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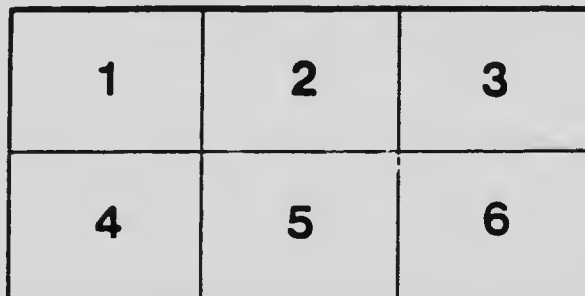
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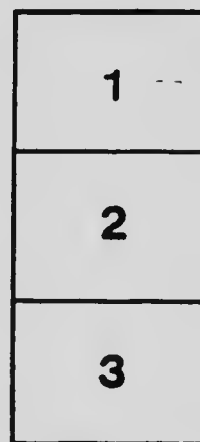
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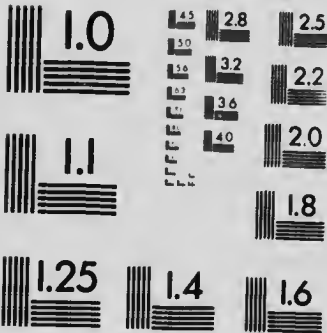
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REPORT
OF THE
CANADIAN ARCTIC EXPEDITION
1913-18

VOLUME IV: BOTANY

PART B: MARINE ALGAE

BERING STRAIT AND ARCTIC OCEAN ALGAE
By FRANK SHIPLEY COLLINS

CALCAREOUS ALGAE
By Mme PAUL LEMOINE

HUDSON BAY ALGAE
By MARSHALL A. HOWE

SOUTHERN PARTY—1913-16

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OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1927

Issued Nov. 24, 1927

Report of the Canadian Arctic Expedition, 1913-18.

VOLUME I: GENERAL INTRODUCTION, NARRATIVE, ETC.
 Part A: NORTHERN PARTY, 1913-18. (To be prepared).
 Part B: SOUTHERN PARTY, 1913-16. By Rudolph Martin Anderson. (In preparation).

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 Coccinellidae, Elateridae, Chrysomelidae and Rhynchophora (excluding Ipidae). By C. W. Leng. (Issued December 12, 1919).
 Dytiscidae. By J. D. Sherman, Jr. (Issued July 11, 1919).
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 Part G: HYMENOPTERA AND PLANT GALLS.
 Sawflies. (Tenthredinoidea.) By Alex. D. MacGillivray.
 Parasitic Hymenoptera. By Charles T. Brues.
 Wasps and Bees. By F. W. L. Shiden. (Issued November 3, 1919).
 Plant Galls. By E. Porter Felt.
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 Spiders. By J. H. Emerton. (Issued July 14, 1919).
 Mites. By Nathan Panks. (Issued January 10, 1920).
 Myriapods. By Ralph V. Chamberlin. (Issued September 4, 1920).
 Part I: LEPIDOPTERA. By Arthur Gibson. (Issued November 7, 1921).
 Part J: ORTHOPTERA. By E. M. Walker.
 Part K: INSECT LIFE ON THE WESTERN ARCTIC COAST OF AMERICA. By Frita Johansen. (Issued December, 1922).
 Part L: GENERAL INDEX.

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 Part L: PARASITIC COPEPODA. By Charles B. Wilson. (Issued June 25, 1920).
 Part M: CIRRIPEIDIA. By H. A. Pilsbry. (Issued August 6, 1920).
 Part N: THE CRUSTACEAN LIFE OF SOME ARCTIC LAGOONS, LAKES AND PONDS. (In preparation).
 By F. Johansen. (Issued December 30, 1922).

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SOUTHERN PARTY—1913-16



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1927

Issued Nov. 24, 1927

Marine Algae from Bering Strait and Arctic Ocean collected by the Canadian Arctic Expedition, 1913-1916

By FRANK SUDLEY COLLINS

Somewhat less than two years after the lamented death of Mr. Collins on May 10, 1916, a collection of algae and his more or less unfinished manuscripts on the algae passed into the possession of the New York Botanical Garden in New York City. His report on the algae of the Canadian Arctic Expedition was left by him virtually complete except for the typing of a few pages, though there even remained what he would have expanded his introductory discussion of this arctic flora, had his life been spared. After an unexpected delay in the preparation of a companion report on Hudson Bay algae by the writer of the present note, Mr. Collins' paper is now offered to the publishers essentially as he left it except for very slight changes of a clerical or proof-reading character. This, perhaps unfortunately, leaves the nomenclature, in some cases, different from that adopted in the Hudson Bay report and probably, in a few instances, different from what would have been employed by Mr. Collins himself, had he lived until the present day. However, such seems to be the only fair course to follow in the case of a posthumous manuscript—the only one that leaves the original author wholly responsible, both for his determinations and for his choice of names.—*Marshall A. Howe*

In attempting some general classification of the 57 species, varieties, and forms included in this list, only a few observations may be made.

Certain species evidently constitute a short-lived vegetation of warm lagoons and pools. Such are *Lyngbya aestuaria*, *Anabaena* sp., *Paludococcus marinus*, *Ulothrix flavca*, *Stichococcus aurivius*, *Enteromorpha percurva*, *E. torta*, *E. prolifera*, *E. micrococca*, *E. micrococca* var. *subsalsa*, *Ica fulvescens*, and *Rhizoclonium implexum*. All are plants of similar stations in the North Temperate Zone. *Prasiola Johanseni* and *Phormidium pupyracum* occur in a warm station, though not in a lagoon.

Four species and forms of *Fucus* appear to be littoral plants. All of the other genera and species are either dredged or found washed ashore and may be considered sublittoral. Four of these are parasites, attached each to a particular species.

At Port Clarence, Alaska, occur two species, *Chondrus affinis* and *Perosiphonia bipinnata*, characteristic of temperate Pacific shores, here apparently reaching their northern limit (69° 35' N.). Here were also two species of *Ceramium*, *C. tenuissimum* and *C. cubrum*, both of temperate zone distribution in both the Atlantic and Pacific.

Enteromorpha intestinalis and *Hildenbrandia prototypus* are practically cosmopolitan. The remainder of the list, thirty-three in all, are characteristic northern forms, of which *Laminaria solidungula* and *L. groenlandica* are limited to arctic regions, while the others extend for varying distances into the temperate zone. *Delesseria sinuosa*, for instance, reaches New Jersey and France on the two sides of the Atlantic.

The list is so short that no conclusions should be drawn from the absence of any species known elsewhere as arctic. It is, however, of interest in two ways. First, as showing the continuity of distribution of species before known in the North Atlantic and North Pacific; secondly, as showing the occurrence in high latitudes, in the warm lagoons in summer, of an assemblage of species much the same as may occur in similar stations in the temperate zone.

LIST OF COLLECTING STATIONS

The localities in which marine algae were collected on the Canadian Arctic Expedition, 1913-16, are the following, arranged from west to east:—

1. Teller (Port Clarence or Grantley harbour), Alaska. Latitude 65° North, longitude 166° 30' West. Stations 20b-c, 20d.
2. Northwest coast of Alaska, between Cape Beaufort and Point Lay. Latitude 69° 35' North, longitude 163° 27' West. Station 22.

3. Spy island (Jones islands, formerly known as Thetis islands), Arctic coast of Alaska. Latitude 70° 33' North, longitude 149° 40' West. Station 26.
4. Tigvariak island, off mouth of Shaviok river, Arctic coast of Alaska. Latitude 70° 04' North, longitude 147° 10' West. Station 26a.
5. Collinson point, Camden bay, Arctic coast of Alaska. Latitude 69° 59' North, longitude 144° 49' 47" West. Stations 27d, 28m.
6. Young point, Amundsen gulf, Mackenzie district, Northwest Territories. Latitude 68° 55' North, longitude 117° 10' West. Station 50d.
7. Dolphin and Union strait, Mackenzie district, Northwest Territories. Stapyhton bay, latitude 69° North, longitude 116° 30' West. Cockburn point, latitude 68° 55' 29" North, longitude 115° West, Stations 43c, 50a. Bernard harbour, latitude 68° 46' 55" North, longitude 114° 50' 27" West, Stations 37a, 41.
8. Wollaston peninsula, Victoria island, Northwest Territories. Mouth of Kimiryuak river, latitude 69° 15' North, longitude 113° 45' West, Station 47e. Austin bay, latitude 68° 30' North, longitude 113° West, Station 47c.
9. Coronation gulf, Mackenzie district, Northwest Territories. Cape Barrow, latitude 68° 00' 36" North, longitude 110° 08' 32" West. Station 44c.

The classified list of algae follows:—

CLASS MYXOPHYCEAE

Family OSCILLATORIACEAE

Genus *Phormidium* Kützing

Phormidium papyraceum Gomont

Phormidium papyraceum Gomont, Monogr. des Oscill., p. 193, 1893.

In small quantity, among *Prasiola Johanseni*, Bernard harbour, June 10, 1916.

Genus *Lyngbya* Agardh

Lyngbya aestuarii Liebman ex Gomont

Lyngbya aestuarii Liebman ex Gomont, Monogr. des Oscill., p. 147, pl. III, figs. 1-2, 1893.

Lyngbya ferruginea Harvey, Nereis Bor.-Am., part 3, p. 102, pl. XLVII. B, 1857.

Among various small algae, scattered filaments only, in lagoon on beach, Stapyhton bay, May 20, 1915.

Family NOSTOCACEAE

Genus *Anabaena* Bory

Anabaena sp.

Anabaena sp. ? Sterile and not specifically determinable filaments among other small algae, brackish water of lagoon, Spy island, Alaska, September 3, 1913. Cells spherical or slightly depressed, 4 μ diameter, in a close, distinct sheath.

CLASS CHLOROPHYCEAE

Family SCENEDESMACEAE

Genus *Palmellococcus* Chodat***Palmellococcus marinus*** Collins

Palmellococcus marinus Collins, Rhodora, Vol. IX, p. 198, 1907. Phyc. Bor.-Am., No. 1316. Collins Green Algae of North America, p. 159, 1909.

On shell of *Idothea*, in pool on sandspit, Collinson point, Camden bay, Alaska, June 7, 1914.

Family PROTOCOCCACEAE

Genus *Chlorochytrium* Cohn***Chlorochytrium inclusum*** Kjellman

Chlorochytrium inclusum Kjellman, Algae of the Arctic Sea, p. 320, Pl. LXXXI, figs. 8-17, 1883. Collins, Green Algae of North America, p. 147, 1909.

In fronds of *Sarcophyllis arctica*, Dolphin and Union strait, Sept. 14, 1915; dredged in 20-30 metres. Station 43c.

Family ULOTRICHACEAE

Genus *Ulothrix* Kützing***Ulothrix flacca*** (Dillw.) Thuret

Conferva flacca Dillwyn, British Confervae, p. 53, Pl. XLIX, 1809.

Ulothrix flacca (Dillw.) Thuret in Le Jolis, Liste des Algues Marines de Cherbourg, p. 56, 1863. Collins, Green Algae of North America, p. 185, 1909.

Among other small algae, brackish lagoon, Spy island, Alaska, Sept. 3, 1913.

Genus *Stichococcus* N. gelii***Stichococcus marinus*** (Wille) Hazen

Stichococcus marinus (Wille) Hazen, Mem. Torrey Bot. Club, Vol. XI, p. 161, Pl. XXI, figs. 8-9, 1902. Collins, Green Algae of North America, p. 190, 1909.

Ulothrix variabilis var. *marina* Wille, Phyc. Bor.-Am., No. 615.

Scattered filaments, in company with other algae, brackish lagoon, Spy island, Alaska, Sept. 3, 1913. Scattered filaments among *Enteromorpha micrococca*, lagoon on beach, Stapylton bay, May 20, 1915.

Family ULVACEAE

Genus *Enteromorpha* Link***Enteromorpha percursa*** (Ag.) J. G. Agardh

Conferva percursa Agardh, Synopsis Algarum, p. 87, 1817.

Enteromorpha percursa (Ag.) J. G. Agardh, Alg. Med., p. 15, 1842. Collins, Green Algae of North America, p. 197, 1909.

Scattered among other algae, brackish lagoon, Spy island, Alaska, Sept. 3, 1913.

Enteromorpha torta (Mert.) Reinbold

Conferva torta Mertens, in Juergens Algae Aquaticae, Dec., XIII, No. 6, year uncertain. The first decade appeared in 1816; the 20th in 1822.

Enteromorpha torta (Mert.) Reinbold, Revision von Juergens Algae, Nuova Notarisa, Series, 4, p. 201, 1893. Collins, Green Algae of North America, p. 198, 1909.

Among other algae, brackish lagoon, Spy island, Alaska, Sept. 3, 1913.

Enteromorpha prolifera (Fl. Dan.) J. G. Agardh

Uva prolifera Flora Danica, Vol. V, p. 5, Pl. DCCLXIII, 1782.

Enteromorpha prolifera (Fl. Dan.) J. G. Agardh, Till Alg. Syst., part 3, p. 129, 1882. Collins, Green Algae of North America, p. 202, 1909.

Dredged in 4-6 metres, Port Clarence, Alaska, July 30, 1913, Station 20 b-c. Among other algae, in brackish lagoon, Spy island, Alaska, September 3, 1913, Station 26. A form with many fine ramuli.

Enteromorpha micrococca Kützing

Enteromorpha micrococca Kützing, Tabulae Phycologicae, Vol. VI, p. 11, Pl. XXX, fig. 2, 1856. Collins, Green Algae of North America, p. 204, 1909.

Among other algae, in brackish water lagoon, Spy island, Alaska, Sept. 3, 1913. Lagoon in beach, at Stapylton bay, May 20, 1915, and at Bernard harbour, June 28, 1915.

Enteromorpha micrococca forma **subsalsa** Kjellman

Enteromorpha micrococca forma *subsalsa* Kjellman, Algae of the Arctic Sea, p. 292, Pl. XXXI, figs. 1-3, 1883. Collins, Green Algae of North America, p. 204, 1909.

With the typical form, in brackish lagoon, Spy island, Alaska, Sept. 3, 1913. Lagoon in beach, Stapylton bay, May 20, 1915.

Enteromorpha intestinalis (L.) Greville

Uva intestinalis Linnaeus, Species Plantarum, Vol. II, p. 1163, 1753.

Enteromorpha intestinalis (L.) Greville, Algae Britannicae, p. 179, 1830. Collins, Green Algae of North America, p. 204, 1909.

Port Clarence, Alaska, dredged in 4-6 metres, July 30, 1913, Station 20b-c.

Genus **Ilea** Fries**Ilea fulvescens** (Ag.) J. G. Agardh

Uva fulvescens Agardh, Till Alg. Syst., part 1, p. 420, 1872.

Ilea fulvescens (Ag.) J. G. Agardh, 1882, p. 115. Collins, Green Algae of North America, p. 206.

Among other algae, brackish lagoon, Spy island, Alaska, Sept. 3, 1913. Differs somewhat from the normal form, in that the cells do not form easily separable longitudinal series, but separate easily in all directions. There is a question whether, under a strict application of the rules of the International Botanical Congress, the name *Ilea* may not be taken to supply the place of *Phyllitis* for a genus of brown algae, the name *Phyllitis* belonging under these rules to a fern. It is not yet certain that the transfer of the name *Ilea* will be necessary, but if it should be, the name *Capsosiphon* seems to be the probable successor.

Family PRASIOACEAE

Genus *Prasiola* (Ag.) Meneghini***Prasiola Johanseni*, sp. nov.**

Fronds up to 1 cm. high, about 10 μ thick, delicate, pale green, of generally rounded outline, much lobed, curled, convolute, attached by thickened margin, without stipe or fibrils; cells in cross section of thallus squarish, one-half to once as wide as high, occupying nearly the whole thickness of the frond; cells in surface view rectangular, from square (3-4 μ) to twice as long as wide (3-6 μ), arranged in distinct longitudinal and transverse series, somewhat in fours, especially when division is rapid, not in quadrangular areas of larger size.

Frondibus usque ad 1 cm. altitudine, circa 10 μ crassis, teneris, pallido-viridibus, plerumque subteretibus, multilobulatis, crispis, convolutis, marginibus incrassatis applicatis sine stipite aut fibrillis; cellulis, in sectione transversali frondis, subquadratis, dimidio usque ad semel tam latis quam altis, fere totam crassitudinem frondis occupantibus; cellulis rectangularibus de superficie visis, quadratis (3-4 μ) ad bis longioribus quam latis (3-6 μ), in seriis distinctis verticalibus et transversalibus, aliquanto in tetradibus, praesertim quum divisio rapida sit, non in areolis majoribus quadratis.

Growing (with *Phormidium papyraceum*) in the shelter of a big boulder on east end of the island forming the north side of Bernard harbour, North West Territories, Lat. 68° 47' N., Long. 114° 46' W. collected by Frits Johansen, June 10, 1916.

This species was distributed, from original material, in the Phycotheca Boreali-Americana as No. 2284.

The plants form a continuous coating, the much lobed and convolute fronds showing no definite normal outline. There is no distinct organ of attachment, the lower margin having a thicker wall and numerous small lobes. Besides reproduction by fragmentation of frond, individual cells in the lower part of the frond develop into spherical akinetes, which increase in size and develop into a membranous frond, with cells similar to those of the parent frond. The cell may reach a diameter of 25 μ before division of contents begins, or the division may begin when the cell is not more than 12 μ in diameter. This development is much like that found in *P. furfuracea* (Fl. Dan.) Menegh. by Wille (Algol. Untersuch., No. 3, 1906, pl. 1, fig. 1-29). No trace was seen of a stipe or any filiform condition. *Prasiola stipitata* Suhr, the best-known marine species, has a long stipe, monosiphonous at base. *P. furfuracea* has larger cells, arranged in distinct quadrate areas. *Prasiola crispa* forma *submarina* Wille develops a monosiphonous filament from the akinete and tends to form monosiphonous filaments at older stages.

Family CLADOPHORACEAE

Genus *Chaetomorpha* Kützing***Chaetomorpha Melagonium* (Web. & Mohr) Kützing**

Conferva Melagonium Web. & Mohr, Reise nach Schweden, p. 194, 1804.

Chaetomorpha Melagonium (Web. & Mohr) Kützing, Phycologia generalis, p. 204, 1845. Collins, Green Algae of North America, p. 323, 1909.

Bernard harbour, dredged, in 10 metres, July 20, 1915, Station 41. Austin bay, Wollaston peninsula, April 4, 1916, beach, station 47e.

Genus **Rhizoclonium** Kützing**Rhizoclonium implexum** (Dillw.) Kützing

Conferva implexa Dillwyn, British Confervae, Pl. B, 1805.

Rhizoclonium implexum (Dillw.) Kützing, Phycologia Germanica, p. 206, 1845.

R. riparium var. *implexum* Collins, Green Algae of North America, p. 328, 1909.

Among other algae, brackish lagoon, Spy island, Alaska, Sept. 3, 1913.

Genus **Spongomorpha** Kützing**Spongomorpha lanosa** (Roth) Kützing

Conferva lanosa Roth, Catalecta Botanica, Vol. III, p. 358, 1806.

Spongomorpha lanosa (Roth) Kützing, Species Algarum, p. 420, 1849.
Green Algae of North America, p. 358, 1909.

Port Clarence, Alaska, July 30, 1913; Station 20 *b-c*, dredged in 8-12 metres. Filaments rather stouter than usual, up to 60 μ ; tufts rather looser than usual.

CLASS PHAEOPHYCEAE

Family **ECTOCLARACEAE**Genus **Pylaiella** Kjellman**Pylaiella littoralis** (L.) Kjellman

Conferva littoralis Linnaeus, Species Plantarum, Vol. II, p. 1165, 1753.

Ectocarpus littoralis Harvey, Nereis Boreali-Americana, part 1; p. 139, 1852.

Pylaiella littoralis (L.) Kjellman, Skandinavians Ectocarpaceer och Tilopterideer, p. 99, 1872.

Collinson point, Camden bay, Alaska, Sept. 15, 1913; Station 27 *d*; from sea level to 2 metres' depth; a small form. Wollaston peninsula, April 4, 1916; loose on the beach; Station 47c.

Family **SPHACELARIACEAE**Genus **Chaetopteris** Kützing**Chaetopteris plumosa** (Lyngb.) Kützing

Chaetopteris plumosa (Lyngb.) Kützing, Phyc. gen., p. 293, 1843.

Dolphin and Union strait, Sept. 14, 1915; dredged in 20-30 metres; Station 43 *c*; on stones, with *Lithothamnium*; Wollaston peninsula, April 4, 1916; beach, station 47c. Young point, Northwest Territories, July 21, 1916; loose on the beach; Station 50d.

Family **ENCOELIACEAE**Genus **Punctaria** Greville**Punctaria stipitata**, sp. nov.

Frond 10-15 cm. long, narrowly lanceolate or linear, 1-2 cm. wide, gradually narrowing into the stipe, of which the upper part is compressed and the lower filiform part is 10-15 mm. long, terminating below in a small rounded basal callus; cross-section of frond 75-100 μ , showing six layers of symmetrically placed cells, those of the superficial layer square or slightly higher than broad, those of the intermediate layer corresponding and of about the same size but

more rounded or irregular, cells of the two inmost layers one for each two of the intermediate layers and elongate parallel to surface of thallus. Hairs? Fructification? PLATE 1.

Fronde 10-15 cm. longa, anguste lanceolata vel lineari. 1-2 cm. lata, sensim in stipitem, supra compressam, infra spatium 10-15 mm. filiformem, attenuata, in callum parvum subsphericum desinente; frondis sectione transversali 75-100 μ crassa, series sex cellularum symmetrice positarum monstrante; cellulis superficialibus (corticalibus) quadratis vel modice altioribus quam latis; cellulis strati intermedii singulis ad singulas corticales positis, eis subaequalibus, sed rotundioribus vel irregularibus; cellulis strati interioris singulis ad duas strati intermedii positis et superficiei frondis paralleliter elongatis; reliqua desunt.

Dredged in 6-9 metres, Port Clarence, Alaska, July 30, 1913, by Frits Johansen, Station 20b-c.

The frond has quite the habit of a young *Laminaria saccharina*, but shows the structure of a *Punctaria*. The texture of the fronds indicates that they are past maturity. No fruit could be found, nor any hairs, but there were occasionally structures that might have been bases of hairs that had fallen. If that were the case, the hairs would be in small scattered groups of about ten.

Punctaria glacialis Rosenvinge (Marine Algae from North-East Greenland, p. 118, figs. 6, 7, 1910) is the only other species with a well-developed stipe, but its frond is larger and wider and usually of rounded outline, and in cross-section the cells are irregularly placed, with nothing of the symmetrical arrangement shown in *Punctaria stipitata*.

Family STRIARIACEAE

Genus *Stictyosiphon* Kützing

Stictyosiphon tortilis (Rupr.) Reinke

Stictyosiphon tortilis Ruprecht, Algae Ochotenses, p. 373, 1851.

Phlacospora tortilis Kjellman, Algae of the Arctic Sea, p. 264, 1883.

Stictyosiphon tortilis (Ruprecht) Reinke, Atlas Deutscher Meeresalgen Pl. XXI, XXII, 1892.

Port Clarence, Alaska, July 30, 1913; dredged in 4-6 metres; Station 20b-c; among *Antithamnion boreale*. Among other algae in brackish lagoon, Spy island, Alaska, Sept. 3, 1913. At both stations a slender form, corresponding to *Phlacospora pumila* Kjellman.

Family DESMARESTIACEAE

Genus *Desmarestia* Lamouroux

Desmarestia aculeata (L.) Lamouroux

Fucus aculeatus Linnaeus, Species Plantar. Vol. II, p. 1632, 1753.

Desmarestia aculeata (L.) Lamouroux, Essai sur les Thalassiphytes, p. 25, 1813.

Bernard harbour, July 20, 1915, Station 41, dredged in 10 metres. Dolphin and Union strait, Station 43c, Sept. 14, 1915; dredged in 20-30 metres; on stones with *Lithothamnium*; quite like the typical form of the Atlantic coast. Cockburn point, Sept. 1, 1914; Station 37c; approaching *D. media*.

Family **CHORDARIACEAE**Genus **Chordaria** Agardh**Chordaria flagelliformis** (Fl. Dan.) Agardh

Fucus flagelliformis Flora Danica, Pl. DCI, 1782.

Chordaria flagelliformis (Fl. Dan.) Agardh, Species Algarum, Vol. I, p. 164, 1822.

Port Clarence, Alaska, July 31, 1913; with plurilocular sporangia; on the beach, Station 20d.

Family **RALFSIACEAE**Genus **Ralfsia** Berkeley**Ralfsia pusilla** (Strömff.) Batters

Stragularia pusilla Strömffelt, Notarise p. 382, Pl. III, fig. 4, 1888.

Ralfsia pusilla (Strömff.) Batters, Additional notes on the Marine Algae of the Clyde Sea area, p. 5, 1892.

On *Chaetomorpha Melagonium*, Wollaston peninsula, Station 47c, April 4, 1916. Small plants, not in good condition; beach.

Family **LAMINARIACEAE**Genus **Chorda** Stackhouse**Chorda Filum** (L.) Stackhouse

Fucus Filum Linnaeus, Species Plantarum, Vol. II, p. 1162, 1753.

Chorda Filum (L.) Stackhouse, Ner. Brit. Fasc. 2, p. XXIV, 1797.

Port Clarence, Alaska, July 30, 1913; dredged in 4-6 metres; both large and small fronds. Station 20b-c.

Genus **Laminaria** Lamouroux**Laminaria solidungula** J. G. Agardh

Laminaria solidungula J. G. Agardh, Spetsbergens Alger, part 1, p. 3, Pl. I, 1862.

Lat. 69° 35' North, Long. 163° 27' West, Station 22; dredged in about 30 metres. Young plants very delicate; smallest with stipe 5 mm. long, lamina 2.5 cm. long, 5 mm. wide; some plants, 8 cm. long, show new frond forming below the old frond; largest frond 60 cm. long, with cuneate base, and rounded apex, bearing the very narrow base of the old frond; sori well formed on the new frond. In one instance two stipes arose from one circular basal disk; possibly formed by coalescence, but showing no indication of it. Off Tigvariak island, Alaska, Sept. 5, 1913, Station 26a, dredged in 4-6 metres; mature fronds 50 cm. long, with large basal sorus on lamina, and remains of old frond at apex. Spy island, Alaska, Sept. 3, 1913, beach, Station 26; up to 1 metre long, stipe short; 2 sori, with sharp constriction between.

Laminaria groenlandica Rosenvinge

Laminaria groenlandica Rosenvinge. Grønlands Havalger, p. 847, 1893.

Harbour, Cockburn point, Sept. 1, 1914, Station 37e. One mature fruiting plant; haptera very numerous, up to 1 dm. long, slender and wiry, resembling a tuft of *Ahnfeltia plicata*. Bernard Harbour, July 20, 1915; Station 41, dredged in 10 metres; small individuals, entangled; lamina short, with torn apex, up to 2 dm. wide; stipe to 5 dm. long, producing very abundant, long, slender haptera,

on some fronds for the whole length of the stipe possibly due to the character of the bottom, sandy mud. Pihumalerksiak island, Cockburn point, Station 50a, July 15, 1916; probably this species, but not in good condition. Young point, Northwest Territories, July 21, 1916; Station 50d, one frond, washed up on beach, about 8 dm. long, sterile, lamina much split above; probably this species.

Genus *Alaria* Greville***Alaria membranacea* J. G. Agardh**

Alaria membranacea J. G. Agardh, Grönlands Laminariaceer och Fucaceer, p. 26, 1872. Kjellman, Algae of the Arctic Sea, p. 215, 1883.

Harbour, Cockburn point, Sept. 1, 1914; Station 37c, dredged in 4 metres; Pihumalerksiak island, Cockburn point, Station 50a, July 15, 1916; a much battered form, frond narrow, but probably this species. A fragmentary frond from Dolphin and Union strait, Sept. 14, 1915, Station 43c, is undeterminable specifically.

Family LITHODERMATACEAE

Genus *Lithoderma* Areschoug***Lithoderma fatiscens* Areschoug**

Lithoderma fatiscens Areschoug, Observationes Phycologicae, Part 3, p. 23.

Kjellman, Algae of the Arctic Sea, p. 255, Pl. XXVI, figs. 6-7, 1883.

Dolphin and Union strait, Sept. 14, 1915. A single small frond on a pebble, dredged in 20-30 metres, station 43c.

Family FUCACEAE

Genus *Fucus* Linnaeus***Fucus evanescens* Agardh**

Fucus evanescens Agardh, Species Algarum, Vol. I, p. 92, 1820.

Port Clarence, Alaska, July 31, 1913; on beach, Station 20d.

Agrees well with *forma typica*.

***Fucus inflatus* Vahl**

Fucus inflatus Vahl, Fl. Dan. Pl. 1127, 1794.

This species is represented by two forms:

***Fucus inflatus* forma *distichus* (L.) Børgesen**

Fucus distichus Linnaeus, Systema Naturae, ed. 12, Vol. 2, p. 716, 1767.

Fucus inflatus forma *distichus* (L.) Børgesen, Marine Algae of the Faroes, p. 405, 1902.

Young point, N.W.T., July 21, 1916, on beach, station 50d.

***Fucus inflatus* forma *linearis* (Oeder) Rosenvinge**

Fucus linearis Oeder, Flora Danica, Pl. CCCLI, 1767.

Fucus inflatus forma *linearis* (Oeder) Rosenvinge, Grönlands Havalger, p. 834, 1893.

Wollaston peninsula, Station 47c, April 4, 1916; Pihumalerksiak island Cockburn point, Station 50a, July 15, 1916. A fragmentary specimen from Wollaston peninsula, April 8, 1916, Station 47e, probably belongs here, also a rather uncharacteristic frond from Cockburn point, Sept. 1, 1914, Station 37e.

***Fucus vesiculosus* Linnaeus**

Fucus vesiculosus Linnaeus, Species Plantarum, Vol. II, p. 1636, 1753.

Harbour, Cockburn point, Sept. 1, 1914; station 37e, a small form.

CLASS RHODOPHYCEAE

Genus **Chondrus** Stackhouse**Chondrus affinis** Harvey

Chondrus affinis Harvey in Hooker and Arnott, Botany of Beechey's Voyage, p. 408, 1843. Harvey, Nereis Boreali-Americana, part 2, p. 181, 1853.
On beach, Port Clarence, Alaska, July 31, 1913, Station 20d.

Family GIGARTINACEAE

Genus **Phyllophora** Greville**Phyllophora Brodiaei** (Turn.) J. G. Agardh

Phyllophora Brodiaei (Turn.) J. G. Agardh, var. *interrupta* (Grev.) Rosen-
vinge, Grønlands Havalger, p. 821, 1893.

Sphacrococcus interruptus Greville, Acta Natur. Curios. Vol. XIV, p. 423,
Pl. XXVI, fig. 1, 1829.

Station 20d, Port Clarence, Alaska, July 31, 1913, on beach. Camden
bay, Alaska, Station 28m, June 7, 1914, Beach, Bernard harbour, July 20, 1915,
dredged in 10 metres, Station 41. Dolphin and Union strait, Sept. 14, 1915,
with nemathecia; dredged in 20-30 metres, Station 43c. Young point, July 21,
1916, on beach, Station 50d. Well developed and apparently plentiful at all
stations.

Genus **Actinococcus** Kützing**Actinococcus subcutaneus** (Lyngb.) Rosenvinge

Chaetophora subcutanea Lyngbye, Flora Danica, Pl. MMCXXXV, fig. 2,
1834.

Actinococcus subcutaneus (Lyngb.) Rosenvinge, Grønlands Havalger, p. 822,
1893.

On *Phyllophora Brodiaei* var. *interrupta*, Dolphin and Union strait, Sept.
14, 1915, Station 43c.

Genus **Ceratocolax** Rosenvinge**Ceratocolax Hartzii** Rosenvinge

Ceratocolax Hartzii Rosenvinge, Deuxième Mémoire sur les Algues Marines
de Groenland, p. 34, 1898.

On *Phyllophora Brodiaei* var. *interrupta*, Dolphin and Union strait, Sept.
14, 1915, Station 43c.

Genus **Ahnfeltia** Fries**Ahnfeltia plicata** (Huds.) Fries

Fucus plicatus Hudson, Flora Anglica, p. 589, 1798.

Ahnfeltia plicata (Huds.) Fries, Flor. Scand. p. 310, 1835.

On beach, Port Clarence, Alaska, July 31, 1913, Station 20d. Young point,
Station 50d, July 21, 1916; washed ashore.

Genus **Sterrocolax** Schmitz.**Sterrocolax decipiens** Schmitz

Sterrocolax decipiens Schmitz, Flora, Vol. LXXVII, p. 397, Pl. VII, figs.
11-12, 1893.

On *Ahnfeltia plicata*, Port Clarence, Alaska, July, 1913, Station 20a.

Family **DELESSERIACEAE**Genus **Delesseria** Lamouroux**Delesseria sinuosa** (Good. & Woodw.) Lamouroux

Fucus sinuosus Goodenough & Woodward, Tr. Linn. Soc., Vol. III, p. 11, 1797.

Delesseria sinuosa (Good. & Woodw.) Lamouroux, Essai sur les thalassophytes, p. 36, 1813.

Dredged in 22-24 metres, Lat. 69° 35' N., long. 163° 27' W. Aug. 17, 1913, Station 22.

Delesseria sinuosa forma **lingulata** Agardh

Delesseria sinuosa forma *lingulata* Agardh, Sp. Alg., Vol. 1, p. 175, 1822.

Dredged in 10 metres, Station 41, Bernard harbour, July 20, 1915. Dredged in 20-30 metres, Station 43c, Dolphin and Union strait, Sept. 14, 1915; with tetraspores.

Family **RHODOMELACEAE**Genus **Polysiphonia** Greville**Polysiphonia arctica** J. G. Agardh

Polysiphonia arctica J. G. Agardh, Species Algaeum, Vol. II, p. 1034, 1863. Kjellman, Algae of the Arctic Sea, p. 123, 1883.

Dredged in 20-30 metres, Dolphin and Union strait, Station 43c, Sept. 14, 1915; a slender form.

Genus **Pterosiphonia** Falkenberg**Pterosiphonia bipinnata** (Post. & Rupr.) Falkenberg

Polysiphonia bipinnata Postels & Ruprecht, Illustrationes Algaeum, p. 22, 1840.

Pterosiphonia bipinnata (Post. & Rupr.) Falkenberg, Rhodomelaceae, p. 273, 1901.

On beach, Port Clarence, Alaska, July 31, 1913, Station 20d; a slender, sparingly branched form, the habit not unlike *Polysiphonia arctica*.

Genus **Rhodomela** Agardh**Rhodomela lycopodioides** (L.) Agardh

Fucus lycopodioides Linnaeus, Systema Naturae, Vol. II, p. 717, 1758.

Rhodomela lycopodioides (L.) Agardh, Species Algaeum, Vol. I, p. 377, 1822.

This very variable species is here represented by three forms.

Rhodomela lycopodioides forma **flagellaris** Kjellman

Rhodomela lycopodioides forma *flagellaris* Kjellman, Algae of the Arctic Sea, p. 108, 1883.

Dredged in 22-24 metres, Lat. 69° 35' N., Long. 163° 27' W., Aug. 17, 1913, Station 22.

Rhodomela lycopodioides forma **setacea** Kjellman

Rhodomela lycopodioides forma *setacea* Kjellman, Algae of the Arctic Sea, p. 108, 1883.

Dredged in 4-6 metres, Port Clarence, Alaska, July 30, 1913; station 20 b-c; with tetraspores.

Rhodobela lycopodioides forma **tenuissima** Kjellman

Rhodobela lycopodioides forma *tenuissima* Kjellman, *Algae of the Arctic Sea*, p. 109, 1883.

Wollaston peninsula, April 8, 1916, Station 47c, beach at Kimiryuak river.

Rhodobela Larix (Turn.) Agardh

Fucus Larix Turner, *Historia Fucorum*, Vol. IV, p. 23, Pl. CCVII, 1819.

Rhodobela Larix (Turn.) Agardh, *Species Algarum*, Vol. I, p. 376, 1822
Harvey, *Nereis Boreali-Americana*, part 2, p. 24, 1853.

On beach, Port Clarence, Alaska, July 31, 1913, Station 20d. Dolphin and Union strait, Sept. 14, 1915, dredged in 20-30 metres, Station 43c.

Genus **Odonthalia** Lyngbye**Odonthalia dentata** (L.) Lyngbye

Fucus dentatus Linnaeus, *Systema Naturae*, Vol. II, p. 748, 1758.

Odonthalia dentata (L.) Lyngbye, *Hydrophytologia Danica*, p. 9, Pl. III, 1819.

Dredged in 22-24 metres, Lat. 69° 35' N., Long., 163° 27' W., Station 22; with tetraspores. The specimens are intermediate between forma *angusta* Harvey of the St. Lawrence river, P. B.-A., No. 1297, and the typical form of northern Europe; mostly old fronds with numerous young proliferous branches.

Family **CERAMIACEAE**Genus **Antithamnion** Nägeli**Antithamnion boreale** (Gobi) Kjellman

A. plumula var. *boreale* Gobi, *Algenflora des Weissen Meeres*, p. 47, 1878.

Antithamnion boreale (Gobi) Kjellman, *Algae of the Arctic Sea*, p. 180, Pl. XVI, fig. 2-3, 1883.

Dredged in 4-6 metres, Port Clarence, Alaska, July 30, 1913, Station 20 b-c. Spy island, Alaska, Station 26, Sept. 3, 1913; with sessile tetrasporangia. Dredged in 22-24 metres, Station 22, Lat. 69° 35' N., Long. 163° 27' W. Dredged in 20-30 metres. Dolphin and Union strait, Station 43c, Sept. 14, 1915. Young point, July 21, 1916, on beach, Station 50d.

Genus **Ceramium** Agardh**Ceramium tenuissimum** (Lyngb.) J. G. Agardh

C. diaphanum var. *tenuissimum* Lyngbye, *Hydrophytologia Danica*, p. 120, Pl. XXXVII, B. 4, 1819.

C. tenuissimum (Lyngb.) J. G. Agardh, *Species Algarum*, Vol. II, p. 120, 1851. Harvey, *Nereis Boreali-Americana*, part 2, p. 216, 1853.

Dredged in 4-6 metres, Port Clarence, Alaska, Station 20b-c, July 30, 1913. Young point, Station 50d, July 21, 1916; a delicate form, found on beach; with tetraspores.

Ceramium rubrum (Huds.) Agardh

Conferva rubra Hudson, *Flora Anglica*, p. 600, 1798.

Ceramium rubrum (Huds.) Agardh, *Species Algarum*, Vol. I, p. 135, 1820.

On beach, Port Clarence, Alaska, July 31, 1913, Station 20 d; a rather slender form, near what is considered typical in the Atlantic.

Family DUMONTIACEAE

Genus *Sarcophyllis* Kützing*Sarcophyllis arctica* Kjellman

Sarcophyllis arctica Kjellman, Algenvegetation des Murmurschen Meeres, p. 17, 1877. Algae of the Arctic Sea, p. 152, Pl. XIV, figs. 1-3, 1883.

On beach, Port Clarence, Alaska, July 31, 1913, Station 207. Collinson point, Camden bay, Alaska, Station 27d, Sept. 15, 1913, beach. Dredged in 20-30 metres, Dolphin and Union strait, Sept. 11, 1915, Station 43c. Abundant and well-developed specimens from all stations; mostly with tetraspores; some with cystocarps from Dolphin and Union strait.

Genus *Lithothamnium** Philippi*Lithothamnium compactum* Kjellman

Lithothamnium compactum Kjellman, Algae of the Arctic Sea, p. 101, Pl. XIX, figs. 1-4, 1883.

Lithothamnium glaciale Kjellman

Lithothamnium glaciale Kjellman, Algae of the Arctic Sea, p. 93, Pl. II, III, 1883.

Lithothamnium laeve (Strømfelt) Foslie

Lithothamnium laeve (Strømfelt) Foslie in Rosenvinge, Deuxième Mémoire sur les Algues Marines de Groenland, p. 14, 1898.

Lithophyllum laeve Strømfelt, Algenvegetation Island, p. 21, Pl. I, figs. 11-12.

All of the three species of *Lithothamnium* were collected by dredging at a depth of 20-30 metres at the west of Cockburn point, Station 43c.

*Determinations by Mme Paul Lemoine.

Family CORALLINACEAE

Genus *Hildenbrandtia* Nardo.*Hildenbrandtia Prototypus* Nardo

Hildenbrandtia Prototypus Nardo, Isis, p. 675, 1834.

On pebbles dredged in 22-24 metres, Lat. 69° 35' N., Long. 163° 27' W., Station 22, Aug. 17, 1913. A single specimen, reduced form and sterile, on a pebble dredged in Dolphin and Union strait, 20-30 metres, Sept. 14, 1915, Station 43c.

EXPLANATION OF PLATE I

Figure 1. *Punctaria stipitata* Collins. Photograph of the type specimens, natural size.

MARINE ALGÆ



PUNCTARIA STIPITATA (C. Ag.)

Type Specimens

Vgl IV B

al size.



Expédition Arctique Canadienne. Mélobésiées. (Calcareous Algae).

PAR MME PAUL LEMOINE

Stagiaire au Muséum d'Histoire Naturelle de Paris

La présence d'algues calcaires n'était pas connue avec certitude sur la côte Nord du Canada; l'Expédition canadienne vient de rapporter, parmi de nombreux matériaux d'étude, une très belle collection de Mélobésiées de Dolphin et Union Strait, à l'Ouest de Coronation Gulf. On savait déjà que les Mélobésiées vivaient en abondance sur les côtes de Groenland, de Ellesmereland, et de la mer de Behring; les algues récoltées par M. Johansen au cours de l'Expédition arctique augmentent d'une façon très intéressante notre connaissance sur la répartition géographique de la flore arctique, sur cette grande étendue des côtes canadiennes, où nos connaissances étaient nulles.

A cause des circonstances que nous traversons*, il n'a été possible de m'envoyer en France qu'une petite partie des échantillons recueillis par l'Expédition arctique, et, dans cette note préliminaire, je n'ai pu tenir compte que des espèces formant la petite collection que j'ai reçue. Il ne semble pas qu'elle contienne d'espèces nouvelles.

Les Mélobésiées arctiques ont été très étudiées depuis trente ans, en particulier par Strömfelt, Kjellman, Rosenvinge, Foslie, et ont donné lieu à d'importants mémoires. La flore arctique paraît remarquablement uniforme—au moins en ce qui concerne les Mélobésiées—et ce sont les mêmes espèces qui vivent dans toute l'étendue du cercle polaire, depuis les côtes sibériennes jusqu'aux côtes canadiennes. Enfin le nombre des espèces arctiques paraît limité; ces diverses raisons expliquent que les trois espèces, qui constituent la petite collection reçue, soient déjà connues dans les régions polaires; ce sont:

Lithothamnium laeve (Strömft.) Rosenv.

Lithothamnium glaciale Kjellm.

Lithothamnium compactum Kjellm.

Ces espèces ont été recueillies par draguage, Station 43c, à l'ouest de Cockburn Pt., à une profondeur de 20 à 30 mètres; elles vivaient sur pierres, dans des fonds de Laminaires et dans des boues grises; au point de vue de leur habitat, je rappellerai qu'il n'est pas rare de récolter les algues calcaires dans les fonds de boue, ainsi que je m'en suis rendu compte sur les côtes françaises; ce fait a d'ailleurs été signalé pour diverses régions du globe.

Les trois espèces recueillies étaient fixées sur pierres; *L. laeve* est reconnaissable à l'aspect par sa surface lisse et brillante et par ses stries concentriques du bord de son thalle; les croûtes très minces sont abondamment pourvues de conceptacles; *L. compactum* forme des croûtes dont la surface est mate et très unie; les échantillons ne sont pas fructifiés; enfin *L. glaciale* forme des croûtes plus épaisses que les deux espèces précédentes; la surface est mamelonnée et présente des sortes de cônes; les croûtes sont fructifiées.

Les trois espèces avaient été signalées sur la côte ouest de Groenland (Rosenvinge, 1899), sur les côtes de Ellesmereland (Simmons in Foslie, 1905), et sur les côtes de l'Alaska, dans la mer de Behring (Kjellman, 1889; Saunders, 1901; Setchell et Gardner, 1903).

En résumé les récoltes de l'Expédition canadienne paraissent confirmer d'une façon intéressante les conclusions des travaux antérieures, c'est-à-dire la pauvreté relative et l'uniformité de la flore arctique de Mélobésiées.

* Early in 1915—Ed.
44637—2

Report on a collection of Marine Algæ made in Hudson bay

By MARSHALL A. HOWE

The only previously published report on the algae of Hudson bay, so far as known to the present writer, is a brief paper entitled "Some Algae from Hudson Bay" by W. A. Setchell and F. S. Collins, printed in *Rhodora* in 1908 (10: 114-116). Two collections were involved in that study, one made on Depot island in Lat. 63° 55' N., and the other on the western shores of James bay between the latitudes of 51° and 55° N. This Setchell and Collins list, including the named species and varieties, embraces 28 names.

The present collection, made by Mr. Frits Johansen in the summer of 1920, was from the southern and eastern shores of James bay and Hudson bay as far north as Richmond gulf and ranging between latitudes of about 51° and 56°. The present list includes 44 species and two named varieties, counting one species referred to genus alone, but without counting the 59 species and named varieties of Diatomaceae determined by Professor C. S. Boyer. Of these larger algae, 33 appear to be additions to the Setchell and Collins list, making the total of algae (excluding diatoms) now known from Hudson bay 61 species and varieties.

Some of the following records, as indicated in several cases, are based upon small fragments only. Most of the species listed are those commonly expected in boreal or North Temperate waters. The most notable record, subject to revision whenever more ample material is available, is that of *Odontholia floccosa*, hitherto known only from the North Pacific. One species, *Peyssonnelia Johansenii*, we venture to describe as new to science.

PHYCOPHYCEAE

OSCILLATORIACEAE

Lyngbya confervoides Ag.

Floating, with *Ectocarpus siliculosus*, *Polysiphonia arctica*, etc., on east coast of James bay, Lat. 53½°, September 9.

Trichomes 13-15 μ wide, sheaths colorless, 2-3 μ thick, cells 2-3 μ long, the disseminants granulated, apex rounded. This species has apparently not before been reported from the American continent north of Maine, but on the coast of Europe it ranges considerably further north than the present station.

CHLOROPHYCEAE

ULVACEAE

Enteromorpha prolifera (O. F. Müll.) Ag.

On beach, Charlton island, James bay, September.

Enteromorpha plumosa Kütz.

Small fragments in about 3 fathoms, Charlton island, James bay, July 25.

PHAEOPHYCEAE

ECTOCARPACEAE

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

Charlton island, July 25; in 10 fathoms, Grey Goose island, James bay, July 30-31; in 10 fathoms, between Olaska and Black Whale harbours, August 28; floating, with *Ectocarpus siliculosus*, *Antithamnion boreale*, etc., between Cape Jones and Long point, September 2; in 5 fathoms, Old Factory bay, Lat. about $52\frac{1}{2}^{\circ}$ N., September 11.

***Ectocarpus siliculosus* (Dillw.) Lyngb.**

Charlton island, James bay, July 25; in 10 fathoms, Grey Goose island, James bay, July 30-31; floating with *Stictyosiphon*, etc., Grey Goose island (Lat. 54° N.), James Bay, August 1; on *Chorda Filum*, in 5 fathoms, Long Point sound, between Long island and Cape Jones, August 2; in 15-20 fathoms, about 3 miles from entrance to Richmond gulf, August 23; with *Pylaiella littoralis*, etc., in 10 fathoms, between Olaska and Black Whale harbours, August 28; floating, with *Pylaiella*, *Haplospora*, and *Antithamnion*, between Cape Jones and Long point, September 2; floating, with *Lyngbya confervoides*, *Polysiphonia arctica*, etc., on east coast of James bay, September 9.

SPHACELARIACEAE

***Sphacelaria radicans* (Dillw.) Ag.**

In 10 fathoms, in bay between Olaska and Black Whale harbours, August 28.

The main and basal filaments are 35-50 μ in diameter, the younger and more terminal 25-30 μ . The branching is rare and irregular; the segments are mostly about half as long as wide, except in the more slender parts, where length and width are subequal.

***Sphacelaria cirrhosa* (Roth) Ag.**

Small fragments, in 10 fathoms, with *Rhodomela lycopodioides tenuissima*, Grey Goose island, James bay, July 30-31.

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

In 10 fathoms, Grey Goose island, James bay, July 30-31; in 10 fathoms, in bay between Olaska and Black Whale harbours, August 28.

ENCOELIACEAE

***Desmotrichum balticum* Kütz.**

In small quantity, with gametangia, associated with fragments of *Zostera* leaves and other algae, in about 3 fathoms, Charlton island, James bay, July 25.

The plants agree well with Kützling's figures *b* and *c* (Tab. Phyc. 6: pl. 4) except that the vegetative cells are more protuberant, giving the uniseriate and biseriate parts of the filaments a more moniliate appearance. The gametangia are conic-acute and sessile or superficial, as figured by Kützling, instead of rather obtuse and intercalary as figured by Reinke (Atlas Deutsch. Meeresalg. 1: pl. 12, 13, f. 1-9).

Petalonia Fascia (O. F. Müll.) Kuntze*Phyllitis Fascia* Kütz.

In about 3 fathoms, Charlton island, James bay, July 25; in 10 fathoms, Grey Goose island, James bay, July 30-31; floating fragment off Grey Goose island, James bay, August 1; in 10 fathoms, in bay between Olaska and Black Whale harbours, August 28; in beach water, on mud, on island between Long island and mainland, north of Cape Jones, August 31; in 5 fathoms, Old Factory bay, east side of James bay, September 11.

Some of the specimens, especially those from the Grey Goose island region, are sterile, hairless, and decolorate, and are somewhat peculiar in structure. These probably represent unattached fragments that have vegetated for a time in water that is deeper than is normal for the species. A cross section of the thallus resembles Kützing's figure 1 (Phyc. Gen. pl. 24 III) except that it is three or four times as thick (80-130 μ) and the cells are three or four times as large. Furthermore, the "Unterrindenschicht" is for the most part wanting and the superficial cells abut directly on the much larger interior cells. These large interior cells are readily visible (in our fluid-preserved material) through the nearly empty and decolorate epidermal cells, the relations of the two suggesting Kützing's unexplained figure 6. Two, three, or four of the smaller cells commonly measure the length or width of the subjacent large cells. The superficial small cells are mostly 14-30 μ in the long diameter, or sometimes longer; the large interior cells are usually 50-100 μ in their longest diameter. Another point in which a cross section differs from Kützing's figure 1 is the presence of occasional rhizoids between the two layers of large medullary cells. The bleached formalin-preserved specimens are so translucent that the course of these rhizoids in the medullary cavity may be observed through the two superposed layers of cells. It was our first impression that these peculiar fragments might be referable to *Punctaria plantaginea*, but the contrast in size between the epidermal cells and the subjacent medullary cells is too great.

STRIARIACEAE**Stictyosiphon tortilis** (Rupr.) Reinke*Phlocozpora tortilis* (Rupr.) Aresch.

Charlton island, James bay, July 25; in 10 fathoms, Grey Goose island, James bay, July 30-31; floating, sometimes attached to *Chordaria flagelliformis*, Grey Goose island (Lat. 54° N.) August 1; often attached to *Chordaria flagelliformis*, August 28; on and with *Chordaria flagelliformis*, in beach water on mud, on island between Long island and mainland, north of Cape Jones, August 31; floating, east coast of James bay, September 9.

In several of the specimens, the young plants are attached to *Chordaria flagelliformis*, as was the case with one of the original specimens described by Ruprecht (Middend. Reise Sibir. 12: 374. 1851). In such the epiphytes look superficially very much like branches of the *Chordaria*, but they are very different in microscopic structure.

DICTYOSIPHONACEAE**Dictyosiphon foeniculaceus** (Huds.) Grev.

Fragment only, Charlton island, James bay, July 25; larger fragments in 10 fathoms, Grey Goose island, July 30-31.

ELACHISTEACEAE

Elachistea fucicola (Volley) Aresch.

On *Fucus evanescens*, on island between Long island and Cape Jones, east coast of Hudson bay, August 31.

Elachistea lubrica Rupr. (?)

On *Odonthalia floccosa* in 10 fathoms, between Olaska and Black Whale harbours, August 28.

Forming tufts only 2-3 mm. high; filaments 26-42 μ in diameter, tapering decidedly at base, the cells mostly 1.25-1.5 times as long as broad; unilocular sporangia obovoid to pyriform-clavate, 75-150 μ long. Rather manifestly different from the specimens on *Fucus*, referred above to *E. fucicola*, yet hardly typical, either of *E. lubrica* or *E. fucicola*. In the small size of its tufts, as well as in its occurrence on a member of the Rhodomelaceae, it suggests *Elachistea stellaris* Aresch., but its filaments are more rigid than in that species and the cells of the filaments are relatively much shorter. So far as our information goes, no *Elachistea* has hitherto been reported as occurring on *Odonthalia*.

CHORDARIACEAE

Myrionema strangulans Grev.

On floating *Petalonia Fascia*, off Grey Goose island, (Lat. 54° N.) James bay, August 1; also in minute quantity on the same host and in same locality, in 10 fathoms, July 30-31.

Castagnea virescens (Carm.) Thuret

Small fragments only, bearing unilocular sporangia, with *Chordaria flagelliformis* and *Stictyosiphon tortilis*, in beach water on mud, on island between Long island and mainland, north of Cape Jones, east coast of Hudson bay, August 31.

Chordaria flagelliformis (O. F. Müll.) Ag.

Floating, sometimes carrying *Stictyosiphon tortilis*, Grey Goose island (Lat. 54° N.), August 1; in 10 fathoms, between Olaska and Black Whale harbours, August 28; in beach water, on mud, on island between Long island and mainland, north of Cape Jones, August 31; on beach, Charlton island, James bay, September; in 5 fathoms, Old Factory bay (Lat. about 52 $\frac{1}{2}$ ° N.), September 11.

RALFSIACEAE

Ikaltzia deusta (Ag.) J. Ag.

On stones at low tide, on south coast of James bay, about 30 miles west of Moose river, July 3. Sterile.

LAMINARIACEAE

Chorda Filum (L.) Stackh.

In 5 fathoms, small specimens (the longest 40 cm. long), Long Point sound, between Long island and Cape Jones, August 2; also, up to 52 cm. long, in beach water, on mud, on island between Long island and mainland, north of Cape Jones, east coast of Hudson bay, August 31.

Chorda tomentosa Lyngbye

In 10 fathoms, between Olaska and Black Whale harbours, August 28. With sporangia.

Alaria sp.

A small fragment of the main frond, with costa, floating off Grey Goose island (Lat. 54° N.), James bay, August 1; another small fragment, in 10 fathoms, in same locality, July 30-31.

TILOPTERIDACEAE

Haplospora globosa Kjellm.

Small specimens, floating, with *Pylaiella littoralis*, *Ectocarpus siliculosus*, and *Antithamnion boreale*, between Cape Jones and Long point, September 2.

FUCACEAE

Fucus evanescens Ag.

On stones at low tide, south coast of James bay, about 30 miles west of Moose river, July 3,—a young sterile fragment; in 10 fathoms, fertile, Grey Goose island, James bay, July 30-31—*f. cornutus* Kjellm.; in 10 fathoms, sterile, in a bay between Olaska and Black Whale harbours (Lat. about 55° N.)—approaching *f. cornutus*; on beach on one of the islands between Long island and Cape Jones, east coast of Hudson bay, August 31—*f. cornutus*, fertile.

RHODOPHYCEAE

BANGIACEAE

Erythrotrichia carnea (Dillw.) J. Ag.

In small quantity, with *Enteromorpha plumosa*, etc., in about 3 fathoms, Charlton island, James bay, July 25.

The filaments agree in being unbranched, but they show great variety in the form of the cells. Possibly some of the specimens with shorter cells belong with *Goniotrachum*.

GIGARTINACEAE

Phyllophora interrupta (Grev.) J. Ag.

In 10 fathoms, in bay between Olaska and Black Whale harbours, August 28.

Ahnfeltia plicata (Huds.) Fr.

On stones at low tide, south coast of James bay, about 30 miles west of Moose river, July 3; in 10 fathoms, Grey Goose island, James bay, July 30-31; on beach between Great Whale river and Richmond gulf, east coast of Hudson bay, August.

Sterrocolax decipiens Schmitz

On *Ahnfeltia plicata*, observed on the first and the last of the three gatherings cited above.

RHODOPHYLLIDACEAE

Turnerella Pennyi (Harv.) Schmitz

In 12-13 fathoms, Richmond gulf (Lat. about 56° N.) August 23; in 15-20 fathoms, with *Phycodrys sinuosa*, etc., about 3 miles from entrance to Richmond gulf, August 23; fragments in 10 fathoms, in bay between Alaska and Black Whale harbours, August 28.

The one or two perhaps nearly perfect thalli are somewhat orbicular or oblong, 4-6 cm. broad, gelatinous, and about 225 μ thick; in a cross-section, the cells of the superficial (cortical) layer are 2-3 times as high as broad (12-15 μ x 4-6 μ , without including the outer wall, which is 3-7 μ thick); the numerous subglobose, ovoid, stellate, or protoform subcortical cells are mostly 10-26 μ in diameter and have densely granular contents. There are small warty excrescences on the margins, but no definitely certain attachment organs. The alcohol-preserved specimens adhere very well to paper when dried under pressure. The thallus is more gelatinous than is the case with specimens from Pröven, Greenland, referred to this species by Rosenvinge and the surface cells are somewhat smaller, but it evidently differs in the structure of its cortex from *Kallymenia Schmitzii* De-Toni (*K. sanguinea* Schmitz), if that species is correctly represented by Turner's specimen from Ungava bay in the herbarium of The New York Botanical Garden, which Farlow doubtfully identified with *Turnerella Pennyi*. Schmitz, in Rosenvinge, Ann. Sci. Nat. Bot. VII, 19: 80, footnote, 1894, has referred Turner's so-called "*Kallymenia Pennyi*?" from Ungava bay to *Kallymenia sanguinea* Schmitz. One of Johausen's specimens (in 12-13 fathoms, Richmond gulf) suggests Rosenvinge's figure 4 (Medd. on Grønland 3: pl. 2) of *Kallymenia sanguinea* in size and contour.

The thallus of the Hudson bay specimens is evidently somewhat thinner than that of typical *Turnerella Pennyi* and in that respect approaches *T. septentrionalis* (Kjellm.) Schmitz, which Rosenvinge, in his "Deuxième Mémoire sur les algues marines du Groenland," concludes is not specifically distinct from *T. Pennyi*.

RHODYMENIACEAE

Rhodymenia palmata (L.) Grey. The "dulse."

A fragment, in 10 fathoms, Grey Goose island, James bay, July 30-31; large specimens, up to 26 cm. long and broad, on beach, Charlton island, James bay, September.

DELESSERIACEAE

Phycodrys sinuosa (Good. & Woodw.) Kütz.

Delesseria sinuosa (Good. & Woodw.) Lamour.

Fragments representing slender basal repent branches, provided with haptera and becoming ancipital-complanate or subterete, dredged, with other algae, in 3 fathoms, Charlton island, James bay, July 25, and in 5 fathoms, in Old Factory bay, September 11; cystocarpic and tetrasporic specimens in 15-20 fathoms, about 3 miles from entrance to Richmond gulf (Lat. about 56° N.) August 23; well-developed apparently sterile plants in 12-13 fathoms, Richmond gulf, August 23; in 25 fathoms, Richmond gulf, August 23; tetrasporic specimens in 10-20 fathoms, 4 miles from entrance to Richmond gulf, August 24.

RHODOMELACEAE

Polysiphonia arctica J. Ag.

Pterosiphonia arctica (J. Ag.) Setch. & Gard. Univ. of California Publ. Bot. 1: 329. 1903 (excluding the specimens cited).

In 10 fathoms, with procarps and young cystocarps, Grey Goose island, James bay, July 30-31; in 15-20 fathoms, with *Phycodrys sinuosa*, etc., about 3 miles from entrance to Richmond gulf (Lat. about 56° N.), August 23; in 10-20 fathoms, 4 miles from entrance to Richmond gulf August 24; floating and sterile, east coast of James bay, September 9 and September 10.

There has been some difference of opinion as to the proper genus for J. Agardh's *Polysiphonia arctica*, but, as pointed out by Rosenvinge (Medd. om Grønland 43: 107. 1910), it seems fairly certain that the plants from north-western America referred by Setchell and Gardner to *Pterosiphonia arctica* are something different. In these Hudson bay plants, the pericentral siphons are 4 to 6 in number, usually 5; in the longer segments, they are often somewhat spirally twisted. Cross-sections show a slight flattening or none at all. The branches are commonly few and distant, and it is not always possible to feel confident as to their mode of arrangement. However, it is often manifest that they are spirally disposed, though at a growing apex they occasionally appear distichous, as at first sight they appear in Rosenvinge's figure 4, even while he protests that they are spirally arranged. Hairs (trichoblasts) are lacking, as in *Pterosiphonia*, but this is the case also in certain species that Falkenberg has allowed to remain in *Polysiphonia*, e.g., *P. urceolata* and *P. fastigiata*. It is of some interest to note that, although J. Agardh found the pericentral siphons constantly 7. Rosenvinge, who has apparently examined "typical specimens," states that the pericentral cells are 4-7 and his three figures of cross-sections show 4, 5, and 6 pericentral siphons.

Polysiphonia urceolata (Lightf.) Grev.

A fragment, sterile, with basal half repent, in about 3 fathoms, Charlton island, James bay, July 25.

Rhodomela lycopodioides (L.) Ag.

In 10 fathoms, in bay, between Olaska and Black Whale harbours, (Lat. about 55° N.) August 28; a larger piece, from same locality and habitat, apparently referable to f. *setacea* Kjellm.; a small fragment only of f. *tennissima* (Rupr.) Kjellm. in about 3 fathoms, Charlton island, James bay, July 25; larger specimens in 10 fathoms, Grey Goose island, James bay, July 30-31.

The f. *tennissima* represented by the two specimens last cited seems to be rather doubtfully distinguishable from *Rhodomela subfusca* (Woodw.) Ag.

Odonthalia dentata (L.) Lyngb.

In about 3 fathoms, Charlton island, James bay, July 25; in 10 fathoms Grey Goose island, James bay, July 30-31; in 10 fathoms, in bay between Olaska and Black Whale harbours (Lat. about 55° N.), August 28.

Odonthalia floccosa (Esp.) Falkenb.

Small sterile fragments in 10 fathoms between Olaska and Black Whale harbours (Lat. about 55° N.), August 28.

This appears to be the first record of the existence of this North Pacific species in Hudson bay. Its habit is not typical and possibly more complete material would provide basis for its segregation. The branches are terete or essentially so except for slight flattening at the points of origin. The wholly "leafless" apices preclude the possibility of the plants being any form of *Rhodomela lycopodioides*.

CERAMIACEAE

Antithamnion boreale (Gobi) Kjellm.

In 10 fathoms, with other algae, Grey Goose island, James bay, July 30-31; fragments, with *Polysiphonia arctica*, etc., in 10-20 fathoms, Richmond gulf, August 24; in 10 fathoms, in bay between Olaska and Black Whale harbours, August 28; floating, with *Haplospora*, *Pylaeella*, and *Ectocarpus*, between Cape Jones and Long point, September 2.

DUMONTIACEAE

Dumontia incrassata (O. F. Müll.) Lamour.

Dumontia filiformis (Huds.) Grev.

Two very young plants, the larger only 5 mm. long, floating with *Stictosiphon tortilis*, etc., off Grey Goose island, James bay, August 1.

Dilsea integr. (Kjellm.) Rosenv.

Sarcophyllis arctica Kjellm.

In 10 fathoms, in bay between Olaska and Black Whale harbours (Lat. about 55° N.), August 28.

SQUAMARIACEAE

Peyssonnela Johansenii, sp. nov.

Thallus rather coriaceous, adherent, but easily separable from substratum, irregular in contour and irregularly lobed or crose, reddish-brown, olive-green or subfuliginous, rather faintly radiate-striate, copiously calcified ventrally and showing in most parts of ventral surface, except for a nearly naked marginal zone 75-150 μ wide, a thick web of tangled branching rhizoids 30-140 μ long, thallus mostly 145-170 μ thick or sometimes 300 μ if the rhizoidal layer is included; cells of the dorsal surface, seen from above, mostly hexagonal, 8-11 μ in diameter, not obviously in rows except near margin; cells of the basal layer, in a radio-vertical section, usually 18-26 μ x 8-13 μ , often appearing to form 2-4 basal (hypothallic) filaments; erect or ascending filaments 8-13 μ in diameter, their cells about as high as broad; plant apparently sterile.

Fronde subcoriacea, adhaerente, sed facile a substrato soluta, irregulari et irregulariter lobata aut crosa, rubro-brunnea, olivaceo-viridi, aut subfuliginosa, subleviter radiatim striata, infra copiose calcarea, et, in plerisque partibus, praeter zonam marginalem 75-105 μ latam, confertam telam rhizinarum 30-140 μ longarum, implicatarum, plus minusve ramosarum, praebente, thallo vulgo 145-170 μ crasso, aut tela rhizinarum inclusa, interdum 300 μ ; cellulis dorsalibus plerumque hexagonis superne visis, 8-11 μ diam., non in ordinibus manifestis, submarginalibus exceptis; cellulis hypothalli, in sectione longi-perpendiculari, plerumque 18-26 μ x 8-13 μ , saepe, ut videtur, 2-4 fila basilaria monstrantibus; filis erectis aut ascendentibus (perithalli) 8-13 μ latis, cellulis fere tam altis quam latis; planta, ut videtur, sterili.

On stones at low tide, south coast of James bay, about 30 miles west of Moose river, collected by Frits Johansen, July 3, associated with *Ralfsia dusta*. The plants are apparently sterile, though showing occasionally what look like the beginnings of tetrasporic sori. They carry attached sporlings of a *Fucus*, about 1-2 mm. high.

The one *Peyssonnelia* with which the Hudson bay plant would most naturally be compared is *P. Rosenringii* Schmitz, originally described from the west coast of Greenland, but since reported from Maine by Rosenvinge and by Col-

lius. Comparison with original description of *P. Rosenvingii* and figure of a vertical section of thallus indicates that *Peyssonndia Rosenvingii* has a thicker, less lobed thallus, with larger cells, a more sharply defined unistratose basal layer, fewer and shorter rhizoids, etc. The scale of magnification indicates the thickness of the thallus to be about 400 μ , while the accompanying text includes the rather remarkable statement that "Les croûtes agées acquièrent une épaisseur de 5 millimètres et davantage." In the Maine specimens currently referred to *P. Rosenvingii*, the nearly entire-margined crusts are 160-220 μ thick. They always occur on Lithothamnium, as observed by Collins, they are closely adherent, and the rhizoids are few and short, apparently unbranched, and rarely exceeding 40 μ in length. Radial striations are more common and more obvious than in the Hudson bay plant and the colour is redder. A radio-vertical section shows a sharply defined basal layer of one series of larger redder cells. The cells of the dorsal surface, seen from above, are 13-18 μ in diameter (vs. 8-11 μ in the Hudson Bay plant) and often lie in distinct radial rows. It is manifest that Johansen's plant is not referable to *Peyssonndia Rosenvingii*. PLATE II, figs. 1, 2.

CORALLINACEAE

Phymatolithon compactum (Kjellm.) Fosl.

On shell on beach between Great Whale river and Richmond gulf, August; on pebble on island between Long island and mainland, north of Cape Jones, September 2.

Phymatolithon laevigatum (Fosl.) Fosl.

A very little, on a pebble, with *P. compactum*, on island between Long island and mainland, north of Cape Jones, September 2.

Lithothamnium glaciale Kjellm.

On shell on beach between Great Whale river and Richmond gulf, August; on beach on one of the islands between Long island and Cape Jones, August 31 — both the typical attached form on a pebble and free, water-worn forms.

Lithothamnium laevè (Strømif.) Fosl.

In about 10 fathoms, on fragment of a shell, Richmond gulf, August 24.

BACILLARIACEAE (DIATOMACEAE)

The following 43 species and named varieties of diatoms were apparently brought up by a single haul of the dredge in three fathoms of water off Charlton island, James bay, by Frits Johansen, July 25, 1920. They accompanied various larger algae such as *Capsosiphon fulvescens*, *Enteromorpha plumosa*, *Petalonia Fascia*, *Phycodrys sinuosa*, *Polysiphonia urecolata*, *Odonthalia dentata*, etc. The determinations of the diatoms are by Professor Charles S. Boyer, of Philadelphia.

1. *Achnanthes parvula* Kütz. Rare.
2. *Biddulphia aurita* Bréb. Not rare.
3. *Biddulphia obtusa* Grun. Not rare.
4. *Campylodiscus Echeneis* Ehrenb. Very rare.
5. *Cocconeis Scutellum* Ehrenb. Abundant.
6. *Cymbella parva* (W. Smith) Cleve. Rare.

7. *Diploneis interrupta* (Kütz.) Cleve. Very rare.
8. *Epithemia gibba* Kütz. Not rare.
9. *Epithemia turgida* (Ehrenb.) Kütz. Not rare.
10. *Fragilaria capensis* Grun. Rare.
11. *Fragilaria capucina* Desmaz. Not common.
12. *Fragilaria capucina mesolepta* Rab. Rare.
13. *Gaillonella nummuloides* (Pillw.) Bory. (*Melosira nummuloides* Ag.).
Abundant, composing the greater part of material.
14. *Gaillonella nummuloides hyperborea* (Grun.) Po. Toni. Abundant.
15. *Gomphonema exiguum arcticum* (Grun.) Cleve. Rare.
16. *Grammatophora arcuata* Ehrenb. Rare.
17. *Grammatophora peruana* Ehrenb. Very rare.
18. *Gyrosigma balticum* (Ehrenb.) Cleve. Very rare.
19. *Gyrosigma fasciola* (Ehrenb.) Cleve. Very rare.
20. *Gyrosigma scalproides eximium* (Thw.) Cleve. Rare.
21. *Gyrosigma spencerii* (W. Smith) Cleve. Rare. (includes var. *boreale* Grun.)
22. *Homoeocladia capitata* H. L. Smith. Occurs in gelatinous tubes. Abundant.
23. *Licmophora anglica* (Kütz.) Grun. Rare.
24. *Mastogloia exigua* Lewis. Very rare.
25. *Navicula directa genulna* Cleve. Rare.
26. *Navicula Grevillei* (Ag.) Cleve. Common. Occurs in tubes.
27. *Navicula humerosa* Bréb. Rare.
28. *Navicula mollis* (W. Smith) Cleve. Rare. Occurs in tubes.
29. *Navicula longa* Greg. Very rare.
30. *Navicula ramosissima* (Ag.) Cleve. Common. Occurs in tubes.
31. *Navicula superba elliptica* Cleve. Very rare.
32. *Navicula tumida* Bréb. Not common. [*Scolioptera tumida* (Bréb.) V. H.].
33. *Nitzschia distans* Greg. Very rare.
34. *Nitzschia sigma rigida* Grun. Rare.
35. *Opephora marina* (Greg.) Petit. Rare.
36. *Pinnularia quadratarea constricta* Oestrup. Very rare.
37. *Rhabdonema arcuatum* (Lyngb.) Kütz. Common.
38. *Rhizolenia setigera* Brightw. Very rare.
39. *Rholcosphenia curvata* (Kütz.) Grun. Rare.
40. *Surirella Gemma* Ehrenb. Common.
41. *Synedra affinis tabulata* (Ag.) Van Heurck. Common.
42. *Synedra pulchella* (Ralfs.) Kütz. Rare.
43. *Trachyneis aspera vulgaris* Cleve. Very rare.

The "rarity" of the above species refers only, of course, to their occurrence in the deposit, as most of them are common along the coast.

The following 29 species and varieties of diatoms named by Professor Boyer, were brought up, with various larger algae, from a depth of ten fathoms in a bay on the south side of Grey Goose Island, James bay, on July 30-31:

1. *Achnanthes brevipes intermedia* (Kütz.) Cleve. (*Achnantheidium arcticum* Cleve.). Common.
2. *Amphipleura rutilans* (Trentepohl) Cleve. Common in lighter forms.

- Biddulphia aurita** Bréb. Common.
4. **Biddulphia obtusa** Grun. Common.
5. **Caloneis brevis** (Greg.) Cleve. Rare.
6. **Caloneis brevis vexans** (Grun.) Cleve. Rare.
7. **Cocconeis Scutellum minuta** Grun. Common.
8. **Cocconeis subtilis** Ehrenb. Occasional.
9. **Diploneis subcineta** (A. Schmidt) Cleve. Rare.
10. **Grammatophora arcuata** Ehrenb. Common.
11. **Grammatophora gibberula** Kütz. Not common.
12. **Grammatophora marina** (Lyngb.) Kütz. Common.
13. **Gyrosigma rectum** (Donkin) Cleve. [*Donkinia recta* (Donkin) Van Heurek]. Rare.
14. **Hyalodiscus scoticus** (Kütz.) Grun. Common.
15. **Hyalodiscus subtilis** Bail. Common.
16. **Licmophora anglica** (Kütz.) Grun. Not rare.
17. **Licmophora Lyngbyei** (Kütz.) Grun. Not rare.
18. **Navicula Grevillei** (Ag.) Cleve. Common.
19. **Navicula humerosa** Bréb. Rare.
20. **Navicula longa** Greg. Rare.
21. **Navicula ramosissima** (Ag.) Cleve. Not rare.
22. **Nitzschia Brebissonii borealis** Grun. Rare.
23. **Nitzschia tubicola** Grun. Not rare in lighter forms.
24. **Pleurosigma Nubecula intermedium** (W. Smith) Cleve. Rare.
25. **Rhabdonema arcuatum** (Lyngb.) Kütz. Common.
26. **Rhabdonema minutum** Kütz. Common.
27. **Rhoicosphenia curvata** (Kütz.) Grun. Common.
28. **Synedra affinis tabulata** (Ag.) Van Heurek. Common.
29. **Trachyneis aspera vulgaris** Cleve. Rare.

Professor Boyer writes: "The collection somewhat resembles that from Charlton island except that there are no fresh-water forms. It is of particular interest as containing *Gyrosigma rectum* (Donkin) Cleve, which I have not before seen from this side of the Atlantic."

Sixteen of the Grey Goose list do not appear on the Charlton island list, making the total number of species and varieties of diatoms from the gatherings 59.

LOCALITIES FROM WHICH ALGAE WERE BROUGHT, ARRANGED CHRONOLOGICALLY

- July 3, 1920. South coast of James bay, about 30 miles west of Moose river, Ontario (about lat. 52° N.).
- July 25. Charlton Island, James bay, in 3 fathoms (lat. 52° N.).
- July 30-31. Bay on south side of Grey Goose island. (Off Big river), James bay, about 10 fathoms.
- August 1. Floating off Grey Goose island, James bay (lat. 54° N.).
- August 2. Long Point sound (between Long island and Cape Jones), Hudson bay, 5 fathoms (about lat. 54½° N.).
- August ... Beach between Great Whale river and Richmond gulf, east coast of Hudson bay (about lat. 56° N.).

- August 23. Richmond gulf (about 3 miles from entrance), east side of Hudson bay, 25 fathoms.
- August 23. Richmond gulf (about 3 miles from entrance), east side of Hudson bay, 15-20 fathoms.
- August 23. Richmond gulf (about 3 miles from entrance), east coast of Hudson bay, (about lat. 56° N.), 12-13 fathoms.
- August 24. Richmond gulf (about 4 miles from entrance), east coast of Hudson bay, 10-20 fathoms.
- August 24. Richmond gulf, east coast of Hudson bay, about 10 fathoms.
- August 28. Bay between Alaska and Black Whale harbours, east side of Hudson bay (about lat. 55° N.).
- August 31. Beach on one of the islands between Long island and Cape Jones, east of Hudson bay.
- August 31. Beach-water, on mud, island between Long island and mainland, north of Cape Jones, east coast of Hudson bay.
- September 2. Shore-water. One of the islands between Long island and mainland, north of Cape Jones.
- September 2. Floating on surface near Cape Jones.
- September 9. Floating on surface, east coast of James bay, about lat. $53\frac{1}{2}^{\circ}$ North.
- September 10. East coast of James bay (between Combe and Paint Hills islands), floating on surface (about lat. 53° N.).
- September 11. Old Factory bay, east side of James bay (about lat. $52\frac{1}{2}^{\circ}$ N.), 5 fathoms.
- September.... Beach of Charlton island, James bay.

Algae of the Neptune Expedition

By FRANK SUPLEY COLLINS

The following two species of Red Algae, collected in Wakeham Bay, Hudson strait, September 1904, by the *Neptune* Expedition, have been sent for determination by Mr. Frits Jørgensen:

Family RHODOPHYLLIDACEAE

Genus *Euthora*

Euthora cristata (L.) J. Ag.

Family CERAMIACEAE

Genus *Ptilota*

Ptilota pectinata (Gunn.) Kjellm.

EXPLANATION OF PLATE II

- Figure 1. *Pyssonnelia Johanseni* M. A. Howe. Photograph of the type specimens, natural size. The fragment at the lower left-hand corner shows the white calcareous ventral surface.
- Figure 2. *Pyssonnelia Johanseni* M. A. Howe. Photograph of a radio-ventral section of the thallus, x about 152. The margin, at the top, is somewhat lacrated.

MARINE ALGAE



PEYSSONNELIA JOHANSENI M. A. Howe

Vol. IV B

Type Specimens



Report of the Canadian Arctic Expedition, 1913-18.

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