The Marine Algæ of Iceland.

(I. Rhodophyceæ.)

By

Helgi Jónsson.

Introduction.

The first work mentioning Icelandic seaweeds is O. F. Müllers Enumeratio stirpium in Islandia sponte crescentium [1]). The later lists up to the middle of the last century are chiefly based upon this work. As the earlier literature has been critically treated by H. F. G. Strömfelt in his book: Om algvegetationen vid Islands kuster [2]), I shall not here enter upon the subject, but only refer to Strömfelts work.

In the following paper I only mention such Icelandic species as I have seen myself. The collections to which I had access are the following:

I. Old collections in the Botanical Museum at Copenhagen from the first half of the last century; as a rule nothing is written on the labels except that the plant has been gathered in Iceland, and generally the name of the collectors is not given, excepting some very few as Mörck (travelled in Iceland 1821), F. Faber (travelled in Iceland 1819—1821) and Japetus Steenstrup (travelled in Iceland 1840—1841). These collections are not mentioned by Strömfelt (l. c.).

[1]) Nova acta Physico-Medica Academiæ Cæsareæ Leopoldino-Carolinæ naturæ curiosorum. Tomus IV. Norimbergæ 1770.

[2]) Göteborgs Kongl. Vetenskaps och Vitterhets samhälles Handlingar. Ny tidsföljd, 21. häftet. Göteborg 1887.

II. New collections belonging to the Botanical Museum at Copenhagen from the second half of the last century made by following travellers:

1. Professor C. Grönlund, the author of „Islands Flora", travelled in Iceland in 1868 and 1876. He gathered some marine algæ in N. Iceland and SW. Iceland. His plants were determined and published by F. R. Kjellman[1]).

2. Dr. L. Kolderup Rosenvinge, who stopped at Reykjavík for a few days on his journey to Greenland 1886, gathered some marine algæ.

3. Mr. Hjalmar Jensen gathered in 1890 few specimens in NW. Iceland and SW. Iceland.

4. Mr. W. Lundbeck gathered some marine algæ in NW. Iceland in 1892 and 1893.

5. Mr. C. H. Ostenfeld, Inspector of the Botanical Museum at Copenhagen, has, as botanist of the Ingolf Expedition (1895—96), brought together a large and valuable collection of marine algæ from several places round Iceland.

6. The author of this paper has in 1894, 1897 and 1898 gathered marine algæ in many places round Iceland.

7. Mr. Ólafur Davíðsson has in 1897 and 1898 gathered many specimens in N. Iceland (Eyjafjörður and Grímsey).

8. Mr. Stefán Stefánsson, Mr. Bjarni Sæmundsson, Mr. C. Hansen, Mr. R. Hørring, Mr. A. C. Johansen and Mr. Guðmundur Guðmundsson have gathered some few specimens at the Icelandic coasts.

III. Mr. H. F. G. Strømfelt travelled in Iceland in 1883 and brought together a large collection, now to be found in the Riksmuseum at Stockholm. I have been able to use this collection, as by the kindness of the authorities of the Riksmuseum it has been lent to me here at Copenhagen.

Of the collections mentioned Mr. Ostenfelds, my own and Mr. Strömfelts are the most valuable and this paper is chiefly based upon them.

I have made references to the book of Strömfelt and the

[1]) Bidrag till kännedomen om Islands hafsalgflora. Botanisk Tidsskrift, 3. Række, 3. Bind. Kjøbenhavn 1879.

principal latest works on Arctic algæ: Kjellman, The Algæ of the Arctic Sea, and L. K. Rosenvinge, Grønlands Havalger.

I was enabled to get my collections in 1897 and to determine all the collections of marine algæ from Iceland by pecuniary support granted me by the Danish Carlsbergfond, the Directors of which I ask to accept my most heartfelt thanks.

I am indebted to the Icelandic Government and Althing for the pecuniary support granted me for travelling purposes in the year 1898.

I am also indebted to Mr. M. Foslie for his determining the Corallinaceæ. I am also highly indebted to my teacher, Dr. L. Kolderup Rosenvinge for his kind advice in many things.

Principal abbreviations:

C. O. = C. H. Ostenfeld.

Harv. Phyc. Brit. = W. H. Harvey: Phycologia Britannica. Vol. I.—III. London 1846—1851.

K. Rosenv. Grl. Havalg. = L. Kolderup Rosenvinge: Grønlands Havalger, Kjøbenhavn 1893. Meddelelser om Grønland III.

K. Rosenv. Deuxième Mém. = L. Kolderup Rosenvinge: Deuxième Mémoire sur les Algues marines du Groenland, Copenhague 1898. Meddelelser om Grønland XX.

Ldbk. = W. Lundbeck.

O. D. = Ólafur Davíðsson.

Reinkes Atlas = J. Reinke: Atlas deutscher Meeresalgen, Kiel 1889—92.

St. = Stefán Stefánsson.

Strömf. Algveg. = H. F. G. Strömfelt: Om algvegetationen vid Islands kuster, Göteborg 1887.

Rhodophyceæ.

Bangioideæ.

Fam. Bangiaceæ.

Bangia fuscopurpurea (Dillw.) Lyngb., Rosenv. Grl. Havalg. p. 831.

On rocks at high-water-mark. Collected with tetraspores in June-September, with cystocarps and antheridia in May-July and September. 3—10 cm. high. Probably common.

E. Icel. common and abundant.
N. Icel. Grímsey (O. D.); Eyjafjörður.
NW. Icel. Kolbeinsá, Skálholtsvík.
SW. Icel. Flatey, Stykkishólmur, Barkanautur.
S. Icel. Vestmannaeyjar.

Porphyra umbilicalis (L.) J. Ag., Rosenv. Grl. Havalg. p. 830, P. laciniata Strömf. Algveg. p. 34.

On rocks at high-water-mark. Common and abundant round the Icelandic coasts. Collected with tetraspores in March-October, with cystocarps in June-August, and with antherida in June. 16—26 cm. high and 4—37 cm. broad.

f. *typica* is the most common and

f. *laciniata* rather common.

f. *linearis*. In the lower litoral zone in Vestmannaeyjar I met with specimens (71 cm. long and 6 cm. broad) which were thicker, narrower and longer than usually. Probably the same form as mentioned by Strömfelt (l. c. p. 34) from E. Icel. and by him named f. linearis.

Porphyra miniata (Ag.) Ag., Rosenv. Grl. Havalg. p. 826. Diploderma m., D. tenuissimum, D. amplissimum Strömf. Algveg. p. 33.

In rock-pools in the lower litoral zone and in the upper sublitoral region to a depth af c. 10 fathoms.

F. *typica* is the most common and grows abundantly round the coasts of Iceland. Diploderma tenuissimum Strömf. I refer to the f. typica. I have examined one of Strömfelts original specimens, it was

soaked in lactophenol, and the thickness of the frond was 39 μ. The cells in the middle of the frond were nearly „fere quadraticae“. Generally I think that the formae of P. miniata are not distinguishable by the shape of the cells in the middle of the frond, as I have seen, in the same section, cells that were „quadraticae, fere quadraticae“ and „vertica-liter rectangulares“.

f. *amplissima* (Kjellm.) K. Rosenv. grows in still water beneath low-water-mark. At first it is attached to other algæ, but soon it becomes loose and its size increases. The largest collected specimen was 43 cm. long and 29 cm. broad. Specimens, which are folded in the way described by Kjellman (The Algæ of the Arctic Sea), sometimes occur, but often they are not more folded than the f. typica. F. amplissima is a form analogous to the great specimens of Monostroma fuscum, which also are loose and grow at low-water-mark in quiet water, often in company with the f. amplissima af P. miniata. In quiet creeks on sheltered coasts these two species, Porphyra miniata and Monostroma fuscum, when loosened from the substrata (algæ, stones, shells), to which they are fastened, increase in size and lie loose on the bottom of the sea. Such large specimina of P. miniata I call f. amplissima.

Probably common round Iceland.

E. Icel. common and abundant.
N. Icel. Grímsey (O. D.); Eyjafjörður.
NW. Icel. Hrútafjörður, Ísafjörður, Dýrafjörður (C. O.).
SW. Icel. common.
S. Icel. Vestmannaeyjar.

Porphyra coccinea J. Ag.

Few, sterile specimina on Desmarestia aculeata in a depth of 6—10 fathoms.

S. Icel. Vestmannaeyjar.

Conchocelis rosea Batters, On Conchocelis, a new genus of perforating Algæ in G. Murray: Phycological Memoirs I. London 1892.

In the sublitoral region to a depth af c. 20 fathoms in Balanus, Mya truncata, Cyprina islandica, Modiola, Astarte, Buccinum undatum, and Serpula, and in the litoral region in Spirorbis on Fucus. I have not seen the sporangia. In the inflated cells I have seen a distinct stellated chromatophore. Mr. Nadson[1]) thinks that Conchocelis rosea does not

[1]) G. Nadson: Die perforierenden (kalkborenden) Algen und ihre Bedeutung in der Natur, in Scripta Botanica Horti Universitatis Petropolitanae, fasc. XVIII. 1900.

belong to the Rhodophyceæ, but to the Chlorophyceæ, and he mentions it as a variety of Ostreobium Queketti Born. et Flah., var. rosea Nadson. He says that these two plants chiefly differ in the colour of the frond. As Conchocelis rosea is composed of articulated filaments without anastomoses, I cannot admit that Mr. Nadson is right in identifying it with Ostreobium Queketti. The Conchocelis rosea is still unsufficiently known, but I do not think that it will prove to be a Chlorophycea on further investigation.

E. Icel. Reyðarfjörður.
N. Icel. Eyjafjörður.
NW. Icel. Hrútafjörður, Ísafjörður; Dýrafjörður (C. O.); Arnarfjörður.
SW. Icel. Stykkishólmur, Reykjavík.
S. Icel. Vestmannaeyjar.

Florideæ.

Fam. **Helminthocladiaceæ.**

Chantransia virgatula (Harv.) Thur., Rosenv. Grl. Havalg. p. 824.

On Corallina, Callithamnion Arbuscula, Halosaccion and other algæ. Collected with monospores in April—June. From a pluricellular, membranaceous base, one cell thick, rise one to three or more vertical filaments. The cells in the middle of the filament are three times longer than those near the base, 10—11 μ thick.

NW. Icel. Ísafjörður (C. O.).
SW. Icel. Hvammsfjörður, Reykjavík; Njarðvík (C. O.).

Chantransia secundata (Lyngb.) Thur., Rosenv. Grl. Havalg. p. 824.

On Sertularia and varions algæ e. g. Corallina, Rhodochorton Rothii a. o. Collected with monospores in May—June and September.

The vertical filaments are 10—13 μ thick. This species cannot be distinguished from the last named by the thickness of the filaments, since both species have nearly the same thickness. The basal disk is as in C. virgatula, from which species it differs by its much shorter cells (cfr. also Rosenv. Grl. Havalg.) and more secund branches.

E. Icel. Hólmanes (C. O.).
SW. Icel. Reykjavík, Hafnarfjörður; Njarðvík (C. O.).
S. Icel. Vestmannaeyjar.

Chantransia Alariæ H. Jónsson n. sp.

Planta 0.5—1 mm. alta, villo denso, lanuginoso laminam Alariæ esculentæ investiens, filis erectis 1—2, pulchre roseis, e cellula

basilari unica egredientibus, inferne nudis, deinde ramos oppositos, alternos aut secundos gerentibus, inferiore parte 11—23 μ, superiore autem 7—11 μ crassis. Fila sterilia pilifera. Sporangia obovoidea-ellipsoidea in superiore parte cujusque cellulæ ramorum et supremi axis primarii sessilia, opposita et in ultima cellula terminalia, 17—22 μ longa, 10—11 μ crassa.

I found the lamina of a few specimens of Alaria esculenta almost totally covered with this alga. Sometimes I have seen that two branches or sporangia in the same heighth on the bearing axis are not opposite, but unilaterally placed side by side. The cells nearest the base are 24—56 μ long and 2—3 times longer than broad, in the middle 58—72 μ

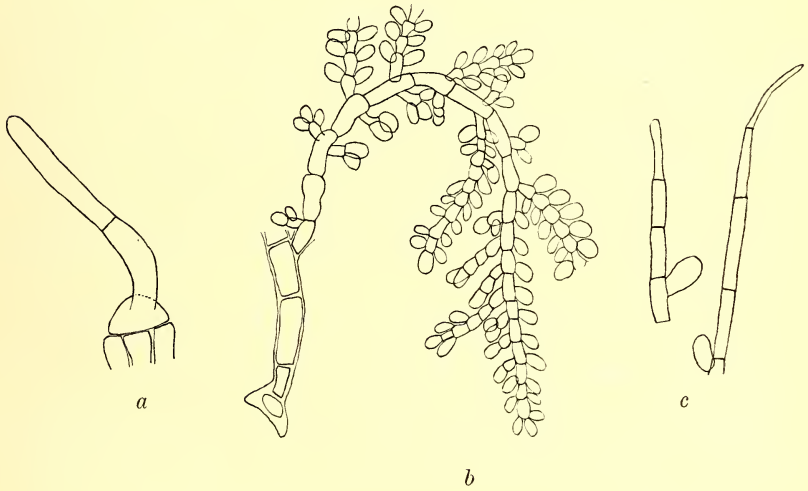

Fig. 1. *Chantransia Alariæ.*

a A young plant 380: 1. — *b* A plant with sporangia 138: 1. *c* Two filaments with short hairs (1 + F. Zeiss).

long and 4—5 times longer than broad, and above 20—50 μ long and 3—6 times longer than broad. The upper end of the cells, especially in the branches, is broader than the lower end. In the young cells, especially the young tetrasporangia, a distinct star-shaped chromatophore, as in the above mentioned species, may be observed.

The only species of Chantransia with one basal cell, hitherto known, is C. microscopica (Naeg.) Fosl., described in the year 1860 by Naegeli in „Morphologie und Systematik der Ceramiaceen", but in the Deuxième Mém. s. l. Alg. d. Groenl., published in 1898, L. K. Rosenvinge decribes a new variety, var. collopoda, of C. microscopica.

Of all the Chantransia species I know, the C. Alariæ most resembles

this variety; but as it is different by distinct characters, being generally larger, the vertical filaments considerably thicker below than above, and the ramification first beginning at a considerable distance from the base, I have taken it as a new species.

I have seen specimens of C. Alariæ from Haugesund (Norway) collected by L. K. Rosenvinge the 6. Aug. 1885, growing on the lamina of Alaria esculenta, resting undetermined in the Bot. Mus. in Copenhagen. The Norwegian plants agree very well with the Icelandic specimens. The filaments are below 16 μ, above 8 μ thick; the sporangia 14—17 μ long and 10—11 μ broad.

In the Phycotheca boreali-americana Nr. 236 the same species also occurs (sub nom. C. secundata (Lyngb.) Thur.), growing on the lamina of Alaria esculenta, collected in July 1894 by F. S. Collins in Hardhead Island, Penobscot Bay, Maine. The American specimens agree very well with the Icelandic-Norwegian plants. The filaments are below 16 μ, above 8 μ thick; the sporangia 20 μ long and 14 μ broad.

The same species has also been collected (1895) in the Færöe Isles by F. Börgesen, growing on Alaria esculenta.

SW. Icel. The Maelstrom in Hvammsfjörður — Gathered in June.

Fam. **Gigartinaceæ.**

Chondrus crispus (L.) Stackh., Strömf. Algveg. p. 31.

It grows in the litoral region and is very common on rocks and in rock-pools at low-water-mark. Collected with tetrasporangia in May and with cystocarps in May-July.

The thallus of this species is varying in breadth and ramification and thus there occur three forms:

F. *typica* (fig. Kütz. Tab. phyc. Vol. 17, Tab. 49 a) is the most common form, 9—11 cm. high; the upper branches 2—5 mm. broad.

F. *latifrons* Le Jolis: Algues marines de Cherbourg Nr. 164 (fig. Harv. Phyc. Brit. Tab. 63 f. 2) with few and broad branches, 8—10 cm. high; the upper branches 5—10 mm. broad. In S. and SW. Icel.

F. *angustifrons* Le Jolis: Algues marines de Cherbourg Nr. 224. (fig. Harv. Phyc. Brit. Tab. 63 f. 1) richly branched, 15 cm. high; the upper branches 2—3 mm. broad.

These three forms are connected with numerous intermediate forms and both the broad and the small forms are not always with certainty to be distinguished from the f. typica.

NW. Icel. Cast ashore at Isafjörður (Strömfelt).
SW. Icel. and S. Icel. common.

Gigartina mamillosa (Good. et Wood.) J. Ag., Strömf. Algveg. p. 31.

It grows in the litoral zone on rocks and in rock-pools at low-water-mark in company with Chondrus crispus. Collected with cystocarps in July-Sept. The frond is 4—8 cm. high, varying in breadth; the broader forms — 6—7 mm. broad — occur in S. and SW. Icel. In Seyðisfjörður (E. Icel.) I met with a sterile form, f. *linearis,* with fronds 10 cm. high, much narrower than in f. *typica* and nearly unbranched.

E. Icel. Seyðisfjörður.
N. Icel. Eyjafjörður.
NW. Icel. Hrútafjörður.
SW. Icel. and S. Icel. common.

Ahnfeltia plicata (Huds.) Fries, Strömf. Algveg. p. 31.

In the litoral zone on rocks near low-water-mark, and in the upper sublitoral region. Collected only sterile, in April—June and October. Fronds 8—10 cm. high. Specimens with galls are not rare.

N. Icel. Washed ashore in Skagafjörður (Strömfelt).
NW. Icel. Washed ashore at Ísafjörður (Strömfelt).
SW. Icel. and S. Icel. rather common.

Phyllophora Brodiæi (Turn.) J. Ag.
* **interrupta** (Grev.) K. Rosenv. Grl. Havalg. p. 821.

It grows in the sublitoral region in a depth af 3—14 fathoms. Fronds 5—7 cm. high. This species, only known from the Artic area of the Icelandic seas, occurs probably also in the Atlantic area.

E. Icel. Húsavík, Brunavík, Borgarfjörður.
NW. Icel. Önundarfjörður, Dýrafjörður (Ldbk.).

Phyllophora membranifolia (Good. et Wood.) J. Ag., Strömf. Algveg. p. 30.

In the lower litoral zone. Fronds 4—7 cm. high. The leaves 3—7 mm. broad.

SW. Icel. Hjallasandur; Reykjavík, Njarðvík (C. O.).
S. Icel. Eyrarbakki (Strömfelt).

Phyllophora rubens (Good. et Wood.) Grev.

In the herbarium of the Bot. Mus. in Copenhagen there are some specimens of this plant, which are said to have been collected in Iceland. On the label is written in Miss Caroline Rosenbergs handwriting: Ex Islandia. As both the finding-place in Iceland and the collector are unknown, I mention this species here as a doubtful Icelandic plant.

Actinococcus subcutaneus (Lyngb.) K. Rosenv. Grl. Havalg. p. 822.

In the latest treatise on this Alga[1]), Darbishire mentions it as a distinct species growing parasitically on the antheridia of Phyllophora Brodiæi.

On Phyllophora Brodiæi * interrupta.

E. Icel. Húsavík, Brúnavík.
NW. Icel. Önundarfjörður (Ldbk.).

Ceratocolax Hartzii K. Rosenv. Deuxième Mém. p. 34.

On Phyllophora Brodiæi * interrupta in a depth of 14 fathoms. With tetrasporangia in May.

NW. Icel. Önundarfjörður (Ldbk.).

Fam. **Rhodophyllidaceæ.**

Cystoclonium purpurascens (Huds.) Kütz., Strömf. Algveg. p. 30.

In the lower litoral zone. Collected with tetraspores in NW. Icel. in September. Sometimes it occurs with tendrils. Fronds 10—22 cm. high.

NW. Icel. Hrútafjörður, Kollafjörður. Cast ashore at Isafjörður. (Strömfelt).
SW. Icel. and S. Icel. common.

Turnerella Pennyi (Harv.) Schmitz, K. Rosenv. Deuxième Mém. p. 29.

It grows in the sublitoral region on Lithothamnion in company with Polysiphonia arctica in a depth of 4—29 (usually 10) fathoms. I have met with small specimens, 5 mm. high and 3 mm. broad, bearing a close similitude to T. septemtrionalis, attached to Lithothamnion, growing in company with larger specimens, 5 cm. high and 7.5 cm. broad, which in everything except that they were attached, resemble the T. Pennyi. I refer without any hesitation all the Icelandic specimens to this species. Regarding the further difference between T. Pennyi and T. septemtrionalis cfr. K. Rosenv. Deuxième Mém.

E. Icel. rather common. Reyðarfjörður, Seyðisfjörður.
N. Icel. Eyjafjörður.

Euthora cristata (L.) J. Ag., Strömf. Algveg. p. 27.

It grows in the sublitoral region in a depth of 2—20 fathoms on the fibers of Laminariæ, especially L. hyperborea, on shells and various

[1]) Annals of Botany Vol. 13, 1899.

substrata. Collected with cystocarps in May—Sept., with tetraspores in April—June.

Low specimens, 1.5—2.5 cm. high, with proportionally broad fronds, the f. *typica* Kjellm., and higher specimens, 5 cm. high, with proportially narrow fronds, the f. *angustata* Lyngb., seem to be equally common.

Probably common round the Icelandic coasts.

E. Icel. common.
N. Icel. Ásmundarstaðir (St.); Eyjafjörður.
NW. Icel. and SW. Icel. common.
S. Icel. Vestmannaeyjar.

Rhodophyllis dichotoma (Lepech.) Gobi., Strömf. Algveg. p. 26.

Sublitoral in a depht of 2—20 (usually 5—10) fathoms. Collected with cystocarps and tetraspores in May and July.

All the Icelandic specimens belong to the f. *typica,* and I have only met with few specimens that somewhat resembled the f. *fusca* Lyngb.

Probably common round the Icelandic coasts.

E. Icel. common.
N. Icel. Ásmundarstaðir (St.); Grímsey (O. D.); Eyjafjörður.
NW. Icel. and SW. Icel. common.

Fam. **Rhodymeniaceæ.**

Rhodymenia palmata (L.) Grev., Kjellm. The Algæ of the Arctic Sea p. 147. Strömf. Algveg. p. 27. R. pertusa Strömf. l. c. p. 28.

It grows in the lower part of the litoral zone, especially in rock-pools, and in the upper part of the sublitoral region. Very common and abundant round the Icelandic coasts. Collected with tetraspores in Febr., April—May, July and October, with antheridia in January.

F. *typica* Kjellm. l. c. (Fig. Turn. Hist. Fuc. T. 115, f. a.) To the f. *typica* of this many-shaped species, I refer all the Icelandic specimens, which have „the majority of the secondary axes formed by repeatedly subdichotomous branching". So taken the f. *typica* is a various forma and connected with the f. *prolifera* by intermediate forms. It has a height of 2—41 cm. and a breadth of 4—10 cm. The length and the breadth of the divisions are very different. When the divisions are many and become very narrow, the plant superficially resembles the f. *sarniensis,* but differs from it by the broad, cuneate base. The length of the divisions is varying from c. $^1/_5$ to $^4/_5$ of the length of the frond. Sometimes there occur specimens, the divisions of which are few, very short and proportionally broad. The frond of these specimens is usually of a

oblong, triangular form, with a broad, cuneated base. Such specimens Strömfelt has determined as *R. pertusa.*

Undivided specimens also occur.

Specimens, which have the margin winged with small leaflets (*β. marginifera* Harv.) are not rare, but specimens without such small leaflets (*α. nuda* Kjellm.) are much more common.

F. *prolifera* Kjellm. l. c. (Fig. Turn. Hist. Fuc. T. 115, f. c.) is rather common.

Lomentaria clavellosa (Turn.) Gaill.; Le Jol. Liste des Algues mar. de Cherb. p. 132.

var. *sedifolia* Ag.

On the fibers of Laminaria hyperborea in a depth of 10—20 fathoms.

S. Icel. Vestmannaeyjar.

Lomentaria rosea (Harv.) Thur., Le Jol. Liste des Alg. mar. de Cherb. p. 131. Fig. Harv. Phyc. Brit. T. 358 and 301.

On the fibers of Laminaria hyperborea in company with the last species.

S. Icel. Vestmannaeyjar.

Plocamium coccineum (Huds.) Lyngb., Strömf. Algveg. p. 27.

In the lower litoral zone. Collected with tetraspores in May-June. 4—14 cm. high.

S. Icel. Staður (C. O.); Eyrarbakki (Strömfelt); Vestmannaeyjar.

Halosaccion ramentaceum (L.) J. Ag., Kjellm., The Algæ of the Arctic Sea p. 153, Strömf., Algveg. p. 29.

It grows abundantly in the lower litoral zone, especially in rock-pools. It is a multiform species and is very common round the Icelandic coasts. Collected with tetraspores in March-July and December. With antheridia in April—May. It is 10—35 cm. long. Of all the forms the f. *robusta* is the largest. The most common forms are the following:

f *robusta* Kjellm. (Fig. Kjellm. l. c. T. 12, f. 4, Lepech. Comm. Petrop. 19 B., T. XXIII). Syn. f. hispida Strömf. l. c. p. 29.

f. *ramosa* Kjellm.

f. *densa* Kjellm. (Fig. Turn. Hist. Fuc. T. 149).

f. *subsimplex* Rupr. (Fig. Kjellm. l. c. T. 13, f. 3).

f. *scopula* (Strömfelt) (Fig. Strömf. l. c. T. II, fig. 1).

The f. *scopula* has only been collected by Strömfelt in one place, Eyrarbakki in S. Icel. The f. *subsimplex* is rather common, the other

forms common. I refer Strömfelt's f. *hispida* to Kjellmans f. *robusta* according to Strömfelt's original specimens.

The f. *scopula* is mentioned by Strömfelt as a distinct species, H. scopula Strömf., but he shows that this species in the ramification resembles the f. subsimplex of H. ramentaceum. I have seen three original specimens of H. scopula Strömf., two of which resemble well enough Strömfelt's figure and description, but the third is a distinct f. *subsimplex* of H. ramentaceum. The H. scopula is different from the other forms of H. ramentaceum by the peculiar form of its ramification, but a similar ramification occurs in the f. subsimplex, although not so fasciculate. I have not met with specimens perfectly resembling the H. scopula, but

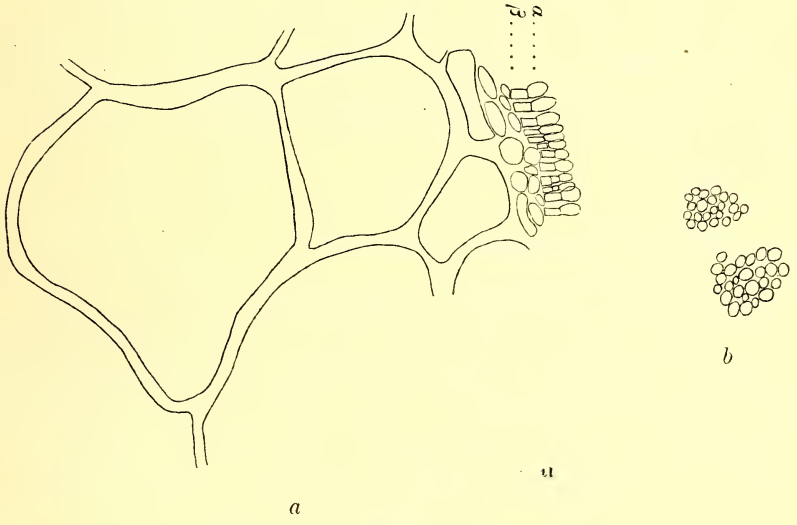

Fig. 2. *Halosaccion ramentaceum.*

a, transverse section of part of the thallus showing the antheridia (α) and the elongated cells (β) (384 : 1). — *b*, antheridia viewed from above (384 : 1).

sometimes I have found plants with a somewhat similar ramification, viz. specimens of f. subsimplex with many subfasciculated, adventitious shoots, which in most cases seems to have been caused by animals.

It is a well known fact that nobody has, as yet, succeeded in discovering the cystocarps of Halosaccion ramentaceum, and all that we know, as yet, about the antheridia, is to be found in Paul Kuckuck: Meeresalgen vom Sermitdlet und kleinen Karajakfjord [1]). The specimen,

[1]) Bibliotheca Botanica. Heft 42. 1897.

mentioned by Kuckuck, was transmitted to L. Kolderup Rosenvinge for examining. It differed from the usual *H. r.* in the smallness of the cortical cells, which formed a translucent layer. Both Kuckuck and Rosenvinge utter, with some hesitation, that the specimen probably was a male specimen of *H. r.* It is certainly a male specimen and does not seem to have fully developed antheridia.

I have met with several male specimens of H. ramentaceum. To the unassisted eye they are not distinguishable from the sterile and tetrasporic specimens, but they differ in the smallness of the cortical cells, which by repeated cell-divisions in radial direction become smaller and smaller until the antheridia are fully developed. In section the antheridial layer is more translucent than the rest of the cortical tissue. Viewed from above the antheridia are closely crowded; they are supported by regularly shaped, elongated cells. The antheridial layer covers a great deal of the surface of the plant in irregularly formed spots of varying extent. I have not seen the pollinoids. The antheridia of *H. r.* resemble exactly the antheridia of Rhodymenia palmata as designed by Thuret[1]) and Buffham[2]).

Fam. **Delesseriaceæ.**

Delesseria alata (Huds.) Lam., Strömf. Algveg. p. 24.

It grows in the lower litoral zone and in the upper sublitoral region to a depth of 10 fathoms. Not rare on the stems of Laminaria hyperborea. Collected with tetraspores in May—June and August. With cystocarps in May. 2—11 cm. high and the frond 1—4 mm. broad.

SW. Icel. Hjallasandur, Einarslón; Reykjavík (Grønlund; C. O.).
S. Icel. Eyrarbakki, Vestmannaeyjar.

Delesseria Baerii (Post. et Rupr.) J. Ag.
* **corymbosa** (J. Ag.) K. Rosenv. Grl. Havalg. p. 806.

In the herbarium of the Botanical Museum in Copenhagen is one specimen of this plant. On the label is written: Islandia d. [ɔ: dedit] Mørck.

The collector of this plant is probably Mr. Mørck, who travelled in Iceland 1821. This plant must belong to the arctic area of the Icelandic Seas.

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[1]) G. Thuret: Recherches sur la fécondation des Fucacées et les anthéridies des Algues. Ann. d. sciences naturelles, Tom. III, Paris 1855.

[2]) Th. Buffham: On the antheridia, etc. of some Florideæ, in the Journal of the Quekett Microscopical Club 1893.

Delesseria sinuosa (Good. et Wood.) Lam., Strömf. Algveg. p. 24.

It grows in the sublitoral region, usually on other algæ, in a depth of 3—20 (usually 8—12) fathoms. Collected with tetraspores in May—June and September. The frond is 10—20 cm. high, the leaves 5—8 cm. long and 3—5,5 cm. broad. The form of the leaves is oblong or ovate, in young leaves obovate. The lobes of the leaf are of varying greatness and form, corresponding to the description of the f. *typica* and the f. *quercifolia*; I have seen many intermediate forms between these two formae, and they cannot be kept apart with distinct characters. Sometimes I have met with specimens bearing prolifications, in most cases loose lying specimens, which in all, except that they have the prolifications, agree with common forms of this species (f. *lingulata*).

Probably common round Iceland.
E. Icel. common.
N. Icel. Ásmundarstaðir (St.): Eyjafjörður: Skagafjörður (Strömfelt).
NW. Icel. and SW. Icel. common.
S. Icel. Eyrarbakki (Strömfelt); Westmannaeyjar.

Delesseria sanguinea (L.) Lam.; Hydrolapathum s. Strömf. Algveg. p. 26.

It grows in the sublitoral region in a depth of 3—10 fathoms, on Laminaria-stems, and in rock-pools at low-water-mark. Collected sterile in April—August, with cystocarps in November. The frond is 10—23 cm high. The leaves are 5—18 cm. long and 1,5—3,5 cm. broad.

Rather common in SW. Icel. and S. Icel.
E. Icel. Húsavík.
SW. Icel. Hvammsfjörður, Hjallasandur. Reykjavík (C. O.).
S. Icel. Staður (C. O.); Eyrarbakki, Vestmannaeyjar.

Fam. **Bonnemaisoniaceæ.**

Bonnemaisonia asparagoides (Wood.) C. Ag.

In the herbarium of the Botanical Museum in Copenhagen there are three specimens of this species, said to have been collected in Iceland. 1—6 cm. high.

On one of the labels is written: „misit Faber". In Fl. Dan. T. 2579 a specimen of this plant is given, regarding which Liebmann writes: „ad littora Islandiæ pr. Reykjavik legit beatus Faber, cujus specimina mecum communicavit cl. Hofman-Bang".

It is possible that this plant occurs in S. Icel. since it is known so far north as Bergen (Norway)[1]) and also occurs in the Orkneys.

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[1]) According to informations kindly given to me in a letter by Mr. M. Foslei.

The collector, Frederik Faber, travelled in Iceland 1819—1821; he dwelt a winter (1820—1821) at Eyrarbakki in S. Icel., and possibly his specimina of this plant were collected here.

Fam. **Rhodomelaceæ.**

Polysiphonia parasitica (Huds.) Grev., Kjellm. The Algæ of the Arctic Sea p. 117.

In the sublitoral region on the fibers of Laminaria hyperborea, in a depth of 10 fathoms. Collected with cystocarps and tetraspores in May. 1.5 cm. high.

S. Icel. Vestmannaeyjar.

Polysiphonia urceolata (Lightf.) Grev., Strömf. Algveg. p. 24.

It grows abundantly and gregarious on stones and other algæ in the lower litoral zone, and in the sublitoral region to a depth of 10 fathoms in most cases on Laminaria-stems. Collected with cystocarps in May and July, with antherida in June, and tetraspores in May—July. It occurs with hairs in March—August, but specimens without hairs also occur (in Jan.—Febr. and June—July).

Probably common round Iceland.

E. Icel. Reyðarfjörður, Seyðisfjörður.
N. Icel. Grímsey (O. D.); Eyjafjörður.
NW. Icel. and SW. Icel. common.
S. Icel. Eyrarbakki, Vestmannaeyjar.

Polysiphonia Brodiæi (Dillw.) Grev.

In the herbarium of the Botanical Museum in Copenhagen there is one specimen of this plant, said to have been collected in Iceland, but as both the collector and the finding-place are unknown I mention it here with doubt. On the label is written in Schousboe's handwriting: Ex. Islandia.

Polysiphonia elongata (Huds.) Harv.

In the herbarium of the botanical Museum in Copenhagen there is one specimen of this plant, said to have been collected in Iceland, but as neither the collector nor the finding-place is known, I mention it here as a doubtful Icelandic plant. On the label is written in Schousboe's handwriting: Ex. Islandia.

Polysiphonia fastigiata (Roth) Grev., Strömf. Algveg. p. 24.

In the litoral zone, as usually, on Ascophyllum nodosum. Collected with antheridia in May, with cystocarps and tetraspores in July—August. 3,5 cm. high.

NW. Icel. Ísafjörður (C. O.; G. Guðmundsson).
SW. Icel. Common.
S. Icel. Eyrarbakki (Strömfelt); Vestmannaeyjar.

Polysiphonia arctica J. Ag., Rosenv., Grl. Havalg. p. 800.

In the sublitoral region in a depth of 2—30 (usually 7—12) fathoms. In August I met with few specimens with tetraspores. The number of the pericentral cells I have found varying from 4 to 7, but usually they are 6—7, sometimes 5—7 (cfr. Rosenv. l. c.). 20—30 cm. high.

E. Icel. Common.
N. Icel. Probably common. Eyjafjörður; Skagafjörður (Grønlund).
NW. Icel. Common.
SW. Icel. Stykkishólmur.

Polysiphonia nigrescens (Huds.) Harv., Kjellm., The Algæ of the Arctic Sea p. 126.

In rock-pools in the lower litoral zone. Collected in July—Sept., with cystocarps in September. 6—8 cm. high.

NW. Icel. Skálholtsvík.
SW. Icel. Melar, Ólafsvík.

Rhodomela lycopodioides (L.) Ag., Strömf., Algveg. p. 23.

It grows in the lower litoral zone and in the sublitoral region to a depth of c. 10 fathoms. Collected with cystocarps in March—Sept., with tetraspores in April—Sept. Specimens collected in December and January are sterile. Specimens collected in the autumn consist of the main-axis without the branches and are of the same appearance as designed in the Fl. dan. T. 357. Specimens collected in the spring (April—May) have the elongated branches richly developed. It occurs with hairs in March—Sept., but in Aug—Sept. specimens without hairs are not rare. 6—17 cm. high.

Following forms of the *R. lycopodioides* occur:

f. *compacta* Kjellm.

f. *laxa* Kjellm.

f. *tenera* Kjellm.

The f. *laxa* is the most common. Strömfelt further mentions the f. *Cladostephus* (J. Ag.) Kjellm., but I think that Strömfelt's f. *cladostephus* is referable to Kjellmans f. *laxa*.

Probably common round Iceland.

E. Icel., N. Icel., NW. Icel. and SW. Icel. common.
S. Icel. Eyrarbakki, Vestmannaeyjar.

Odonthalia dentata (L.) Lyngb., Strömf., Algveg. p. 23.

In the sublitoral region in a depth of 2—20 (usually 3—10) fathoms. Small specimens, 2—4 cm. high, occur in the litoral zone in rock-pools. Collected with tetraspores in January, June and Sept.—Octob.

Probably common round Iceland.
E. Icel. Common.
N. Icel. Ásmundarstaðir (St.); Eyjafjörður.
NW. Icel. and SW. Icel. Common.
S. Icel. Eyrarbakki.

Fam. Ceramiaceæ.

Callithamnion Arbuscula (Dillw.) Lyngb., Strömf., Algveg. p. 32.

It grows in the lower litoral zone attached to stones or other algæ (common on Gigartina), and also occurs on Cladophora rupestris. Collected with tetraspores in May—July, with cystocarps and antheridia in June. 3—4 cm. high.

Rather common in SW. Icel. and S. Icel.

SW. Icel. Öndverðarnes; Njarðvík (C. O.).
S. Icel. The southern shore of Reykjanes (C. O.); Eyrarbakki, Vestmannaeyjar.

Callithamnion scopulorum C. Ag., Spec. Alg. p. 176.

In the litoral region, on stones and various algæ as Gigartina, Cystoclonium, Cladophora rupestris a. o. With tetraspores in May—July.

SW. Icel. Öndverðarnes, Einarslón; Reykjavík (C. O.).
S. Icel. Vestmannaeyjar.

Plumaria elegans (Bonnem.) Schmitz, Syst. Uebersicht der bisher bekannten Gattungen der Florideen. Flora oder allgem. bot. Zeitung 1889; Kjellman: The Algæ of the Arctic Sea p. 172.

It grows in the lower litoral zone; with cystocarps in May, tetraspores in June, August and October. 7—10 cm. high.

Probably common in SW. and S. Icel.

SW. Icel. Hrappsey, Stykkishólmur; Reykjavík (C. O.).
S. Icel. Melvík (C. O.); Eyrarbakki, Vestmannaeyjar.

Ptilota plumosa (L.) Ag., Strömf., Algveg. p. 32.

In the sublitoral region in a depth of 1—20 (usually 3—10) fathoms. With tetraspores in May—Sept. and cystocarps in May—June. 4—18 (usually 10—18) cm. high.

N. Icel. Ásmundarstaðir (St.); Grímsey (O. D.); Eyjafjörður.
NW. Icel. and SW. Icel. Common.
S. Icel. Probably common. Staður (C. O.); Eyrarbakki, Vestmannaeyjar.

Ptilota pectinata (Gunn.) Kjellm., Strömf., Algveg. p. 32.

In the sublitoral region to a depth of c. 10 fathoms, and in the litoral zone at low-water-mark. 2—8 cm. high.

E. Icel. Common.
N. Icel. Probably common. Ásmundarstaðir (St.); Eyjafjörður; Skagafjörður (Grønlund).
NW. Icel. Common.
SW. Icel. Hvammsfjörður, Reykjavík.

Antithamnion Plumula (Ellis) Thur., *β* **boreale** Gobi, A. boreale Strömf., Algveg. p. 32.

It grows in the sublitoral region to a depth of c. 12 fathoms. With tetraspores in June. It occurs both with and without glandular cells.

E. Icel. Seyðisfjörður (C. O.).
N. Icel. Grjótnes (C. O.); Skagafjörður (Strömfelt).
NW. Icel. Dýrafjörður (C. O.).
SW. Icel. Hvammsfjörður.

Antithamnion floccosum (Müll.) Kleen., Strömf., Algveg. p. 32.

In the litoral zone at low-water-mark and in the sublitoral region to a depth of 5 fathoms. With tetraspores in April—June. Without glandular cells.

E. Icel. Eskifjörður (Strömfelt).
SW. Icel. Hvammsfjörður, Viðey, Reykjavík.
S. Icel. Eyrarbakki, Vestmannaeyjar.

Ceramium rubrum (Huds.) Ag., Strömf., Algveg. p. 31.

It grows in the lower litoral zone and in the sublitoral region to a depth of c. 12 fathoms. Collected with tetraspores in May—Sept. and with cystocarps in June—Sept. 8—16 cm. high.

Following forms of this varying species occur:

f. *decurrens* J. Ag.

f. *genuinum* Kjellm.

f. *prolifera* J. Ag.

The f. *decurrens* is the most common.

Probably common round Iceland.

N. Icel. Eyjafjörður.
NW. Icel. and SW. Icel. Common.
S. Icel. Staður (C. O.); Eyrarbakki, Vestmannaeyjar.

Ceramium acanthonotum Carm., Kjellman, The Algæ of the Arctic Sea p. 171.

It grows in the litoral zone attached to other Algæ. All the Icelandic specimens belong to the f. *typica* Kjellm. (l. c.). 1—3 cm. high.

SW. Icel. Öndverðarnes.
S. Icel. Melvík (C. O.); Vestmannaeyjar.

Rhodochorton Rothii (Turt.) Naeg., Rosenv., Grl. Havalg. p. 791.

It is very abundant and gregarious on stones in the litoral region and forms an undervegetation in the Fucus-zone. It occurs also in the sublitoral region on the stems of Laminaria hyperborea to a depth of c. 10 fathoms.

The litoral specimens collected in March—October are always sterile with exception of few specimina collected in July at Grjótnes in N. Icel. The sublitoral specimens collected in the summer, in July, at Vattarnes in E. Icel., in a depth of 10 fathoms, growing between the fibers of Laminaria hyperborea, are with tetraspores. The specimens growing on the old stems of Lam. hyperborea collected in the spring, in March—April, at Reykjavík, are also with tetraspores.

In the literature I have only seen fructiferous summer-specimens of R. Rothii mentioned by Kjellman [1]), collected by him at Spitzbergen in July.

The litoral, sterile specimens are usually c. 5 mm. high and the fructiferous specimens collected at Grjótnes 13 mm. high. The thickness of the filaments are 10—18 μ, and the cells are 1—5 times longer than broad.

At Vestmannaeyjar it formed on very exposed rocks in the litoral zone almost globular, solid tufts, with the basal filaments densely intertwisted, the f. *globosa* Kjellm. (The Algæ of the Arctic Sea). Lyngbye [2]) mentions similar forms of the R. Rothii and utters thereabout: „interdum ad latera rupium glomerulos durissimos formantes".

The branches of the specimens collected at Grjótnes have, instead of one, one to three bunches of fructiferous branchlets. Either the branches have one or a few bunches in different heighth, or the branchlets after the extrusion of the spores grow long and bear one to three bunches of fructiferous branchlets [3]). These specimens are considerably higher than the common, sterile Icelandic specimens, and resemble somewhat the *R. intermedium* Kjellm. (Spetsbergens Thallophyter p. 28 (l. c.)), but as they generally very well agree with R. Rothii, I refer them to it without hesitation. The R. intermedium is very closely related to R. Rothii and is probably not specifically distinct from it, differing only by the heighth of the vertical filaments (2—3 cm.); all the other characters mentioned in Kjellman's description of R. intermedium (l. c.) agree as well with R. Rothii as with R. intermedium.

[1]) F. R. Kjellman: Om Spetsbergens marina, klorofyllförande Thallophyter, Bihang till K. svenska Vet. Akad. Handlingar. Band 3. Stockholm 1875.

[2]) H. B. Lyngbye: Tentamen Hydrophytologiæ Daniæ. Hafniæ 1819, p. 129.

[3]) Somewhat similar specimens are mentioned by K. Rosenvinge in Grl. Havalger (l. c.).

The specimens growing on the old stems of Laminaria hyperborea resemble the R. Rothii in everything, except that the basal filaments are creeping in the subepidermal tissue of the Laminaria stems. At first I thought that the plant was an endophyte, but by further examination of the Laminaria tissue, I am convinced, that it is only a pseudo-endophyte. The surface of the Laminaria stems was rough, the epidermal layer had fallen away, the intercellular substance of the subepidermal tissue was disorganized, and the cell-rows in many cases split. The basal filaments of the Rhodochorton were creeping in the dead tissue, but the death of the tissue did not seem to have been caused by it. Sometimes it is difficult to see whether the Rhodochorton has caused the destruction of the tissue, or not, but several times it is easily seen, that the tissues were dead when the Rhodochorton appeared. The Polysiphonia urceolata, which grew among the Rhodochorton on the Laminaria stems in the dead tissue, was a „pseudo-endophyte", in the same manner as the R. Rothii.

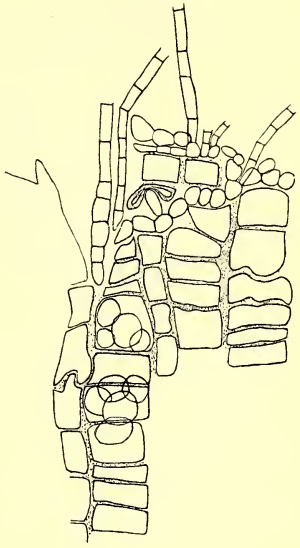


Fig. 3. *Rhodochorton Rothii.* Transverse section of part of the stem of Laminaria hyperborea showing the Rhodochorton filaments creeping in the dead and dying tissues (138 : 1).

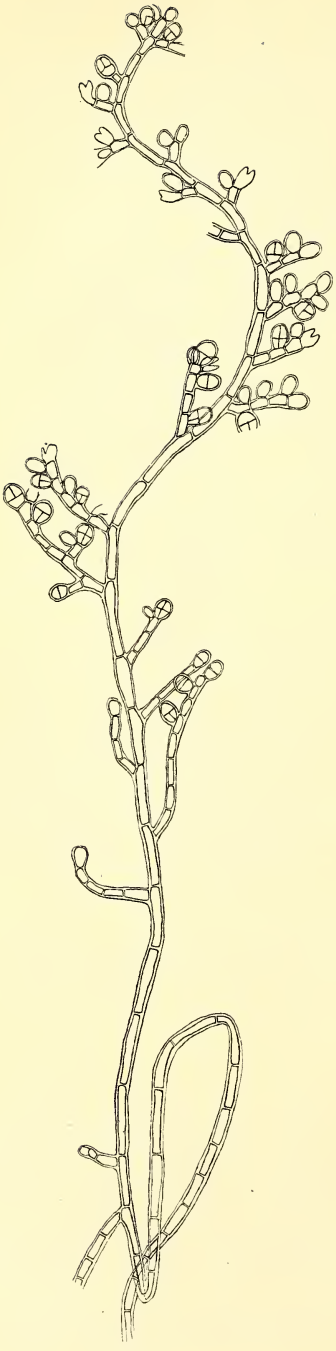
The *R. parasiticum* Batters [1]) is certainly identical with the R. Rothii growing in the dead tissue of the Laminaria stems.

E. Icel. Vattarnes.
N. Icel. Grjótnes (C. O.).
NW. Icel. Dýrafjörður (C. O.).
SW. Icel. Probably common. Ólafsvík, Brimnes, Reykjavík, Hafnarfjörður.
S. Icel. Vestmannaeyjar.

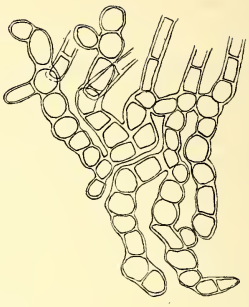
Rhodochorton repens H. Jónsson nov. sp.

Planta epiphytica c. 1 mm. alta, filis erectis 8—13 μ crassis e basi a filis repentibus constituto egredientibus, inferiore parte nudis, superiore autem circiter a medio ramosis. Rami sparsi, alterni, sæpe secundi (præsertim rami superiores), interdum oppositi, et in supremo axi primario corymbosi, sporangia gerentes. Rami (ramuli) infimi et supremi breves, medii autem interdum elongati. Sporangia

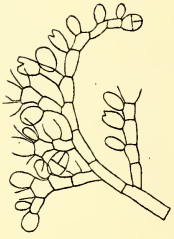
[1]) E. A. Batters: New or critical British marine Algæ. Journal of Botany. Vol. 34. London 1896



b.



a.



c.

Fig. 4. *Rhodochorton repens.*
a. The creeping basal filaments and the lowest part of 5 erect filaments (384 : 1). — *b.* An erect filament with branches and sporangia (138 : 1). — *c.* Uppermost part of an erect filament with secund, corymbous branches (138 : 1).

in supremo axi primario et in ramulis sessilia aut breve pedicellata, sæpissime in axi primario et in superiore latere ramulorum secunda, rarius opposita et in ultima cellula terminalia, ovata, obovata aut ellipsoidea, 20—27 μ longa et 14—17 μ lata.

In stipite Alariæ esculentæ.

The length of the cells in the primary axis below and above is 2—3 times and in the middle 5 times larger than their breadth. The upper ends of the cells, especially in the branches, are broader than the lower ends.

The cells in the creeping, basal filaments are usually as long as they are broad, and often rounded. The colour of this plant I cannot describe, as I have only got it preserved in alcohol, and on account of its bad condition I am not sure of the shape of the chromatophore, but it seems to be one parietal plate.

Collected with tetraspores in May.

S. Icel. Vestmannaeyjar.

Rhodochorton minutum Suhr. Descr. in Reinke's Atlas. Fig. Reinke's Atlas T. 40.

It grows in the litoral region on Cystoclonium purpurascens. Collected with tetraspores in June.

SW. Icel. Njarðvík (C. O.).

Rhodochorton penicilliforme (Kjellm.) Rosenv., Les Algues marines du Groenland in Ann. Sc. nat. 7e Sér. XIX.

It grows on Sertularia sp. on Fucus in the litoral zone and on Laminaria in the sublitoral region. Collected with tetraspores in March—August. The thickness of the vertical filaments is 11—13 μ.

E. Icel. Berufjörður, Reyðarfjörður.
N. Icel. Hrísey.
NW. Icel. Ísafjörður; Dýrafjörður (C. O.).
SW. Icel. Hvammsfjörður, Stykkishólmur, Reykjavík.

Rhodochorton membranaceum Magnus. Rosenv., Grl. Havalg. p. 794, P. Kuckuck: Beiträge zur Kenntniss der Meeresalgen 1897.

It grows together with the last species in Sertularia on Fucus in the litoral region and on Laminaria in the sublitoral region. Collected with tetraspores in March—August. The vertical filaments are 7—8 μ thick. This species is easily distinguished from the R. penicilliforme, being both considerably narrover and endozoic.

Probably common round Iceland.

E. Icel. Berufjörður, Reyðarfjörður.

N. Icel. Hrísey.
NW. Icel. Ísafjörður; Dýrafjörður (C. O.).
SW. Icel. Hvammsfjörður, Stykkishólmur, Reykjavík.

Fam. **Dumontiaceæ.**

Dumontia filiformis (Fl. dan.) Grev., Strömf. Algveg. p. 30.

It grows in rock-pools in the litoral region both on sheltered and exposed coast. Collected with tetraspores in May—June, with antheridia in May and with cystocarps in June. 12—24 cm. high, and the branches 1—2 mm. broad.

E. Icel. Hólmar in Reyðarfjörður.
SW. Icel. rather common. Stykkishólmur, Ólafsvík, Reykjavík; Njarðvík (C. O.).
S. Icel. Eyrarbakki, Vestmannaeyjar.

Dilsea edulis Stackh., *Sarcophyllis edulis* Kjellman, The Algæ of the Arctic Sea p. 152.

It is only known from one place, where it was growing in the Fucus-zone in the litoral region. 2—5,5 cm. high and 1—2,5 cm. broad.

SW. Icel. Öndverðarnes.

Fam. **Nemastomaceæ.**

Furcellaria fastigiata (Huds.) Lam.

One specimen of this plant is in the herbarium of the Botanical Museum in Copenhagen. On the label is written in Schousboe's handwriting: Ex Islandia.

As neither the collector nor the finding-place is known, this species must be mentioned as a doubtful Icelandic plant.

Fam. **Squamariaceæ.**

Petrocelis Hennedyi (Harv.), Batters, A list of the marine Algæ of Berwick-on-Tweed.

It forms rather great crusts on the stems of Laminaria hyperborea. Collected with tetraspores in January and July—October. In this species *Codiolum Petrocelidis* Kuckuck is a frequent endophyte.

NW. Icel. Ísafjörður (C. O.).
SW. Icel. Melar, Skógarnes, Reykjavík, Seltjarnarnes.
S. Icel. Eyrarbakki.

Cruoria arctica Schmitz in Rosenv., Grl. Havalg. p. 784.

It grows in the sublitoral region to a depth of c. 10 fathoms, and at low-water-mark in the Corallina-zone. Collected with tetraspores in June—July.

SW. Icel. Stykkishólmur, Brimnes; Keflavík by Snæfellsjökull (C. O.).

Cruoria pellita (Lyngb.) Fries., Kjellm., The Algæ of the Arctic Sea p. 142.

In the litoral zone.

SW. Icel. Njarðvík (C. O.).

Peyssonellia Rosenvingii Schmitz in Rosenv., Grl. Havalg. p. 782; Hæmatostagon balanicola Strömf., Algveg. p. 25(?).

On the fibers of Laminaria hyperborea, different shells, and stones to a depth of c. 15 fathoms. Collected in April—Sept., only sterile.

The Icelandic specimens closely resemble the Greenlandic specimens of P. Rosenvingii, and although the Icelandic plants are sterile, I refer them withouth hesitation to this species.

The *Hæmatostagon balanicola* is described by Strömfelt (1887) as novi generis nova species: his description is founded on young and sterile specimens collected in Skagafjörður in N. Icel. He shows in the description that this new genus is closely related to the genus *Peyssonellia*, but differing from it by the absence of the radicles.

Strömfelt's description is too defective, but later it has been completed by M. Foslie[1]) and Fr. Schmitz[2]), who have both had opportunity to examine Strömfelt's original specimens. They both found that Strömfelt had not noticed the radicles, and consequently they identify the genus Hæmatostagon with the genus Peyssonellia.

Foslie identifies (1894, l. c.) the H. balanicola Strömf. with the P. Rosenvingii Schmitz (described in 1893), but in the same year (1894), somewhat later, Fr. Schmitz (l. c.) in his answer to M. Foslie, mentions the H. balanicola. In the year 1887 he had received an original specimen of this plant from Strömfelt. Having examined it, he found that it was furnished with radicles, and consequently he thought he could identify Hæmatostagon with Peyssonellia[3]); this he communicated to Strömfelt and received his consenting answer in a letter of 1. March 1887. Schmitz did not admit that H. balanicola was identical with P. Rosenvingii. „*H. balanicola* Strömf.", he says, „ist eine ganz unbestimmbare Squamariacee. .... Es handelt sich hier um jugendliche Exemplare einer Alge, die jungen

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[1]) M. Foslie: New or critical Norwegian Algæ. Det kongelige Norske Videnskabers Selskabs Skrifter 1893. Throndhjem 1894.

[2]) Fr. Schmitz: Kleinere Beiträge zur Kenntniss der Florideen. La Nuova Notarisia 1894.

[3]) In Fr. Schmitz: Systematische Uebersicht der bisher bekannten Gattungen der Florideen, in Flora oder allg. bot. Zeitung 1899 and in Engler und Prantl: Die natürlichen Pflanzenfamilien the genus Hæmatostagon is mentioned as identical with the genus Cruoriella.

Pflanzen von *Peyssonellia Rosenvingii*, wie ich zugebe, ähnlich sind, die ebensogut aber auch ganz anderen Arten von *Peyssonellia* .... zugehören können".

In Remark on the *Hæmatostogon balanicola* Strömf.[1]) Foslie in his answer to Schmitz says: „I admit, that I ought not to have adopted Strömfelt's denomination until better developed specimens of this species are forthcoming, but on the other hand I think, that also the latter [ɔ: *H. balanicola*] will prove to be identical with the Greenlandic specimen."

This is all that is known about the Hæmatostagon balanicola. I have not seen Strömfelt's original specimen and cannot add to the knowledge about this plant, but I think, that Foslie is right in identifying it with P. Rosenvingii. Schmitz's objections do not demonstrate, that H. balanicola is specifically different from P. Rosenvingii; he admits, on the contrary, that the former resembles young specimens of the latter. He only says that the young, sterile specimens of H. balanicola are, as other young and sterile Squamariaceæ, indeterminable, and consequently cannot with certainty be identified with any of the known species of Peyssonellia, but he adds: „Wenn einmal genau festgestellt sein wird, welche Arten der Squamariaceen überhaupt an der Nordküste von Island vorkommen, dann mag es vielleicht möglich sein, mit ziemlicher Wahrscheinlichkeit, oder selbst mit Sicherheit anzugeben, zu welcher Species die jugendlich unentwickelten und sterilen Exemplaren, die Strömfelt vorlagen, gehörten."

Although we, at present, do not exactly know the distribution of the Squamariaceæ round Iceland, I think that we know enough to say, that it is a probability almost amounting to certainty, that the plant collected by Strömfelt in N. Icel. and by him named H. balanicola is identical with P. Rosenvingii, which is not rare in N. Icel. and E. Icel.

E. Icel. Berufjörður, Seyðisfjörður.
N. Icel. Grjótnes (C. O.); Hrísey; Skagafjörður (Strömfelt).
NW. Icel. Hrútafjörður, Bíldudalur.
SW. Icel. Stykkishólmur; Keflavík by Snæfellsjøkull (C. O.); Reykjavík.

Rhododermis parasitica Batters, A List of the marine Algæ of Berwick-on-Tweed.

On the stems of Laminaria hyperborea and different shells. With tetraspores in April—July.

NW. Icel. Ísafjörður (C. O.).
SW. Icel. Einarslón, Engey.
S. Icel. Eyrarbakki.

[1]) La nuova Notarisia 1896.

Fam. Corallinaceæ.

Lithothamnion[1] **glaciale** Kjellm., Strömf., Algveg. p. 18.

In a depth of 1—10 fathoms. One specimen resting in the Botanical Museum in Copenhagen is said to have been dredged up in a depth of 80 fathoms near Grímsey (legit Sölling).

E. Icel. Berufjörður (Johansen); Reyðarfjörður, Seyðisfjörður.
N. Icel. Grímsey (O. D.); Eyjafjörður; Skagaströnd (Johansen).
S W. Icel. Gustsey, Stykkishólmur; Keflavík by Snæfellsjökull (C. O.); Reykjavík.

Lithothamnion Ungeri Kjellm., the Algæ of the Arctic Sea p. 91 excl. syn.; L. intermedium Strömf., Algveg. p. 19.

Abundant in a depth of 10 fathoms in quiet water.

E. Icel. Seyðisfjörður.
N. Icel. Eyjafjörður (St.).
NW. Icel. Bildudalur.

Lithothamnion tophiforme Unger, Foslie, The Norwegian Forms of Lithothamnion 1895, p. 119; L. soriferum Strömf., Algveg. p. 18.

In a depth of 5—30 fathoms.

E. Icel. Reyðarfjörður; Eskifjörður (Strömfelt); Norðfjörður (Hörring).
N. Icel. Húsavík (Strömfelt); Eyjafjörður.
S. Icel. Eyrarbakki (Strömfelt). One specimen is also said to have been collected south of Iceland (dedit Brusendorff).

Lithothamnion flavescens Kjellm., The Algæ of the Arctic Sea p. 98.

In a depth of 8—18 fathoms.

E. Icel. Reyðarfjörður, Seyðisfjörður.

Lithothamnion foecundum Kjellm., The Algæ of the Arctic Sea p. 99.

In a depth of 10 fathoms.

E. Icel. Reyðarfjörður, Seyðisfjörður.
N. Icel. Eyjafjörður.

Lithothamnion læve (Strömf.) Fosl., List of species of Lithothamnia; Lithophyllum læve Strömf., Algveg. p. 21.

At low-water-mark and in a depth of 1—20 fathoms.

E. Icel. Reyðarfjörður.
N. Icel. Eyjafjörður; in 66° 33′ N. Lat., 20° 06′ W. Long, in a depth of 44 fathoms (C. O.).

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[1]) The genera *Lithothamnion, Phymatolithon, Clathromorphum, Lithophyllum* and *Dermatolithon* have been determined by M. Foslie.

NW. Icel. Ísafjörður; Dýrafjörður (Ldbk., C. O.); Tálknafjörður (Ldbk.).
SW. Icel. Reykjavík.
S. Icel. Eyrarbakki (Strömf.).

Lithothamnion Lenormandi (Aresch.) Fosl., The Norwegian Forms of Lithothamnion 1895, p. 150.

In a depth of 1—2 fathoms.

SW. Icel. Reykjavík.

Phymatolithon polymorphum (L.) Fosl., List of Species of the Lithothamnia p. 8; Lithothamnion polymorphum Strömf., Algveg. p. 19.

In the litoral region at low-water-mark.

S. Icel. Eyrarbakki, Vestmannaeyjar.

Clathromorphum compactum (Kjellm.) Foslie, List of Species of the Lithothamnia p. 8; Lithothamnion compactum Kjellm., The Algæ of the Arctic Sea p. 101.

In a depth of 1—18 fathoms.

E. Icel. Reyðarfjörður, Seyðisfjörður.
N. Icel. Grjótnes (C. O.); Eyjafjörður.
NW. Icel. Hrútafjörður, Ísafjörður.
SW. Icel. Reykjavík (C. O.).
S. Icel. Eyrarbakki.

Clathromorphum circumscriptum (Strömf.) Fosl., List of Species of Lithothamnia p. 8; Lithothamnion circumscriptum Strömf., Algveg. p. 20.

In the lower litoral zone and upper sublitoral region to a depth of c. 5 fathoms, on stones and the fibers of *Laminaria*.

E. Icel. common. Berufjörður, Reyðarfjörður, Seyðisfjörður.
N. Icel. Eyjafjörður (O. D., St.); Hraun i Fljót (G. Davíðsson).
NW. Icel. Ísafjörður; Tálknafjörður (Ldbk.); Arnarfjörður.
SW. Icel. Melar, Reykjavík.

Lithophyllum Crouani Fosl., List of Species of the Lithothamnia, p. 10.

Only known from two places in a depth of 5—7 fathoms on Laminaria hyperborea, both on the stem, which was nearly totally covered by it (at Hrísey), and on the fibers.

N. Icel. Hrísey.
NW. Icel. Dýrafjörður (C. O.).

Dermatolithon macrocarpum (Ros.) Fosl., Revised systematical survey of the Melobesieæ p. 21; Melobesia macrocarpa Strömf., Algveg.

On the fibers and stems of Laminaria hyperborea. With tetraspores and cystocarps in April—June.

Mr. Foslie thinks that D. macrocarpum and D. Laminariæ probably are identical.

SW. Icel. Reykjavík.
S. Icel. Eyrarbakki, Vestmannaeyjar.

Corallina officinalis L., Strömf., Algveg. p. 18.

In the lower litoral zone in rock-pools and in the sublitoral region to a depth of c. 10 fathoms. With antheridia in June—July and tetrasporangia in August.

N. Icel. Hjeðinshöfði (O. D.); Eyjafjörður.
NW. Icel. Látravík, Adalvík (Ldbk.); Ísafjörður, Arnarfjörður.
SW. Icel. Common.
S. Icel. Eyrarbakki, Vestmannaeyjar.

Hildenbrandia rosea Kütz.; Hildenbrandtia r. Strömf., Algveg. p. 24.

It grows abundantly and gregariously in the litoral region as undervegetation in the Fucus-zone; and occurs also in the sublitoral region to a depth of 2 fathoms. With tetraspores in May—Sept.

Probably common round Iceland.

E. Icel. Reyðarfjörður, Seyðisfjörður.
N. Icel. Grímsey (O. D.); Eyjafjörður.
NW. Icel. Hrútafjörður; Dýrafjörður (C. O.).
SW. Icel. Common.
S. Icel. Vestmannaeyjar.