MEDDELELSER OM GRØNLAND
UDGIVNE AF
KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND
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THE ZOOLOGY OF EAST GREENLAND

MEDUSÆ, SIPHONOPHORA, AND CTENOPHORA

BY

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WITH ONE FIGURE IN THE TEXT

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INTRODUCTION

Very little is known about the occurrence of Medusæ, Siphonophora, and Ctenophora off the east coast of Greenland; in the literature they are recorded in three papers only, and the results of the collections made by the numerous expeditions during the recent years are very scanty as far as these animals are concerned.

Three species of medusæ were taken in a few localities off the north-east coast by the "Belgica" expedition in 1905 (HARTLAUB 1909): *Aglantha digitale*, *Æginopsis laurentii*, and *Nausithoë limpida*, the latter described as a new species. In the "Conspectus Faunæ Groenlandicæ" (KRAMP 1914) *Aglantha digitale* and *Æginopsis laurentii* were recorded from Angmagssalik, and three other species are mentioned, each from one or two localities: *Ptychogastria polaris*, *Lucernaria quadricornis*, and *Cyanea capillata*. The results of one of the recent expeditions, The Scoresby Sound Committee's 2nd East Greenland expedition in 1932, were published separately (KRAMP 1933); six species of medusæ were collected by this expedition in the fjord Kangerdlugssuaq and off the Blosseville Coast; two of these, *Sarsia tubulosa* and *Catablema vesicarium*, were not previously known from East Greenland, and for the first time a ctenophore (*Beroë cucumis*) was recorded from East Greenland. Thus, up to now, 5 species of Hydromedusæ, 3 species of Scyphomedusæ, and one Ctenophore are recorded in the literature. In the present paper the number is increased by two Hydromedusæ (*Halitholus pauper* and *Halitholus cirratus*) and two Scyphomedusæ (the lucernarians *Halimocyathus lagena* and *Lucernaria haeckeli*), and for the first time the presence of a siphonophore (*Dimophyes arctica*) is stated, and this from one locality only. Moreover some fragments of a ctenophore are presumed to belong to *Mertensia ovum*, and from a drawing made by Dr. THORSON it appears that also *Bolinopsis infundibulum* occurs in East Greenland waters. Thus the entire number of species now amounts to 16.

It is possible that the fauna of medusæ, siphonophores, and ctenophores is really poor on this inhospitable coast, but scanty use of appliances for collection of pelagic animals is certainly also partly responsible

for the inconsiderable number of specimens taken; on the three-year expedition in 1931—1934 plankton was mainly collected by vertical hauls with fine-meshed nets unsuitable for capture of macroplankton. Apart from *Aglantha digitale*, which occurs almost everywhere in arctic seas, the only species taken in any considerable number of localities by the recent expeditions were the benthonic lucernarians and the semi-benthonic Trachymedusa *Ptychogastria polaris*, which was frequently collected by means of dredge or trawl.

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. 1. Records of occurrence derived from the previous literature are marked with the name of the author and the year of publication in brackets. When no author's name is added, the records are published here for the first time. 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 distribution of the species is given. As to the spelling of the geographical names the following should be remarked: Bugt = Bay, Kap = Cape, Sund = Sound, Ø = Island, Havn = Harbour.

SYNOPSIS OF THE SPECIES

Hydromedusæ.

Leptolina.

1. *Sarsia tubulosa* (M. Sars).

Sarsia tubulosa + *mirabilis* + *pulchella* + *decipiens* + *densa* + *litorea* Hartlaub 1907 pp. 19 ff. figs. 10—39.
Sarsia tubulosa Kramp 1926 p. 8, textfigs. 6—16, pl. I figs. 5—7.

East-Greenland record:

Sarsia tubulosa Kramp 1933 p. 15.

Occurrence at East Greenland:

Kangerdlugssuaq area: d'Aunay Bugt, about 69° N. 25°25′ W., 16. VII.1932, near the surface (KRAMP 1933).

South-east coast: Behind Kungmiut in Angmagssalikfjord, 28.VII. 33, 3—10 m.

Distribution: Widely distributed in the coastal areas of the boreal regions and penetrating somewhat into the Arctic; occurring from northern France to the Barents Sea and along the east coast of North America from Newport to Labrador; common on the west coast of Greenland from Kap Farvel to Disco Bay. It also occurs in the Pacific.

2. *Halitholus pauper* Hartlaub.

Halitholus pauper Hartlaub 1914 p. 272 figs. 223—224.
Halitholus pauper Kramp 1926 p. 71 pl. II figs. 1—3.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

South-east coast: Behind Kungmiut in Angmagssalikfjord, 28.VII. 33, 3—10 m.

Distribution: Arctic; very common along the west coast of Greenland as far north as Disko; moreover known from the north-western coasts of Iceland and from a few localities in the Pacific: Kamtchatka and Vancouver.

3. *Halitholus cirratus* Hartlaub.

Halitholus cirratus Hartlaub 1914 p. 274 figs. 225—233.
Halitholus cirratus Kramp 1926 p. 74 pl. II fig. 4.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

South-east coast: Behind Kungmiut in Angmagssalikfjord, 28.VII. 33, 3—10 m.

Distribution: Arctic, circumpolar; common along the west coast of Greenland and recorded from Newfoundland and from Jones Sound between North Devon and Ellesmere Land; abundant off Spitzbergen and in the Barents Sea; in the Baltic and the Kattegat it occurs as an arctic survivor.

4. *Catablema vesicarium* (A. Agassiz).

Catablema vesicarium + *campanula* + *eurystoma* Haeckel 1879 p. 63—64.
Catablema vesicarium Hartlaub 1914 p. 315 figs. 263—267.
Catablema vesicarium Kramp 1926 p. 87 pl. II figs. 10—11.

East-Greenland record:

Catablema vesicarium Kramp 1933 p. 16.

Occurrence at East Greenland:

South-east coast: Behind Kungmiut in Angmagssalikfjord, 28.VII. 33, 3—10 m; Tasiusak near Angmagssalik, 9.VIII.33, 10—0 m; Angmagssalik, 8.IX.32, 100 m wire (KRAMP 1933).

Distribution: Arctic; very abundant off the west coast of Greenland from Kap Farvel to Smith Sound and also known from the east coast of North America as far south as Cape Cod; found off the northern coasts of Iceland and common around Spitzbergen and in the Barents Sea and the White Sea; also recorded from the Kara Sea. Moreover it occurs in the Bering Sea.

Trachylina.

5. *Ptychogastria polaris* Allman.

Ptychogastria polaris Allman 1878 p. 290 figs.
Pectyllis arctica Haeckel 1879 p. 266.
Ptychogastria polaris Browne 1903 p. 24 pl. 4 figs. 1—2, pl. 5 figs. 6—8.

East-Greenland record:

Ptychogastria polaris Kramp 1914 p. 427.

Occurrence at East Greenland:

Franz Joseph Fjord area: Between Kap Weber and Ymers Ø, 13. VIII.32, depth 400 m; Dusénfjord, Ymers Ø, 11.VIII.32, 240 m; Sofia-

sund, 20.VIII.32, 210 m; Solitærbugt, Ellaø, 24.IX.31, 34—40 m; Solitærbugt, Ellaø, 5.VII.32, 85—95 m and 90—95 m; mouth of Forsblad Fjord, 28.VIII.1900 (KRAMP 1914).

Scoresbysund area: Hurry Fjord, 8.VIII.1900, 14—0 m (KRAMP 1914); Hurry Fjord near the Fame Øer, 8.VII.33, 10—20 m.

With one exception (Hurry Fjord, 8.VIII.1900) the specimens were collected at the bottom of the sea, and in most cases the bottom is stated to consist of clay and large stones.

Distribution: Arctic, circumpolar, penetrating somewhat into the boreal regions. Recorded from deep water off Halifax in Nova Scotia, and from the coasts of Labrador and Baffin Land; found in several localities on the west coast of Greenland between Julianehaab and Smith Sound. Further known from Jan Mayen and the north coast of Iceland, and from Spitzbergen, Barents Sea, Kara Sea, Laptev Sea, and Bering Sea. On the west coast of Norway it is known from some of the fjords as far south as Bergen. It is mainly found in fairly deep water, frequently attached to the bottom, but it may also be taken pelagically, sometimes even near the surface of the water.

6. *Aglantha digitale* (O. F. Müller).

Aglantha digitalis Haeckel 1879 p. 272 pl. 16 figs. 5—6.
Aglantha digitale Mayer 1910 p. 402 pl. 49 fig. 2.
Aglantha digitale Broch 1929 p. 512 figs. 22—23.

East-Greenland records:

Aglantha digitalis Hartlaub 1909 p. 470.
Aglantha digitalis Kramp 1914 p. 428.
Aglantha digitale Kramp 1933 p. 16.

Occurrence at East Greenland:

North-east coast: 76°49′ N. 18°13′ W. to 76°58′ N. 18°00′ W., 27.VII. 1905, depth 300 m, taken about 100 m below the surface (HARTLAUB 1909); 75°47′5 N. 12°59′ W., 23.VII.1905, depth 350 m, taken about 200 m below the surface (HARTLAUB 1909).

Franz Joseph Fjord area: Between Kap Franklin and Broch-Øerne, 12.VIII.32, 700 m wire; Zoologdalen, Ymers Ø, 8.VIII.32, 400 m wire; between Kap Weber and Ymers Ø, 13.VIII.32, vertical haul, 100—0 m; Franz Joseph Fjord near the mouth of Antarctic Sound, 13.VIII.32, 800 m wire and 100—0 m; Isfjord, off the 2nd glacier, 7.VIII.32, 700 m wire; Franz Joseph Fjord, off Kjerulfs Fjord, 6.VIII.32, 600 m wire; Dicksonfjord, 19.VIII.32, 700 m wire; Rhedinfjord, inner part, 19.VIII. 32, vertical haul 100—0 m; north-east of Kap Hedlund, Kempes Fjord,

20.VIII.32, 700 m wire; Narhvalsund, off Polheimdal, 20.VIII.32, 100—0 m; 2 miles east of Botanikerbugten, 20.VIII.32, 100—0 m; between Solitærbugt and Mariaø, 24.VIII.32, 50 m wire; Kong Oscarsfjord, off Kap Elisabeth, 25.VIII.32, 500 m wire; Solitærbugt, Ellaø, 22.I. and 10.II.32, vertical hauls, 50—0 m; Kong Oscarsfjord south-east of Kap Dufva, 23.VIII.32, 800 m wire and 100—0 m; between Kap Simpson and Kap Wardlaw, 22.VIII.32, 600 m wire; 2 miles north of Kap Wardlaw, 22.VIII.32, 100—0 m.

Scoresbysund area: South of Kap Tobin, 29.VIII.32, 700 m wire.

Kangerdlugssuaq area: Ravnsfjord between Kap Ravn and Kap Johnstrup, about 68°30′ N. 28°15′ W., 29.VII.1932, 200 m wire (KRAMP 1933); 3 miles off Kap Stephensen, about 68°23′ N. 28°33′ W., 22.VII.32 (KRAMP 1933); Kangerdlugssuaq, head of the fjord, 20.VIII.32, 250 m wire (KRAMP 1933).

South-east coast: Behind Kungmiut in Angmagssalikfjord, 28.VII. 33, 3—10 m; east of Angmagssalik, 10.IX.1900 (KRAMP 1914).

No doubt *Aglantha digitale* is generally distributed along the entire east coast of Greenland.

Distribution: Circumpolar, common in all arctic and subarctic seas and penetrating far into boreal regions. Off the east coast of North America it may be met with as far south as Massachusetts Bay; in the eastern Atlantic it occurs at least as far south as off the Straits of Gibraltar. In the temperate areas it mainly occurs in the deeper strata; in the cold areas it may be found at all depths, though it is rare at the surface and in very deep water.

7. *Æginopsis laurentii* Brandt.

Æginopsis laurentii Brandt 1838 p. 363 pl. 6 figs. 1—6.
Æginopsis laurentii Mayer 1910 p. 472.
Æginopsis laurentii Broch 1929 p. 534 fig. 38.

East-Greenland records:

Æginopsis laurenti Hartlaub 1909 p. 472.
Æginopsis laurentii Kramp 1914 p. 434.
Æginopsis laurentii Kramp 1933 p. 16.

Occurrence at East Greenland:

North-east coast: 76°49′ N. 18°13′ W. to 76°58′ N. 18°00′ W., 27.VII. 1905, depth 300 m, taken about 100 m below the surface (HARTLAUB 1909); 75°47′5 N. 12°59′ W., 23.VII.1905, depth 350 m, taken about 200 m below the surface (HARTLAUB 1909).

Franz Joseph Fjord area: Between Kap Franklin and Broch-Øerne, 12.VIII.1932, 700 m wire; between Kap Simpson and Kap Wardlaw, 22.VIII.32, vertical haul 100—0 m.

Kangerdlugssuaq area: Ravn's Fjord, between Kap Ravn and Kap Johnstrup, about 68°30′ N. 28°15′ W., 29.VII.32, 200 m wire (KRAMP 1933).

South-east coast: East of Angmagssalik, 10.IX.1900 (KRAMP 1914); Lindenows Fjord, 22.VIII.32, 100 m wire.

Distribution: Arctic, circumpolar; off the east coast of North America it occasionally occurs as far south as Newfoundland; common in the waters west of Greenland at least as far north as Smith Sound. It is not known from Iceland, but it has been recorded from deep water in a locality between Iceland and Norway. From Vardø in the extreme north of Norway it is distributed northwards to Spitzbergen and eastwards along the entire north coast of Russia and Siberia, and further to the north coast of Alaska.

Siphonophora.

8. *Dimophyes arctica* (Chun).

Diphyes arctica Chun 1897 p. 19 pl. 1 figs. 1—10.
Diphyes arctica Vanhöffen 1906b p. 17 figs. 16—18.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

Franz Joseph Fjord area: Between Kap Franklin and Broch-Øerne, 12.VIII.1932, 700 m wire, 2 specimens.

Distribution: Cosmopolitan; common in most parts of the arctic region, but never found in the neighbourhood of Iceland; generally distributed in the waters west of Greenland. In cold areas it may be taken at all depths, but in warm and temperate regions it only occurs in deep water.

Scyphomedusæ.

9. *Halimocyathus lagena* (O. F. Müller).

Halicyathus lagena Haeckel 1880 p. 394.
Halimocyathus lagena Mayer 1910 p. 537.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

Franz Joseph Fjord area: Ellaø, 3.—5.VIII.1933, 4—16 m; Solitærbugt, Ellaø, 14.VI.32; Kap Hedlund, Kempes Fjord, 17.VII.32, 9—12 m.

Scoresbysund area: Scoresbysund, 3.VIII.1891, 20—110 m; Scoresbysund, near the settlement, 14.VIII.33, 7—11 m; off Kap Hope, Scoresbysund, 27.VI.33, 7 m, 29.VI.33, 6—7 m, 30.VI.33, 12—13 m; mouth of Scoresbysund, 70°10′ N. 22°20′ W., 27.VII.24, 25 m; Heklas Havn at Danmarks Ø, March 1892, 19 m; Gaaseland, 9.VII.1892.

South-east coast: Behind Kungmiut in Angmagssalikfjord, 28.VII.33, 7—10 m and 10—15 m; Tasiusak near Angmagssalik, 9.VII.33, 10—0 m.

Distribution: East coast of North America as far south as Massachusetts Bay; fairly common on the west coast of Greenland as far north as Prøven, 72°20′ N. Also found on the west coast of Norway.

10. *Lucernaria quadricornis* O. F. Müller.

Lucernaria quadricornis Haeckel 1880 p. 390.
Lucernaria pyramidalis Haeckel 1880 p. 391 pl. 22.
?*Lucernosa walteri* Antipa 1892 p. 379 pl. 17 figs. 1—9.
Lucernaria quadricornis Mayer 1910 p. 527, textfig. 336.

East-Greenland records:

Lucernaria quadricornis Kramp 1914 p. 441.
Lucernaria quadricornis Kramp 1933 p. 16.

Occurrence at East-Greenland:

Scoresbysund area: Off Kap Tobin, 11.VII.1933, 30—40 m; Hvalrosbugt, 2.IX.27, 30—35 m; Hurry Fjord, two miles inside the mouth of the fjord, 20.VII.33, 60—75 m.

Kangerdlugssuaq area: Kangerdlugssuaq, the mouth of the fjord, 10 m, and in the northern branch of the fjord, 20 m and 70 m (KRAMP 1933).

South-east coast: Tasiusak, near Angmagssalik (KRAMP 1914).

Distribution: East coast of North America north of Cape Cod; found in several localities on the west coast of Greenland between Kap Farvel and Inglefield Bay, 77°17′ N. Also recorded from Spitzbergen and the Faroes; common on the European coasts from southern England to the White Sea.

Remarks: Some of the specimens are very large and might, therefore, be considered as belonging to *L. walteri* Antipa. This species is, however, only distinguished from *L. quadricornis* by such characters which are easily explained as the results of growth beyond the usual size of the species (folding of the gonads, large number of tentacles). I am inclined to think that *L. walteri* is only a large, arctic growth form of *L. quadricornis.*

11. *Lucernaria haeckeli* (Antipa).

Lucernosa haeckeli Antipa 1892 p. 388 pl. 18 figs. 12—14.
Lucernaria campanulata Levinsen 1893 p. 147.
Lucernaria haeckeli Mayer 1910 p. 529.
Lucernaria haeckeli Kramp 1942c p. 105.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

Scoresbysund area: Røde Fjord, the bay opposite Røde Ø, 22.VIII. 1933, 13—18 m, soft clay with gravel, one specimen.

Distribution: East Spitzbergen (ANTIPA 1892); Prøven on the west coast of Greenland, 72°22′ N. 55°32′ W. (LEVINSEN 1893, KRAMP 1942).

Remarks: One specimen was found in the locality mentioned above; Dr. G. THORSON, who collected the specimen, wrote in the journal of the expedition: "One large *Lucernaria*, without a pedicel; it is not the same as the common, stalked form (i. e. *L. quadricornis*), but the colour is the same, except that the tips of the tentacles are light-coloured."

In the original description of *L. haeckeli* the stalk is stated to be hardly one-third as long as the bell; in the small specimen from West Greenland, examined by me, the stalk was one-fifth as long as the bell; the present specimen has no stalk at all, and nothing indicates that a stalk has been present and torn off. The umbrella is 25 mm high (including the arms) and 16 mm in diameter; the eight arms are short, and, as in *L. haeckeli*, the four perradial notches of the umbrella margin are only slightly, though distinctly, wider and deeper than the four interradial ones. The aboral end of the umbrella is somewhat flattened, forming an adhesive disk, 9 mm in diameter, with a somewhat undulated margin. The four interradial longitudinal muscles are very strong, and the marginal muscle is likewise rather strong (this latter feature is in disagreement with the original description of *L. haeckeli*). There are at least 100 tentacles on each of the arms, and the tentacles are not particularly short. The gonads do not reach to the base of the arms, but they are very broad and overlapping. It is particularly the characteristic structure of the gonads which makes me believe that this specimen belongs to *L. haeckeli*, the only species in which the gonads are described as so broad that they overlap one another. The few points in which the specimen differs from the original description do not seem to me to afford sufficient reason to establish a new species.

12. *Cyanea capillata* (Linné).

Cyanea capillata + *arctica* Haeckel 1880 pp. 529, 530.
Cyanea capillata + *arctica* Vanhöffen 1906c pp. 52, 53 figs. 15—19.
Cyanea capillata Mayer 1910 p. 596 pl. 65 figs. 3—4.

East-Greenland records:

Cyanea arctica Kramp 1914 p. 445.
Cynea capillata Kramp 1933 p. 16.

Occurrence at East Greenland:

North-east coast: Danmarks Havn, 20.VII.1908.

Franz Joseph Fjord area: Eskimonæs, 18.VII.1932, 0—1 m; 2 miles east of Botanikerbugt, 20.VIII.32, 400 m wire; Solitærbugt, Ellaø, 16. VIII.32, surface; off Solitærbugt, Ellaø, 24.VIII.32, 100 m wire; Kong Oscar's Fjord, off Kap Elisabeth, 25.VIII.32, 200 m wire; Dickson Fjord, 19.VIII.32, 100 m wire; Kong Oscar's Fjord, south-east of Archers Ø, 22.VIII.32, 100 m wire; 2 miles north of Kap Wardlaw, 22.VIII.32, 100 m wire.

Scoresbysund area: Off Kap Stewart, southern end of Jameson Land, 3.VIII.1900 (KRAMP 1914).

South-east coast: Angmagssalik, 9.IX.1932, surface (KRAMP 1933).

This species is probably generally distributed along the east coast of Greenland.

Distribution: Generally distributed in the coastal areas of the temperate and arctic seas, in the Atlantic as well as in the Pacific areas. In the North-Atlantic area it occurs from Florida along the east coast of North America to the straits between the arctic Canadian islands and along the west coast of Greenland at least as far north as Upernavik. It also occurs around Iceland and Spitzbergen and along the European coasts from northern Russia to the Atlantic coast of France.

13. *Nausithoë limpida* Hartlaub.

Nausithoë limpida Hartlaub 1909 p. 474 pl. 77 figs. 3—5.

East-Greenland record: Ibid.

Occurrence at East Greenland:

North-east coast: 75°58′5 N. 14°08′ W., 24.VII.1905, depth 300 m, taken near the bottom (HARTLAUB 1909); 75°47′5 N. 12°59′ W., 23.VII. 05, depth 350 m, taken about 200 m below the surface (HARTLAUB 1909).

This species has not been found since it was described by HARTLAUB from the above mentioned localities.

Ctenophora.

14. *Beroë cucumis* Fabricius.

Beroë cucumis Vanhöffen 1906a p. 7 figs. 16—17.
Beroë ovata Mayer 1912 p. 49 pl. 14 fig. 66, pl. 15 figs. 68—69, pl. 16 figs. 72—75.
Beroë cucumis Mayer 1912 p. 52 pl. 15 fig. 67, pl. 17 fig. 76.

East-Greenland record:

Beroë cucumis Kramp 1933 p. 18.

Occurrence at East Greenland:

Franz Joseph Fjord area: Off Saddelbjerget, 74°00′ N. 16°32′ W., 5.VII.1929, surface; 5 miles south of Bontekoe Ø, 21.VIII.32, 150 m wire.

Scoresbysund area: Scoresbysund, off Kap Tobin, 28. VIII. 32, 300 m wire.

Kangerdlugssuak area: Barclay Bugt, about 69°15′ N., 24°50′ W., at the beach, 14.VII.32; d'Aunay Bugt, about 69° N. 25°25′ W., 16.VII. 32, near the surface; 3 miles off Kap Stephensen, about 68°23′ N. 28°33′ W., 22.VII.32; Miki's Fjord, 25.VIII.32; Kangerdlugssuaq, three localities, 10.—18.VIII.32, 120 m wire and near the surface. (All these localities are mentioned in Kramp 1933).

Distribution: Cosmopolitan; common in arctic waters, circumpolar.

15. *Mertensia ovum* (Fabricius).

Mertensia ovum A. Agassiz 1865 p. 26 figs. 29—37.
Mertensia ovum Vanhöffen 1906a p. 2 figs. 1—3.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

Franz Joseph Fjord area: 2 miles north of Kap Wardlaw, 22.VIII. 1932, 400 m wire; some fragments, probably belonging to this species.

Distribution: Arctic, circumpolar; common off the west coast of Greenland, occasionally carried southwards along the American coast as far as Newport; known from Iceland and Spitzbergen.

16. *Bolinopsis infundibulum* (O. Fr. Müller).

Bolina alata A. Agassiz 1865 p. 15 figs. 1—18.
Bolina infundibulum Vanhöffen 1906a p. 5 fig. 11.
Bolinopsis infundibulum Mayer 1912 p. 21 pl. 4 figs. 12—15.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

Franz Joseph Fjord area: Solitærbugt, Ellaø, 15.V.1932, one specimen swimming at the surface of the water in an opening in the ice.

The specimen was not preserved, but a drawing made from life by Dr. G. THORSON leaves no doubt of the identity of the species.

Distribution: Probably circumpolar, mainly occurring in arctic and subarctic waters, but also penetrating rather far to the south; it is common off the Norwegian coast and in the North Sea and the Kattegat, and in the west it occurs as far south as Woods Hole. Some closely related forms are supposed by some authors to belong to the same species which, in such case, has an almost cosmopolitan distribution.

GENERAL REMARKS

The fauna of Medusæ, Siphonophora, and Ctenophora in the coastal area along the east coast of Greenland, as far as known up to now, consists of 16 species, certainly a rather small number as compared with the faunas of neighbouring arctic areas. I have no doubt, however, that further investigations, especially off the southern parts of the coast, would increase this number. The only area in which the macroplankton has been fairly well examined is the Franz Joseph Fjord area, where several pelagic hauls were made in the summer of 1932 by the "Godthaab"; five pelagic species were collected during these investigations: *Aglantha digitale*, *Æginopsis laurentii*, *Dimophyes arctica*, *Cyanea capillata*, and *Beroë cucumis*, all of which are very common in arctic waters. It is possible that no or few other species occur in this area, but further south one might expect to find at least some of the species known from the northern part of the west coast of Greenland which also occur at Spitzbergen and in the Barents Sea.

Among the 16 species known from East Greenland seven species have a predominantly arctic distribution (*Halitholus pauper*, *Halitholus cirratus*, *Catablema vesicarium*, *Ptychogastria polaris*, *Æginopsis laurentii*, *Lucernaria haeckeli*, and *Mertensia ovum*). Six species are about equally common in arctic and northern-boreal areas (*Sarsia tubulosa*, *Aglantha digitale*, *Halimocyathus lagena*, *Lucernaria quadricornis*, *Cyanea capillata*, and *Bolinopsis infundibulum*). Two species (*Dimophyes arctica* and *Beroë cucumis*) have a cosmopolitan distribution and are very common in arctic waters. Evidently, therefore, the East-Greenland fauna of these animals has a decidedly arctic character.

Table I shows the distribution of the 16 East-Greenland species in other parts of the North-Atlantic coastal areas. *Nausithoë limpida* is only known from East Greenland; *Lucernaria haeckeli* is a rare species, hitherto known from Greenland and Spitzbergen only. The other species all occur on the west coast of Greenland, and are also distributed more or less southwards along the Canadian coast, except *Halitholus pauper* which has not been found there. Besides *Lucernaria haeckeli* and *Nausi-*

Table I. Distribution of the species of Medusæ, Siphonophora, and Ctenophora found along the east coast of Greenland.

	Eastern Canada	West Greenland	East Greenland	Iceland	Spitzbergen	Europe N. of Lofoten	Europe S. of Lofoten
Sarsia tubulosa	×	×	×	×	.	×	×
Halitholus pauper	.	×	×	×	.	.	.
— *cirratus*	×	×	×	.	×	×	×
Catablema vesicarium	×	×	×	×	×	×	.
Ptychogastria polaris	×	×	×	×	×	×	×
Aglantha digitale	×	×	×	×	×	×	×
Æginopsis laurentii	×	×	×	.	×	×	.
Dimophyes arctica	×	×	×	.	×	×	×
Halimocyathus lagena	×	×	×	×	.	×	×
Lucernaria quadricornis	×	×	×	.	×	×	×
— *haeckeli*	.	×	×	.	×	.	.
Cyanea capillata	×	×	×	×	×	×	×
Nausithoë limpida	.	.	×	.	.	.	.
Beroë cucumis	×	×	×	×	×	×	×
Mertensia ovum	×	×	×	×	×	?	.
Bolinopsis infundibulum	×	×	×	×	×	×	×
Number of species...	13	15	16	10	12	12	10

thoë limpida four of the East Greenland species have not been recorded from Iceland; two of them, *Halitholus cirratus* and *Æginopsis laurentii*, are well-marked arctic forms, but it is difficult to account for the absence of *Dimophyes arctica* and *Lucernaria quadricornis* in the Icelandic waters. *Sarsia tubulosa* and *Halitholus pauper* do not occur at Spitzbergen; *Halimocyathus lagena* is likewise unknown at Spitzbergen, but it seems probable that it will be found there in future. The species lacking on the European coasts south of Lofoten are all decidedly arctic forms; *Halitholus cirratus* does not occur on the west coast of Norway, but it is common in the Kattegat and the Baltic, where it must be regarded as an arctic survivor.

From the coastal areas off the west coast of Greenland we know 34 species of medusæ, 3 species of siphonophores, and 3 species of ctenophores, making 40 species in all (bathypelagic forms not included), so that no less than 25 of the West-Greenland species are unknown on the east coast (see KRAMP 1942*a*, *b*, *c*). Some of these species might be expected to occur in East Greenland, but it is true that the west coast presents greater possibilities for the subsistence of a mixed fauna consisting of species of different zoogeographical character, because the

hydrographical conditions are much more diversified. Iceland likewise has a much richer fauna of these animals than East Greenland, comprising 39 species (33 medusæ, 3 siphonophores, and 3 ctenophores, see KRAMP 1939). Several of the species occurring off the southern and western coasts of Iceland are found far westwards in Danmark Strait between Iceland and East Greenland, and some of them must no doubt, at least occasionally, be carried near the East Greenland coast, where they might be found by further investigation.

The East-Greenland Polar Current moves southwards all along the east coast of Greenland. Off the northern part of the coast the temperature of the water is below 0° down to depths of about 250 m; further south the vertical extent of the polar water is considerably diminished, and off the southernmost part of the coast it only reaches down to about 50 m. Below the polar water is a stratum of Atlantic water with temperatures above 0°, and this is particularly remarkable in the southern areas under the influence of the Irminger Current which turns westwards from Iceland across Danmark Strait towards the Greenland coast. Near the coast and in the fjords the surface water is somewhat heated in the summer, owing to the radiation of the sun and the afflux of melting water from the coast; in the southern and middle areas temperatures above 0° may be observed down to about 25 m below the surface, but in the northernmost areas this stratum of "fjord water" is very thin. Among the species mentioned above, *Sarsia tubulosa*, *Halitholus pauper*, *Halitholus cirratus*, and *Bolinopsis infundibulum*, were taken in the fjord water only, *Catablema vesicarium*, *Cyanea capillata*, and *Beroë cucumis* both in the surface water and in the polar water below. *Aglantha digitale* occurred at all depths; *Æginopsis laurentii* was only taken in the polar water, *Dimophyes arctica* and *Nausithoë limpida* in the Atlantic water.

Among the benthonic species, *Halimocyathus lagena* was found at depths between 4 and 25 m, i. e. in the strata where the temperature rises towards or above 0° in summer; the only specimen of *Lucernaria haeckeli* was likewise taken in the upper strata, 13—18 m; *Lucernaria quadricornis* has a more extensive vertical distribution, occurring in the fjord water as well as in the polar water, 10—70 m. The semibenthonic, arctic medusa *Ptychogastria polaris* occurs at all depths between 10 and 400 m.

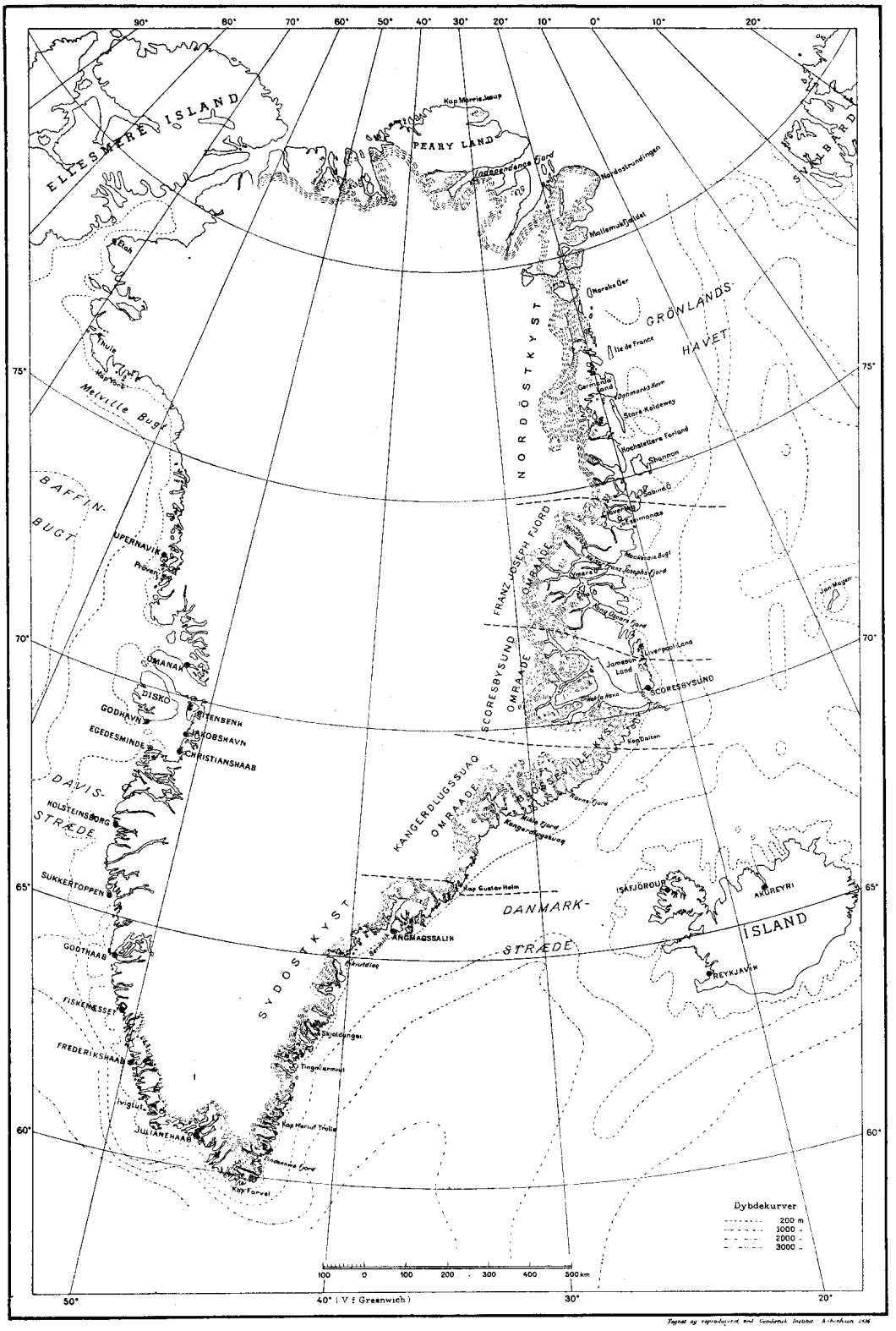
ELLESMERE ISLAND
PEARY LAND
Kap Morris Jesup
Independence Fjord
Nordostrundingen
Mellemøerne
Nordøstkysten
GRØNLANDS HAVET
Ile de France
Melville Bugt
BAFFIN-BUGT
Shannon
Kap York
UPERNAVIK
Prøven
OMANAK
DISKO
GODHAVN
EGEDESMINDE
JAKOBSHAVN
CHRISTIANSHAAB
DAVIS-STRÆDE
HOLSTEINSBORG
SUKKERTOPPEN
GODTHAAB
FISKENÆSSET
FREDERIKSHAAB
JULIANEHAAB
Kap Farvel
Sydostkysten
FRANZ JOSEPH FJORD
SCORESBYSUND OMRÅDE
SCORESBYSUND
Liverpool Land
Jameson Land
Kap Dalton
KANGERDLUGSSUAQ OMRÅDE
Kap Gustav Holm
ANGMAGSSALIK
DANMARK-STRÆDE
ISAFJÖRDUR
AKUREYRI
ISLAND
REYKJAVIK
Dybdekurver
200 m
1000 „
2000 „
3000 „
100 0 100 200 300 400 500 km
40° (V f Greenwich)

Fig. 1.

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