

MEDDELELSER OM GRØNLAND

UDGIVNE AF

KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND

Bd. 121 · Nr. 11.

THE ZOOLOGY OF EAST GREENLAND

HYDROIDA

BY

P. L. KRAMP

WITH 4 FIGURES IN THE TEXT

KØBENHAVN

C. A. REITZELS FORLAG

BIANCO LUNOS BOGTRYKKERI A/S

1943

INTRODUCTION

The first record of Hydroids off the east coast of Greenland was given by KIRCHENPAUER (1874) who mentioned *Lafoea fruticosa* and *Sertularella tricuspidata* and two unidentified species (*Campanularia* sp. and *Sertularia* sp.) collected by KOLDEWEY's expedition in 1869 and 1870, about 75° N. No more additions to the knowledge of the hydroids of East Greenland were obtained in the 19th century; various Swedish expeditions between 1870 and 1900 brought back some collections, the hydroids of which were identified by JÄDERHOLM and mentioned by him in two papers (1902 and 1909). The first of these papers records 5 species from the East-Greenland coastal waters: *Tubularia regalis*, *Perigonimus yoldiæ-arcticæ*, *Hydractinia allmani*, *Lafoea fruticosa*, and *Lafoea gracillima*, besides two species from very deep water in the seas east of Greenland. The hydroids collected by the "Belgica" expedition in 1900 were identified by HJ. BROCH and published by GRIEG (1907); eight species were found, all of them new to the fauna of East Greenland. In JÄDERHOLM's second paper (1909) 6 more species were added to the list. Thus, in 1909, 20 species of hydroids were known from East Greenland.

The Danmark Expedition to the north-east coast of Greenland in 1906—1908 brought back a large amount of hydroids, mainly collected in the surroundings of Danmarks Havn (KRAMP 1911). When certain corrections are made, the list of species collected by the Danmark expedition comprises 28 species identified with certainty, and 2 varieties, *Lafoea fruticosa grandis* and *Sertularella polyzonias gigantea*; of these 28 species only 10 were previously known from East Greenland, 18 species being new to the fauna; the typical forms of the two varieties were known beforehand, but the varieties were recorded from East Greenland for the first time. Two of the species were new to science: *Halecium groenlandicum* and *Cuspidella procumbens*.

A general list of all the hydroids known from Greenland (the west coast as well as the east coast) with all the localities was published in the "Conspectus Faunæ Groenlandicæ" (KRAMP 1914).

Very few later additions to the fauna are given in the literature. BROCH (1916 and 1918) has revised some of the previous identifications of species and given some new East-Greenland localities for a small number of species, but has only added two species to the list of the fauna (*Laomedea longissima* and *Halecium halecinum*). Three more species were added by FRASER (1933): *Eudendrium ramosum*, *Hebella calcarata*, and *Sertularella tenella*. In a small collection of hydroids taken in Kangerdlugssuak in 1932 I found a *Coryne* which most probably belongs to *C. sarsi*, and a new species of considerable interest, *Corympha obvoluta* (KRAMP 1933).

The number of species hitherto recorded in the literature as occurring in the East-Greenland coastal waters amounts to 44.

The various Danish expeditions to East Greenland in recent years (1929—1933) have not added very much to our knowledge of the occurrence of these animals. The results of the Scoresby Sound Committee's expedition in 1932 are published separately (KRAMP 1933); from the other expeditions altogether 25 species of hydroids were brought home, four of which were not previously known from East Greenland: *Cuspidella grandis*, *Stegopoma plicatile*, *Diphasia fallax*, and one new species, *Hydractinia serrata* n. sp. The areas mainly examined by these expeditions were: the extensive fjord complexes of Franz Joseph Fjord and Scoresbysund, the immediate neighbourhood of Angmagssalik, and some localities in the southernmost part of the coast, Lindenowfjord and Kekertaksiak. In these southern localities a fairly large number of hydroids were obtained, while in the other areas investigated hydroids are apparently not very plentiful. The investigations in the Franz Joseph Fjord and Scoresbysund areas were carried out principally in the inner parts of the fjords, while our knowledge of the fauna on the open coasts is still mainly based on the older collections. Unfortunately the coast between Angmagssalik and Lindenows Fjord is practically unexplored as far as the fauna is concerned.

In the systematic part of the present paper all the East-Greenland localities are given in which each species has been found up to now. The coast is divided into five sections from north to south: North-east coast, Franz Joseph Fjord area, Scoresbysund area, Kangerdlugssuaq area, and south-east coast. The limits between the areas are seen on the map, fig. 4. Records of occurrence derived from the literature are marked with the name of the author and the year of publication in brackets. When no author's name is added, the specimens in question are derived from recent expeditions and identified by me. The depths of the localities are given, but according to the decision of the editors the dates of capture and the name of the expedition are omitted. The quotations

of literature comprise: a) works in which adequate descriptions or figures are found which may be useful to identification, b) the most important synonyms, c) all records of occurrence on the east coast of Greenland. Further the geographical and bathymetrical distribution of the species is given. The spelling of the geographical names is in accordance with the wishes of the editorial committee and needs a few explanatory remarks: Sund = sound, Bugt = bay, Havn = harbour, Ø = island, Kap = cape.

SYNOPSIS OF THE SPECIES

Athecata.

1. *Coryne sarsi* (Lovén).

Coryne mirabilis L. Agassiz 1860—62.

Syncoryne sarsi Hincks 1868 p. 52 pl. 7 fig. 3.

East-Greenland records:

Coryne eximia Kramp 1911 p. 362.

Coryne eximia Kramp 1914 p. 979.

Coryne sp. Kramp 1933 p. 4.

The colonies of *Coryne*, all sterile, found in East-Greenland waters probably belong to *C. sarsi*; the corresponding medusa, *Sarsia tubulosa* (M. Sars) is found off the Blossville Coast, about 69° N.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, in four localities, 20—60 m, on *Delesseria* and hydroids (KRAMP 1911).

Scoresbysund area: Amdrup Havn, near the settlement Scoresbysund, three localities, 6—10, 10—18, and 22—26 m, on several specimens of *Margarita groenlandica*.

Kangerdlugssuaq area: Kangerdlugssuaq, inner part of the fjord, 175 m, on *Grammaria abietina*. (KRAMP 1933).

Distribution: *Coryne sarsi* is a northern-boreal species, widely distributed in the coastal areas of the northern parts of the Pacific and Atlantic areas; along the European coasts it occurs from France to Novaya Zemlya; on the west coast of Greenland it has been found as far north as 70°30' N., in Umanak Fjord.

The colonies found in Scoresbysund were taken in the upper strata, in which the temperature rises above 0° for a short time in summer, whereas the specimens from Kangerdlugssuaq and Danmarks Havn were found in the very cold water of the Polar Current; it is doubtful, therefore, whether the colonies from these two localities really belong to *C. sarsi*.

2. *Tubularia regalis* Boeck.

Tubularia regalis Boeck 1860 p. 114 pl. 3.

Tubularia variabilis Bonnevie 1899 p. 26 pl. 1 fig. 4.

Tubularia regalis Bonnevie 1899 p. 27 pl. 1 fig. 5.

East-Greenland records:

Tubularia regalis Jäderholm 1902 p. 4.

Tubularia regalis Kramp 1914 p. 982.

Tubularia sp. Kramp 1933 p. 4.

Occurrence at East Greenland:

Franz Joseph Fjord area: Off Mackensie Bugt, 100 m (JÄDERHOLM 1902).

Scoresbysund area: West coast of Jameson Land, off the Bjørne Øer, 30—40 m, one large specimen.

Kangerdlugssuaq area: Kangerdlugssuaq, middle part of the fjord, about 200 m, some empty tubes (KRAMP 1933).

Distribution: Arctic, mainly found in the deeper parts of the littoral region. It has been found in several localities in the Norwegian Sea, the Barents Sea, White Sea, and Kara Sea, and around Spitzbergen; moreover it is recorded from some of the fjords in northern Norway, and it is quite common in Trondheim Fjord, where it is considered an arctic survivor. It is also recorded from a single locality off the west coast of Greenland, about 62° N., in deep water, 290—400 m.

On the east coast of Greenland it has only been taken in the Polar water. The locality in the Scoresbysund area is in uncommonly shallow water, but in East Spitzbergen it has been found at a similar depth, 38 m (RYLOV 1923 p. 145).

Remarks: The specimen from Scoresbysund is provided with numerous female gonophores; most of them contain a fully or nearly fully developed actinula; the gonophore-carriers are more than 30 mm long. Mr. G. THORSON, who collected this specimen, made a coloured drawing of it immediately after the capture; the gonophores are a delicate pink, the colour of the hypostome a brilliant red.

3. *Corymorpha obvoluta* Kramp.

Corymorpha obvoluta Kramp 1933 p. 4 figs. 1—9.

East-Greenland record:

Ibidem.

Occurrence at East Greenland:

Kangerdlugssuaq area: Kangerdlugssuaq, inner part of the fjord, 175 m (KRAMP 1933).

This is the only locality from which this interesting species is known.

4. *Rhizogeton nudus* Broch.

Rhizogeton nudum Broch 1909 p. 137 textfig. 1.

Rhizogeton nudus Dons 1912 p. 53 textfigs. A—C.

East-Greenland records:

Rhizogeton nudum Kramp 1911 p. 362.

Rhizogeton nudus Kramp 1914 p. 977.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 30—40 m, on hydroids (KRAMP 1911).

Distribution: Arctic, known from Spitzbergen and the northern part of Norway; off the west coast of Greenland it has been found between 60°27' and 67°45' N., at depths between 46 and 293 m.

On the east coast of Greenland it is only known from Danmarks Havn, but as it is a small and inconspicuous hydroid, it may have been overlooked in the other areas, where it most probably occurs.

5. *Hydractinia allmani* Bonnevie.

Hydractinia allmani Bonnevie 1898 p. 485 pl. 26 figs. 36, 37.

Hydractinia allmani Bonnevie 1899 p. 47 pl. 1 fig. 1.

Hydractinia allmani Jäderholm 1908 p. 7 pl. 1 fig. 5, pl. 2 figs. 2—5.

East-Greenland records:

Hydractinia allmani Jäderholm 1902 p. 8.

Hydractinia allmani Jäderholm 1909 p. 49.

Hydractinia allmani Kramp 1914 p. 988.

Occurrence at East Greenland:

Franz Joseph Fjord area: Mackensie Bugt, 73°30' N. 3—10 and 12—35 m (JÄDERHOLM 1902); 5 miles S. of Bontekoe Ø, 245 m; Franz Joseph Fjord, 73°20' N., 220 m (JÄDERHOLM 1902); north of Ymers Ø, 180 m; Moskusoxefjord, 230 m; near west point of Ymers Ø, 73°15' N. 25°42' W., 760 m; near Ellaø, 72°56' N. 24°33' W., about 125 m; Kempes Fjord, 72°43' N. 26°38' W., 35—60 m (JÄDERHOLM 1909); Kempes Fjord, 13 localities, mainly near Kap Hedlund, 12—17, 15, 16—19, 22—24, 22—24, 23, 22—34, 25—29, 30, 33—40, 44—49, 50, 85 m; Vega Sund, 72°45' N. 22°56' W., 35—60 m; mouth of Forsblad Fjord, 6—26 m.

Scoresbysund area: Hurry Fjord, 3 localities, 18—22, 22—24, 25 m.

In all these localities the species was found attached to living specimens of *Sipho curtus* (Jeffer.)

Distribution: Arctic, very common around Spitzbergen and recorded from the Kara Sea and north of the New-Siberian Islands; also

found in deep water off the west coast of Norway north of 63° N. Never taken off the west coast of Greenland. The species has a very extensive vertical distribution.

In the Franz Joseph Fjord area this species is very common and generally distributed from the coasts of the open sea to the innermost branches of the fjords; it was mainly found in comparatively shallow water, 3—60 m, but it was also taken at considerable depths, until 760 m. Outside the Franz Joseph Fjord area it was only found in Hurry Fjord near Scoresbysund, whereas it seems to be completely lacking in the other parts of the East-Greenland coast. This is in accordance with the distribution of *Sipho curtus*. Dr. G. THORSÓN has kindly informed me that this gastropod has never been found south of Scoresbysund, and also that it is particularly common in the Franz Joseph Fjord area.

6. *Hydractinia ornata* Bonnevie.

Hydractinia ornata Bonnevie 1899 p. 47 pl. 1 fig. 2.

East-Greenland records:

Hydractinia ornata Grieg 1907 p. 557.

Hydractinia ornata Kramp 1914 p. 989.

Occurrence at East Greenland:

North-east coast: 75°58' N. 14°08' W., 300 m, on *Sipho curtus* (GRIEG 1907).

Distribution: Northern part of the Norwegian Sea, 249 m.

7. *Hydractinia serrata* n. sp.

Occurrence:

Franz Joseph Fjord area: Moskusokse Fjord, depth 15 m, 11.VIII. 1930, on 3 living specimens of *Buccinum belcheri* Reeve (East-Greenland expedition 1930, stat. 6); Eleonora Bugt, 15—27 m, 15.VIII.1932, on one living specimen of *Buccinum belcheri* ("Godthaab" 1932, stat. 39).

South-east coast: Lindenows Fjord, 60—80 m, 25.VII.1935, on 2 small specimens of *Buccinum belcheri* ("Thor" 1935, stat. 17); Lindenows Fjord, 25—35 m, 28.VII.1935, on 2 small specimens of *Buccinum groenlandicum* Chemnitz ("Thor" 1935, stat. 20).

The specimens from these four localities differ somewhat from each other. At first I was even inclined to regard them as representing two different species, but on further consideration I have come to the conclusion that the differences are due to individual variation which,

perhaps, is correlated with the species of gastropod serving as substratum for the colonies.

One of the colonies from Lindenows Fjord, stat. 20, 25—35 m, is chosen as the type.

Description of the type: The hydrorhiza forms a continuous crust covering almost the whole shell of *Buccinum groenlandicum*; the

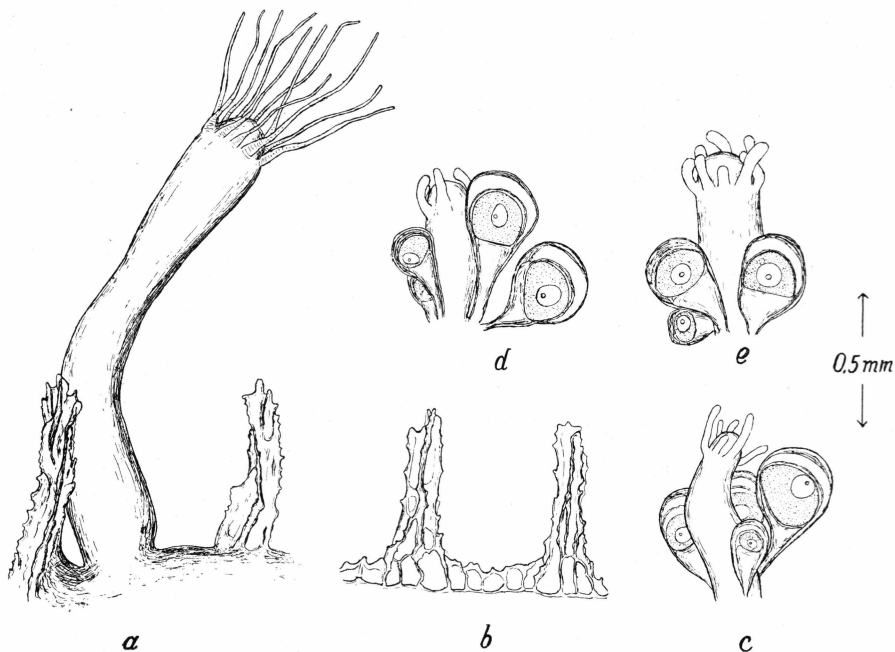


Fig. 1. *Hydractinia serrata* n. sp. **Type.** From Lindenows Fjord, St. 20. *a.* nutritive polyp and spines; *b.* spines; *c.—e.* blastostyles with female gonophores.

crust is rather thin and provided with numerous chitinous ridges forming an irregular network. Numerous chitinous spines (figs. 1 *a—b*), about 0.65—0.75 mm in length, slender, with prominent longitudinal ridges (usually four), somewhat irregular, their sharp edges irregularly serrated. Nutritive polyps (fig. 1 *a*) highly contractile, in the preserved state up to about 2 mm long, with about 12 long tentacles. Blastostyles (figs. 1 *c—e*) considerably smaller than the nutritive polyps, about as long as the spines, with a mouth opening and about 5—8 tentacles; the latter are well developed though rather short. The female gonophores issue from the basal part of the blastostyle, or from the hydrorhiza in immediate neighbourhood of the blastostyle, usually in a number of 3—5 (rarely more) around each blastostyle. The gonophores are pear-shaped, large, sometimes more than 0.5 mm in length; they are

cryptomedusoid, and each gonophore contains only one, large egg. Male gonophores are not observed.

This form was found on the shells of two small, living specimens of *Buccinum groenlandicum*. In the other localities the hydroid was attached to the shells of living specimens of *Buccinum belcheri*, and in all these the spines are smaller than in the type; they are very similar in shape, but measure only 0.45—0.55 mm in length (figs. 2 *b*, 3 *b*). In the preserved state some of the nutritive polyps are so strongly con-

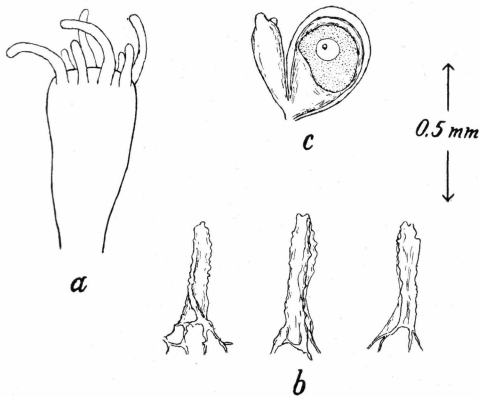


Fig. 2. *Hydractinia serrata* n. sp. Colony from Moskusokse Fjord. *a*. nutritive polyp; *b*. spines; *c*. blastostyle with female gonophore.

tracted that they appear like minute, almost disk-like knobs between the bases of the spines, while others are extended to a length of about 2.5 mm (fig. 3 *a*). The number of tentacles varies between 8 and 12. The blastostyles of the colonies from *Buccinum belcheri* (figs. 2 *c*, 3 *c*) are considerably more reduced than in the type; they do not reach to the summits of the spines, they have no mouth opening, and their tentacles are reduced in number as well as in size, forming knob-like protuberances, most frequently two in number, sometimes one or three, rarely four. At the base of each blastostyle there is, as a rule, only one large gonophore, occasionally also one very small. In the colonies from Moskusokse Fjord (fig. 2) the gonophores are of about the same size as in the type, but in the colony from Eleonora Bugt (fig. 3) they are considerably smaller. Their structure is entirely the same as in the type. Nor in these colonies are any male gonophores present; the two colonies from Lindenows Fjord stat. 17 carry no gonophores at all; their spines and nutritive polyps agree perfectly with those in the other colonies found on *Buccinum belcheri*, the spines being distinctly smaller than in the colonies taken in the neighbouring locality, Lindenows Fjord stat. 20,

on *Buccinum groenlandicum*. The variation of the species thus seems to be more dependent on the nature of the substratum than on the locality in which the colony is found.

The development of only one egg in each gonophore separates *Hydractinia serrata* from the vast majority of the species of *Hydractinia*

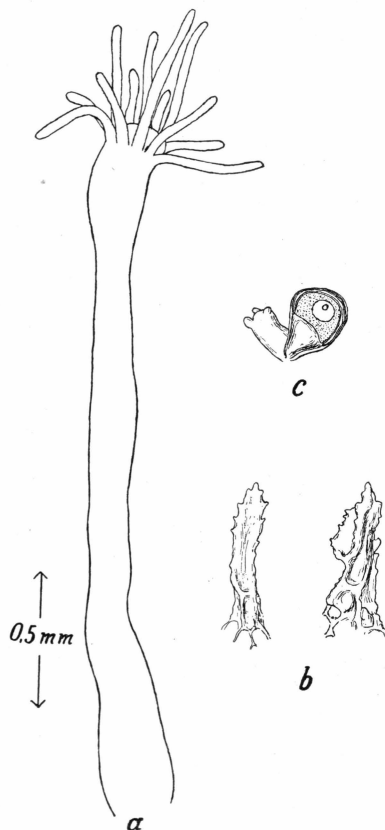


Fig. 3. *Hydractinia serrata* n. sp. Colony from Eleonora Bugt. a. nutritive polyp; b. spines; c. blastostyle with female gonophore.

described up to now; almost all of them have a considerable number of eggs in the gonophores. There are, however, some few species, besides *H. serrata*, with only one or two eggs. Gonophores with only one egg are described in *H. lævispina* Fraser (Pacific coast of North America) and *pacifica* Hartlaub (Chile, Kerguelen, South Africa); one or two eggs are found in the gonophores of *H. californica* Torrey and *milleri* Torrey (both in Pacif. N. America); in *H. verdi* Ritchie (Cape Verde) the gonophores contain three eggs. *H. serrata* differs from all these species i. a. by the position of the gonophores; in *H. serrata* they issue from the base of the blastostyle, in the others from the middle or upper portion

of the blastostyle. There are three species in which the female gonophores are unknown, while the male gonophores are described: In *H. fallax* Broch (West Africa) the male gonophores issue directly from the hydro-rhiza and not from blastostyles; in *H. michaelsoni* Broch (West Africa) they are placed immediately below the tentacles of the blastostyle; in *H. antarctica* Studer (Kerguelen Island) the male gonophores are placed at the base of the blastostyle, like the female gonophores in *H. serrata*, but in *H. antarctica* the blastostyles are completely devoid of tentacles, and it also differs from *serrata* by the pyramidal shape of the spines. There is no probability that *H. serrata* should be identical with any of these southern species. Among the northern species of *Hydractinia* a basal position of the gonophores is found in *H. monocarpa* Allman; this species is similar to *H. serrata* in several respects, but its gonophores contain numerous eggs, and they are eumedusoid, provided with radial canals, of which no traces are seen in the gonophores of *H. serrata*.

Hydractinia serrata n. sp. is thus a well marked species, which in the fertile condition can hardly be confounded with any other species known. It may possibly prove to be identical with an unnamed species from Spitzbergen mentioned by RYLOV (1923 p. 153) as *Hydractinia* sp., which could not be properly described because no gonophores were present; it had long spines with well-developed spinules and was said to be distinctly different from the other species occurring at Spitzbergen (*monocarpa*, *carica*, *minuta*, and *allmani*). It was found on the shells of *Neptunea borealis*, *Buccinum groenlandicum*, and *Buccinum terræ-novæ*. Dr. G. THORSON kindly informs me that this latter is a distinct species, but its shell is very similar to that of *groenlandicum*.

8. *Perigonimus abyssi* G. O. Sars.

Perigonimus abyssi G. O. Sars 1874 p. 38 pl. 5 figs. 27—30.

Perigonimus abyssi Jäderholm 1909 p. 45 pl. 1 figs. 13—14.

East-Greenland records:

Perigonimus sp. Kramp 1911 p. 363.

Perigonimus sp. Kramp 1914 p. 986.

Perigonimus abyssi Broch 1916 p. 53.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 20—40 m, on hydroids, polyzoans, algæ, stones, etc. (KRAMP 1911).

Scoresbysund area: Hurry Fjord, 14—0 m, on shell and operculum of a large *Neptunea despecta*; as no gonophores are present, the determination of the species is uncertain.

Distribution: Arctic and boreal; fairly common along the Scandinavian coasts and also known from Spitzbergen and Kolafjord. Moreover it is recorded from a single locality on the west coast of Greenland, near Egedesminde, 68°30' N. Off the Norwegian coast it mainly occurs at considerable depths, about 100—600 m, but in the Arctis it is frequently met with in shallow water.

9. *Perigonimus yoldiæ-arcticæ* Birula.

Perigonimus yoldiæ-arcticæ Birula 1897 p. 11 pl. 10 fig. 3.

Perigonimus yoldiæ-arcticæ Jäderholm 1909 p. 45 pl. 1 fig. 17.

East-Greenland records:

Perigonimus repens Jäderholm 1902 p. 5.

Perigonimus yoldiæ-arcticæ Jäderholm 1909 p. 45.

Perigonimus yoldiæ-arcticæ Kramp 1914 p. 986.

Occurrence at East Greenland:

Franz Joseph Fjord area: Outer part of Moskusokse Fjord, 220 m, on the shells of *Portlandia arctica* (JÄDERHOLM).

Distribution: Arctic; very common around Spitzbergen and recorded from several localities along the entire north coast of Russia and Siberia. It is almost always found attached to *Portlandia arctica*, and it is mainly taken in comparatively shallow water, from a few metres down to about 50 m, though occasionally descending into somewhat deeper water; in Moskusoksefjord it was found at a depth of 220 m, the greatest depth from which this species has ever been recorded.

10. *Perigonimus roseus* (M. Sars).

Rhizoragium roseum M. Sars 1877 p. 28 pl. 2 figs. 37—43.

Garveia groenlandica Levinsen 1893 p. 155.

Perigonimus roseus Jäderholm 1909 p. 46 pl. 3 fig. 7.

Garveia groenlandica Kramp 1911 p. 363 pl. 25 fig. 6.

East-Greenland records:

Garveia groenlandica Kramp 1911 p. 363.

Garveia groenlandica Kramp 1914 p. 989.

Garveia groenlandica Fraser 1933 p. 564.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 3 localities, 20—40 m, on various hydroids (KRAMP 1911).

Franz Joseph Fjord area: Clavering Fjord near Clavering Ø, 74°20' N. 21° W., 18—64 m (FRASER 1933).

Distribution: This species has its main occurrence off the boreal parts of the Scandinavian coasts, but is also known from Kolafjord, the White Sea, and Novaya Zemlya; moreover it has been taken in several localities off the west coast of Greenland between about 60° and 67°17' N., and in Hudson Strait. Also recorded from the west coast of North America. It mainly occurs in the middle and deeper parts of the littoral region.

The occurrence on the East Greenland coast shows that this species is able to endure very low temperatures, since it was taken in the Polar-Current water, where the temperature is below 0° throughout the year.

11. *Eudendrium rameum* (Pallas).

Eudendrium rameum Hincks 1868 p. 80 fig. 8 (frontispiece).

Eudendrium rameum Jäderholm 1909 p. 50 pl. 4 figs. 1—2.

East-Greenland records:

Eudendrium rameum Kramp 1911 p. 363.

Eudendrium rameum Kramp 1914 p. 990.

Eudendrium rameum Broch 1916 p. 57.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 6—about 100 m, in great abundance, particularly between 20 and 60 m; off Maroussia, 160—180 m (KRAMP 1911).

Scoresbysund area: Kap Tobin, 107 m (BROCH 1916); Henry Land, 69°34' N. 23°35' W., 38 m (BROCH 1916).

South-east coast: Kekertaksiak, 60—70 m, one large colony, with female gonophores.

Distribution: Cosmopolitan, circumpolar in the arctic region, common in the coastal regions throughout the North Atlantic area; the vertical distribution ranges from a few metres as far down as 2500 m, but it is mainly found in the middle and deeper parts of the littoral region. Common off the west coast of Greenland as far north as Wolstenholme Fjord, 76°36' N.

It probably occurs along the entire east coast of Greenland, though up to now it has only been taken in a few localities, which are however so far apart that it seems reasonable to suppose that the species also occurs in the intervening parts of the coast. It is very abundant in Danmarks Havn, and the colony found at Kekertaksiak, in the southernmost part of the coast, was very large, measuring 13 cm in height and breadth.

Remarks: The large colony from Kekertaksiak carries numerous female gonophores; the degree of development of the fertile polyps in

female colonies of this species is subject to considerable variation; in the present colony the gonophores are placed around hydranths which are about half the size of the hydranths of the sterile nutritive polyps.

12. *Eudendrium ramosum* (Linné).

Eudendrium ramosum Hincks 1868 p. 82 pl. 13.

East-Greenland record:

Eudendrium ramosum Fraser 1933 p. 564.

Occurrence at East Greenland:

Franz Joseph Fjord area: North of Clavering Ø, 74°20' N. 21° W., 18—64 m (FRASER 1933).

Distribution: *Eudendrium ramosum* has frequently been confounded with other species, especially with *E. rameum* (Pallas) and *E. racemosum* (Cavolini); its distribution cannot, therefore, be stated with certainty. It is common on the British coasts and in the North Sea, and one fertile colony has been ascertained on the south-east coast of Iceland. RYLOV (1924) records it with some doubt from the Barents Sea. It also occurs on the west coast and east coast of North America, but is not known from West Greenland.

FRASER, who has seen this species on the American coasts, records it without any doubt from the above-mentioned locality in East Greenland.

13. *Eudendrium tenellum* Allman.

Eudendrium tenellum Allman 1877 p. 8 pl. 4 figs. 3—4.

Eudendrium tenellum Jäderholm 1909 p. 54 pl. 4 figs. 5—6.

East-Greenland records:

Eudendrium tenellum Kramp 1911 p. 365.

Eudendrium tenellum Kramp 1914 p. 991.

?*Eudendrium capillare*? Kramp 1933 p. 4.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 5 localities, 15—60 m, most common between 40 and 60 m, partly with female gonophores, on hydroids, barnacles, and *Delesseria* (KRAMP 1911).

Kangerdlugssuaq area: Kangerdlugssuaq, inner part of the fjord, 175 m, one sterile colony, on *Grammaria abietina*, previously supposed by me to belong to *E. capillare*, but after a reexamination of the specimen I am more inclined to think that it should be referred to *E. tenellum*.

South-east coast: Kekertaksiak, 75—90 m, with male gonophores.

Distribution: This species was originally described from the West Indies between Cuba and Florida; most other records are from northern seas: Norway, Spitzbergen, Barents Sea, and West Greenland; moreover it occurs in the Mediterranean and on the the Pacific coast of North America. Found in some localities on the west coast of Greenland between 62°58' and 64°11' N., depth 47—293 m.

Known with certainty from the northernmost and southernmost sections of the East Greenland coast and probably also found in Kangerdlugssuaq.

Thecaphora.

14. *Campanularia verticillata* (Linné).

Campanularia verticillata Hincks 1868 p. 167 pl. 32 fig. 1.

Campanularia verticillata Jäderholm 1909 p. 69 pl. 7 fig. 4.

East-Greenland records:

Campanularia verticillata Kramp 1911 p. 393.

Campanularia verticillata Kramp 1914 p. 1068.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 30—40 m fairly common (KRAMP 1911).

Distribution: northern-boreal, circumpolar, penetrating as far south as the Bay of Biscay, very common on the coasts of north-western Europe and on the southern and western coasts of Iceland; it has a wide vertical distribution, from a few metres to about 600 m, but is mainly found in the middle parts of the littoral region. Fairly common along the entire west coast of Greenland as far north as 76°40' N. at depths between 50 and 470 m.

The only locality in East Greenland, where this species has been found, is at the entrance to Danmarks Havn in the far North, and in this single locality it was rather common.

15. *Campanularia volubilis* (Linné).

Campanularia volubilis Hincks 1868 p. 160 pl. 24 fig. 2.

Campanularia volubilis Jäderholm 1909 p. 67 pl. 6 fig. 14.

East-Greenland records:

Campanularia volubilis Kramp 1911 p. 389.

Campanularia volubilis Kramp 1914 p. 1063.

Occurrence at East Greenland:

North-east coast: Surroundings of Danmarks Havn, 30—40 m, rather common; 50—100 m, rare; on various hydroids and polyzoans (KRAMP 1911).

South-east coast: Kekertaksiak, 60—70 m, on hydroids and algæ, rare.

Distribution: Arctic-boreal, Atlantic and Pacific. In the eastern Atlantic area the distribution ranges from the southern parts of the British Isles along the Norwegian coast to the Kara Sea, Spitzbergen, Iceland, and Greenland. Mainly found in the upper and middle parts of the littoral region, though sometimes taken in deeper water, until 650 m. On the west coast of Greenland it is common as far north as 72° N, at depths between 25 and 650 m.

On the east coast of Greenland this species has only been found in the northernmost and the southernmost of the numerous localities examined, and never in great abundance.

16. *Campanularia groenlandica* Levinsen.

Campanularia groenlandica Levinsen 1893 p. 168 pl. 5 figs. 10—12.

Campanularia groenlandica Jäderholm 1909 p. 67 pl. 6 figs. 12—13.

East-Greenland records:

Campanularia groenlandica Kramp 1911 p. 390.

Campanularia groenlandica Kramp 1914 p. 1065.

Occurrence at East Greenland:

North-east coast: Off Maroussia, near Danmarks Havn, 160—180 m, on various hydroids (KRAMP 1911).

South-east coast: Kekertaksiak, 60—70 m, on *Sertularella tricuspidata*.

Distribution: Arctic, circumpolar; on the Norwegian coast it penetrates as far south as Trondheim Fjord; found off the western and north-western coasts of Iceland, and on the west coast of Greenland as far north as 68°20' N., at depths between 50 and 525 m; it is mainly found in the littoral region.

This species is rarely seen in great abundance, and on the east coast of Greenland it seems to be very rare, as only a few small colonies have been found in two localities very far from each other. In both these localities the species was taken in the cold water of the Polar Current.

17. *Campanularia integra* Mac Gillivray.

Campanularia integra Hincks 1868 p. 163 pl. 31 fig. 1.

Campanularia caliculata Hincks 1868 p. 164 pl. 31 fig. 2.

Campanularia integra Jäderholm 1909 p. 65 pl. 6 figs. 4—9.

East-Greenland records:

Campanularia integra Kramp 1911 p. 388.

Campanularia integra Kramp 1914 p. 1060.

Campanularia integra Kramp 1933 p. 15.

Occurrence at East Greenland:

North-east coast: The surroundings of Danmarks Havn, 6—180 m, especially abundant at depths between 20 and 40 m, mainly growing on *Delesseria*, but also found on various species of hydroids, polyzoans, barnacles, and worm tubes (KRAMP 1911).

Franz Joseph Fjord area: Kap Mary, Clavering Ø, 20 m, on polyzoans, rare.

Scoresbysund area: Head of Hurry Fjord, near Fameøerne, 22—24 m, on two specimens of the gastropod *Margarita groenlandica*.

Kangerdlugssuaq area: Kangerdlugssuaq, three localities in the middle portion of the fjord, 10 m and 175 m, on *Grammaria abietina*, rare; about 200 m, in great abundance on *Lafoea fruticosa* (KRAMP 1933).

South-east coast: Lindenows Fjord, in the northern branch of the fjord, 20—25 and 40—50 m, and in the mouth of the fjord, 125—150 and 100—150 m, on hydroids and polyzoans; Kekertaksiak, 60—70 m, on hydroids.

Distribution: Cosmopolitan, particularly common in the arctic and subarctic regions, mainly found in the upper parts of the littoral region, but also descending into greater depths. Common along the entire west coast of Greenland as far north as 76°40' N., at depths between 10 and 400 m.

The distribution on the east coast of Greenland ranges from Danmarks Havn in north to Kekertaksiak in south, but the species does not seem to be equally common everywhere. It is, apparently, very rare in the great fjord complexes (Franz Joseph Fjord and Scoresbysund), where the water, in all depths, is fairly stagnant, while it has been found in great abundance in the surroundings of Danmarks Havn, in fairly shallow water, where rather strong tidal currents prevail. It was also taken in great abundance at a depth of 200 m in Kangerdlugssuaq. The vertical range in East Greenland is 6—200 m, and it occurs in the water of the Polar Current as well as in the fjord water, the upper strata of which in summer may attain a fairly high temperature.

18. *Laomedea longissima* (Pallas).

Obelia longissima Hincks 1868 p. 154 pl. 27.

Obelia longissima Jäderholm 1909 p. 63 pl. 5 fig. 14.

East-Greenland records:

Laomedea longissima Broch 1918 p. 167.

Occurrence at East Greenland:

Scoresbysund area: Hurry Fjord, 1 mile inside the mouth of the fjord, 15 m.

Kangerdlugssuaq area: Uttentalsund, 8—10 m, on *Margarita helicina*.

South-east coast: Tasiusak, near Angmagssalik, 6—9 m (BROCH 1918); Lindenows Fjord, northern branch, 20—25 m; mouth of Lindenows Fjord, 125—150 m.

Distribution: Cosmopolitan, circumpolar in the arctic region, recorded from Spitzbergen and the entire north coast of Russia and Siberia, from shallow water to a little more than 100 m. On the west coast of Greenland it occurs as far north as 72°47' N., depth 40—94 m.

Most of the colonies from East Greenland were taken in the upper strata, where the temperature of the water is above 0° for some time every summer; only in Lindenows Fjord a colony was taken in deeper water, 125—150 m; on this part of the coast the water of the Polar Current does not reach so far down, so that this colony has lived in water with positive temperatures throughout the year.

19. *Lafoea gracillima* (Alder).

Lafoea gracillima Jäderholm 1909 p. 74 pl. 7 figs. 6—8.

East-Greenland records:

Lafoea gracillima Jäderholm 1902 p. 9.

Lafoea gracillima Kramp 1911 p. 371.

Lafoea gracillima Kramp 1914 p. 1021.

Lafoea gracillima Broch 1918 p. 7.

Lafoea gracillima Kramp 1933 p. 15.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 30—40 m, fairly common on various hydroids (KRAMP 1011).

Franz Joseph Fjord area: Eskimonæs at Clavering Ø, about 55 m, several small colonies on algæ and worm-tubes; Mackensie Bugt, 12—35 m (JÄDERHOLM 1902); Moskusokse Fjord, off Mt. Anker valley, 17—21 m, numerous large colonies; between Mariaø and Ellaø, 250 m, numerous large colonies; Solitærbugt, Ellaø, 85—95 m and 320 m.

Scoresbysund area: Hurry Fjord, 0—13 and 94 m (BROCH 1918); Hurry Fjord near Fame Øer, 22—24 m, several large colonies on polyzoans; Henry Land, 69°35' N., 18 m (BROCH 1918).

Kangerdlugssuaq area: Uttentalsund, 50—60 m, one small colony; Kangerdlugssuaq, middle portion of the fjord, 10 m, on hydroids (KRAMP 1933).

South-east coast: Lindenows Fjord, several localities from the mouth to the head of the fjord, 30—50, 40—50, 120, and 125—150 m, on hydroids and on the stalk of *Boltenia*, partly in great abundance.

Distribution: Cosmopolitan, common also in arctic waters; mainly found in the middle parts of the littoral region. Off the west coast of Greenland it occurs from about 60° to 78° N., at depths between 40 and 470 m.

This is one of the most common hydroids on the East Greenland coast; it has been found in all the sections, in the fjords as well as on the open coast, from shallow water down to 320 m; in several localities it was taken in great abundance.

20. *Lafoea fruticosa* (M. Sars).

A, forma *genuina* Broch.

Lafoea fruticosa Hincks 1868 p. 202.

Lafoea fruticosa Jäderholm 1909 p. 73 pl. 7 fig. 9.

Lafoea fruticosa Broch 1909 p. 158 textfig. 19.

Lafoea fruticosa forma *genuina* Broch 1918 p. 12.

East-Greenland records:

Lafoea fruticosa Kirchenpauer 1874 p. 416.

Lafoea fruticosa Jäderholm 1902 p. 9.

Lafoea fruticosa Jäderholm 1909 p. 73.

Lafoea fruticosa Kramp 1911 p. 371.

Lafoea fruticosa Kramp 1914 p. 1017.

Lafoea fruticosa Broch 1918 p. 12.

Lafoea fruticosa Kramp 1933 p. 14.

Occurrence at East Greenland:

North-east coast: 77° N. 17½° W., 300 m, on the cirri of *Hathrometra prolixa* (KRAMP 1911); the surroundings of Danmarks Havn, 6—180 m, very common, particularly abundant between 20 and 40 m, growing on hydroids, stones, shells, algæ, etc. (KRAMP 1911); 76°06' N. 13°26' W., 200—250 m (KRAMP 1911); North of Shannon Ø, about 75°30' N., in great abundance (KIRCHENPAUER 1874); south of Hvalros Ø, 74°30' N. 18°40' W., 80—100 m (JÄDERHOLM 1902).

Franz Joseph Fjord area: Mackensie Bugt, 12—35 m (JÄDERHOLM 1902); mouth of Franz Joseph Fjord, 73°20' N. 21°20' W., 70 m (JÄDERHOLM 1909); Kap Weber in Franz Joseph Fjord, 73°32' N. 24°38' W., 100—110 m (JÄDERHOLM 1909); inside the western outlet of Antarctic Sund, 230 m; between Mariaø and Ellaø, 250 m; Solitærbugt, Ellaø, 85—95 m.

Scoresbysund area: Kap Tobin, 107 m (BROCH 1918); mouth of Hurry Fjord, 94 m (BROCH 1918); near the Bjørne Øer in Scoresbysund, 18—28 m, several large colonies.

Kangerdlugssuaq area: three localities in Kangerdlugssuaq, 10 m, 175 m, and about 200 m (KRAMP 1933).

South-east coast: Lindenows Fjord, innermost part, 30—50 m, rare.

Distribution: Arctic-boreal; widely distributed in the Atlantic and Pacific Oceans, but particularly common in arctic and boreal waters. In the eastern Atlantic area it penetrates southwards to the British coasts and the southern part of the west coast of Norway; it occurs along the entire north coast of Russia and Siberia. Mainly found in the middle and deeper parts of the littoral region, occasionally descending into the abyssal, as far down as 835 m. Common off the west coast of Greenland as far north as 76°40' N., at depths between 25 and 610 m.

Lajoea fruticosa f. *genuina* has been found in all sections of the East-Greenland coast, in the fjords as well as on the open coast and at very different depths, ranging from 6 to 300 m, thus occurring both in the fjord water, in the Polar-Current water, and in the Atlantic water below the Polar Current. It seems to be particularly common in the two northernmost sections, and it is one of the few species of hydroids found in the inner branches of the Franz Joseph Fjord complex.

B, forma *grandis* (Hincks).

Lajoea grandis Hincks 1874 p. 147 pl. 6 figs. 1—2.

Lajoea symmetrica Bonnevie 1899 p. 64 pl. 5 figs. 2c, 4.

Lajoea fruticosa forma *grandis* Broch 1918 p. 12.

East-Greenland records:

Lajoea grandis Kramp 1911 p. 372.

Lajoea grandis Kramp 1914 p. 1020.

Lajoea fruticosa f. *grandis* Broch 1918 p. 12.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 30—40 m and 160—180 m, common (KRAMP 1911).

South-east coast: Ingmikertok, Angmagssalik Fjord, depth not stated (BROCH 1918).

Distribution: Predominantly arctic: Greenland, Spitzbergen, Barents Sea, Kara Sea, northern and eastern coasts of Iceland, northern part of the west coast of Norway; also recorded from the Wyville Thomson Ridge between Iceland and the Faroes, and from one locality as far south as 60° N., off the southern part of the Norwegian coast. The bathymetrical distribution is similar to that of forma *genuina*. Common along the west coast of Greenland as far north as Godhavn, 69°15' N., and also found in Jones Sound between North Devon and Ellesmere Land.

On the east coast of Greenland this arctic form seems to have a rather sporadic occurrence; it is common in Danmarks Havn, but has only been found in one other locality, near Angmagssalik.

21. *Hebella calcarata* (A. Agassiz).

Lafœa calcarata A. Agassiz 1865 p. 122 textfigs. 190, 191.

Hebella calcarata Fraser 1912 p. 371 textfig. 34.

East-Greenland record:

Hebella calcarata Fraser 1933 p. 564.

Occurrence at East Greenland:

Franz Joseph Fjord area: Clavering Fjord, near Clavering Ø, 74°20' N. 21° W., 18—64 m (FRASER 1933).

Distribution: Widely distributed: East coast of North America from Nova Scotia to Florida, west coast of Africa, various localities in the Indian Ocean, and off Japan, Australia, and New Zealand.

It is of considerable interest that this species has been found as far north as in the East Greenland locality mentioned above.

22. *Filellum serpens* (Hassall).

Filellum serpens Hincks 1868 p. 241 pl. 41 fig. 4.

Filellum serpens Jäderholm 1909 p. 76 pl. 7 fig. 11.

East-Greenland records:

Lafoëa serpens Grieg 1907 p. 557.

Lafoëa serpens Kramp 1911 p. 373.

Grammaria serpens Kramp 1914 p. 1027.

Filellum serpens Fraser 1933 p. 564.

Occurrence at East Greenland:

North-east coast: 78°09' N. 14°01' W., 78 m (GRIEG 1907); The surroundings of Danmarks Havn, 6—180 m, abundant between 30 and 60 m on hydroids, more rarely occurring on polyzoans and algæ (KRAMP 1911).

Franz Joseph Fjord area: Clavering Fjord near Clavering Ø, 74°20' N. 21° W., 18—64 m (FRASER 1933).

Distribution: Cosmopolitan. Particularly common in the boreal regions, where it mainly occurs in the mid-littoral regions, occasionally descending as far down as 280 m; less common in the Arctic and in warmer seas. Found in several localities off the west coast of Greenland as far north as Disko, 69°41' N., at depths between 56 and 450 m.

On the east coast of Greenland this species has only been found in a few localities, but in the northernmost section, near Danmarks Havn, it was very abundant.

23. *Grammaria abietina* M. Sars.

Salacia abietina Hincks 1868 p. 212 pl. 41 fig. 3.

East-Greenland records:

Grammaria abietina Kramp 1911 p. 376.

Grammaria abietina Kramp 1914 p. 1030.

Grammaria abietina Broch 1918 p. 18.

Grammaria abietina Kramp 1933 p. 15.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 30—40 and 160—180 m, fairly common (KRAMP 1911).

Scoresbysund area: Kap Tobin, 94 m (BROCH 1918); mouth of Hurry Fjord, 140 m.

Kangerdlugssuaq area: Uttentalsund, 50—60 m; Kangerdlugssuaq, in three localities, 10 m, 60—70 m, and 175 m (KRAMP 1933).

South-east coast: Lindenows Fjord, in several localities from the mouth to the head of the fjord, 20—25, 30—50, about 50, 60—80, and 125—150 m; Kekertaksiak, 60—70 m.

Distribution: Arctic-boreal, Atlantic and Pacific. It occurs in the Siberian Polar Sea; on the European coasts it is found as far south as the British Isles, and it is also once recorded from the northern coast of France. It mainly belongs to the deeper parts of the littoral region, occasionally descending into considerable depths. It has been found in some scattered localities off the west coast of Greenland, even as far north as Smith Sound, about 78° N., at depths between 60 and 300 m.

Apparently it occurs along the entire east coast of Greenland, being somewhat more common in the southern than in the northern sections. It seems to be lacking in the inner parts of the fjord complexes of the Franz Joseph Fjord and Scoresbysund areas. It was found both in the fjord water, in the Polar-Current water, and in the Atlantic water below.

Remarks: In Uttentalsund was found a small colony consisting of a creeping stolon attached to a polyzoan (*Scrupocellaria* sp.); hydrothecæ issue at irregular intervals from the stolon (as in *Filellum serpens*), but the terminal end of the stolon leaves the substratum and forms a small erect stem, still with only three hydrothecæ.

24. *Grammaria immersa* Nutting.

Grammaria immersa Nutting 1901 p. 178 pl. 21 figs. 5—6.

East-Greenland records:

Grammaria immersa Jäderholm 1909 p. 75.

Grammaria immersa Kramp 1911 p. 376.

Grammaria immersa Kramp 1914 p. 1031.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 30—60 m (KRAMP 1911).

Franz Joseph Fjord area: Off Mackensie Bugt, 73°20' N. 21°20' W., 70 m (JÄDERHOLM 1909).

Distribution: Arctic, circumpolar. In the Pacific it penetrates southwards as far as Queen Charlotte Islands and Japan; the southernmost locality in the Atlantic area, from which it is recorded with certainty, is off the east coast of Iceland; a large colony in our collections is labelled "The Faroes", but we do not know the exact locality, where it was taken. The species belongs to the deeper parts of the littoral region. Found in some localities off the west coast of Greenland, as far north as Disko, 69°41' N., at depths between 80 and 194 m.

This species is quite common at Danmarks Havn, but has only been found in one other locality on the east coast of Greenland.

25. *Toichopoma obliquum* (Hincks).

Calycella obliqua Hincks 1874 p. 149 pl. 6 figs. 4—5.

Toichopoma obliquum Kramp 1911 p. 374 pl. 20 fig. 4, pl. 23 figs. 5—8, pl. 24 fig. 1.

East-Greenland records:

Toichopoma obliquum Kramp 1911 p. 374.

Toichopoma obliquum Kramp 1914 p. 1025.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 20—60 m, common on hydroids, polyzoans, ascidians, algæ, stones, and shells (KRAMP 1911).

Franz Joseph Fjord area: Eskimonæs, about 55 m, several small colonies on algæ and worm-tubes; Kap Mary, Clavering Ø, 20 m; Moskusokse Fjord, on *Flustra*.

South-east coast: Lindenows Fjord, the mouth of the fjord, 50—75 and 100—150 m, a few small colonies.

Distribution: Arctic: Spitzbergen, Barents Sea, Kara Sea; found in several localities off the west coast of Greenland as far north as Jakobshavn, 69°46' N., at depths between 25 and 190 m.

In East Greenland it is common in Danmarks Havn, but less abundant further south, depth 20—150 m, partly in the water of the Polar Current, partly (in Lindenows Fjord) in the Atlantic water below.

26. *Cuspidella humilis* Hincks.

Cuspidella humilis Hincks 1868 p. 209 pl. 39 fig. 4.

East-Greenland records:

Cuspidella humilis Jäderholm 1909 p. 81.

Cuspidella humilis Kramp 1914 p. 1008.

Occurrence at East Greenland:

Scoresbysund area: South-east of Hvalros Øer, 74°30' N. 18°40' W., 80—100 m (JÄDERHOLM 1909).

Distribution: Widely distributed, probably cosmopolitan, recorded from Iceland, Spitzbergen, Franz Joseph Archipelago, and the entire north coast of Russia and Siberia. Mainly found in the middle parts of the littoral region. Also found on the west coast of Greenland, about 62° N., 190 m.

Only taken in one locality on the east coast of Greenland.

27. *Cuspidella grandis* Hincks.

Cuspidella grandis Hincks 1868 p. 210 pl. 40 fig. 4.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

North-east coast: Off Kap Bismarck, Danmarks Havn, 30—40 m, on polyzoans.

Franz Joseph Fjord area: Kap Mary, Clavering Ø, 20 m, on polyzoans.

Distribution: Boreal, Atlantic and Pacific. Recorded from the British coasts, the North-Sea area, the Bay of Biscay, and from Labrador and Hudson Bay, mainly in the middle and deeper parts of the littoral region. Found in some localities off the west coast of Greenland between Godthaab and Disko, 64°—69°46' N., 80—319 m.

Rare on the east coast of Greenland.

28. *Cuspidella procumbens* Kramp.

Cuspidella procumbens Kramp 1911 p. 384 pl. 24 figs. 2—6.

East-Greenland records:

Cuspidella procumbens Kramp 1911 p. 384.

Cuspidella procumbens Kramp 1914 p. 1010.

Cuspidella procumbens Kramp 1933 p. 14.

Occurrence at East Greenland:

North-east coast: The surroundings of Danmarks Havn, 6—60 m and 300 m, very abundant between 20 and 60 m, mainly on hydroids (KRAMP 1911).

Kangerdlugssuaq area: Kangerdlugssuaq, middle part of the fjord, about 200 m (KRAMP 1933).

Distribution: Arctic. Known from a few localities on the west coast of Greenland, 67°30' and 76°25' N. Originally described from Danmarks Havn, where it is very common, and also found in Kangerdlugssuaq.

29. *Lafoeina maxima* Levinsen.

Lafoeina maxima Levinsen 1893 p. 182 pl. 4 figs. 9—12.

East-Greenland records:

Lafoeina maxima Jäderholm 1909 p. 82.

Lafoeina maxima Kramp 1911 p. 386.

Lafoeina maxima Kramp 1914 p. 1012.

Occurrence at East Greenland:

North-east coast: The surroundings of Danmarks Havn, 13—100 m, very common (KRAMP 1911).

Franz Joseph Fjord area: Kap Broer Ruys, 73°30' N. 20°18' W., 25—27 m (JÄDERHOLM 1909).

Scoresbysund area: Kap Steward, 70°27' N. 22°35' W., 13—18 m (JÄDERHOLM 1909); Hurry Fjord near the Fame Øer, 22—24 m, one small colony on *Flustra*.

Distribution: Arctic. Known from the north coast of Iceland, Spitzbergen, northern Norway, the White Sea, and the entire north coast of Russia and Siberia. Found at depths between 6 and 140 m, mainly in rather shallow water. Very common along the west coast of Greenland from Julianehaab to Thule, and also found in Jones Sound between North Devon and Ellesmere Land.

The records from East Greenland are all from the three northernmost sections, and mostly from strata in which the temperature of the water is below 0° throughout the year.

30. *Stegopoma plicatile* (M. Sars).

Stegopoma plicatile Levinsen 1893 p. 178 pl. 6 figs. 1—7.

Stegopoma plicatile Kramp 1913 p. 15, textfigs. 1—2.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

Franz Joseph Fjord area: South-west of Kap Franklin, 320 m, one large colony with gonothecæ; 2 miles north of Kap Wardlaw, Ymers Ø, 250 m.

Distribution: Arctic-boreal, Atlantic and Pacific. Known from the north coast of Iceland, Jan Mayen, Spitzbergen, Franz Joseph Ar-

chipelago, Barents Sea, Kara Sea, and the Siberian Polar Sea; penetrating southwards along the Norwegian coast into the Skagerrak. Also found in Hudson Bay and very common off the west coast of Greenland as far north as $75^{\circ}54'$ N. It belongs to the deeper parts of the littoral region, descending into the abyssal; in the waters west of Greenland it has been taken at depths between 103 and 850 m.

On the East-Greenland coast it has only been found in two localities, 250—320 m.

31. *Stegopoma fastigiatum* (Alder).

Calycella fastigiata Hincks 1868 p. 208 pl. 39 fig. 3.

Stegopoma fastigiatum Jäderholm 1909 p. 78 pl. 8 fig. 1.

East-Greenland records:

Stegopoma fastigiatum Jäderholm 1909 p. 78.

Stegopoma fastigiatum Kramp 1911 p. 383.

Stegopoma fastigiatum Kramp 1914 p. 1007.

Occurrence at East Greenland:

North-east coast: 77° N. $17\frac{1}{2}^{\circ}$ W., 300 m, on the cirri of *Hathrometra proluxa* (KRAMP 1911).

South-east coast: Off Kap Herluf Trolle, $61^{\circ}16'$ N. (JÄDERHOLM 1909).

Distribution: Widely distributed, though mainly found in the North Atlantic. Recorded from Japan, Hawaii, New Zealand, and East India. In the Atlantic area it is mainly southern-boreal. In the eastern Atlantic the distribution ranges from the Murman Coast southwards at least to Morocco. Mainly found in the middle and deeper parts of the littoral region. The species is recorded from the west coast of Greenland, but the exact localities are unknown.

32. *Calicella syringa* (Linné).

Calycella syringa Hincks 1868 p. 206 pl. 39 fig. 2.

Calycella syringa Jäderholm 1909 p. 80 pl. 8 fig. 3.

East-Greenland records:

Calycella syringa Kramp 1911 p. 384.

Calycella syringa Kramp 1914 p. 1013.

Occurrence at East Greenland:

North-east coast: 77° N. $17\frac{1}{2}^{\circ}$ W., 300 m, on cirri of *Hathrometra proluxa* (KRAMP 1911); the surroundings of Danmarks Havn, 6—40 and 50—100 m, very abundant between 20 and 40 m, mainly on *Delesseria*, but also on various hydroids (KRAMP 1911).

Franz Joseph Fjord area: Kap Mary, Clavering Ø, 20 m, on polyzoans.

Scoresbysund area: Near the Bjørne Øer, Scoresbysund, 18—28 m, on polyzoans, rare.

Distribution: Cosmopolitan, also widely distributed in arctic regions. Mainly occurring in the upper and middle parts of the littoral region, but occasionally descending into deep water, about 1500 m. Common also along the entire west coast of Greenland as far north as Thule, 76°36' N., at depths between 25 and 470 m.

Very abundant in Danmarks Havn, but hitherto only found in a few localities further south, and not south of Scoresbysund.

33. *Tetrapoma quadridentatum* (Hincks).

Calycella quadridentata Hincks 1874 p. 149 pl. 8 figs. 17—20.

East-Greenland records:

Tetrapoma quadridentatum Kramp 1911 p. 385.

Tetrapoma quadridentatum Kramp 1914 p. 1015.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 30—40 m, on *Sertularella tricuspidata* (KRAMP 1911).

Distribution: Arctic, probably circumpolar. Recorded from Spitzbergen, Barents Sea, the Murman Coast, and the north coast of Russia and Siberia at least as far eastwards as the New Siberean Islands, and from the Ochotian Sea. Mainly found in the middle parts of the littoral region. On the west coast of Greenland it has been found in several localities between 60°27' and 68°45' N., at depths between 35 and 293 m.

On the East Greenland coast it has only been found in Danmarks Havn.

34. *Halecium halecinum* (Linné).

Halecium halecinum Hincks 1868 p. 221 pl. 42.

Halecium halecinum Jäderholm 1909 p. 57 pl. 4 figs. 13—14.

East Greenland record:

Halecium halecinum Broch 1918 p. 36.

Occurrence at East Greenland:

Scoresbysund area: Kap Tobin, 107 m (BROCH 1918).

Distribution: Widely distributed; in the Atlantic area it is mainly southern-boreal, very common around the British Isles and in the North Sea and adjacent waters and along the west coast of Norway;

also recorded from the southern and western coasts of Iceland, Spitzbergen, and the White Sea. Mainly found in the middle parts of the littoral region, but sometimes descending into deep water, until 1300 m. It is not known from West Greenland.

The specimen from Scoresbysund was identified by BROCH and has been reexamined by me.

35. *Halecium muricatum* (Ellis & Solander).

Halecium muricatum Hincks 1868 p. 223 pl. 43 fig. 1.

Halecium muricatum Jäderholm 1909 p. 59 pl. 5 figs. 4—6.

East-Greenland records:

Halecium muricatum Jäderholm 1909 p. 59.

Halecium muricatum Kramp 1911 p. 365.

Halecium muricatum Kramp 1914 p. 996.

Halecium muricatum Broch 1918 p. 43.

Occurrence at East Greenland:

North-east coast: Surroundings of Danmarks Havn, 6—100 m, very abundant, especially between 40 and 60 m (KRAMP 1911).

Franz Joseph Fjord area: S.E. of Clavering Ø, 74°10' N. 20°08' W., 25—40 m (JÄDERHOLM 1909); Kap Broer Ruys, 73°30' N. 20°18' W., 25—77 m (JÄDERHOLM 1909); head of Moskusokse Fjord, 17—21 m, some small colonies.

Scoresbysund area: Amdrup Havn at the mouth of Scoresbysund, 14—16 m, several large, fertile colonies on big stalks of *Laminaria*.

South-east coast: Ingmikertok, Angmagssalikfjord (BROCH 1918).

Distribution: Arctic-boreal, circumpolar. Common almost everywhere in arctic regions and around Iceland, penetrating southwards along the European coasts as far as southern England. It mainly occurs in the upper parts of the littoral region, but may descend into deep water, found as far down as 1350 m. Very common off the west coast of Greenland, where it has been found as far north as Thule, at depths between 25 and 470 m.

Also common in certain parts of the East Greenland coast.

36. *Halecium labrosum* Alder.

Halecium labrosum Hincks 1868 p. 225 pl. 44 fig. 1.

East-Greenland records:

Halecium labrosum Kramp 1911 p. 366.

Halecium labrosum Kramp 1914 p. 999.

Occurrence at East Greenland:

North-east coast: Kap Bismarck, Danmarks Havn, 30—60 m, particularly common between 40 and 60 m (KRAMP 1911).

Distribution: Arctic-boreal, Atlantic and Pacific. Very common in arctic regions, penetrating southwards along the Norwegian coast into Danish waters and to the coasts of Scotland and northern England; also recorded from some localities in more southern areas: Heligoland, the Mediterranean, and the Azores. It mainly belongs to the upper parts of the littoral region, occasionally found at greater depths, until 470 m. It is somewhat rare on the coasts of Iceland, but very common off the west coast of Greenland as far north as Ritenbenk, about 70° N., at depths between 47 and 470 m, and also found in Jones Sound between North Devon and Ellesmere Land.

On the East Greenland coast it has only been found in the neighbourhood of Danmarks Havn, where it was fairly common.

37. *Halecium groenlandicum* Kramp.

Halecium groenlandicum Kramp 1911 p. 367 pl. 22 figs. 1—4.

Halecium polytheca Linko 1911 p. 73 textfig. 15, pl. 1 fig. 4.

Halecium groenlandicum Linko *ibid.* p. 240.

East-Greenland records:

Halecium groenlandicum Kramp 1911 p. 367.

Halecium groenlandicum Kramp 1914 p. 1002.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 50—100 m (KRAMP 1911).

South-east coast: Kekertaksiak, 75—90 m, several large, fertile colonies.

Distribution: Arctic. Known from Barents Sea, Murman Coast, White Sea, Kara Sea, and from the west coast of Greenland between about 61° and 69°41' N., depth 33—700 m.

On the east coast of Greenland it has only been found in two localities, Danmarks Havn in the North and Kekertaksiak near the southern end of the coast.

38. *Halecium curvicaule* v. Lorenz.

Halecium curvicaule v. Lorenz 1886 p. 25 pl. 2 figs. 1—2.

Halecium repens Jäderholm 1908 p. 16 pl. 2 figs. 19—20.

Halecium curvicaule Broch 1909 p. 150 textfigs. 9—11, pl. 2 fig. 2.

Halecium curvicaule Dons 1912 p. 61, figs. D—G.

East-Greenland records:

Halecium curvicaule Kramp 1911 p. 367.

Halecium curvicaule Kramp 1914 p. 1000.

Occurrence at East Greenland:

North-east coast: Surroundings of Danmarks Havn, several localities, 6—180 m (KRAMP 1911).

Distribution: Arctic. Known from Iceland, Jan Mayen, Spitzbergen, Barents Sea, Kara Sea, the Murman Coast, and the northern part of the west coast of Norway, north of about 69° N. Mainly found in the middle and deeper parts of the littoral region. Fairly common on the west coast of Greenland between Julianehaab and Prøven, about 61°—73°22' N., at depths between 25 and 570 m.

On the east coast of Greenland this species has only been found in the neighbourhood of Danmarks Havn.

39. *Halecium tenellum* Hincks.

Halecium tenellum Hincks 1868 p. 226 pl. 45 fig. 1.

Halecium tenellum Jäderholm 1909 p. 55 pl. 4 fig. 12.

Halecium textum Kramp 1911 p. 368 pl. 21 figs. 5—6, textfig. 3.

East-Greenland records:

Halecium textum Kramp 1911 p. 368.

Halecium sp. (*tenellum* aff.) Kramp 1911 p. 370.

Halecium textum Kramp 1914 p. 1003.

Halecium tenellum Kramp 1914 p. 1004.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 20—40 and 160—180 m, on *Delesseria* and hydroids (KRAMP 1911).

South-east coast: Mouth of Lindenows Fjord, 100—150 m, several small colonies on polyzoans; Kekertaksiak, 60—70 m, on *Sertularella tricuspidata*.

Distribution: Cosmopolitan, though not very common in arctic and boreal regions. Occurs in the littoral region, as far down as 300 m. Found in some few localities on the west coast of Greenland as far north as 68°47' N., depth 25—300 m.

On the East-Greenland coast this species has only been found in the northernmost and the southernmost sections, at very different depths.

40. *Halecium minutum* Broch.

Halecium minutum Broch 1903 p. 4 pl. 1 figs. 1—4.

East Greenland records:

Halecium sp. (*minutum* aff.) Kramp 1911 p. 370.

Halecium minutum Kramp 1914 p. 1005.

Occurrence at East Greenland:

North-east coast: Off Maroussia, Danmarks Havn, 160—180 m, on hydroids (KRAMP 1911).

Distribution: Arctic, probably circumpolar, penetrating slightly into the boreal region; fairly common on the cold east coast of Iceland, but rare on the other parts of the Icelandic coasts. Mainly found in the upper and middle parts of the littoral region. On the west coast of Greenland it occurs from about 62°—68°47' N., at depths between 34 and 293 m.

? *Nemertesia antennina* (Linné).

Antennularia antennina Hincks 1868 p. 280 pl. 61.

Antennularia antennina Jäderholm 1909 p. 105 pl. 12 fig. 1.

East-Greenland records:

Antennularia ramosa Grieg 1907 p. 558.

Antennularia antennina? Kramp 1914 p. 1057.

Occurrence at East Greenland:

North-east coast: 78°09' N. 14°01' W., 78 m (GRIEG 1907).

Only a fragment of a colony was taken in the locality mentioned above, and it was only with some doubt that it was referred to *Antennularia ramosa*. As previously stated by me (1914), it is highly improbable that this decidedly southern species might occur on the north east coast of Greenland; it is more likely that the fragment belonged to the species *antennina*; this is likewise a predominantly southern form, but it is also quite common in northern waters, being found off the southern part of the west coast of Greenland, round Iceland, and off the Murman Coast and Bear Island.

41. *Sertularella tricuspida* (Alder).

Sertularella tricuspida Hincks 1868 p. 239 pl. 47 fig. 1.

East-Greenland records:

Sertularella tricuspida Kirchenpauer 1874 p. 416.

Sertularella tricuspida Kramp 1911 p. 386.

Sertularella tricuspida Kramp 1914 p. 1038.

Occurrence at East Greenland:

North-east coast: Surroundings of Danmarks Havn, 30—100 m, very abundant between 30 and 40 m, on stones, shells, ascidians, worm tubes, hydroids, algæ, etc. (KRAMP 1911).

Franz Joseph Fjord area: About 74° N. (KIRCHENPAUER 1874).

Scoresbysund area: Kap Tobin, 107 m; Turner Sund, 226 m.

South-east coast: Mouth of Lindenows Fjord, 50—75 and 100—150 m, some few small colonies; Kekertaksiak, 60—70 m, several colonies.

Distribution: Arctic-boreal, circumpolar. Very common in arctic seas and in the northern part of the boreal region; in the eastern Atlantic area it penetrates as far south as the Faroes and along the west coast of Norway until Bergen. Mainly found in the littoral region, but occasionally descending into deep water. Very common off the west coast of Greenland as far north as Disko, 69°41' N., depth about 20—400 m, and also recorded from Jones Sound.

This species probably occurs along the entire east coast of Greenland, but it seems to be lacking in the great fjords, where the movements of the water are slight.

42. *Sertularella polyzonias* (Linné).

A, forma *typica* Broch.

Sertularella polyzonias Hincks 1868 p. 235 pl. 46 fig. 1.

Sertularella polyzonias Jäderholm 1909 p. 100 pl. 11 fig. 12.

Sertularella polyzonias forma *typica* Broch 1909 p. 215.

East Greenland records:

Sertularella polyzonias Grieg p. 557.

Sertularella polyzonias Kramp 1914 p. 1033.

Occurrence at East Greenland:

North-east coast: 78°09' N. 14°01' W., 78 m (GRIEG 1907).

Distribution: Cosmopolitan, circumpolar, but not very common in arctic regions; particularly abundant in the boreal parts of the European coasts. Mainly found in the upper and middle parts of the littoral region. Off the west coast of Greenland it occurs from about 62° to 69°15' N., at depths between 56 and 300 m.

B. var. *gigantea* Hincks.

Sertularella polyzonias var. *gigantea* Hincks 1874 p. 151 pl. 7 fig. 11.

Sertularella gigantea Mereschowsky 1878 pp. 323, 330, 339 pl. 14 figs. 6—7.

Sertularella polyzonias forma *gigantea* Broch 1909 p. 215.

East-Greenland records:

Sertularella gigantea Kramp 1911 p. 387.

Sertularella gigantea Kramp 1914 p. 1034.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 50—100 and 160—180 m, fairly common (KRAMP 1911).

Distribution: Arctic, circumpolar. Found in one single locality off the north coast of Iceland. Occurs in the upper and middle parts of the littoral region. Fairly common along the west coast of Greenland as far north as 69°15' N., at depths between 14 and 263 m.

43. *Sertularella tenella* (Alder).

Sertularella tenella Hincks 1868 p. 242 pl. 47 fig. 3.

Sertularella tenella Jäderholm 1909 p. 102 pl. 11 fig. 15.

East-Greenland record:

Sertularella tenella Fraser 1933 p. 564.

Occurrence at East Greenland:

Franz Joseph Fjord area: Clavering Fjord near Clavering Ø, 74°20' N. 21° W., 18—64 m (FRASER 1933).

Distribution: Mainly southern-boreal, Atlantic and Pacific; fairly common at the British Isles and found on the west coast of Norway as far north as Trondheim Fjord; also recorded from a few arctic localities: Kolafjord (SPASSKY 1930) and Franz Joseph Archipelago (USCHAKOW 1932). Found in a single locality off the west coast of Greenland, about 62° N., 190 m. It mainly occurs in the middle part of the littoral region.

44. *Diphasia fallax* (Johnston).

Diphasia fallax Hincks 1868 p. 249 pl. 49 fig. 2.

Diphasia wandeli Levinsen 1893 p. 197 pl. 8 figs. 1—5.

Diphasia fallax Jäderholm 1909 p. 83 pl. 8 figs. 7—8.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

Scoresbysund area: Hekla Havn, Scoresbysund.

Distribution: Northern-boreal in the Atlantic area. Abundant off the northern parts of the British coasts and along the west coast of Norway as far north as Tromsø; also very common around the Faroes and Iceland, and recorded from the Barents Sea. Found in some localities

off the west coast of Greenland as far north as $68^{\circ}28'$ N., depth 97—400 m. It mainly occurs in the middle and deeper parts of the littoral region, but may descend into very deep water, until about 1400 m.

The colony from Scoresbysund was collected by RYDER in 1891; it has been identified by BROCH, but no record of it has been published until now.

45. *Abietinaria abietina* (Linné).

Sertularia abietina Hincks 1868 p. 266 pl. 55.

Diphasia abietina Jäderholm 1909 p. 85 pl. 8 fig. 14.

East-Greenland records:

Diphasia (Abietinaria) abietina Grieg 1907 p. 557.

Diphasia abietina Kramp 1914 p. 1054.

Occurrence at East Greenland:

North-east coast: $78^{\circ}09'$ N. $14^{\circ}01'$ W., 78 m (GRIEG 1907); $77^{\circ}31'$ N. $18^{\circ}24'$ W. (GRIEG 1907).

South-east coast: Kekertalik, 60 m, one small colony.

Distribution: Northern-boreal. It mainly occurs in the boreal and subarctic regions of the Atlantic as well as the Pacific areas, less common in the Arctic; also recorded from more southerly regions: Portugal, the Mediterranean, Madeira. Very abundant around Iceland and also found at Spitzbergen, in the Barents Sea, the White Sea, and the Kara Sea, and off the west coast of Greenland, where it is rather common as far north as Disko, $69^{\circ}41'$ N., at depths between 46 and 525 m. It occurs from shallow water down to more than 800 m, but is mainly found in the littoral region.

It seems to be rare on the East-Greenland coast.

46. *Sertularia tenera* G. O. Sars.

Sertularia tenera G. O. Sars 1874 p. 108 pl. 4 figs. 1—4.

Thutaria tenera Jäderholm 1909 p. 93 pl. 19 figs. 1—4.

East-Greenland records:

Sertularia tenera Grieg 1907 p. 557.

Sertularia tenera Kramp 1914 p. 1042.

Occurrence at East Greenland:

North-east coast: $78^{\circ}09'$ N. $14^{\circ}01'$ W., 78 m (GRIEG 1907).

Distribution: Arctic-boreal, circumpolar. Common on the west coast of Norway and penetrating into the Danish waters. Recorded from a few scattered localities off the coasts of Scotland and the Faroes;

also found around Iceland, but not very common. It occurs in the littoral region, down to about 350 m. Off the west coast of Greenland it has been found as far north as Egedesminde, 68°47' N., at depths between 25 and 319 m.

47. *Hydrallmania falcata* (Linné).

Hydrallmania falcata Hincks 1868 p. 273 pl. 58.

Hydrallmania falcata Jäderholm 1909 p. 104 pl. 11 fig. 17.

East-Greenland records:

Hydrallmania falcata Grieg 1907 p. 557.

Hydrallmania falcata Kramp 1914 p. 1051.

Occurrence at East Greenland:

North-east coast: 78°09' N. 14°01' W., 78 m (GRIEG 1907).

Distribution: Northern-boreal. Penetrating as far southwards as to the Bay of Biscay, exceedingly common in the boreal parts of the East-Atlantic area, along the entire coast of Norway and around Iceland; also recorded from Spitzbergen, the Barents Sea, the White Sea, and the Kara Sea. It mainly occurs in the littoral region, but may descend into deep water, exceptionally as far down as 2000 m. Off the west coast of Greenland it has only been found in one locality, Julianehaab Bank, 60°16' N., 135 m.

On the east coast of Greenland it is likewise known from one locality only.

48. *Thuiaria laxa* Allman.

Thuiaria laxa Allman 1874 p. 472 pl. 65 fig. 1.

Thuiaria hjorti Broch 1903 p. 7 pl. 3 figs. 11—14.

Thuiaria immersa Nutting 1904 p. 66 pl. 9 figs. 3—4.

Thuiaria hjorti Jäderholm 1909 p. 89 pl. 9 figs. 1—2.

East-Greenland records:

Thuiaria laxa Kramp 1911 p. 388.

Thuiaria laxa Kramp 1914 p. 1048.

Thuiaria laxa Broch 1918 p. 142.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 160—180 m (KRAMP 1911).

Scoresbysund area: Kap Tobin, 107 m (BROCH 1918); mouth of Rosenvinges Bugt, Scoresbysund, 300 m, one large colony; off Kap Hooker, Jameson Land, about 150 m, one large colony; Turner Sund, about 225 m (BROCH 1918); Henry Land, 38 m (BROCH 1918); off Henry Land, 360—375 m (BROCH 1918).

Distribution: Arctic. Recorded from Spitzbergen and the Siberian Polar Sea as far eastwards as Taimur; fairly common off the coasts of Iceland, sparingly occurring as far south as the Shetland Islands. Also taken in two localities off the west coast of Greenland: Julianehaab Bank, $60^{\circ}22'$ N., and Smith Sound, $76^{\circ}40'$ N., depth 85—600 m, and off Hamilton Inlet in Labrador, 55° N. It mainly occurs in the deeper parts of the littoral region and the upper part of the abyssal.

Several colonies of this species are found in the Scoresbysund area, mainly on the open coast, in the Polar Current water as well as in the Atlantic water below; three colonies were taken at the entrance to Danmarks Havn.

GENERAL REMARKS

In the following tables, Tables I and II, the fauna of hydroids in the littoral region along the east coast of Greenland is compared with the faunas in other parts of the North-Atlantic area. The term "littoral region" is used for depths of less than about 300 metres, "abyssal region" for greater depths. Species which only occur in the abyssal region are not included in the tables. The arctic varieties *Lafoea fruticosa grandis*, *Sertularella polyzonias gigantea*, and *Diphasia fallax wandeli* are enumerated as species. Table I shows the occurrence of the 50 East-Greenland species and varieties in other North-Atlantic littoral regions, including the European coasts south of Lofoten on the west coast of Norway. In Table II are given lists of the species known from the following areas: the east coast of Canada, including Hudson Bay and the arctic Canadian Islands; the west coast of Greenland; the east coast of Greenland; Iceland; Spitzbergen; the northern coasts of the European continent from Lofoten to the east side of Kara Sea. Some more or less doubtful species are excluded from the lists. A list of the hydroids known from the waters west of Greenland, with their northern and southern limits of distribution off the Greenland coast, is given by me in a previous paper (KRAMP 1932 pp. 68—69), and detailed accounts of the distribution of the hydroids around Iceland are published in the "Zoology of Iceland" (KRAMP 1938); a few additions to the fauna of Iceland are given in a recent paper by VERVOORT (1942). The records from the other areas (Canada, Spitzbergen, and Europe north of Lofoten) are derived from various separate papers, no complete lists being available from these regions.

Table II shows at a glance that the hydroid fauna of East Greenland is rather poor in comparison with those in the other areas. This is no surprise, because the hydrographical conditions are fairly uniform all along the East-Greenland coast, owing to the East-Greenland Polar Current of very cold water which is only slightly mixed up with water originating from milder regions. In the other regions the hydrographical conditions are much more diversified. The southern part of the Canadian

Table I. Distribution of the East-Greenland Hydroids in other parts of the North-Atlantic coastal areas.

| | Eastern Canada | West Greenland | East Greenland | Iceland | Spitzbergen | Europe N. of Lofoten | Europe S. of Lofoten | Zoogeographical distribution |
|--|-------------------|-------------------|-------------------|---------|-------------|-------------------------|-------------------------|---------------------------------|
| <i>Coryne sarsi</i> (Lovén) | × | × | × | × | . | × | × | northern-boreal |
| <i>Tubularia regalis</i> Boeck | . | × | × | . | × | × | × | arctic |
| <i>Corymorpha obvoluta</i> Kramp | . | . | × | . | . | . | . | unknown |
| <i>Rhizogeton nudus</i> Broch | . | × | × | . | × | × | . | arctic |
| <i>Hydractinia allmani</i> Bonnevie | . | . | × | . | × | × | . | arctic |
| — <i>ornata</i> Bonnevie | . | . | × | . | . | × | . | arctic |
| * — <i>serrata</i> n. sp. | . | . | × | . | . | . | . | unknown |
| <i>Perigonimus abyssii</i> G. O. Sars | . | × | × | . | × | × | × | arctic-boreal |
| — <i>yoldiae-arcticae</i> Birula | . | . | × | . | × | × | . | arctic |
| — <i>roseus</i> (M. Sars) | × | × | × | . | . | × | × | boreal |
| <i>Eudendrium rameum</i> (Pallas) | × | × | × | × | × | × | × | cosmopolitan |
| — <i>ramosum</i> (L.) | × | . | × | × | . | × | × | uncertain |
| — <i>tenellum</i> Allman | × | × | × | . | × | × | × | uncertain |
| <i>Campanularia verticillata</i> (L.) | × | × | × | × | × | × | × | northern-boreal |
| — <i>volubilis</i> (L.) | × | × | × | × | × | × | × | arctic-boreal |
| — <i>groenlandica</i> Levinsen | × | × | × | × | × | × | × | arctic |
| — <i>integra</i> McGillivray | × | × | × | × | × | × | × | cosmopolitan |
| <i>Laomedea longissima</i> (Pallas) | × | × | × | × | × | × | × | cosmopolitan |
| <i>Lafoea gracillima</i> (Alder) | × | × | × | × | × | × | × | cosmopolitan |
| — <i>fruticosa</i> M. Sars, <i>genuina</i> | × | × | × | × | × | × | × | arctic-boreal |
| — — <i>grandis</i> Hincks | × | × | × | × | × | × | × | arctic |
| <i>Hebella calcarata</i> (A. Agassiz) | × | . | × | . | . | . | . | ? cosmopolitan |
| <i>Filellum serpens</i> (Hassall) | × | × | × | × | × | × | × | cosmopolitan |
| <i>Grammaria abetina</i> (M. Sars) | × | × | × | × | × | × | × | arctic-boreal |
| — <i>immersa</i> Nutting | . | × | × | × | × | × | × | arctic |
| <i>Toichopoma obliquum</i> (Hincks) | . | × | × | × | × | × | . | arctic |
| <i>Cuspidella humilis</i> Hincks | × | × | × | × | × | × | × | cosmopolitan |
| — <i>grandis</i> Hincks | × | × | × | . | . | . | × | boreal |
| — <i>procumbens</i> Kramp | . | × | × | . | . | . | . | arctic |
| * <i>Lafoeina maxima</i> Levinsen | × | × | × | × | × | × | . | arctic |
| * <i>Stegopoma plicatile</i> (M. Sars) | × | × | × | × | × | × | × | arctic-boreal |
| — <i>fastigiatum</i> (Alder) | × | × | × | . | . | × | × | boreal |
| <i>Calicella syringa</i> (L.) | × | × | × | × | × | × | × | cosmopolitan |
| <i>Tetrapoma quadridentatum</i> (Hincks) | × | × | × | × | × | × | . | arctic |
| <i>Halecium halecinum</i> (L.) | × | . | × | × | × | × | × | southern-boreal |
| — <i>muricatum</i> (Ell. & Sol.) | × | × | × | × | × | × | × | arctic-boreal |
| — <i>labrosum</i> Alder | × | × | × | × | × | × | × | arctic-boreal |
| — <i>groenlandicum</i> Kramp | . | × | × | . | . | × | . | arctic |
| — <i>curvicaule</i> v. Lorenz | × | × | × | × | × | × | × | arctic |

* Species not previously recorded from East Greenland.

Table I (continued).

| | Eastern Canada | West Greenland | East Greenland | Iceland | Spitzbergen | Europe N. of Lofoten | Europe S. of Lofoten | Zoogeographical distribution |
|---|----------------|----------------|----------------|---------|-------------|----------------------|----------------------|------------------------------|
| <i>Halecium tenellum</i> Hincks | × | × | × | × | × | × | × | cosmopolitan |
| — <i>minutum</i> Broch..... | × | × | × | × | × | × | . | arctic |
| <i>Sertularella tricuspida</i> (Alder)..... | × | × | × | × | × | × | × | arctic-boreal |
| — <i>polyzonius</i> (L.) <i>typica</i> | × | × | × | × | × | × | × | cosmopolitan |
| — — <i>gigantea</i> Mereschk. | . | × | × | × | × | × | . | arctic |
| — <i>tenella</i> (Alder) | × | × | × | . | × | × | × | southern-boreal |
| * <i>Disphasia fallax</i> (Johnst.) <i>typica</i> | × | × | × | × | × | × | × | northern-boreal |
| <i>Abietinaria abietina</i> (L.) | × | × | × | × | × | × | × | northern-boreal |
| <i>Sertularia tenera</i> G. O. Sars | × | × | × | × | × | × | × | arctic-boreal |
| <i>Hydrallmania falcata</i> (L.) | × | × | × | × | × | × | × | northern-boreal |
| <i>Thuiaria laxa</i> Allman | × | × | × | × | × | × | × | arctic |
| number of species | 37 | 42 | 50 | 32 | 39 | 45 | 36 | |

coast is purely boreal, the northern part purely arctic. On the west coast of Greenland the water may attain rather high temperatures in certain places or at certain periods, while in other parts strictly arctic conditions prevail. The south coast of Iceland is washed by the warm water of the Gulf Stream and the Irminger Current enabling a considerable number of southern species to live there, while the fauna on the east coast is influenced by a branch of the Polar Current. Spitzbergen and the north coast of Russia are reached by off-shoots of the Gulf Stream, but in some parts of these areas the conditions are purely arctic. No wonder, therefore, that all these areas present possibilities for the subsistence of a mixed fauna consisting of species of different zoogeographical character, while on the east coast of Greenland conditions are unfavourable to a great number of the species met with in the surrounding areas. Nevertheless, some species of comparatively southern distribution are occasionally found off the east coast of Greenland.

The majority of the hydroids known from East Greenland are widely distributed in the coastal areas of the North Atlantic. Among the 50 species recorded no less than 25 are known to occur in all of the seven areas represented in Table I.

Table II. Distribution of the Hydroids in the littoral region in the northern parts of the Atlantic area.

| | Eastern Canada | West Greenland | East Greenland | Iceland | Spitzbergen | Europe N. of Lofoten |
|--|-------------------|-------------------|-------------------|---------|-------------|-------------------------|
| <i>Coryne pusilla</i> Gärtner | × | . | . | × | . | × |
| — <i>brevicornis</i> Bonnevie..... | . | . | . | . | × | × |
| — <i>loveni</i> M. Sars | . | × | . | . | . | . |
| — <i>sarsi</i> (Lovén)..... | × | × | × | × | . | × |
| <i>Gemmaria implexa</i> (Alder) | . | . | . | . | . | × |
| <i>Stauridium productum</i> Wright..... | . | . | . | . | . | × |
| <i>Acaulis primarius</i> Stimpson..... | × | . | . | . | . | × |
| <i>Tubularia indivisa</i> L. | × | × | . | × | × | × |
| — <i>regalis</i> Boeck | . | × | × | . | × | × |
| — <i>larynx</i> Ell. & Sol. | × | . | . | × | × | × |
| — <i>couthouyi</i> L. Agassiz | × | . | . | . | . | . |
| — <i>spectabilis</i> (L. Agassiz) | × | . | . | . | . | . |
| — <i>crocea</i> (L. Agassiz)..... | × | . | . | . | . | . |
| — <i>prolijer</i> (L. Agassiz)..... | × | . | . | × | . | . |
| <i>Corymorpha nutans</i> M. Sars | . | . | . | × | × | . |
| — <i>pendula</i> L. Agassiz..... | × | . | . | . | . | . |
| — <i>nana</i> Alder | . | . | . | . | . | × |
| — <i>glacialis</i> M. Sars | . | . | . | × | × | × |
| — <i>sarsi</i> Steenstr..... | . | . | . | . | . | × |
| — <i>groenlandica</i> (Allman) | . | × | . | × | × | . |
| — <i>uvifera</i> (O. Schmidt) | . | . | . | . | . | × |
| — <i>obvoluta</i> Kramp | . | . | × | . | . | . |
| <i>Candelabrum phrygium</i> (Fabr.) | × | × | . | . | . | × |
| <i>Monobrachium parasitum</i> Mereschkowsky . | × | × | . | . | × | × |
| <i>Rhizogeton nudus</i> Broch | . | × | × | . | × | × |
| <i>Clava squamata</i> (O. F. Müll.) | × | . | . | × | . | × |
| <i>Hydractinia carnea</i> M. Sars | × | . | . | × | × | × |
| — <i>sarsi</i> (Steenstr.) | . | × | . | × | . | . |
| — <i>echinata</i> (Flem.) | × | × | . | × | . | . |
| — <i>borealis</i> Mereschkowsky | . | . | . | . | . | × |
| — <i>carica</i> Bergh | × | . | . | . | × | × |
| — <i>allmani</i> Bonnevie..... | . | . | × | . | × | × |
| — <i>monocarpa</i> Allman | . | × | . | . | × | × |
| — <i>ornata</i> Bonnevie | . | . | × | . | . | × |
| — <i>laevispina</i> Fraser..... | × | . | . | . | . | . |
| — <i>serrata</i> n. sp. | . | . | × | . | . | . |
| <i>Bougainvillia ramosa</i> (v. Beneden) | . | . | . | × | . | . |
| — <i>carolinensis</i> (McCrary) | × | . | . | . | . | . |
| <i>Dicoryne conferta</i> (Alder) | × | . | . | × | . | . |
| <i>Bimeria fruticosa</i> Scheuring | . | . | . | . | . | × |
| — <i>brevis</i> Fraser | × | . | . | . | . | . |
| <i>Perigonimus repens</i> (Wright) | . | . | . | × | . | . |

Table II (continued).

| | Eastern Canada | West Greenland | East Greenland | Iceland | Spitzbergen | Europe N. of Lofoten |
|--|-------------------|-------------------|-------------------|---------|-------------|-------------------------|
| <i>Perigonimus abyssi</i> G. O. Sars | . | × | × | . | × | × |
| — <i>yoldiæ-arcticæ</i> Birula | . | . | × | . | × | × |
| — <i>roseus</i> (M. Sars) | × | × | × | . | . | × |
| <i>Eudendrium ramosum</i> (L.) | × | . | × | × | . | × |
| — <i>rameum</i> (Pallas) | × | × | × | × | × | × |
| — <i>annulatum</i> Norman | × | × | . | × | × | × |
| — <i>caricum</i> Jäderholm | . | × | . | . | . | × |
| — <i>album</i> Nutting | × | . | . | . | . | . |
| — <i>dispar</i> L. Agassiz | × | . | . | . | . | . |
| — <i>capillare</i> Alder | × | × | . | × | × | × |
| — <i>tenellum</i> Allman | × | × | × | . | × | × |
| <i>Campanularia verticillata</i> (L.) | × | × | × | × | × | × |
| — <i>volubilis</i> (L.) | × | × | × | × | × | × |
| — <i>hincksi</i> Alder | × | . | . | × | . | × |
| — <i>johnstoni</i> Alder | × | . | . | × | × | . |
| — <i>amphora</i> (L. Agassiz) | × | . | . | . | . | . |
| — <i>noliformis</i> (McCrady) | × | . | . | . | . | . |
| — <i>groenlandica</i> Levensen | × | × | × | × | × | × |
| — <i>integra</i> McGillivray | × | × | × | × | × | × |
| — <i>speciosa</i> Clark | × | × | . | . | × | × |
| <i>Laomedea flexuosa</i> Alder | × | × | . | × | . | × |
| — <i>neglecta</i> Alder | × | . | . | × | . | . |
| — <i>gemiculata</i> (L.) | × | × | . | × | . | × |
| — <i>dichotoma</i> (L.) | × | . | . | × | . | × |
| — <i>longissima</i> (Pallas) | × | × | × | × | × | × |
| — <i>hyalina</i> (Hincks) | × | × | . | × | × | × |
| — <i>loveni</i> Allman | × | × | . | × | . | × |
| — <i>gracilis</i> M. Sars | × | . | . | × | . | × |
| — <i>gelatinosa</i> (Pallas) | × | . | . | . | . | × |
| <i>Lajocia dumosa</i> (Fleming) | × | × | . | × | × | × |
| — <i>gracillima</i> (Alder) | × | × | × | × | × | × |
| — <i>fruticosa</i> M. Sars, <i>genuina</i> | × | × | × | × | × | × |
| — — <i>grandis</i> Hincks | × | × | × | × | × | × |
| <i>Hebella calcarata</i> (A. Agassiz) | × | . | × | . | . | . |
| <i>Filellum serpens</i> (Hassall) | × | × | × | × | × | × |
| <i>Grammaria abietina</i> (M. Sars) | × | × | × | × | × | × |
| — <i>immersa</i> Nutting | . | × | × | × | × | × |
| — <i>borealis</i> (Levensen) | × | × | . | × | . | × |
| <i>Toichopoma obliquum</i> (Hincks) | . | × | × | . | × | × |
| <i>Lictorella pinnata</i> (G. O. Sars) | . | × | . | . | . | × |
| <i>Bonneviella grandis</i> (Allman) | . | × | . | × | . | × |
| <i>Cuspidella humilis</i> Hincks | × | × | × | × | × | × |
| — <i>grandis</i> Hincks | × | × | × | . | . | . |
| — <i>procumbens</i> Kramp | . | × | × | . | . | . |

Table II (continued).

| | Eastern Canada | West Greenland | East Greenland | Iceland | Spitzbergen | Europe N. of Lofoten |
|---|-------------------|-------------------|-------------------|---------|-------------|-------------------------|
| <i>Cuspidella costata</i> Hincks | × | . | . | . | . | . |
| <i>Lafocina tenuis</i> M. Sars | . | . | . | . | × | × |
| — <i>maxima</i> Levensen | × | × | × | × | × | × |
| <i>Campanulina lacerata</i> (Johnston) | × | . | . | × | . | × |
| — <i>turrita</i> Hincks | . | × | . | . | . | . |
| — <i>mollis</i> (Spassky) | . | . | . | . | . | × |
| <i>Stegopoma plicatile</i> (M. Sars) | × | × | × | × | × | × |
| — <i>fastigiatum</i> (Alder) | × | × | × | . | . | × |
| <i>Calicella syringa</i> (L.) | × | × | × | × | × | × |
| <i>Tetrapoma quadridentatum</i> (Hincks) | × | × | × | . | × | × |
| <i>Halecium halecinum</i> (L.) | × | . | × | × | × | × |
| — <i>beani</i> Johnston | × | . | . | × | . | . |
| — <i>scutum</i> Clark | . | × | . | × | × | × |
| — <i>articulosum</i> Clark | × | . | . | × | . | . |
| — <i>kükenthali</i> Markt.-Turn. | . | × | . | × | × | × |
| — <i>sessile</i> Norman | × | . | . | . | . | × |
| — <i>løve</i> Kramp | . | × | . | . | . | . |
| — <i>muricatum</i> (Ell. & Sol.) | × | × | × | × | × | × |
| — <i>labrosum</i> Alder | × | × | × | × | × | × |
| — <i>groenlandicum</i> Kramp | . | × | × | . | . | × |
| — <i>curvicaule</i> v. Lorenz | × | × | × | × | × | × |
| — <i>tenellum</i> Hincks | × | × | × | × | × | × |
| — <i>minutum</i> Broch | × | × | × | × | × | × |
| <i>Kirchenpaueria pinnata</i> (L.) | . | . | . | × | . | . |
| <i>Plumularia setacea</i> L. | . | . | . | × | . | . |
| — <i>setaceoides</i> Bale | × | . | . | . | . | . |
| <i>Schizotricha catharina</i> (Johnston) | . | . | . | × | . | . |
| — <i>frutescens</i> (Ell. & Sol.) | . | . | . | × | . | . |
| <i>Polyplumaria gracillima</i> (G. O. Sars) | × | × | . | × | . | . |
| — <i>flabellata</i> G. O. Sars | . | . | . | × | . | . |
| — <i>profunda</i> (Nutting) | . | . | . | × | . | . |
| <i>Nemertesia antennina</i> (L.) | × | × | ? | × | × | × |
| — <i>ramosa</i> Lmx. | . | . | . | × | . | . |
| <i>Nematocarpus ramuliferus</i> (Allman) | . | . | . | × | . | . |
| <i>Cladocarpus integer</i> (G. O. Sars) | × | × | . | × | × | × |
| — <i>formosus</i> Allman | . | × | . | × | . | × |
| — <i>campanulatus</i> Ritchie | . | × | . | × | . | . |
| — <i>bicuspis</i> (G. O. Sars) | . | . | . | × | . | . |
| — <i>bonnevieæ</i> Jäderholm | . | . | . | × | . | × |
| — <i>dubius</i> Broch | . | . | . | . | × | . |
| <i>Aglaophenopsis cornuta</i> (Verrill) | × | × | . | . | . | . |
| — <i>compressa</i> (Bonnievie) | . | × | . | . | . | × |
| <i>Thecocarpus myriophyllum</i> (L.) | × | × | . | × | . | . |
| <i>Sertomma tamarisca</i> (L.) | × | × | . | × | . | × |

Table II (continued).

| | Eastern Canada | West Greenland | East Greenland | Iceland | Spitzbergen | Europe N. of Lofoten |
|---|-------------------|-------------------|-------------------|---------|-------------|-------------------------|
| <i>Sertularella tricuspida</i> (Alder) | × | × | × | × | × | × |
| — <i>polyzonias</i> (L.), <i>typica</i> | × | × | × | × | × | × |
| — — <i>gigantea</i> Mereschk. | . | × | × | × | × | × |
| — <i>gayi</i> (Lmx.) | . | . | . | × | . | × |
| — <i>tenella</i> (Alder) | × | × | × | . | × | × |
| — <i>rugosa</i> (L.) | × | × | . | × | . | × |
| — <i>fusiformis</i> (Hincks) | × | . | . | . | × | . |
| <i>Diphasia fallax</i> (Johnst.), <i>typica</i> | × | × | × | × | × | × |
| — — <i>wandeli</i> Levinsen | . | × | . | × | . | × |
| — <i>rosacea</i> (L.) | × | . | . | × | . | × |
| — <i>attenuata</i> Hincks | . | . | . | × | . | . |
| — <i>pulchra</i> Nutting | × | × | . | . | . | × |
| — <i>pinaster</i> (Ell. & Sol.) | . | . | . | × | . | . |
| — <i>thujarioides</i> (Clark) | . | . | . | . | × | × |
| — <i>kincaidi</i> Nutting | × | . | . | . | . | . |
| <i>Dynamena pumila</i> (L.) | × | × | . | × | . | × |
| <i>Abietinaria abietina</i> (L.) | × | × | × | × | × | × |
| — <i>flicula</i> (Ell. & Sol.) | × | × | . | × | . | × |
| — <i>turgida</i> (Clark) | × | . | . | . | . | . |
| — <i>fusca</i> (Johnston) | . | . | . | × | . | × |
| <i>Sertularia cupressina</i> L. | × | × | × | × | × | × |
| — <i>fabricii</i> Levinsen | × | × | . | × | . | . |
| — <i>mirabilis</i> (Verrill) | × | × | . | × | × | × |
| — <i>robusta</i> (Clark) | × | × | . | . | . | × |
| — <i>albimaris</i> Mereschkowsky | . | . | . | . | × | × |
| — <i>schydlovsii</i> Kudelin | . | . | . | . | . | × |
| — <i>tenera</i> G. O. Sars | × | × | × | × | × | × |
| <i>Hydrallmania falcata</i> (L.) | × | × | × | × | × | × |
| <i>Thuiaria thuja</i> (L.) | × | × | . | × | . | × |
| — <i>laxa</i> Allman | × | × | × | × | × | × |
| — <i>alternithea</i> Levinsen | × | × | . | × | . | . |
| — <i>variabilis</i> Broch | . | . | . | × | × | . |
| — <i>lonchitis</i> (Ell. & Sol.) | × | × | . | × | × | × |
| — <i>carica</i> Levinsen | × | . | . | × | × | × |
| — <i>hippuris</i> Allman | × | × | . | . | . | × |
| — <i>obsoleta</i> (Lepeschin) | . | . | . | . | × | × |
| — <i>pinaster</i> (Lepeschin) | . | . | . | . | . | × |
| — <i>cupressoides</i> (Lepeschin) | . | . | . | . | . | × |
| — <i>hartlaubi</i> (Nutting) | . | . | . | . | . | × |
| — <i>arctica</i> (Bonnievie) | . | . | . | . | × | × |
| — <i>decemserialis</i> (Mereschk.) | . | . | . | . | . | × |
| Total number of species | 104 | 87 | 50 | 99 | 70 | 116 |

Two species (*Corymorpha obvoluta* and *Hydractinia serrata* n. sp.) are only known from East Greenland; these are excluded from the following discussion.

42 of the East-Greenland species are also known from West Greenland; the species not found on the west coast are: 1) the three arctic species *Hydractinia allmani*, *Hydractinia ornata*, and *Perigonimus yoldiæ-arcticæ*, all of which have a decidedly eastern distribution in the arctic Atlantic area; 2) *Eudendrium ramosum*, *Hebella calcarata*, and *Halecium halecinum*, which are southern forms, each of them recorded from one single locality off the east coast.

32 species are common to East Greenland and Iceland; the species not known from Iceland are 1) the most distinctly arctic forms, 2) some species which may be supposed to live on the coasts of Iceland, though they have not yet been observed there (*Perigonimus abyssi*, *Perigonimus roseus*, *Eudendrium tenellum*, *Cuspidella grandis*, *Stegopoma fastigiatum*, *Sertularella tenella*).

39 species are common to East Greenland and Spitzbergen; *Hydractinia ornata*, *Cuspidella procumbens*, and *Halecium groenlandicum* will probably also be found at Spitzbergen in the future; the other species known from East Greenland but not from Spitzbergen all have a comparatively southern distribution: *Coryne sarsi*, *Perigonimus roseus*, *Eudendrium ramosum*, *Cuspidella grandis*, *Stegopoma fastigiatum*.

45 of the East-Greenland species occur off the north coast of Russia and the Norwegian coast north of Lofoten. The species not taken in this latter area are: 1) the two southern species *Hebella calcarata* and *Cuspidella grandis*, 2) *Cuspidella procumbens* which very likely will be found there in future.

36 species are common to East Greenland and the European coasts south of Lofoten; the species lacking there are all decidedly arctic forms (except *Hebella calcarata*).

37 of the East-Greenland species are known from the Canadian coasts; with the exception of *Perigonimus abyssi*, the species not recorded from Canada are all truly arctic, and some of these probably do occur in the insufficiently investigated high-arctic parts of the Canadian waters.

Table II comprises 171 species of which only 50 are known from East Greenland. The area, among those included in the table, most abounding in hydroids is Europe north of Lofoten, with 116 species; this may partly be due to the rather considerable differences between the temperature conditions in different parts of this region; but it should also be pointed out that these waters have been rather thoroughly investigated, in previous times as well as by the numerous Russian expeditions of recent years. From the Canadian area 104 species are known,

Table III. Regional distribution of the Hydroids on the east coast of Greenland.

| | Number of species found | | | | | | Percentage number | | | | | |
|----------------------------|-------------------------|-------------------------|-------------------|----------------------|------------------|-------------------------|-------------------|-------------------------|-------------------|----------------------|------------------|------------------|
| | North-east coast | Franz Joseph Fjord area | Scoresbysund area | Kangerdlugssuak area | South-east coast | Total number of species | North-east coast | Franz Joseph Fjord area | Scoresbysund area | Kangerdlugssuak area | South-east coast | Total percentage |
| Arctic species | 14 | 6 | 4 | 2 | 4 | 17 | 38 | 32 | 22 | 20 | 24 | 34 |
| Arctic-boreal | 8 | 4 | 5 | 2 | 5 | 9 | 22 | 21 | 28 | 20 | 29 | 18 |
| Northern-boreal | 4 | 0 | 2 | 1 | 1 | 5 | 11 | 0 | 11 | 10 | 6 | 10 |
| Boreal | 2 | 2 | 0 | 0 | 0 | 2 | 5 | 10 | 0 | 0 | 0 | 4 |
| Southern-boreal | 1 | 1 | 1 | 0 | 1 | 3 | 3 | 5 | 5 | 0 | 6 | 6 |
| Cosmopolitan | 7 | 5 | 6 | 3 | 5 | 9 | 19 | 26 | 33 | 30 | 29 | 18 |
| Uncertain distrib. | 1 | 1 | 0 | 2 | 1 | 5 | 3 | 5 | 0 | 20 | 6 | 10 |
| Total number | 37 | 19 | 18 | 10 | 17 | 50 | — | — | — | — | — | 100 |

and this number would undoubtedly be somewhat increased, if the arctic parts of the area were better examined.

The most interesting observation is, however, the considerable quantity of species found off the west coast of Greenland as compared with the number of species known from East Greenland; no less than 37 of the West-Greenland species (besides a number of abyssal forms) are unknown on the east coast. As mentioned above, the hydrographical conditions are more diversified on the west coast than on the east coast, and if we go over the list of species we find that the majority of the West-Greenland species lacking in East Greenland are such as have a comparatively southern distribution (this applies to about 25 of the 37 species). Evidently the fauna is poorer along the east coast than along the west coast. But several of the West-Greenland species, particularly those which are common to the west coast of Greenland and the north coast of Russia, might be expected to occur in East Greenland, and I have no doubt that the number of East-Greenland species will be increased by further investigation.

As seen from Table III the number of species found off the north-east coast far surpasses that observed in any of the other sections of the east coast of Greenland, though the northernmost part of the coast might be expected to be particularly unfavourable to the existence of a rich fauna. The knowledge of the hydroid fauna on the north-east coast is almost entirely derived from the collections by the "Danmark" expedition in 1906—1908; no less than 30 species and varieties were

taken on this expedition, mainly in the neighbourhood of Danmarks Havn. The fjords and sounds of this area are characterized by the free afflux of the water from the arctic ocean, strong currents passing north of Great Koldewey Island into Dove Bay; strong currents are usually favourable to the development of hydroids, and a rich growth of these animals has evidently existed in the localities, where the Danmark expedition was stationed during a prolonged period. Similar favourable conditions are undoubtedly present in several other parts of the East-Greenland coast, but the collections made in such other localities have been more sporadic. The thorough investigations by the Danish three-year expedition in 1931—1934 were mainly carried out in the inner parts of the great fjord complexes of the Franz Joseph Fjord and Scoresbysund areas and secured great quantities of various kinds of marine animals, but surprisingly few hydroids. A rich growth of hydroids evidently occurs at the small island Kekertaksiak in the southernmost part of the coast, where several species were collected by the M/S "Thor" in 1935, though only a few hauls were made with the dredge. Many hydroids were also taken on the same expedition in the neighbouring inlet Lindenows Fjord, in spite of the fact that a threshold with a depth of only 18 m in the mouth of the fjord bars the free circulation of the ocean water. Altogether 17 species of hydroids were taken in these localities. The coast from Lindenows Fjord to Angmagssalik is almost entirely unexplored, and the fauna of the open coast further north, towards Danmarks Havn, must be designated as imperfectly known. A discussion of the distribution of the hydroids along the East-Greenland coast, therefore, cannot be expected to yield very satisfactory results.

The hydrography of the east coast of Greenland is mainly characterized by the Polar Current moving southwards all along the coast. Off the northern part of the coast the temperature of the water is below 0° down to depths of about 250 m; above the submarine ridge between Iceland and Greenland the thickness of the polar water is somewhat more than 100 m, and off the southernmost part of the coast it only reaches down to about 50 m; moreover the temperature of the polar water is a little higher in the south than in the north. Below the polar water is a stratum of Atlantic water with somewhat higher temperatures. Owing to the radiation of the sun and the afflux of melting water from the coast the surface water is somewhat heated during the summer, and in the middle and southern areas and in the large fjords temperatures above 0° may be observed down to about 25 m below the surface, but in the northernmost areas this stratum with positive temperatures is extremely thin. One might expect, therefore, that the composition of

the fauna had a decidedly more arctic character in the North than in the South, and a difference in this regard has really been pointed out as far as some groups of marine animals are concerned. Table III, however, shows that there is no marked difference in the zoogeographical character of the hydroid fauna in the different sections of the coast. The East-Greenland fauna of hydroids, as far as known up to now, consists of 17 arctic species, 9 arctic-boreal, 5 northern-boreal, 2 boreal, 3 southern-boreal, and 9 cosmopolitan species, besides 5 species the distribution of which is imperfectly known.

The actual number of species observed is too small to serve as base for reliable calculations; but it will be seen from Table III that the variations in the percentage number of species of the various zoogeographical groups within each of the five sections of the coast, are remarkably slight and in some cases evidently due to casual circumstances. The percentage number of arctic + arctic-boreal species is 60 on the north-east coast and 53 on the south-east coast, and in the three other sections it varies from 40 to 52. It is undoubtedly quite accidental that the two boreal species (*Perigonimus roseus* and *Cuspidella grandis*) were only found in the two northernmost sections; one of the southern-boreal species (*Stegopoma fastigiatum*) was taken in the northernmost as well as in the southernmost section. Our present knowledge of the fauna of hydroids on the east coast of Greenland and its regional distribution along the coast gives no suggestion of zoogeographical differences between the various parts of the coast, such as may be pointed out by means of other animals.

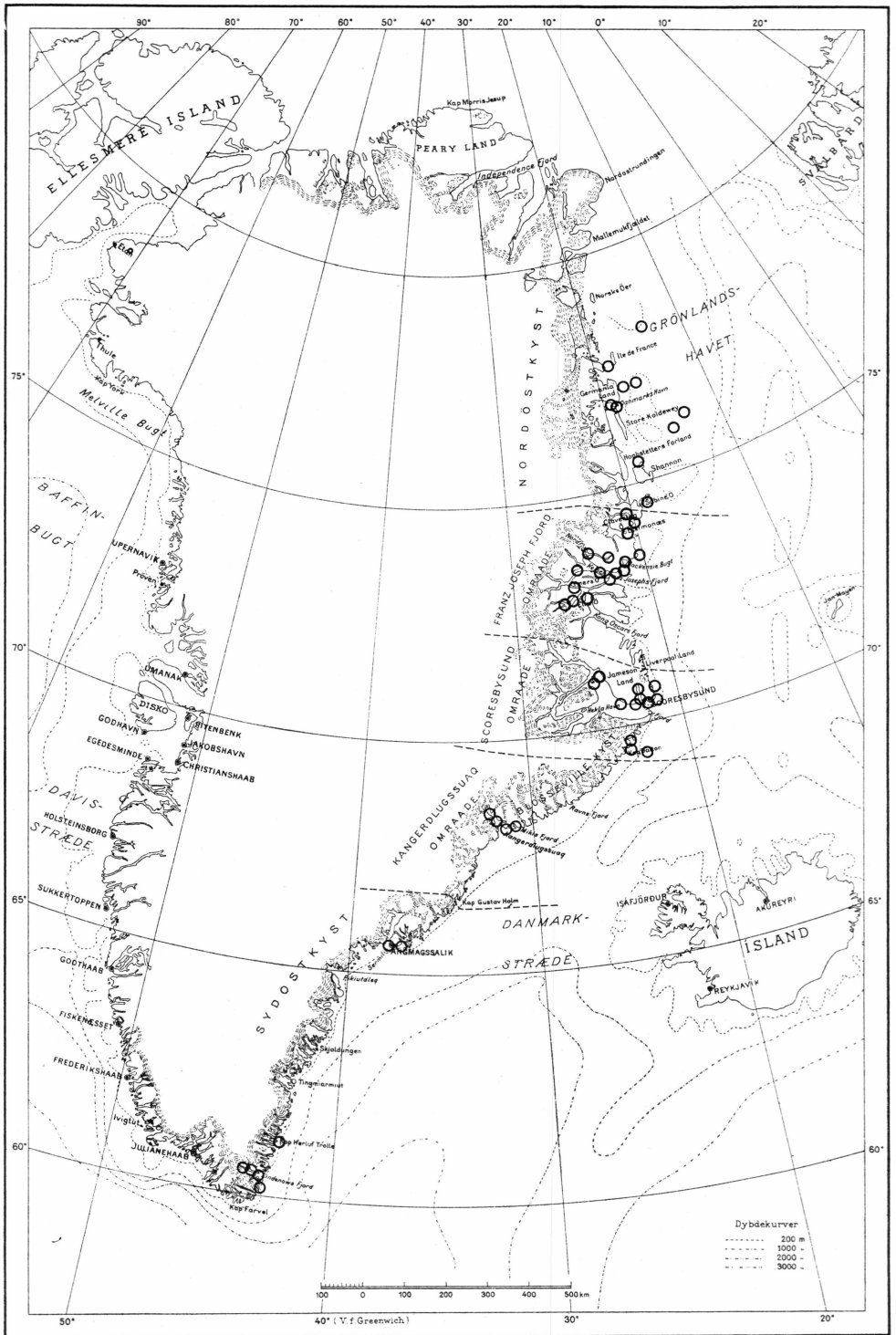


Fig. 4. Localities where Hydroids have been collected on the east coast of Greenland.

LIST OF LITERATURE

- AGASSIZ, A., 1865: North American Acalephae. Illustr. Catal. Mus. Comp. Zool., Harvard Coll. No. 2.
- AGASSIZ, L., 1860—62: Contributions to the Natural History of the United States of America. 2' Monogr. Vol. III and IV.
- ALLMAN, G. J., 1877: Report on the Hydroida collected during the exploration of the Gulf Stream. Mem. Mus. Comp. Zool., Harvard Coll. Vol. 5.
- BIRULA, A. A., 1897: Ueber die Hydrozoa . . . gesammelt von Dr. A. Botkin in den Jenissey- und Obi-Busen. Ann. du Mus. Zool. Acad. Impér. Sci. Sct. Pétersbourg.
- BOECK, C., 1860: Tubularie fra Belsund paa Spitzbergen — *Tubularia regalis*. Vidensk.-Selsk. Forhandl. for 1859, Christiania.
- BONNEVIE, K., 1898: Zur Systematik der Hydroiden. Zeitschr. wiss. Zool. Bd. 63.
— 1899: Hydroida. Den norske Nordhavsexpedition 1876—1878, Zool. Bd. 7.
- BROCH, HJ., 1903: Die von dem norwegischen Fischereidampfer »Michael Sars« in den Jahren 1900—1902 . . . gesammelten Hydroiden. Bergens Museums Aarbog 1903.
— 1909: Die Hydroiden der arktischen Meere. Fauna Arctica, Bd. 5.
— 1916: Hydroida, Part I. The Danish Ingolf-Expedition, Vol. V, Part 6.
— 1918: Hydroida, Part II. Ibid. Vol. V, Part 7.
- DONS, C., 1912: Hydroid-Bemerkungen I. *Rhizogeton nudum* Broch und *Halecium curvicaule* Lorenz. Tromsø Museums Aarshefter, 34.
- FRASER, C. McLEAN, 1912: Some Hydroids of Beaufort, North Carolina. Bull. Bureau of Fisheries, Vol. 30.
— 1933: Some Greenland Hydroids. Journ. Washington Acad. of Science, Vol. 23, No. 12.
- GRIEG, J., 1907: Invertébrés du fond. Duc d'Orléans, Croisière océanogr., Belgica, dans la Mer du Groenland. Bruxelles.
- HINCKS, TH., 1868: A History of the British Hydroid Zoophytes.
— 1874: On deep-water Hydroida from Iceland. Ann. Mag. Nat. Hist., Ser. 4, Vol. 13.
- JÄDERHOLM, E., 1902: Die Hydroiden der schwedischen zoologischen Polarexpedition 1900. Bihang till Kgl. Svenska Vetensk.-Akad. Handl. Bd. 28, Afd. IV, No. 12.
— 1908: Die Hydroiden des sibirischen Eismeerer. Mém. de l'Acad. Imp. des Sciences de Sct. Pétersbourg. Ser. 8, phys.-math. Klasse. Vol. 18.
— 1909: Hydroiden. Northern and Arctic Invertebrates in the collection of the Swedish State Museum, IV. Kgl. Svenska Vetensk.-Akad. Handl. Bd. 45, No. 1.
- KIRCHENPAUER, 1874: Hydroiden und Bryozoen. Die zweite deutsche Nordpolarfahrt 1869 und 1870 unter Führung des Kapitän Koldewey. Bd. II, Wissensch. Ergebn. Leipzig.

- KRAMP, P. L., 1911: Report on the Hydroids collected by the Danmark Expedition at North-East Greenland. Danmark-Exped. til Grønlands Nordøstkyst 1906—1908. Bd. V, Nr. 7. Meddel. om Grønland Bd. 45.
- 1914: Hydroider. Conspectus Faunæ Groenlandicæ. Meddel. om Grønland Bd. 23.
- 1932: Hydroids. The Godthaab Expedition 1928. Meddel. om Grønland Bd. 79.
- 1933: Coelenterata, Ctenophora and Chætognatha. The Scoresby Sound Committee's 2nd East Greenland Expedition in 1932 to King Christian IX's Land. Meddel. om Grønland Bd. 104.
- 1938: Marine Hydrozoa. Hydroida. The Zoology of Iceland. Vol. II, Part 5a.
- LEVINSEN, G. M. R., 1893: Meduser, Ctenophorer og Hydroider fra Grønlands Vestkyst. Vidensk. Meddel. nat. Foren. Kjøbenhavn for 1892.
- LINKO, A. K., 1911: Hydrires, Vol. I. Faune de la Russie. Sct. Pétersbourg.
- LORENZ, L. VON, 1886: Polypomedusen von Jan Mayen. Internat. Polarforsch. 1882—83. Die österreich. Polarstat. Jan Mayen, Bd. 3. Wien.
- MERESCHKOWSKY, C., 1878: Studies on the Hydroida. Ann. Mag. nat. Hist. Ser. 5, Vol. 1.
- NUTTING, C. C., 1901: The Hydroids. Papers from the Harriman Alaska Expedition, XXI. Proc. Washington Acad. Sci. Vol. 3.
- 1904: American Hydroids, II. The Sertularidæ. Washington.
- RYLOV, V. M., 1923: Zoologische Ergebnisse der Russischen Expeditionen nach Spitzbergen. Hydroidea Athecata. Ann. Mus. Zool. Acad. Sci de Russie. Tome 24.
- 1924: Hydroidea Athecata, gesammelt von der Expedition des schwimmenden Meeresinstituts im Jahre 1921. Bericht d. wissensch. Meeresinst. Lief. 9.
- SARS, G. O., 1874: Bidrag til Kundskaben om Norges Hydroider. Forhandl. Vidensk.-Selsk. Christiania for 1873.
- SARS, M., 1877: Nye og mindre bekjendte Coelenterater. New and little known Coelenterates. Fauna littoralis Norwegiæ, P. 3.
- SPASSKY, N., 1930: Beiträge zur Kenntniss der Hydroidenfauna des Kolafjordes und des süd-westlichen Teiles der Barents-See. Trav. Stat. Biol. Murman. T. 3.
- USCHAKOW, P. V., 1932: Faune hydroïdov archipelaga Franza-Josipha. Trans. Arctic Instit. Vol. 2.
- VERVOORT, W., 1942: Northern Hydroida in the collections of the Rijksmuseum van natuurlijke Historie and the Zoological Museum at Amsterdam, with notes on their distribution. Zool. Mededeel. Dl. 23.