia*. The specimens distributed by Harvey as Austr. Algae no. 233 under *L. arbuscula* Sond. is quite different from this.

**Locality.** Rebun Island (!); Hidaka Prov. (!); Rikuchu Prov. (!).

**Distribution.** New Holland; California; ? Cape of Good Hope; ? Van Diemens Land; ? India.

**Chondria lanceolata** Harv.

Alg. Austr. exsiccat., No. 156.—Id.: Bot. of West Austr., p. 549.

Though only one specimen is all I have, it agrees satisfactorily with its co-type in the Agardhian Herbarium.

**Locality.** Tanegashima. Found growing on a leaf of *Zostera* (Dr. T. Inui).

**Distribution.** New Holland.

**Pleonosporium venustissimum** De Toni.


= *Callithamnion vancouverianum* J. Ag.: Epicris, p. 30.


(For other references, see: De Toni, l.c.).

In general appearance of frond, the plant recalls *Callithamnion corymbosum*. But from the latter it is easily separated by having no cortication in the basal part of frond. The frond gives out a rhizoidal filament downwards, generally simple but frequently sparingly ramified, from the basal cell of a lateral pinnule. This character seems quite seldom in *Callithamnion*, but rather common in *Pleonosporium*, though it is not counted as a peculiarity of the genus.
The frond ramifies strictly alternately pinnately. Some of the pinnae stop undeveloped, often remaining quite simple and short. Some of them elongate further, decompoundly pinnuliferous. In the larger filaments, cells are 2–4 times as long as the diameter, but in the ultimate ramulets nearly as equal.

J. Agardh remarks that the plant has an appearance between C. gracillimum and C. thuyoides. In Phyc. Brit., both species are given to be provided with the lateral pinnae which are linear in general outline. Kützing's Tab. Phyc. XII, Taf. 1, shows also such aspect. In my specimens, the upper pinnae are in many cases rather fasciculate due to a greater length of the lower pinnules. This, however, is in a too trifle degree to separate the plant from the present species with which it agrees so well in other characters.

My specimens are tetrasporiferous. A tetrasporangium divides at first tetrahedral and then into eight and finally sixteen.

Locality. Cape Inuboi(!).

Distribution. Vancouver Island and its vicinity; Coast of Peru.

**Seirospora ? tenuissima** De Toni.

Syll. Alg. IV, p. 1348.

(For references, see: De Toni, l.c.).

There are not many species of *Seirospora* ever recorded. Among them, *S. tenuissima*, *S. Gailloni* and *S. Giraudyi* are known to have corymbose-fasciculate ramulets, which character is one of the peculiarities in ours. The latter two species, however, are distinguished from ours by having compact cortex in the lower parts of frond.


Distribution. West coast of France; Gulf of Genoa; Adriatic Sea.

**Ceramium circinatum** J. Ag.

(For list of synonyms, see: De Toni, l.c.).

Distribution. Atlantic coast of Europe; Mediterranean Sea.

Ceramium pedicellatum J. Ag.


My specimens fully agree with Kützing’s Tab. Phyc. XIII, Taf. 4, fig. 1, except that the number of involucres is mostly 5–6. In the sterile state the species is difficult to separate from Ceramium rubrum as has been pointed out by Kylin. In the Agardhian Herbarium there are specimens under C. rubrum pedicellatum treated separated from those under C. pedicellatum. My specimens coincide with the latter. Leaving aside the question whether it should be regarded as a mere form of C. rubrum or as an independent species, I have but to mention the occurrence of a form exactly agreeing with the above named plant within our boundary.

Locality. Rebun Island(!).

Schizymenia Dubyi J. Ag.

(For list of other synonyms, see : De Toni, l.c.).
In De Toni's Syll. Alg., l.c., we find a lengthy list of synonyms for this species. There is a good ground to combine *S. minor* J. Ag. and *S. cordata* J. Ag. into one species. But to amalgamate them with *S. Dubyi* J. Ag. must be rather hesitated. The type specimens of the first two "species" have a thick and cartilaginous substance which, so far as I have seen, is never the case in *S. Dubyi* J. Ag. They are more reasonably comparable with *S. undulata* J. Ag. than with any other of the genus. It may not be admissible, however, to deal with them under one species unless there is a strong reason to do so. On the other hand I have a slightest doubt in reducing *S. Binderi* J. Ag. to a synonyme of the present species.

This species is very common on the northern coast of the Japan Sea. On the Pacific coast its occurrence remains yet in doubt, although various plants apparently resembling it, but different in structure, are there met with.

**Locality.** Rishiri Island(!); Hakodate(!); Uzen Prov. (T. HIKIDA.); Echigo Prov.(!); Wakasa Prov. (R. TSUGE).

**Distribution.** Atlantic coast of Europe; Mediterranean Sea; California; Valparaizo.

**Nemastoma laciniata** J. Ag.


I have to report the occurrence of this little known alga within our boundary, after studying the type specimen in the Agardhian Herbarium. My specimens are all male, and no account on the cystocarps I can add to the original description.

It is here to be noted that in the Agardhian Herbarium some of the types of *Schizymenia* species and those of the foliose forms of *Nemastoma* appear to me to have no marked difference to separate from one another. One of the examples is *S. stipitata* and *N. laciniata*. The species of *Schizymenia* described by J. Agardh on the material from Cape of Good Hope and New Zealand are undoubtedly too much multiplied. A
careful study on them with a good number of specimens may very likely prove that the describer has put too much stress to the shape of the base of frond and to the locality of the plants.

Locality. Hakodate(!).
Distribution. New Zealand.

Remark. In No. II. of the present Notes I have reported the occurrence of *Ascothamnion intricatum* Kütz. in Japan. Having no knowledge about its living state I have heeded nothing that it should be an animal. This summer while botanizing on Koshiki Island off west coast of Kiushu, I have collected its living specimen and actually observed the ciliated eight tentacles protruding from and contracting into the cup-shaped zooecia. It has been already reduced to a synonyme of *Zoo- botryum pellucidum* Ehrenb.

Sapporo, 15, December, 1916.