

MEDDELELSER OM GRØNLAND

UDGIVNE AF

KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND

Bd. 104 • Nr. 8.

THE SCORESBY SOUND COMMITTEE'S 2ND EAST GREENLAND
EXPEDITION IN 1932 TO KING CHRISTIAN IX's LAND

LEADER: EJNAR MIKKELSEN

MARINE ALGÆ
FROM KANGERDLUGSSUAK

BY

L. KOLDERUP ROSENVINGE

WITH 3 FIGURES IN THE TEXT

KØBENHAVN

C. A. REITZELS FORLAG

BIANCO LUNOS BOGTRYKKERIA/S

1933

On the Scoresby Sound Committee's 2nd East Greenland Expedition to King Christian IX's Land under the leadership of Captain EJNAR MIKKELSEN, collections of marine algæ were made in Kangerdlugssuak by Mr. TYGE W. BÖCHER and MAGNUS DEGERBØL, mag. sc. The material was delivered to Mr. HAROLD G. WAGER, who conserved it, partly in a dried state, partly in small samples in formalin, and gave some general comments on the algæ of the district, especially in the littoral zone, on which he himself had made observations. Unfortunately the dried material of the larger Laminariaceæ and Fucaceæ was damaged by sea-water and hence more or less completely decayed, and was in a state in which it could not be preserved; the material of these two groups is therefore very incomplete. The following remarks are due to Mr. WAGER:

The expedition first touched the coast of East Greenland at Cape Dalton and then proceeded southwards along the coast making frequent landings as far as Kangerdlugssuak.

At Cape Dalton the only algæ found between tide marks was a small amount of very stunted *Ecocarpus* (*Pylaiella littoralis*) growing as a felt-like covering on the rock in some cracks of the rocky portion of the shore.

Farther south at one locality in d'Aunay Bugt, lat. 69°, a few specimens of *Desmarestia aculeata* and *Polysiphonia urceolata* (not seen, L. K. R.) were found at low tide mark, and this growth appeared to be the result of a small hot spring which fell into the sea at this point. In this region of the coast various Laminariaceæ were dragged up attached to the anchor, thus proving the presence of a considerable flora at lower levels, but it was not possible to investigate it.

In Kangerdlugssuak, lat. 68°00' to 68°30', which was visited in August, 1932, a well developed and characteristic flora is found on the rocky portion of the coast between tide marks consisting entirely of the following five species: — *Rhodochorton Rothii*, *Pylaiella littoralis*,

Fucus vesiculosus, *Fucus inflatus* and *Chætomorpha Melagonium*. The *Rhodochorton Rothii* forms a thick felt-like covering on the sheltered rocks $1\frac{1}{2}$ —2 m above low tide mark. (The upper part of the *Fucus*-belt consists of *F. vesiculosus*, the lower one of *F. inflatus* (Böcher)). There is a pronounced maximum of *Fucus (inflatus)* at low tide mark and for about 50 cms above and below it, and the plants become more and more stunted as they grow further above low tide mark, until $1\frac{1}{2}$ m above it they are only 2—6 cms long. These upper plants are often badly damaged, presumably by frost or by the mechanical action of moving ice, and show new growth along the torn edges of the frond. Below the low tide mark the *Fucus (inflatus)* grows to a larger size as scattered tufts which continue downwards as far as could be seen in the rather muddy water, i. e. to about 3—4 m depth. The *Fucus* serves as a support for *Pylaiella littoralis*, which is abundant both on the *Fucus* and on the rocks, up to a height of $1\frac{1}{2}$ m above low tide mark. Lastly there is a belt of *Chætomorpha Melagonium* which starts just below low tide mark and extends downwards for 2—3 m or more¹). The *Chætomorpha* filaments were isolated one from another and had tufts of *Pylaiella* a. o. on them.

This assemblage of plants is very common in the sheltered parts where there are rocks in the tidal zone, but no other species of algæ was found in spite of careful search at several selected localities.

Farther south, at Lake Fjord (lat. $66^{\circ}20'$) or Tassiusak (lat. $65^{\circ}37'$), there is a considerable increase in the quantity of littoral algæ and other species were observed but no systematic collections were made.

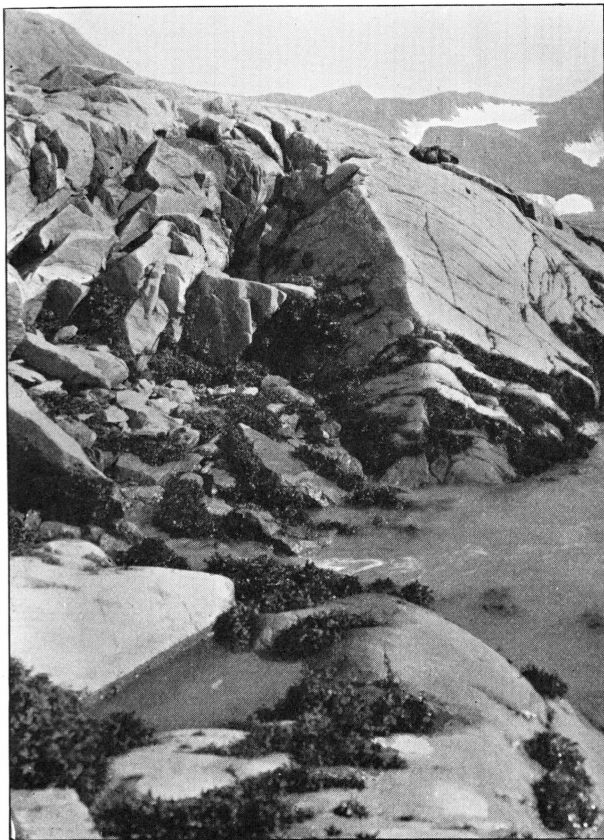
HAROLD G. WAGER.

At Kangerdlugssuak a considerable amount of dredging was carried out by BÖCHER and DEGERBØL, at depths varying from a few metres to about eighty metres, in several places near the mouth of the fjord, but principally in the sheltered channel, Uttental Sound, between Kraemer Island and the mainland, further between the skerries and in a small bay at the Skærgaards Peninsula. Some dredgings were also made along the East coast of the main Fjord North of the mouth of Amdrup Fjord (Comp. Böcher, Phytogeographical Studies etc. Medd. om Grønland, Bd. 104, Nr. 3 1933, p. 25).

The algæ collected were preliminarily named by Mr. WAGER, but they were later handed over to me, who have worked out the following list of the species recorded in the collection. The total number of listed

¹) The lower limit of the littoral region is, according to my definition, at the low tide mark; therefore, the belt of *Chætomorpha Melagonium* belongs to the sublittoral region (L. K. R.).

species is 39, which have all formerly been met with in East Greenland, with the exception of the new species and with reservation as to the species not identified with certainty. This figure is rather small and cannot be taken to correspond to the total flora of the region in question. The total number of species of marine algæ known from East Greenland is 126 (K. ROSENVINGE 1910, p. 96), and the number of species



T. Böcher phot.

Fig. 1. Rocks at low tide, Tugtulik (Lake Fjord), with *Fucus vesiculosus*.

known from the coast North of 76° lat. N. is 62 (l.c. p. 96). It may therefore be expected that further a great deal of species will be found by later investigation in the Kangerdlugssuak area, especially many of the species hitherto only known from the coast North of 76° lat. N., but presumably also a number of the species hitherto only known from lower latitudes. Thus it would be interesting to know whether e.g. *Chorda Filum*, *Saccorrhiza dermatodea*, *Laminaria longicruris*, *L. digitata*, *Ascophyllum nodosum*, and *Rhodymenia palmata*, which all occur at Angmagssalik, might extend their occurrence so far northwards on this

coast. The two last-named species do not seem to occur in the district, as these otherwise very characteristic inhabitants of the littoral zone would scarcely have been overlooked, if they really occurred in Kangerdlugssuak.

List of the Species found in Kangerdlugssuak.

The remarks on the occurrence of the species are based on the information given by Mr. BÖCHER and Mr. WAGER.

I. Chlorophyceæ.

Chlorochytrium inclusum Kjellm.

In *Pantoneura Baerii*, *Rhodophyllis dichotoma*, and *Turnerella Pennyi*.

Ulothrix sp.

Single filaments on *Stictyosiphon tortilis*, 9—10 μ in diameter, at the base thinner, about 4 μ , with cells 2—3 times as long as broad, whereas higher up they are of about the same length as breadth; without rhizoids. Perhaps belonging to *U. scutata* Jónss. (Mar. Alg. East Greenl. Medd. om Grøn. 30, 1904, p. 57); but the material is too scanty for a certain identification of the species.

Monostroma fuscum (Post. et Rupr.) Wittr., emend.

A dried specimen without attachment organ, about 15 cm in diameter, is found in the collection.

Numerous specimens were met with in a sheltered bay at Skærgaards Peninsula.

Acrosiphonia Hystrix (Strömf.) Jónss. (1903, p. 368).

The filaments were 150 to 225 μ thick. With zoosporangia.

Acrosiphonia sp.

A few fragments of a much thinner *Acrosiphonia* with very patent branches were met with among *Stictyosiphon tortilis* and *Acrocystis groenlandica*; the filaments were 42—50 μ thick with thick-walled cells which were 3—5 times as long as broad.

Chætomorpha Melagonium (W. et M.) Kütz.

Common, at low-water mark and in several dredges. Well developed specimens.

II. Phæophyceæ.

Ectocarpus ovatus Kjellm. f. *Holmii* K. Rosenv.

A specimen of a small *Ectocarpus* which seems to be referable to this form, was met with in the collection in company with *Pylaiella littoralis*. As I have seen this small specimen only, I give here a description and some figures of it, hoping that further specimens will be found later.

The specimen consists of a horizontal filament which apparently has not been directly attached to the substratum, but shows free rhizoids given off from the bases of the erect filaments. The cells of the horizontal

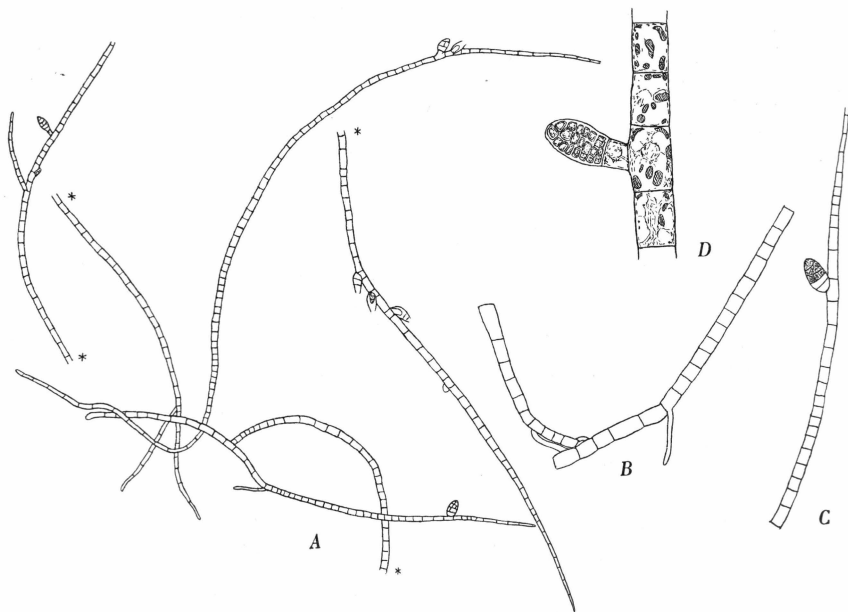


Fig. 2. *Ectocarpus ovatus* Kjellm. f. *Holmii* K. Rosenv. A 48 : 1, B—C 153 : 1, D 260 : 1.

filament are twice as long as broad, $14\ \mu$ broad. The erect filaments are about $200\ \mu$ long, unbranched or with a single branch, $11\text{--}17.5\ \mu$ thick, the cells 1—2.5 times as long as broad, tapering towards the top; they bear lateral, sessile or by a one-celled stipe borne plurilocular sporangia, which are ovate, $28\text{--}32\ \mu$ long, $16\text{--}18\ \mu$ broad. The vegetative cells contain several disc-shaped chromatophores. The plant is referred here with doubt to *E. ovatus*, though it has no opposite sporangia or branches. In this it agrees with *E. Holmii* K. Rosenv. (1893, p. 889), which I have referred later as a reduced form to *E. ovatus* (K. Rosenv. 1898. I, p. 78), as in the original material (Alg. mar. Groenl., Ann. sc. nat. 7e Ser. t. 19, 1894, p. 115 note) I found a more robust specimen with opposite branches and sometimes two sporangia on one cell. The plural number

of chromatophores is important for the identification of the species. *E. ovatus* has repeatedly been met with in East Greenland.

***Pylaiella littoralis* (L.) Kjellm.**

Found very commonly growing in the littoral region both on *Fucus* and on the rocks, and in a 5 m dredge. Unilocular sporangia were present in August, forming short chains, but many specimens were sterile.

***Sphacelaria radicans* Harv.**

A few small sterile specimens of a *Sphacelaria* attached to the basal portion of *Euthora cristata* have been referred, though with doubt, to this species; they were unbranched or sparsely branched.

***Sphacelaria racemosa* Grev.**

Some specimens found among *Stictyosiphon tortilis*, sterile.

***Chaetopteris plumosa* (Lyngb.) Kütz.**

Several specimens were found in the deeper dredges. The species seems to be common. Some specimens still bore unilocular sporangia in August, in others all the sporangia had been thrown off.

***Elachista fucicola* (Vell.) Aresch.**

A young sterile specimen undoubtedly belonging to this species was met with growing on *Chaetomorpha Melagonium*.

***Acrocystis groenlandica* nov. gen., nov. sp.**

In the dried material entangled masses of a branched filamentous brown alga were found which in its structure showed some resemblance on one side with *Sphacelaria* on the other side with *Stictyosiphon*, consisting of articulated filaments, the joints of which were divided by a number of longitudinal walls. Unfortunately, all the specimens were sterile; but their structure was very characteristic and they could not be referred to any known genus. I give therefore a description and some figures of it and give it a name, although it has no organs of fructification, and hence is very incompletely known. It is very characteristic of the species that it has a large vaulted apical cell, which has the same diameter as the filament and which is divided by transversal walls. The segments divide immediately by longitudinal walls, often only one or two, which usually are not axial but more or less excentric. Often a long series of joints occur which only contain one or two longitudinal walls or none whatever, whereas the number of longitudinal walls in other filaments, or parts of filaments, is larger. In the first case the joints are often short. In the latter case the joints grow longer, and then consist of a number of long cells which to begin with are of equal length but later are often divided by transversal walls. To judge from the few apices which

I have seen, the young segments are not divided by a secondary transverse wall like in the Spacelariaceæ, and there is nothing else suggesting that

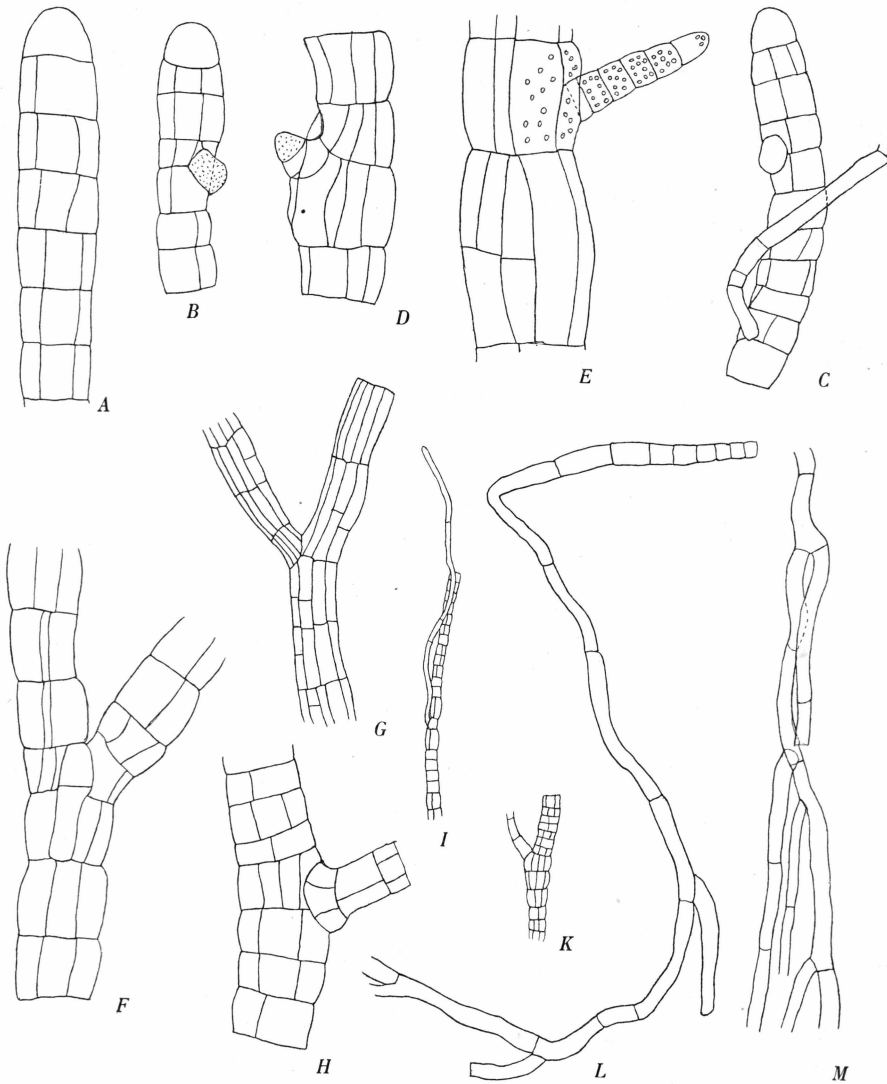


Fig. 3. *Acrocystis groenlandica* K. Rosenv. A—C, Summits of filaments with apical cell, and partly with initial cell for branch. D, young branch. E, probably a young rhizoid-like organ. F—H, lower portion of branches. I—M, rhizoid-like filaments.

A—F, H, L, M 153:1. G, I, K, 48:1.

it might be referred to this family. So, no transitory black-colouring of the cell-walls took place by treating with Eau de Javelle.

The structure of the polysiphonous fronds shows some resemblance to that of *Stictyosiphon tortilis*, but the peripheral cells are not divided

up into short cells as in this. The branches are always solitary, never opposite, with long distances between them. They arise near the top, as a large initial cell, which is formed at the boundary between two joints, and are produced after the formation of longitudinal walls in the joints (fig. 3 *B—D*). The insertion of the branch rests on the below-lying joint as well as on the above-lying joint (fig. 3 *F—H*). The first joint is often shorter than the following ones.

The plant attains a length of several centimetres, but the length cannot be stated, as the species occurs in entangled masses lying loose on the bottom. It is only slightly branched, the rhizoidlike organs not regarded, the filaments for long extents being without a single branch. The filaments are flaccid, their diameter is variable, the short-celled ones are usually 40—70 μ in diameter, the polysiphonous ones with long articles 67—133 μ . Besides the branches the plants bear long vigorous rhizoid-like filaments as outgrowths from the joints, springing from the upper end or from the middle of the joints. They are originally simple, transversally septate, later branched laterally in their distal part, and consisting of long cells, which in the dried material had brown contents which probably contained chromatophores. The first cells often remain short (fig. 3 *L*). These organs are not fixed to any substratum, they are perhaps penetrating into the muddy bottom. The long cells are 14—21 μ thick, up to over 300 μ long.

The cells of the dried plants were shrunken. In soaking them they were treated with boiling lactic acid or with Eau de Javelle. In material treated with the latter reagent and after washing out stained with methylene blue, numerous small blue bodies, which were supposed to be chromatophores, were found (fig. 2 *E*). Hyaline hairs like those occurring so commonly in the Phæophyceæ were not met with. Organs of fructification were entirely wanting, which no doubt has connection with the fact that the plants were not fixed to any substratum. It is therefore impossible to indicate its place in the system. But on the other hand it is different from all known genera of Phæophyceæ. In structure it is reminiscent of *Stictyosiphon* but differs in the presence of a broad apical cell, whereas the shoots of *Stictyosiphon* are tapering upwards and have a trichothallic growth. I give it the name of *Acrocytis groenlandica* and give here the diagnosis of the new genus.

Acrocytis, nov. gen. Frons filiformis ramosa, ramis sparsis, articulata, cellula apicali lata terminata. Segmenta divisione transversali cellula terminalis orta septis longitudinalibus in articulos polysiphoneos dividuntur, et cellulae periphericae demum sæpe septis transversalibus dividuntur. Rami e cellula initiali inter articulos prorumpente oriuntur. Filamenta rhizoidea e cellulis initialibus similibus orientia, longa et

crassa, articulata, ramosa, phæophoris forsan instructa. Pila hyalina desunt. Organa reproductiva ignota.

As all the specimens are loose, it is possible that they represent a transformed loose form of an alga which in a normal state shows other characters. It must be left to further investigations to determine its relationships.

Desmarestia viridis (O. F. Müll.) Lamx.

Small fjord on the south coast of Kraemer Island. With some hairs in August.

Desmarestia aculeata (L.) Lamx.

Very common in dredges at all depths. Specimens attaining a length of about 1 m. Some hairs were still present in one specimen in August.

Chorda tomentosa Lyngb.

Typical but rather small specimens, 12 to 24 cm long, with unilocular sporangia, were found in some of the deeper dredges, 15 m.

Laminaria solidungula J. Ag.

Frequent at all ages in dredges at 8 to 15 m. Dimensions of largest specimen found was: stipe 51 cm long, lamina 110 cm long and 35 cm broad.

Laminaria saccharina (L.) Lamx. forma.

A young specimen and a larger, broad one without base are present in the collection.

Laminaria nigripes J. Ag.(?).

One damaged specimen found which was, according to Mr. WAGER, probably referable to this species.

Alaria Pylaii (Bory) J. Ag.

Very common at the head of Kangerdlugssuak (loc. XII BÖCHER 1933, fig. 2, p. 25), where, according to Mr. BÖCHER, it formed associations covering the bottom. Further at Kraemer Island. The largest dried specimen in the collection is probably referable to f. **grandifolia** (J. Ag.) Jónsson. It has a long rachis with rather distant sporophylls, and a real stipe over 30 cm long.

Agarum Turneri (Turn.) Post et Rupr.

Many specimens of all ages were found in dredges from 20 to 60 m in Uttental Sound, and at the south coast of Kraemer Island, east

coast of the main Fjord north of Amstrup Fjord. The largest of the preserved specimens was 35 cm long.

Fucus vesiculosus L.

Common in the tide zone in the whole Kangerdlugssuak.

Fucus inflatus L.

Common in the lower tide zone and the sublittoral zone, down to about 5 m below tide mark.

III. Rhodophyceæ.

Cruoria arctica Schmitz(?).

Mr. BÖCHER says that he has taken some algæ on a stone with *Hildenbrandia*. As this crustaceous Floridea has not been preserved, it is impossible to verify the correctness of the determination; but considering that the crust, according to Mr. BÖCHER, was rather thick, it is more probable that it was *Cruoria arctica*, which has formerly been found in North East Greenland.

Lithothamnion foecundum Kjellm.

Two crusts of a *Lithothamnion* were met with on hapters of *Laminaria*, agreeing with *L. foecundum* by having conceptacles of sporangia with a concave roof pierced by about 40 canals.

A very young sterile crust of an undeterminable *Lithothamnion* was found on *Chætomorpha Melagonium*.

Antithamnion boreale (Göbi) Kjellm.

Several specimens from hapters of *Laminariæ* at 20 m depth and otherwise in dredges. The specimens were up to 1.5 cm long, with gland cells and with tetrasporangia, but no specimens with sex organs. The long shoots bear two series of opposite pinnulæ; sometimes a shorter third pinnula is met with in the whorl.

Ptilota pectinata (Gunn.) Kjellm.

Common in the deeper dredges, e. g. at the east coast of the main fjord. — With tetrasporangia.

Rhodochorton Rothii (Turt.) Näg.

Common in the tide zone. Mr. WAGER found it with tetrasporangia in August; I found the fertile clusters but without sporangia.

Rhodochorton penicilliforme (Kjellm.) K. Rosenv.

On *Chætomorpha Melagonium*, with tetrasporangia.

Polysiphonia urceolata (Lightf.) Grev.

In a dredge, about 15 metres.

Polysiphonia arctica J. Ag.

Common in all the deeper dredges, always sterile.

Pantoneura Baerii (Post. et Rupr.) Kylin. Kylin und Skottsberg, Zur Kenntnis der subarkt. u. antarkt. Meeresalgen. II. Wiss. Ergebn. d. Schwed. Südpolar-Exped. 1901—1903, 1919, p. 18.

Delesseria Baerii (Post. et Rupr.) Rupr.

In deeper dredges. Up to 6 cm high, sterile. Young specimens attached to *Antithamnion boreale*.

Phycodrys rubens (Huds.) Batt., Catal. Brit. Mar. Algæ. Suppl. to the Journ. of Botany 1902, p. 76.

Delesseria sinuosa (Good. et Woodw.) Lamx.

Common in all dredges except the deepest, e. g. Uttental Sound. Large specimens, one with marginal leaflets with tetrasporangia in August.

Phyllophora Brodiaei (Turn.) J. Ag. f. **interrupta** (Grev.) K. Rosenv.

Found commonly in the dredges. Large and broad specimens, one with nemathecia (*Actinococcus subcutaneus* (Lyngb.) K. Rosenv.) in small marginal leaflets. In quantities, loose, in a 80 m dredge in Uttental Sound, in company with tubes of Annelids.

Euthora cristata (L.) J. Ag.

Common in all dredges, e. g. in Uttental Sound. Specimens up to 7.5 cm long.

Rhodophyllis dichotoma (Lepech.) Gobi.

Mostly small, narrow specimens, one found growing on *Chætomorpha Melagonium*. Small bay at Skærgaards Peninsula.

Turnerella Pennyi (Harv.) Schmitz.

One specimen from a deep dredge.

Halosaccion ramentaceum (L.) J. Ag.

Found growing very freely in one locality, in streaming water between two skerries at Skærgaards Peninsula, about 2—3 m below low tide mark. Well developed specimens reaching 30 to 40 cm in length, with tetrasporangia.

For the nomenclature of the species reference may be made to

L. KOLDERUP ROSENVINGE: Deuxième mémoire sur les Algues marines du Groenland. Meddelelser om Grønland **20**. 1898.

— On the Marine Algæ from North-East Greenland. Medd. om Grønland **43**. 1910.

H. JÓNSSON: The Marine Algæ of East Greenland. Medd. om Grønland **30**. 1904.

