MEDDELELSER OM GRØNLAND
UDGIVNE AF
KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND
Bd. 121 · Nr. 3.

THE ZOOLOGY OF EAST GREENLAND

COPEPODS

BY

P. JESPERSEN

WITH 10 FIGURES IN THE TEXT

KØBENHAVN
C. A. REITZELS FORLAG
BIANCO LUNOS BOGTRYKKERI A/S.
1939

INTRODUCTION

The present paper is a summary of the marine copepods hitherto found in the waters of East Greenland. Only such species are included as have been taken comparatively near the coast of East Greenland; from the southern part of Danmark Stræde and Grønlandshavet practically only such species are included as have been taken inside the 1000 m curve. All pronouncedly bathypelagic forms from deeper areas of the Danmark Stræde and Grønlandshavet are thus left out of account.

The paper is divided into two sections: a systematic account of the species and a few zoogeographical remarks regarding the copepod fauna of East Greenland. The systematic account of the material is further divided into two groups viz. *Copepoda natantia* and *Copepoda parasita et hemiparasita.* The latter group has been classified in accordance with the method used by H. J. Hansen (1923), whereas all other copepods are entered under the former group. The classification used in the systematic arrangement under sub-orders is that of Chas. B. Wilson (1932). The present paper contains 84 species, of which 3 species are doubtful, collected from the literature dealing with marine copepods from East Greenland waters.

I. Synopsis of the Species.

A. Copepoda Natantia.

In the summary given below *Copepoda natantia* include the sub-order *Calanoida*, *Harpacticoida* and partly also *Cyclopoida*. To the latter sub-order further belong two species, which are classified under the group of *Copepoda parasita et hemiparasita* (see pp. 50—51).

Fam. ***Calanidae.***

1. *Calanus finmarchicus* (Gunnerus).

Monocolus finmarchicus Gunnerus 1765, p. 175, figs. 20—23.
?Cetochilus septentrionalis Goodsir 1843, p. 339, figs. 1—2.
Calanus finmarchicus Sars 1903, p. 9, pls. I—III.

East Greenland records:

Calanus finmarchicus Wesenberg-Lund, C. 1896, p. 140.
Calanus finmarchicus Cleve, P. T. 1900, p. 7.
Calanus finmarchicus Damas, D. & Koefoed, E. 1909, p. 382.
Calanus finmarchicus With, C. 1915, p. 26.
Calanus finmarchicus Stephensen, K. 1933, p. 9.
Calanus finmarchicus Ussing, H. 1938, p. 10.
Calanus finmarchicus Jespersen, P. 1939, p. 8.

Occurrence at East Greenland: This species which is one of the most frequently occurring copepods is distributed along the whole of the east coast of Greenland, and even occurs in the innermost parts of the East Greenland fjords. In the innermost part of the Kejser Franz Joseph Fjord area the species seems to be particularly numerous in the intermediary water layers, whereas in the deeper water layers it seems to occur with the greatest frequency in the central parts of this fjord area. In the East Greenland waters the species seems particularly numerous in the cold Polar Current immediately off the coast, whereas the frequency of occurrence is much smaller in the warmer Atlantic waters outside the East Greenland Current. The species undoubtedly penetrates as far north as there is open water. According to the literature at hand it has been found off East Greenland as far north as in 78°13′ N.

—16°31′ W. where it was taken by the Duc d'Orléans Expedition 1905 (Damas and Koefoed 1909).

Distribution: The species is very widely spread. Besides in the northern Atlantic and the adjoining arctic seas it also occurs in the northern Pacific, as well as in antarctic seas with adjoining temperate marine areas. On the Nautilus Expedition, 1931, it was identified as being of common occurrence north of Spitsbergen between 81° and 82 ° N. (Farran 1936), and in very nearly the same latitude it is known from the water north of Franz Joseph Land (Bernstein 1932). In the southern parts of the northern Atlantic, where it was identified as far as the area round the Azores, it occurs in considerably deeper water layers than farther north in the Atlantic.

Biology: According to Ussing (1938) part of the species leaves the upper water layers of the East Greenland fjords in the autumn and passes the winter in greater depths, from which it rises to the surface layers, some time before propagation takes place. The laying of eggs in the East Greenland fjords seems to begin at the end of June or the beginning of July, and presumably lasts until some time in September, the maximum spawning presumably taking place at the beginning of July. In the case of a great number of individuals copulation undoubtedly already takes place in the months of January and February, whereas the laying of eggs, as mentioned above, only takes place towards the summer.

Remarks: In the waters off East Greenland this species comprises two size groups for adult individuals as well as for the two oldest stages of copepodids, this being also i.a. the case in West Greenland waters (Jespersen 1934). In the East Greenland fjords the group of large individuals is in particular numerously represented in the deeper water layers, whereas the small individuals predominate in the upper water layers. According to Ussing (1938) the above-mentioned variation in size must presumably be considered as having some bearing upon conditions of nutrition, whereas the fact that the species upon the whole is larger off Greenland than e.g. in the North Sea must undoubtedly be ascribed to the lower temperature of the Greenland waters.

2. *Calanus hyperboreus* Krøyer.

Calanus hyperboreus Krøyer 1838, p. 84, pl. IV.
Calanus hyperboreus Sars 1903, p. 12, pl. V.

East Greenland records:

Calanus hyperboreus Cleve, P. T. 1900, p. 7.
Calanus hyperboreus Damas, D. & Koefoed, E. 1909, p. 352.
Calanus hyperboreus With, C. 1915, p. 34.
Calanus hyperboreus Ussing, H. 1938, p. 11.
Calanus hyperboreus Jespersen, P. 1939, p. 26.

Occurrence at East Greenland: This species is undoubtedly to be found everywhere off the coast of East Greenland, both in the fjords and in the more open waters along the coasts. In the East Greenland fjords the species particularly occurs in great quantities in the interior parts, whereas the number is comparatively small in the coast waters outside. This at any rate holds good of the intermediary water layers, whereas in the deeper water layers the number of specimens is greatest in the middle parts of the fjord areas.

Distribution: *Calanus hyperboreus* is a pronouncedly circumpolar species which penetrates far into the northern Atlantic. In arctic seas it has been identified as far north as any investigations have been carried on. As to the distribution of the species see the chart of STEUER (1933, p. 282). In the northern Atlantic the species has been met with as far south as about 30° N., but in more southern latitudes it occurs exclusively in deep water layers, whereas in northern waters it is frequently met with rather near the surface.

Biology: This species like *Calanus finmarchicus* leaves the upper water layers in winter, but whereas in the East Greenland fjords a number of individuals of the former species is frequently met with in the upper 50 m, *Calanus hyperboreus* seems to have disappeared entirely from these water layers (USSING 1938). The species only seems to frequent the upper 50 m during the actual summer-season, viz. from May to September-October. Conditions of breeding probably keep *Calanus hyperboreus* in rather low depths. Even though the species has been met with in great oceanic depths, it has never been found breeding in such places. It probably only spawns over lower waters, whence the spawn is then spread into greater depths. According to the investigations available of the occurrence of *Calanus hyperboreus* in East Greenland fjords the principal spawning season, according to USSING l. c. seems to be the end of May and the beginning of June. Wintering probably takes place in the III and IV copepodid stages; at any rate these stages predominate in the period September-October, whereas in the period May-June, when the species rises to the upper water layers, the stock consists of females and copepodids in stages IV and V.

Remarks: In East Greenland waters this species is only represented by a single size group, the average size of which practically coincides with the mean size of individuals from the central and eastern part of the waters south of Davis Stræde (see JESPERSEN 1937 and 1939).

3. *Neocalanus gracilis* (DANA).

Calanus gracilis DANA 1855, p. 1078, pl. 74.
Cetochilus longiremis CLAUS 1863, p. 171, pl. XXVI.
Calanus gracilis BRADY 1883, p. 35, pl. V.
Calanus gracilis GIESBRECHT 1892, p. 90.

East Greenland records:

Neocalanus gracilis JESPERSEN, P. 1939, p. 38.

Occurrence at East Greenland: *South East Coast:* A female has been taken in a haul with 1000 m w. in 61°13′ N. — 40°57′ W. (Dana, St. 2436, $^{25}/_{7}$ 1925).

Distribution: This species which is a rather pronounced warm water form is widely distributed in the warm and temperate parts of the Atlantic, and it must surely be regarded more or less as a chance, when it penetrates so far north as near the coast of East Greenland.

Fam. ***Eucalanidae.***

4. *Eucalanus elongatus* (DANA).

Calanus elongatus DANA 1849, p. 18.
Eucalanus elongatus GIESBRECHT 1892, p. 131.
Eucalanus elongatus WITH 1915, p. 48, pl. I.

East Greenland records:

Eucalanus elongatus JESPERSEN, P. 1939, p. 38.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* Between Kap Franklin and Broch Islands a single specimen has been taken $^{12}/_{8}$ 1932 in a haul with 700 m w. (JESPERSEN 1939).

Distribution: The species is distributed over great parts of the northern Atlantic, and as appears from the chart fig. 1 it has been identified in several localities off the coasts of Iceland as well as in the Danmark Stræde, but the above-mentioned find at Kejser Franz Joseph Fjord is apparently outside the actual area of distribution of the species. In Davis Stræde it is only known from the area south of 64° N. The positions marked on the chart are based on the following papers: JESPERSEN 1934 and 1939, LYSHOLM and NORDGAARD 1921, STØRMER 1929 and WITH 1915.

5. *Rhincalanus nasutus* GIESBRECHT.

Rhincalanus nasutus GIESBRECHT 1892, p. 152.
Rhincalanus nasutus SARS 1903, p. 15, pls. VI—VII.

East Greenland records:

Rhincalanus nasutus JESPERSEN, P. 1939, p. 40.

Occurrence at East Greenland: *South East Coast:* This species is only known from a single locality in East Greenland, viz. off Kap Herluf Trolle in 61°13′ N.—40°57′ W., where a few specimens were taken $^{25}/_{7}$ 1925 in a haul with 1000 m w. (Dana, St. 2436).

Distribution: Typically oceanic form, which is widely distributed in warmly temperate areas of all oceans. In the northern Atlantic it

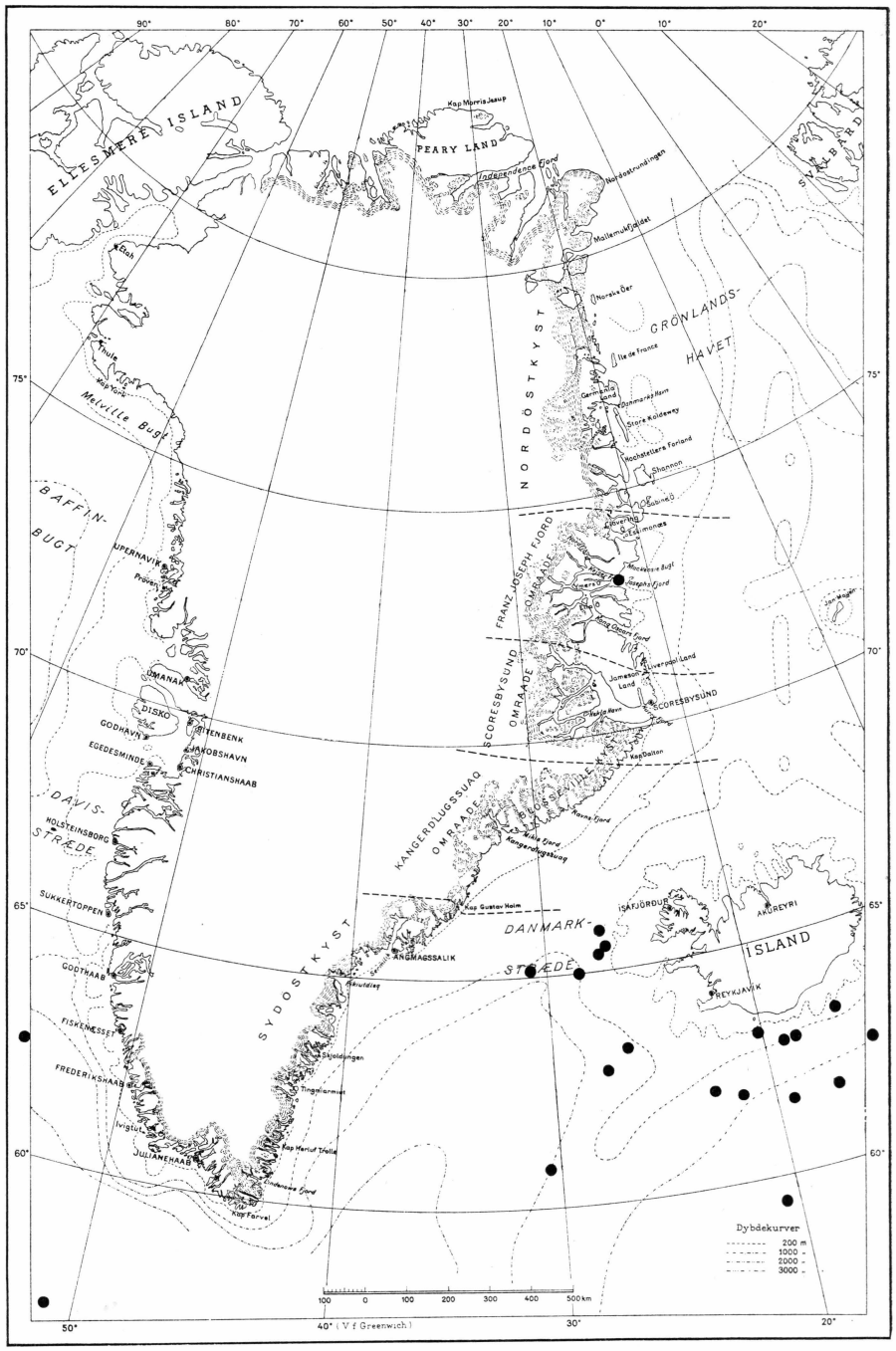

Fig. 1. *Eucalanus elongatus* DANA. Occurrence in the waters round Greenland.

penetrates as far north as the waters south of Davis Stræde and the southern part of Danmark Stræde. Off the northwestern coast of Iceland it has been taken so far north as in 65°50′ N.—26°53′ W. (With 1915). In the waters of northern Europe it is sometimes met with as far north as the coasts of Norway (Sömme 1929) and at the Murman coast (Linko 1907).

Fam. *Pseudocalanidae.*

6. *Pseudocalanus minutus* (Krøyer).

Calanus minutus Krøyer 1849, p. 543.
Pseudocalanus elongatus Sars 1903, p. 20, pls. X—XI.
Pseudocalanus minutus With 1915, p. 57, pl. I.

East Greenland records:

Pseudocalanus elongatus Cleve, P. T. 1900, p. 7.
Pseudocalanus gracilis Damas, D. & Koefoed, E. 1909, p. 406.
Pseudocalanus elongatus Damas, D. & Koefoed, E. 1909, p. 406.
Pseudocalanus minutus With, C. 1915, p. 61.
Pseudocalanus minutus Ussing, H. 1938, p. 11.
Pseudocalanus minutus Jespersen, P. 1939, p. 40.

Occurrence at East Greenland: Of common occurrence everywhere along the coast of East Greenland, in the interiors of the fjords as well as in the more open coast waters. In the Kejser Franz Joseph Fjord area it has more particularly been met with in very large numbers in the interior branches of the fjord, and also in the Scoresby Sund Fjord area it seems to occur far more numerously in the interior parts than at the mouth of the fjord and in the waters immediately outside it. Along East Greenland this species is a rather pronounced coast form, but particularly in the northern part of the Danmark Stræde there seems to be a connection between the East Greenland and Icelandic stock of this species (Fig. 2).

Distribution: The species is distributed along both coasts of the northern Atlantic and in the adjacent northern seas. That it penetrates far north appears from the fact that on the Nautilus Expedition 1931 it was met with north of Spitsbergen in 81°50′ N. (Farran 1936). In the more central parts of the northern Atlantic it is hardly to be found, but passes along both sides of the latter far towards the south.

Biology: Throughout the winter this species is to be found in comparatively small numbers in the upper water layers of the East Greenland fjords. The number increases towards spring, but not until July-August is there a very lively increase in the stock owing to reproduction. In September-October the quantity again decreases, the minimum of the stock being gradually reached in the course of the winter.

In the East Greenland fjords the greater part of this species attains

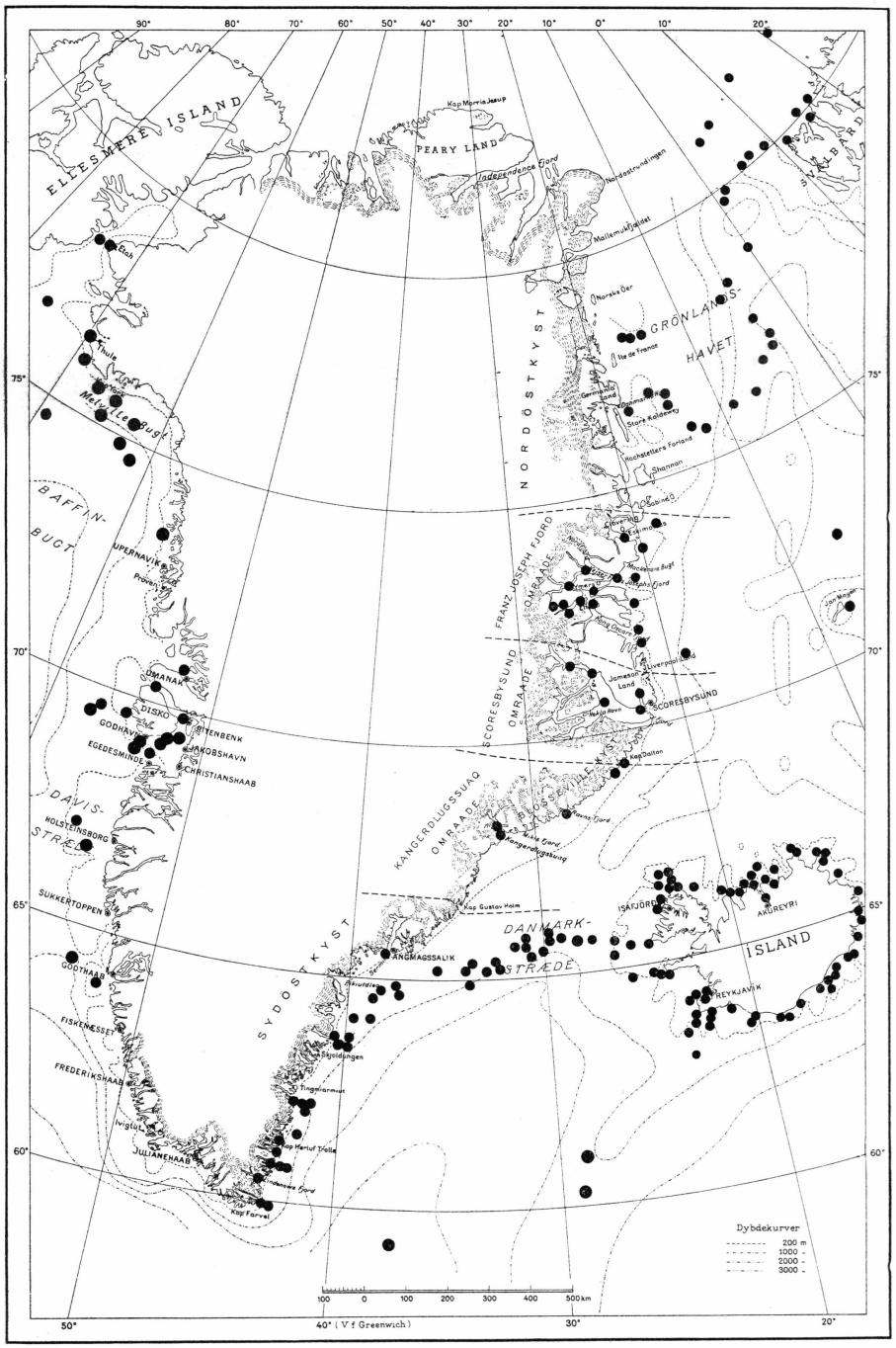

Fig. 2. *Pseudocalanus minutus* (KRØYER). Occurrence in the waters round Greenland.

the mature stage in the course of the winter and the spring. Copulation presumably takes place in April-June, and the chief spawning season is May-June. The wintering particularly takes place in the III—V copepodid stages. The age of this species at East Greenland is generally one year only, but there are certain facts which point towards the possibility of such a rapid development that under certain circumstances some individuals become mature and breed the same summer. For adult individuals the duration of life seems much shorter for the males than for the females (cfr. USSING 1938).

7. *Microcalanus pygmæus* G. O. Sars.

Pseudocalanus pygmæus (♀) SARS 1900, p. 73, pl. XXI.
Spinocalanus longicornis (♂) SARS 1900, p. 77, pl. XII.
Microcalanus pusillus SARS 1903, p. 157, suppl. pls. II—III.
Microcalanus pygmaeus v. BREEMEN 1908, p. 27, fig. 24.
Microcalanus pygmæus WITH 1915, p. 66.

East Greenland records:

Microcalanus pygmæus DAMAS, D. & KOEFOED, E. 1909, p. 407.
Microcalanus pygmæus WITH, C. 1915, p. 67.
Microcalanus pygmaeus USSING, H. 1938, p. 11.
Microcalanus pygmæus JESPERSEN, P. 1939, p. 43.

Occurrence at East Greenland: This species which is one of the most frequently occurring copepods in East Greenland waters is undoubtedly to be found along the entire coast from south to north. It has been identified in the two East Greenland fjords, Kejser Franz Joseph Fjord and Scoresby Sund Fjord, and in the interior parts of the former fjord area it occurs in very considerable quantities, whereas the numbers outside the fjord area are relatively much smaller.

Distribution: This species is undoubtedly in its general appearance a rather pronounced cold water form, though it penetrates comparatively far down into the northern Atlantic. Here, however, it occurs much more frequently as a bathypelagic copepod than in northerly latitudes, where it is often met with rather near the surface. The species is of fairly common occurrence in the waters west of Greenland, but does not seem to have been identified farther south along the American coast of the northern Atlantic.

Biology: Unlike various other copepods in East Greenland fjords *Microcalanus pygmæus*, according to USSING 1938, has its maximum occurrence during the winter in the upper layers of water, whereas in summer it has practically disappeared from these water layers. On the other hand, it is generally to be found all summer in depths of 100—200 m. The spawning of this species at East Greenland presumably takes place as early as the season January-March, but there is possibly also a spawning season in early summer (cfr. USSING l. c.).

8. *Spinocalanus abyssalis* GIESBRECHT.

Spinocalanus abyssalis GIESBRECHT 1892, p. 209.
Spinocalanus abyssalis WITH 1915, p. 69, pl. I.
Spinocalanus longicornis SARS 1900, p. 75, pl. XXII; 1903, p. 22, pl. XII.

East Greenland records:
Spinocalanus abyssalis JESPERSEN, P. 1939, p. 46.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* A few individuals of this species have been taken in a vertical haul with 100—0 m. ($^{19}/_{8}$ 1932).

Distribution: The area of distribution of this species extends from pronouncedly arctic reaches over great parts of the northern Atlantic; here it is more particularly met with at great depths, probably carried there with a sub-current of arctic water.

9. *Spinocalanus magnus* WOLFENDEN.

Spinocalanus magnus WOLFENDEN 1904, p. 118.
Spinocalanus magnus FARRAN 1905, p. 20, pl. III.
Spinocalanus latifrons SARS 1907, p. 5.

East Greenland records:
Spinocalanus magnus DAMAS, D. & KOEFOED, E. 1909, p. 409.

Occurrence at East Greenland: *Scoresby Sund:* A few individuals of this species were taken in a vertical haul 1000—800 m at 71°22′ N.—18°58′ W., off Liverpool Land (DAMAS and KOEFOED 1909).

Distribution: Like the preceding this species occurs in arctic as well as in more temperate seas. Besides at East Greenland it is known in arctic areas i. a. from the waters round Spitsbergen (DAMAS and KOEFOED l. c.) and from Baffin Bugt (JESPERSEN 1934).

Fam. *Aetideidae.*

10. *Bradyetes brevis* FARRAN.

Bradyetes brevis FARRAN 1936a, p. 238, figs. 1—12.

East Greenland records:
Bradyetes brevis FARRAN, G. P. 1936a, p. 238.
Bradyetes brevis JESPERSEN, P. 1939, p. 49.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* This species is only known in a single specimen (♀), taken in a vertical haul 50—0 m at Ella Ø (ca. 72°55′ N.—25°00′ W.), $^{30}/_{10}$ 1932 (JESPERSEN 1939).

Distribution: Besides the coast of East Greenland not known in other localities.

11. *Aetideopsis rostrata* G. O. Sars.

Ætideopsis rostrata Sars 1903, p. 160, suppl. pls. IV—V.
Aetideopsis rostrata Wilson 1932, p. 46, fig. 27.

East Greenland records:

Aetideopsis rostrata Damas, D. & Koefoed, E. 1909, p. 437.

Occurrence at East Greenland: *North East Coast:* 78°13′ N.—16°31′ W.; 78°06′ N.—15°06′ W.; 76°47′ N.—15°21′ W.; 76°37′ N.—18°22′ W. *Scoresby Sund:* Off Jameson Land 71°22′ N.—18°58′ W.

Distribution: The species is known both from the European and the American side of the Atlantic. The most southerly occurrences are in the Bay of Biscay (Farran 1926) and northeast of Cape Code Light (Wilson l. c.). In arctic areas outside East Greenland it is known, among other places, from Baffin Bugt (Jespersen 1934), Franz Joseph Land (Bernstein 1932) and from the waters between Jan Mayen and Finmarken (Sars l. c.).

12. *Chiridius armatus* (Boeck).

Euchaete armata Boeck 1872, p. 39.
Chiridius armatus Sars 1903, p. 27, pls. XV—XVI.
Pseudaetidius armatus Wolfenden 1904, p. 115.

East Greenland records:

Chiridius armatus Cleve, P. T. 1900, p. 7.
Chiridius armatus Jespersen, P. 1939, p. 46.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* Off Clavering Ø (74°15′ N.—18°15′ W.) and Kejser Franz Joseph Fjord itself. *Scoresby Sund:* Off Liverpool Land (71°30′ N.—21°00′ W.).

Distribution: In the northern Atlantic this species is widely distributed, but penetrates far north in rather pronouncedly arctic areas. Outside the coast of East Greenland it has thus been met with in West Greenland waters as far north as the northern part of Baffin Bugt (Jespersen 1934).

Remarks: In Greenland waters this bathypelagic copepod has exclusively been identified in water layers corresponding with horizontal hauls with more than 600 m w. As one female bearing the remains of egg sacs has been found ($^{19}/_{8}$ 1932) in the Kejser Franz Joseph Fjord area, it is probable that the species is able to breed in these northern latitudes. Egg-bearing females have been found in West Greenland waters as far north as in the southern part of Baffin Bugt.

13. *Chiridius obtusifrons* G. O. Sars.

Pseudocalanus armatus Vanhöffen 1897, p. 279, fig. 6.
Chiridius armatus Sars 1900, p. 64, pl. XVII.
Chiridius armatus Mrazek 1902, p. 521.
Chiridius obtusifrons Sars 1903, p. 29, pl. XVII.
Chiridius obtusifrons Wolfenden 1904, p. 131.

East Greenland records:

Chiridius armatus CLEVE, P. T. 1900, p. 7.
Chiridius obtusifrons DAMAS, D. & KOEFOED, E. 1909, p. 436.
Chiridius obtusifrons WITH, C. 1915, p. 85.
Chiridius obtusifrons JESPERSEN, P. 1939, p. 47.

Occurrence at East Greenland: This species is presumably distributed in the deeper water layers along the whole of the east coast of Greenland. The Danish expeditions have taken it both in Kejser Franz Joseph Fjord and in the Scoresby Sund Fjord areas, and when it has not been met with further south, this is presumably due to the fact that only in exceptional cases has fishing been carried out in greater depths. On the Duc d'Orléans Expedition 1905 the species was further identified at a number of stations off the coast of North East Greenland between c. 75° and 78 ° N. (DAMAS and KOEFOED 1909). From the Danish East Greenland Expedition 1900 there are further a couple of finds from the open waters of Grønlandshavet viz. in 79°09′ N.—4°36′ W. and 74°09′ N.—11°31′ W. (WITH 1915).

Distribution: This rather pronouncedly arctic copepod has in the western Atlantic been met with as far south as Nova Scotia (BIGELOW 1926) to which locality it has probably been carried with the south-going Labrador Current, being of common occurrence in the deeper water layers both in Davis Stræde and Baffin Bugt. In the eastern part of the Atlantic it does not seem to occur farther south than the Faroe-Shetland Channel, and the southern limit of its occurrence in the waters of Western European waters must therefore presumably be put at about 60 °N. Towards north it has been met with in the waters round Spitsbergen (DAMAS and KOEFOED 1909) and at Franz Joseph Land (BERNSTEIN 1932). As to the distribution see further the paper on copepods in the waters of West Greenland by the present author (1934, p. 57, fig. 13).

14. *Gaidius tenuispinus* G. O. SARS.

Chiridius tenuispinus SARS 1900, p. 67, pl. XVIII.
Gaidius borealis WOLFENDEN 1903, p. 365.
Gaidius tenuispinus SARS 1903, p. 162, pl. XVIII, suppl. pl. VI.

East Greenland records:

Gaidius tenuispinus DAMAS, D. & KOEFOED, E. 1909, p. 437.
Gaidius tenuispinus JESPERSEN, P. 1939, p. 48.

Occurrence at East Greenland: The presence of this species has been demonstrated by the Duc d'Orléans Expedition 1905 (DAMAS and KOEFOED 1909) at several stations along the coast of North East Greenland, between 75°39′ N. and 78°13′ N., as well as off Liverpool Land in 71°22′ N.—18°58′ W. It has furthermore been met with in

several localities in the Kejser Franz Joseph Fjord and Scoresby Sund Fjord areas, as well as off Kap Herluf Trolle farther south along the coast of East Greenland (JESPERSEN 1939).

Distribution: In the northern Atlantic it is known both from the European and the American side. In the eastern part it has been met with as far south as in about 30° N. (SARS 1925) and in the western part as far as the Gulf of St. Lawrence (WILLEY 1918) and the Gulf of Maine (BIGELOW 1926). However, it penetrates far into arctic areas, being i. a., outside East Greenland, known from Baffin Bugt and Smith Sund off West Greenland (JESPERSEN 1923 and 1934), Spitsbergen (MRAZEK 1902), Franz Joseph Land (BERNSTEIN 1932) and the eastern part of the polar basin crossed by Nansen (SARS 1900).

Remarks: In East Greenland waters the species is almost exclusively met with in deeper water layers, having mostly been taken in horizontal hauls with at least 300 m w.

15. *Euchirella rostrata* (CLAUS).

Undina rostrata CLAUS 1866, p. 11, pl. I.
Euchaeta Hessei BRADY 1883, p. 63, pl. XX.
Euchirella rostrata GIESBRECHT 1892, p. 222, pls. II and XV.

East Greenland records:

Euchirella rostrata WITH, C. 1915, p. 117.
Euchirella rostrata JESPERSEN, P. 1939, p. 49.

Occurrence at East Greenland: *South East Coast:* A single specimen has been taken at the surface near Kap Dan at Angmagssalik, and also the "Dana" caught a few specimens near Kap Herluf Trolle (St. 2436, 61°13′ N.—40°57′ W.).

Distribution: This oceanic species which is widely distributed in the temperate Atlantic has, beyond doubt, its northern limit in East Greenland waters in the southern part of Danmark Stræde and in West Greenland waters in the area south of Davis Stræde.

Fam. ***Euchaetidae.***

16. *Pareuchaeta norvegica* (BOECK).

Euchaeta norvegica BOECK 1872, p. 40.
Euchæta norvegica SARS 1903, p. 38, pls. XIV—XVI.
Pareuchaeta norvegica A. SCOTT 1909, p. 69.
Paraeuchaeta norvegica WILSON 1932, p. 65, fig. 43.

East Greenland records:

Euchæta norvegica CLEVE, P. T. 1900, p. 7.
Euchæta norvegica DAMAS, D. & KOEFOED, E. 1909, p. 436.
Euchæte norvegica WITH, C. 1915, p. 165.
Euchæte norvegica STEPHENSEN, K. 1933, p. 10.
Pareuchaeta norvegica JESPERSEN, P. 1939, p. 49.

Occurrence at East Greenland: The species is undoubtedly of common occurrence along the entire coast of East Greenland, where it is found in the interiors of the fjords as well as in the more open waters off the coast. It has been met with from the most southern point of Greenland (about 60° N.) and as far north as the waters between East Greenland and Spitsbergen (78°—79° N.).

In the two East Greenland fjord-systems, viz. Kejser Franz Joseph Fjord and Scoresby Sund, where detailed investigations have been carried on, it proves that this species occurs in greatest quantities in the middle part of the fjord areas, whereas the number is comparatively smaller in the inner areas of the fjords, as well as at the mouths of the fjords and the open water off the coast. The species especially occurs in depths of more than 100—200 m below the surface (JESPERSEN 1939).

Distribution: The species is widely distributed in the northern Atlantic and has been found both along the eastern and the western side of the ocean, but it is beyond doubt of most frequent occurrence in the northern areas of the Atlantic as well as in adjoining more or less arctic waters. It is beyond doubt found as far north as open water exists, and for instance in the Polar Sea north of Spitsbergen it has been taken as far north as lat. 84°.

Remarks: By comparison with material of this species from other Greenland waters it has been proved that the average length in East Greenland waters corresponds with the length of individuals from Baffin Bugt, whereas it is somewhat larger than for individuals from the most southern area of the West Greenland waters and from the water south-west of Iceland. This seems to suggest that the largest individuals are to be found in marine areas with cold water, the smallest in temperate areas (see JESPERSEN 1939, p. 52).

17. *Pareuchaeta glacialis* (H. J. HANSEN).

Euchæta glacialis HANSEN 1886, p. 74, pls. XXIII—XXIV.
Euchæta glacialis SARS 1903, p. 40, pl. XXVII.
Pareuchaeta glacialis ROSE 1933, p. 119, fig. 101.

East Greenland records:

Euchæta glacialis DAMAS, D. & KOEFOED, E. 1909, p. 436.
Euchæte glacialis WITH, C. 1915, p. 171.
Euchæte glacialis STEPHENSEN, K. 1933, p. 10.
Pareuchaeta glacialis JESPERSEN, P. 1939, p. 53.

Occurrence at East Greenland: Like the preceding this species is beyond doubt to be found at suitable depths and in water layers with a low temperature along the entire coast of East Greenland. It has been proved to spread over the whole of the distance from Kap Farvel to the coast of North East Greenland. In the latter area it was

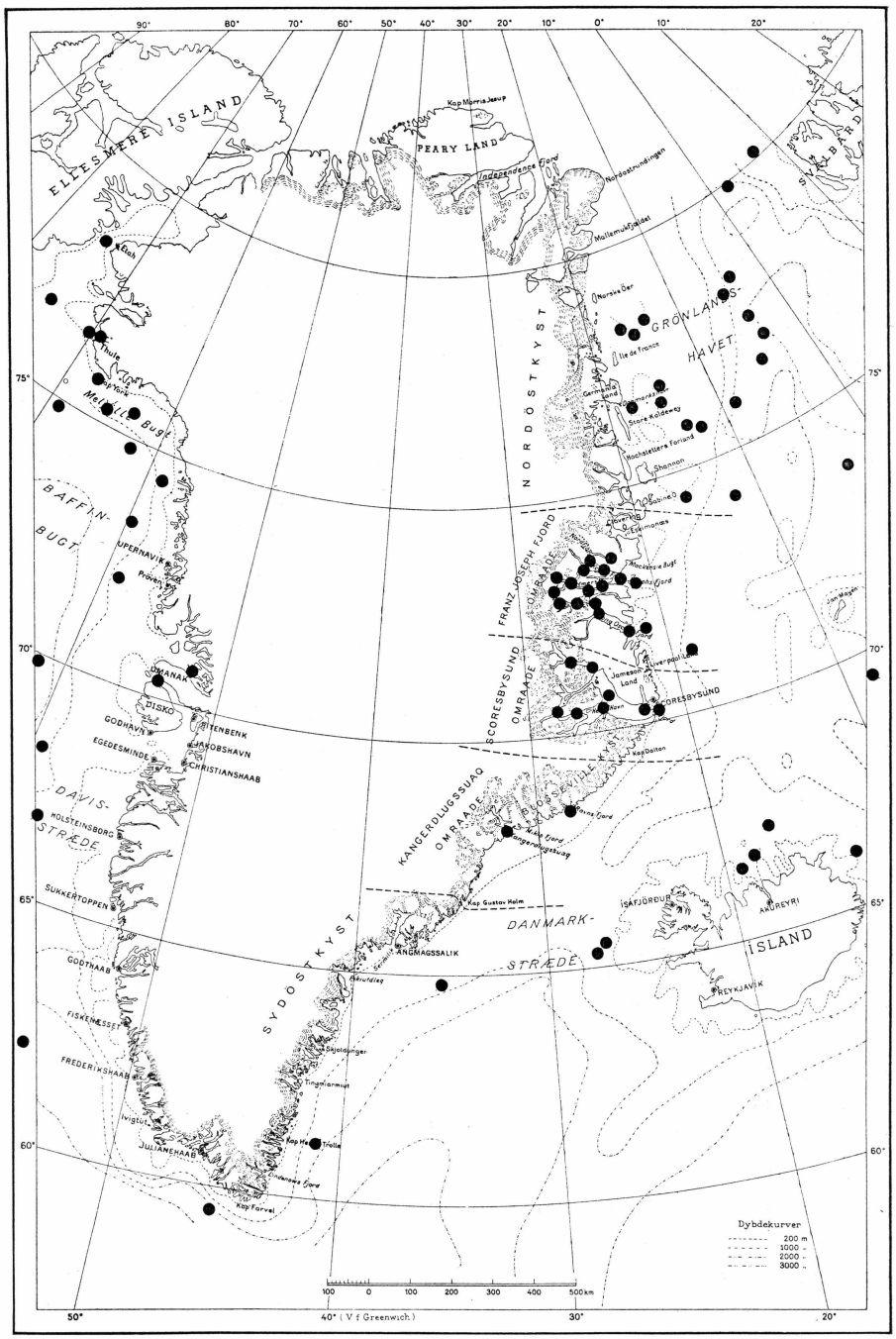

Fig. 3. *Pareuchaeta glacialis* (H. J. HANSEN). Occurrence in the waters round Greenland.

met with by the Duc d'Orleans Expedition at a number of stations between about 71° and 79°. In the interiors of the East Greenland fjords it also seems to be of common occurrence in the deeper water layers, but sometimes it can also be met with rather near the surface.

Unlike the preceding species *Pareuchaeta glacialis* seems to occur in greatest numbers in the innermost parts of the East Greenland fjords, whereas they both occur in comparatively small quantities at the mouths of fjords and in the coast waters outside the latter. Upon the whole this species seems to occur in considerably larger numbers than *Pareuchaeta norvegica* in the Kejser Franz Joseph Fjord and Scoresby Sund Fjord areas.

Distribution: As a specific arctic form this copepod does hardly appear farther south in the eastern part of the Atlantic than to about 60° N., and in the western part of the Atlantic the southern limit is also in this latitude, seeing that it is hardly to be found farther south than along the distance from Kap Farvel and as far Hudson Strait on the coast of Labrador. In the chart fig. 3 the positions have been given for the localities in the seas adjoining Greenland where *Pareuchaeta glacialis* is known to have been met with. The material before us partly originates from the collections made by the "Dana", and partly from the following papers: DAMAS and KOEFOED 1909, JESPERSEN 1923, 1934 and 1939, STEPHENSEN 1933 and WITH 1915.

It appears from the chart that the species has been identified both along the entire west and east coasts of Greenland, as well as along the north coast of Iceland. From Danmark Stræde there are a few finds, but it is worthy of mention that no specimens whatever have been taken in the more southerly part of the waters between Iceland and the southern point of Greenland, except immediately off the coast of East Greenland. In this area, however, several hauls have been made in the deeper water layers, viz. by the following expeditions: Ingolf 1894—95 (WITH l. c.), Michael Sars 1924 (STÖRMER 1929), Armauer Hansen 1913 (LYSHOLM and NORDGAARD 1921) and the "Dana" 1925; none of these expeditions, however, have left any record of the species within this area. As to its further distribution see my paper on the copepods of the Godthaab Expedition (1934, p. 77, fig. 20).

Spawning: In the Kejser Franz Joseph Fjord and Scoresby Sund Fjord areas a considerable number of spermatophorous females have been met with, as well as a few females with remainders of egg sacs, and so there can be no doubt that spawning takes place in this locality in the summer and possibly even in the spring. All females with egg sacs have been taken in horizontal hauls with 600—700 m w.

Remarks: In measuring the lengths of a fairly large number of individuals from the East Greenland and West Greenland waters (Davis

Stræde and Baffin Bugt) it has not been possible to demonstrate essential differences in the size of individuals from the two areas (see JESPERSEN 1939, p. 57).

Fam. *Phaennidae.*

18. *Xanthocalanus fallax* G. O. SARS.

Xanthocalanus minor GIESBRECHT 1892, p. 286, pl. 12.
Xanthocalanus borealis SARS 1903, p. 46, pls. XXXI—XXXII.
Xanthocalanus minor SARS 1921, p. 3, pl. I.
Xanthocalanus fallax SARS 1925, p. 128, pl. XXXV.

East Greenland records:

Xanthocalanus fallax JESPERSEN, P. 1939, p. 58.

Occurrence at East Greenland: Only known from Kejser Franz Joseph Fjord, where a few specimens were taken $^{19}/_{8}$ 1932 in a horizontal haul with 700 m w.

Distribution. Outside the Mediterranean and several localities in the northern Atlantic this species has been identified i. a. in great depths in Norwegian fjords.

19. *Xanthocalanus borealis* G. O. SARS.

Xanthocalanus borealis SARS 1900, p. 49, pl. XI.
Xanthocalanus borealis SARS 1925, p. 137, pls. XXXV and XXXVIII.
Xanthocalanus hirtipes WITH 1915, p. 241.
Xanthocalanus hirtipes (?) VANHÖFFEN 1897, p. 282, fig. 18.

East Greenland records:

Xanthocalanus hirtipes DAMAS, D. & KOEFOED, E. 1909, p. 401.
Xanthocalanus borealis JESPERSEN, P. 1939, p. 58.

Occurrence at East Greenland: In the haul mentioned under the above species as being made in Kejser Franz Joseph Fjord this species is likewise represented by a few individuals. Further, the Duc d'Orleans Expedition 1905 found specimens of the genus *Xanthocalanus* (determined as *Xanthocalanus hirtipes* VANHÖFFEN) off the coast of Northeast Greenland in about 76° N.—14° W. (DAMAS and KOEFOED 1909). This is presumably the same species which was identified in Kejser Franz Joseph Fjord.

Distribution: As opinions have varied whether *Xanthocalanus hirtipes* VANHÖFFEN should be looked upon as a separate species or as a synonym of *Xanthocalanus borealis* SARS 1900, the information before us is uncertain regarding the distribution of the latter species; it seems, however, more particularly to belong in boreal and arctic areas. Outside East Greenland waters *Xanthocalanus borealis* has thus in all probability been met with in Lille Karajak Fjord on the

west coast of Greenland (VANHÖFFEN l. c.), in Baffin Bugt and Smith Sund (JESPERSEN 1934) as well as in the Kara Sea (WITH l. c.). It occurs as far south as southwest of Ireland (FARRAN 1920).

20. ? *Oothrix bidentata* G. P. FARRAN.

Oothrix bidentata FARRAN 1905, p. 42, pls. X—XI.

East Greenland records:

Oothrix bidentata DAMAS, D. & KOEFOED, E. 1909, p. 401.

Occurrence at East Greenland: The Duc d'Orléans Expedition 1905 reports this species as having been taken off the coast of East Greenland, in about 76° N.—14° W. (DAMAS and KOEFOED 1909), but it may be doubtful, whether this is really the species. Thus it has also on former occasions been described as occurring in the White Sea (WIRKETIS 1926, BOGOROV 1932), but these specimens have later been proved to be a not hitherto described species viz. *Neoscolecithrix farrani* (SMIRNOV 1935), and there is consequently a possibility that it is this species which is also to be found at East Greenland.

Distribution: As far as I have been able to judge from the literature before me, this species is only known with certainty from the west coast of Ireland (FARRAN l. c.).

Fam. *Scolecithricidae.*

21. *Undinella oblonga* G. O. SARS.

Undinella oblonga SARS 1900, p. 52, pls. XII—XIII.
Undinella oblonga VAN BREEMEN 1908, p. 68, fig. 79.

East Greenland records:

Undinella oblonga JESPERSEN, P. 1939, p. 59.

Occurrence at East Greenland: In East Greenland waters this species is only represented by a single find, which was taken at the "Dana" St. 2308, $^1/_6$ 1925, in 59°21′ N.—37°56′ W. near the south point of Greenland. It was found in a vertical haul of 500—300 m.

Distribution: This species is represented by finds made in several localities in the northern Atlantic. It has further been identified in the Davis Stræde and Baffin Bugt, in the waters between East Greenland and Spitsbergen and also in pronouncedly arctic areas north of Siberia. My paper on the copepods of the Godthaab Expedition contains a chart (1934, p. 86), which shows the finding places hitherto known.

22. *Scaphocalanus magnus* (T. SCOTT).

Amallophora magna TH. SCOTT 1894, p. 55, pl. VI.
Scolecithrix cristata GIESBRECHT 1895, p. 252, pls. II—III.

Scaphocalanus acrocephalus Sars 1900, p. 36, pls. VII—IX.
Amallophora magna Sars 1903, p. 51, pls. XXXIV—XXXV.
Scolecithrix magna Farran 1908, p. 51.
Scaphocalanus magnus A. Scott 1909, p. 97.
Scaphocalanus magnus With 1915, p. 189, pls. VII—VIII.
Scaphocalanus magnus Sars 1925, p. 169.

East Greenland records:

Amallophora magna Damas, D. & Koefoed, E. 1909, p. 437.

Occurrence at East Greenland: The Duc d'Orleans Expedition 1905 (Damas and Koefoed 1909) found this species at a number of stations off the coast of Northeast Greenland from Liverpool Land in the south to north of Germania Land (between about 71°—78° N.), but otherwise it is not known from other localities along the coast of East Greenland. On the other hand, it has been met with in the more central and easterly areas of the Danmark Stræde (With l. c., Jespersen 1934).

Distribution: This is one of the most widely distributed species of marine copepods, being known from arctic and antarctic areas, in the northern, southern and tropical Atlantic and also in the Mediterranean and the Pacific.

23. *Scaphocalanus brevicornis* (G. O. Sars).

Scolecithrix brevicornis Sars 1900, p. 46, pl. X.
Amallophora brevicornis Sars 1903, p. 53, pl. XXXVI.
Scolecithrix gracilipes Farran 1908, p. 52, pl. VI.
Scaphocalanus brevicornis With 1915, p. 192, pl. VII.
Scaphocalanus brevicornis Farran 1926, p. 258.

East Greenland records:

Amallophora brevicornis Damas, D. & Koefoed, E. 1909, p. 437.

Occurrence at East Greenland: *North East Coast*: 78°13′ N.—16°31′ W. *Scoresby Sund*: 71°22′ N.—18°58′ W. (Damas and Koefoed 1909).

Distribution. Outside the East Greenland stations mentioned above this species was taken by the Duc d'Orleans Expedition 1905 at other stations nearer Spitsbergen. Otherwise, it is known from the Polar Basin north of 81° N., the Norwegian Sea, in the waters W. off the Shetlands and in Bay of Biscay (Rose 1933).

24. *Scolecithricella minor* (Brady).

Scolecithrix minor Brady 1883, p. 58, pls. XVI—XVII.
Scolecithricella minor Sars 1903, p. 55, pls. XXXVII—XXXVIII.

East Greenland records:

Scolecithricella minor DAMAS, D. & KOEFOED, E. 1909, p. 436.
Scolecithricella minor JESPERSEN, P. 1939, p. 59.

Occurrence at East Greenland: The species is beyond doubt of rather common occurrence along the entire coast of East Greenland. In the interiors of the fjords, however, it seems to occur in small numbers. Thus, the Danish expeditions to the Kejser Franz Joseph Fjord and Scoresby Sund Fjord areas 1932 and 1933 did not identify it in the former area, whereas it was found in insignificant quantities in those from Scoresby Sund Fjord.

Distribution: This species is of common occurrence in great parts of the northern Atlantic and penetrates far north in pronouncedly arctic areas. In the seas adjoining East Greenland it has, as proved from the chart fig. 4, been found in the Danmark Stræde as well as in Grønlandshavet, whereas in West Greenland waters it is curiously enough only known from the area south of Davis Stræde, but neither from Davis Stræde itself nor from Baffin Bugt. The stations marked on the chart are based upon information given in the following papers: DAMAS and KOEFOED 1909, FARRAN 1936, JESPERSEN 1934 and 1939, LYSHOLM and NORDGAARD 1921, STÖRMER 1929 and WITH 1915. Further, a number of stations are marked, where the species was found on the expeditions of the "Dana" round Iceland and along the eastern coast of South Greenland in the years 1924—34.

25. *Scolecithricella ovata* (FARRAN).

Scolecithrix ovata FARRAN 1905, p. 37, pls. VI—VII.
Scolecithricella ovata WITH 1915, p. 208, pls. VII—VIII.
Scolecithricella ovata SARS 1925, p. 188, pl. LII.

East Greenland records:

Scolecithricella ovata JESPERSEN, P. 1939, p. 59.

Occurrence at East Greenland: *South East Coast:* 61°13′ N.—40°57′ W. (Dana St. 2436) in a horizontal haul with 1000 m w. That it has only been found in this one station is, however, possibly due to the fact that it principally occurs in intermediary water layers where relatively few collections have been made.

Distribution: The occurrence of this species at the southern point of Greenland agrees very well with the area of distribution of the species, seeing that it must beyond doubt be characterized as a pronouncedly Atlantic form. In the waters round Greenland it is otherwise known from the southern part of the Danmark Stræde and at West Greenland only from the area south of Davis Stræde, these areas being undoubtedly the northern limit of the occurrence of the species. The

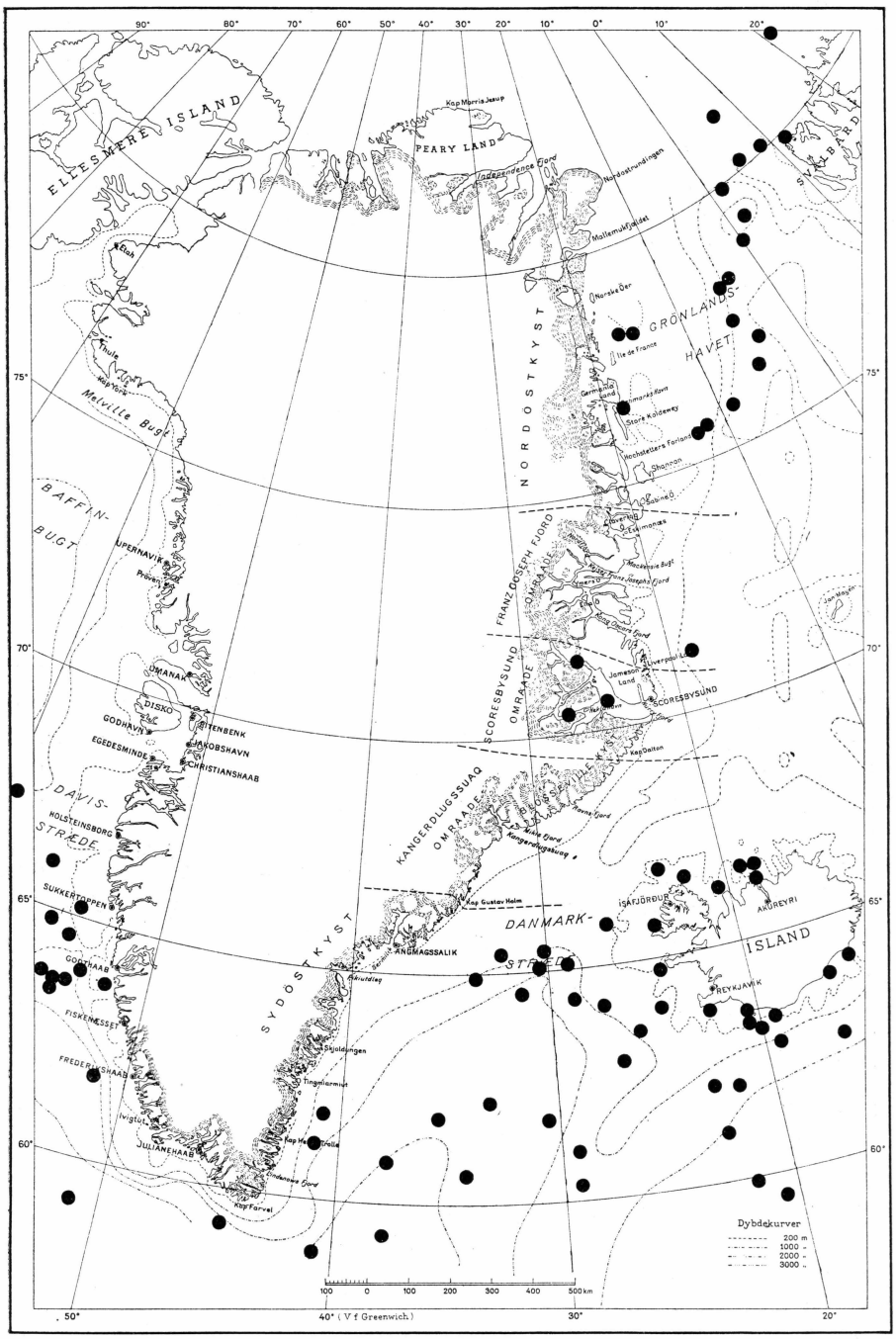

Fig. 4. *Scolecithricella minor* (BRADY). Occurrence in the waters round Greenland.

localities indicated in fig. 5 are, besides finding places based upon the collections of the "Dana", marked in accordance with information contained in the following papers: JESPERSEN 1934 and 1939, LYSHOLM and NORDGAARD 1921, STÖRMER 1929 and WITH 1915. A comparison between the two charts, fig. 4 and fig. 5, shows a considerable difference as regards the distribution of the two species *Scolecithricella minor* and *S. ovata*, the former of which penetrates far into pronouncedly arctic regions, whereas the latter must be characterized as a more specifically Atlantic form.

Fam. *Temoridae.*

26. *Temora longicornis* (O. F. MÜLLER).

Cyclops longicornis O. F. MÜLLER 1792, p. 115, pl. XIX.
Temora finmarchicus BAIRD 1850, p. 228, pl. XXVIII.
Temora longicornis SARS 1903, p. 97, pls. LXV—LXVI.

East Greenland records:

Temora longicornis JESPERSEN, P. 1939, p. 60.

Occurrence at East Greenland: This species has not until now been identified immediately along the coast of East Greenland, but it has been met with so far west in the Danmark Stræde that we are justified in classing it with the East Greenland fauna. On the cruises of the "Dana" in the Danmark Stræde between 65° and 66° N. it was met with as far west as 34° W. (see the chart fig. 26, p. 61, JESPERSEN 1939).

Distribution: This species occurs in most of the seas of northern Europe as far as the coasts of France, being further known from the Mediterranean and of common occurrence as far north as off the coasts of Iceland. On the American side of the Atlantic it was not met farther south than off Chesapeake Bay (BIGELOW 1922) and farthest north off the Straits of Belle Isle (PINHEY 1926, 1927). That it sometimes penetrates into pronouncedly arctic areas is proved by the fact that a few specimens have been identified as far north as in the waters north of Spitsbergen in 81°50′ N.—20°15′ E. (FARRAN 1936). The species is beyond doubt most frequently occurring rather near the coast, but its occasional occurrence in the open ocean is proved by a find in 55°24′ N.—41°10′ W. (HERDMAN, THOMPSON and SCOTT 1898).

27. *Temorites brevis* G. O. SARS.

Temorites brevis SARS 1900, p. 100, pls. XXX—XXXI.

East Greenland records:

Temorites brevis DAMAS, D. & KOEFOED, E. 1909, p. 437.

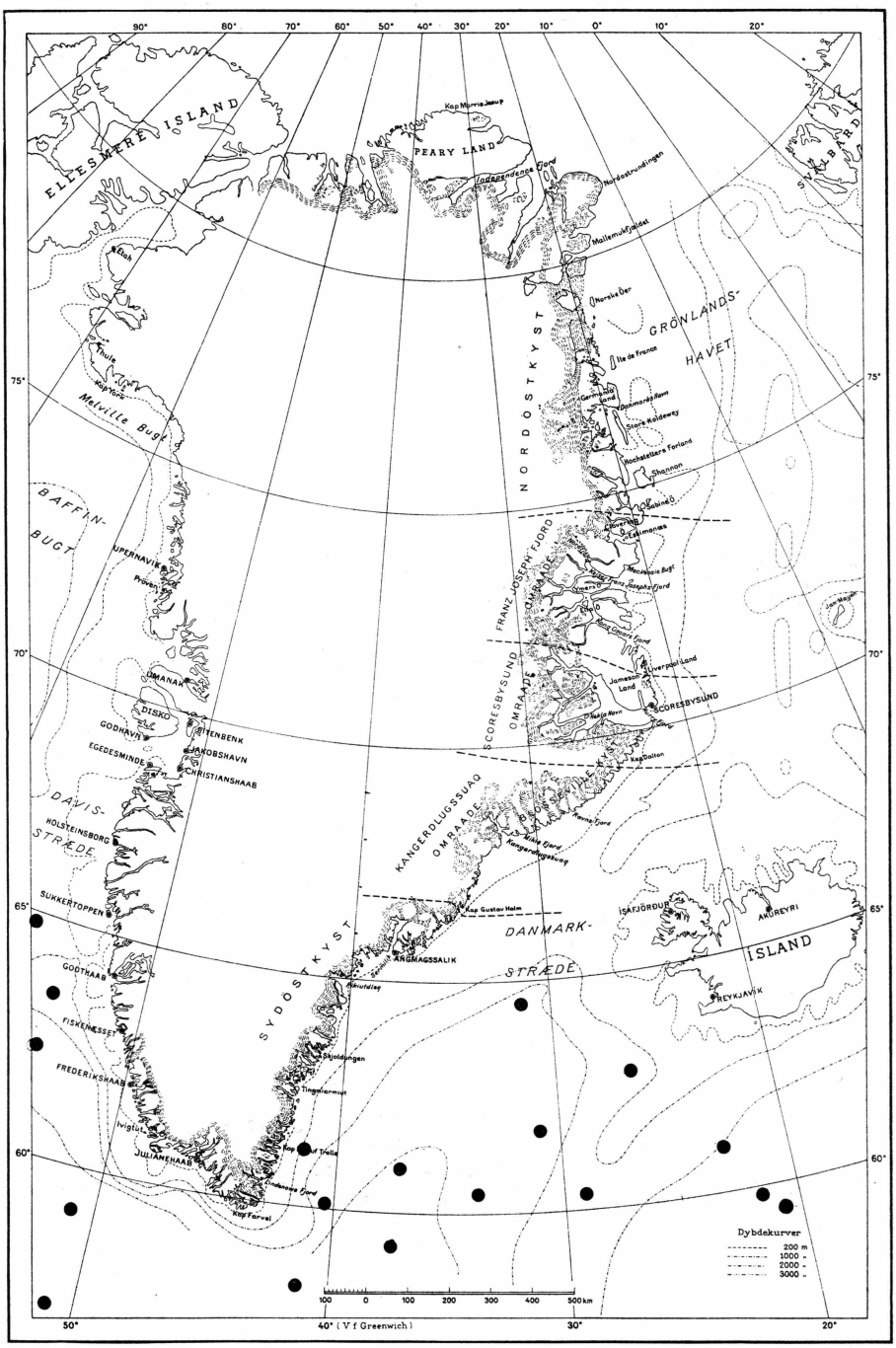

Fig. 5. *Scolecithricella ovata* (FARRAN). Occurrence in the waters round Greenland.

Occurrence at East Greenland: *North East Coast:* 78°05′ N.—15°21′ W.; 78°13′ N.—16°31′ W. *Scoresby Sund:* 71°22′ N.—18°58′ W. (DAMAS and KOEFOED 1909).

Distribution: This species has a rather peculiar distribution. Apart from having been met with at East Greenland and in the Polar Basin (SARS l. c.) it has only been identified in the Mediterranean (SARS 1925), and up to the present it does not seem to be known from the intermediary regions.

Fam. ***Metridiidae.***

28. *Metridia longa* (LUBBOCK).

Calanus longus LUBBOCK 1854, p. 127, pl. V.
Metridia armata BOECK 1864, p. 14.
Metridia longa SARS 1903, p. 112, pls. LXXV—LXXVI.

East Greenland records:

Metridia longa CLEVE, P. T. 1900, p. 7.
Metridia longa DAMAS, D. & KOEFOED, E. 1909, p. 437.
Metridia longa USSING, H. 1938, p. 11.
Metridia longa JESPERSEN, P. 1939, p. 60.

Occurrence at East Greenland: This species, which is one of the most frequently occurring copepods in East Greenland waters, is beyond doubt to be found along the entire coast of East Greenland. It is met with in the fjords as well as in the open sea, but it seems characteristic of the distribution of the species that it occurs most numerously in the interior parts of the East Greenland fjords, whereas the number is comparatively insignificant in the waters outside the fjord areas proper.

Distribution: *Metridia longa* is rather northerly in the whole of its occurrence, but its area of distribution extends from pronouncedly arctic regions and rather far towards south in the northern Atlantic. In the eastern part of the latter it is still of rather common occurrence as far south as west of Ireland, whereas its occurrence still farther south seems to be more casual. Both along the European and the Atlantic coast of the northern Atlantic it has been identified as far south as about 40°—42° N., but in the southern parts of its area of distribution it has most frequently only been met with in rather great depths.

Biology: (USSING 1938). In the upper water layers (50—0 m) of the East Greenland fjords *Metridia longa* has its maximum occurrence in winter, whereas in summer (May to July) it only occurs in very small numbers. As early as August and September it is, however, of common occurrence, being represented by adult individuals, which it is true expire after spawning; in October the species has therefore again disappeared from the upper water layers. In November the new generation,

consisting of various copepodid stages, is met with in the upper water layers. In the East Greenland fjords the species undertakes pronounced vertical wanderings in the course of the twenty-four hours, so that at night it occurs higher up in the water than in the day; but during the light season the species avoids the upper water layers. According to the investigations at hand as to the occurrence of the species in East Greenland waters, most individuals become mature in the course of the winter, the spring and the first months of summer, but there is no spawning worth mentioning until the month of August.

Remarks: In East Greenland waters, according to USSING l. c. there seems not to be any noticeable seasonal variation in size for this species as is e. g. the case with certain other copepods. On the other hand, a comparison between the relation in size of individuals from East Greenland and West Greenland waters seems to indicate that the length of *Metridia longa* in East Greenland waters is on an average somewhat greater than that of individuals from West Greenland (see JESPERSEN 1939 p. 66).

29. *Metridia lucens* BOECK.

Metridia lucens BOECK 1864, p. 238.
Metridia hibernica GIESBRECHT 1892, p. 340.
Metridia lucens SARS 1903, p. 113, pl. LXXVII.

East Greenland records:

Metridia lucens JESPERSEN, P. 1939, p. 67.

Occurrence at East Greenland: *South East Coast:* 61°13′ N.—40°57′ W. (Dana St. 2436, $^{25}/_{7}$ 1925) where a few specimens were taken in a haul with 600 m w.

Distribution: Localities for this species in the seas adjoining Greenland have been indicated in the chart fig. 6, which is based upon material from the following papers: FARRAN 1936, JESPERSEN 1934 and 1939, LYSHOLM and NORDGAARD 1921, STÖRMER 1929 and also unpublished finds from the cruises of the "Dana" in the waters of Iceland and Greenland. The actual northern limit of the species must presumably be put at North Iceland and in the Danmark Stræde, and it is therefore rather surprising that the Nautilus Expedition 1931 proved the existence of the species as far north as in 81°40′ N.—11°20′ E. in the waters north of Spitsbergen (FARRAN 1936). In this northern locality, however, only a single individual was found. In the western part of the Atlantic the northern limit of the occurrence of the species is thus presumably in the water south of Davis Stræde (JESPERSEN 1934) as well as in Gulf of St. Lawrence (WILLEY 1918). In the eastern part it occurs from the Bay of Biscay (FARRAN 1926) as far as about 70° N. along the coasts

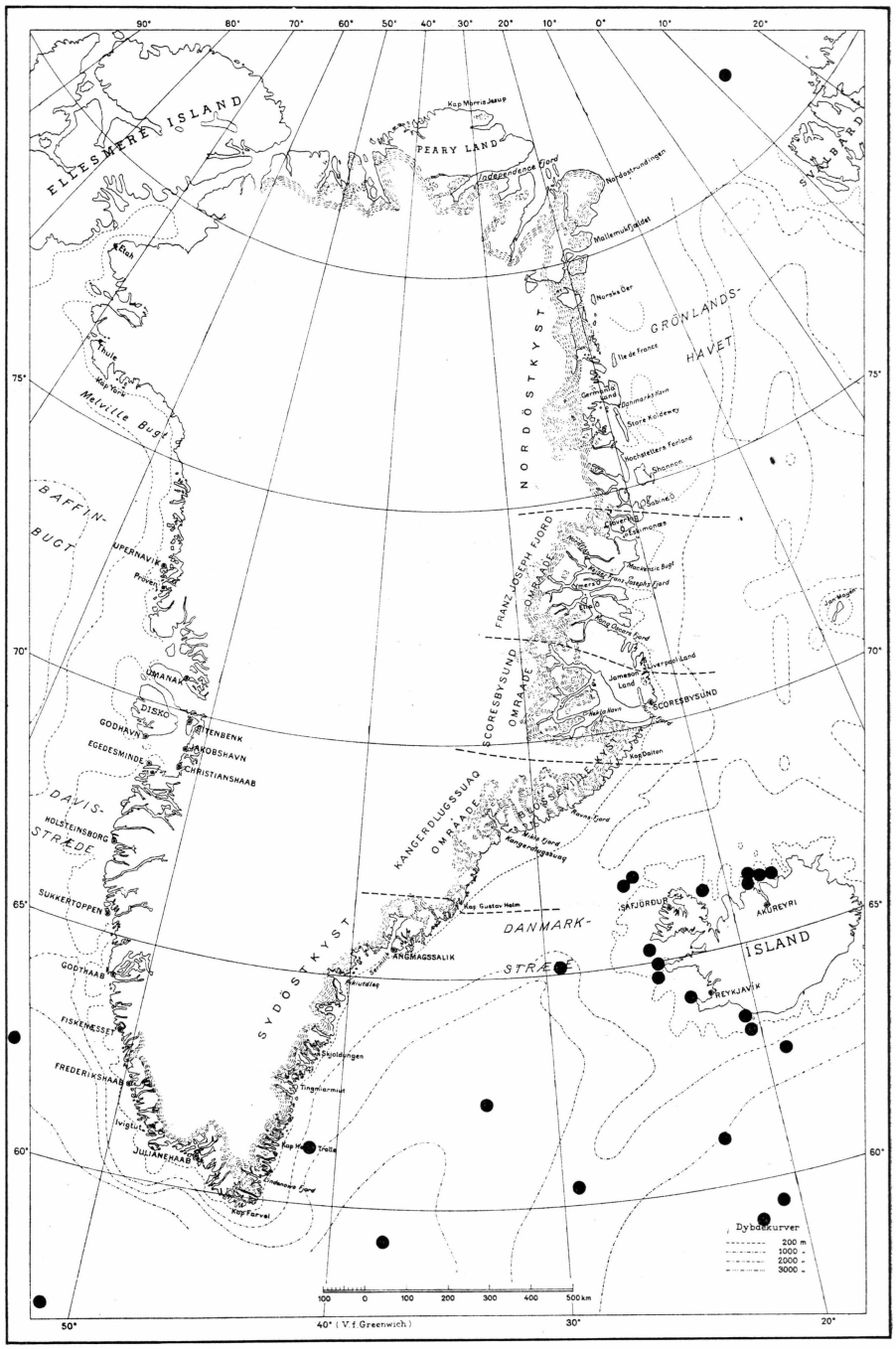

Fig. 6. *Metridia lucens* BOECK. Occurrence in the waters round Greenland.

of Norway (NORDGAARD 1905) and at the Murman Coast (LINKO 1912, 1915, WIRKETIS 1928).

30. ?*Metridia Boecki* GIESBRECHT.

Metridia boeckii GIESBRECHT 1892, p. 340.
Metridia Boecki A. SCOTT 1909, p. 120, pl. XXXVII.
Metridia Boecki SARS 1925, p. 199, pl. LIV.

East Greenland records:

Metridia Boecki JESPERSEN, P. 1939, p. 68.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* One individual taken $^{24}/_{8}$ 1932 near Ella Ø. The determination of this specimen which was taken in a horizontal haul with 650 m w. is, however, not quite certain.

Distribution: Chiefly known from rather southern areas of the Atlantic, though found in small quantities as far north as in the waters south of the Davis Stræde (JESPERSEN 1934).

31. *Pleuromamma robusta* (DAHL).

Pleuromma robusta F. DAHL 1893, p. 105.
Pleuromamma robusta SARS 1903, p. 115, pls. LXXVIII—LXXIX.
Pleuromamma rotundum ESTERLY (BIGELOW 1915, p. 287).
Pleuromamma robusta STEUER 1932, p. 20, figs. 69—91.

East Greenland records:

Pleuromamma robusta JESPERSEN, P. 1939, p. 68.

Occurrence at East Greenland: *South East Coast:* In 61°13′N. — 40°57′ W. at Dana St. 2436, which is situated off Kap Herluf Trolle, a few specimens of this species have been found in horizontal hauls with 600 and 1000 m w.

Distribution: As appears from fig. 7 this species is a pronouncedly southern species in the waters adjoining Greenland. In West Greenland waters it has only been met with in the area south of Davis Stræde, and it is hardly to be found as far north as along the north coast of Iceland. The finds mentioned are based upon the following papers: JESPERSEN 1934 and 1939, LYSHOLM and NORDGAARD 1921, STÖRMER 1924 (there is however a mark of interrogation affixed to the determination of the species) as well as unpublished finds from the cruises of the "Dana". The species is very widely distributed, seeing that besides in other oceans it is found in the Atlantic from the southern coasts of Iceland and Greenland through the tropical areas as far as the antarctic seas. As to the distribution of the species see further STEUER 1932, who gives a chart of the occurrence of the species.

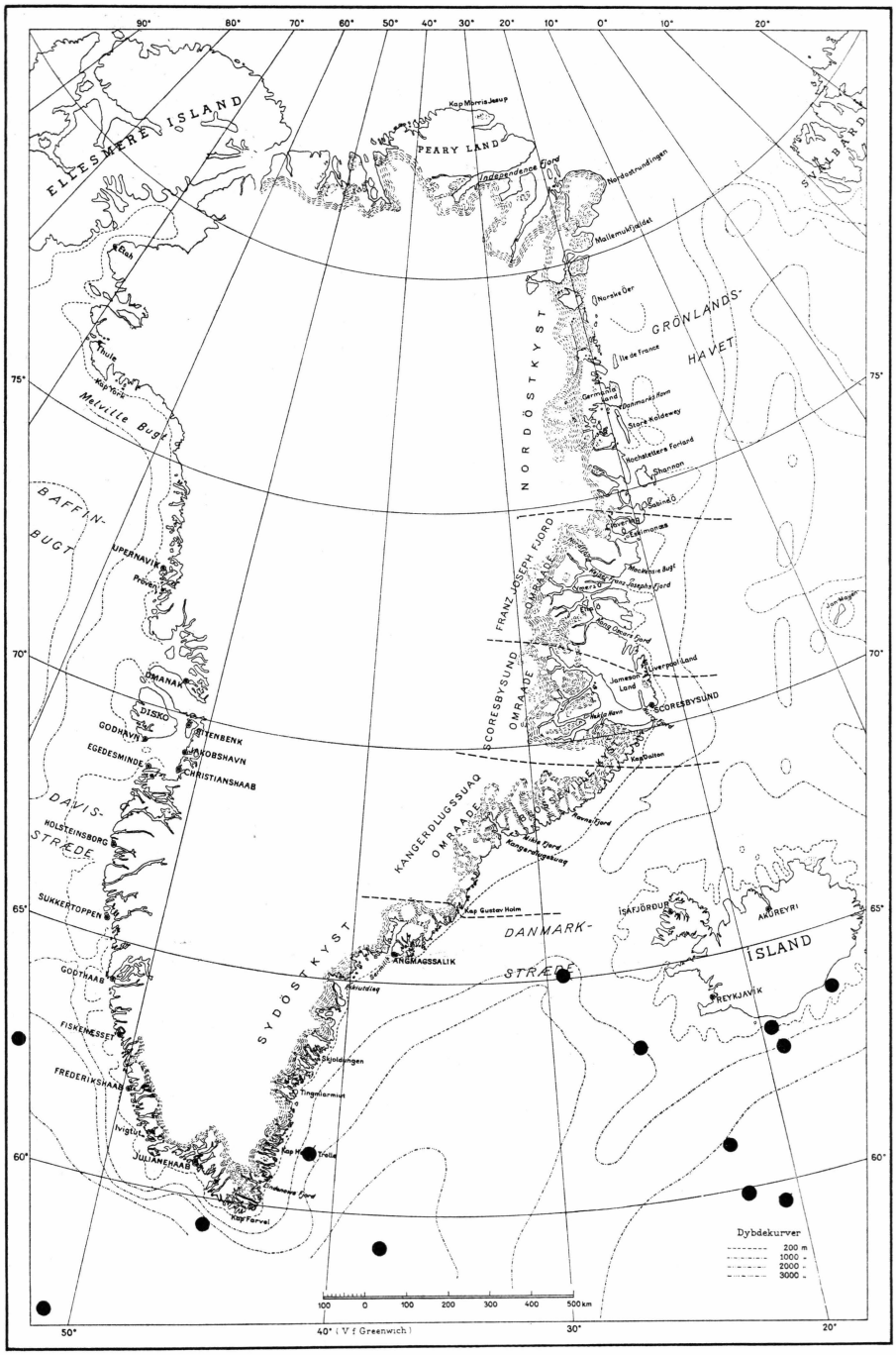

Fig. 7. *Pleuromamma robusta* (DAHL). Occurrence in the waters round Greenland.

Fam. *Centropagidae.*

32. *Centropages hamatus* (Lilljeborg).

Ichtyophorba hamata Lilljeborg 1853, p. 185, pls. XXI—XXVI.
Ichtyophorba angustata Claus 1863, p. 199, pl. 35.
Centropages hamatus Sars 1903, p. 76, pl. LII.

East Greenland records:

Centropages hamatus Jespersen, P. 1939, p. 68.

Occurrence at East Greenland: *South East Coast:* In a surface haul at Angmagssalik a single specimen of this species was taken on September 8th, 1932, but otherwise it is unknown from other localities along the coast of East Greenland.

Distribution: From Greenland this species has further only been identified in a couple of localities viz. Egedesminde (Jespersen 1934) and Nordre Strømfjord (Stephensen 1913). As appears from the chart fig. 8 the species is of common occurrence along the coasts of Iceland, but in the Danmark Stræde it has only been found in the eastern part (to about 28° W.). The few localities in Greenland are possibly due to the fact that the species has been carried here from other coast waters, where it is of more common occurrence. It is consequently very likely that it has been carried to West Greenland from the Canadian side of the Davis Stræde, and the specimen from Angmagssalik has possibly been carried across the Danmark Stræde from Iceland by the west-going branch of the Irminger Current. This possibility at least seems to supply an explanation of the sporadic occurrence of the species at the coasts of Greenland. Along the Atlantic coast of North America it is known from the Gulf of St. Lawrence (Willey 1918) as well as from the Straits of Belle Isle (Pinhey 1926), but it is probably found still farther north along the Canadian coast. The most northerly localities along the coasts of northern Europe is northern Norway (Nordgaard 1905) as well as the White Sea (Wirketis 1926).

Fam. *Heterorhabdidae.*

33. *Heterorhabdus norvegicus* (Boeck).

Heterochæta norvegica Boeck 1872, p. 40.
Heterochæta profundus Dahl 1893, p. 105.
Heterorhabdus norvegicus Sars 1903, p. 118, pls. LXXX—LXXXI.

East Greenland records:

Heterorhabdus norvegicus Damas, D. & Koefoed, E. 1909, p. 436.
Heterorhabdus norvegicus Jespersen, P. 1939, p. 69.

Occurrence at East Greenland: This species is presumably to be found in greater depths everywhere in East Greenland waters.

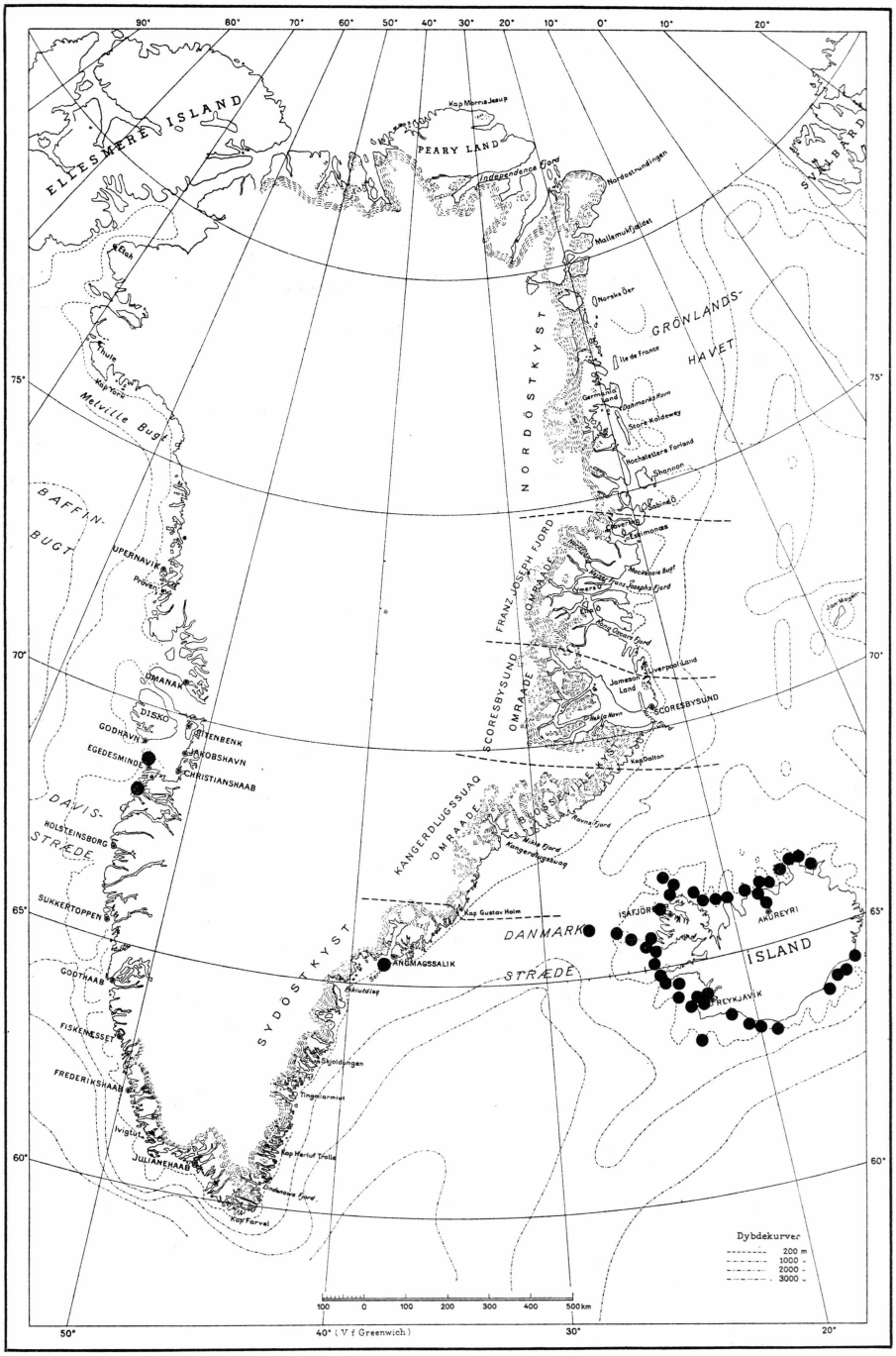

Fig. 8. *Centropages hamatus* (LILLJEBORG). Occurrence in the waters round Greenland.

It is of rather common occurrence in the inner parts of the East Greenland fjords where it occurs with the greatest frequency in depths corresponding to horizontal hauls with 600—700 m w. (JESPERSEN 1939). The Duc d'Orleans Expedition identified it at a number of stations along the coast of North East Greenland and in the waters between Greenland and Spitsbergen (DAMAS and KOEFOED 1909).

Distribution: The species is widely distributed over great parts of the northern Atlantic and penetrates far into arctic areas, such as e. g. the waters north of Spitsbergen and Franz Joseph Land. As to the distribution see further the chart of STEUER (1933, p. 283) which shows the occurrence of the species.

Spawning: In the months of July and August spermatophore-bearing females of this species have been found in a few specimens from the Scoresby Sund Fjord, and consequently it is to be presumed that spawning in this area takes place in summer.

34. *Heterorhabdus compactus* G. O. SARS.

Heterochæta compacta SARS 1900, p. 83, pls. XXIV—XXV.
Heterorhabdus compactus SARS 1925, p. 226, pl. LXII.

East Greenland records:

Heterorhabdus compactus DAMAS, D. & KOEFOED, E. 1909, p. 437.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* 71°22′ N.—18°58′ W. taken in a vertical haul from 1000 to 800 m off Kong Oscars Fjord.

Distribution: In the northern Atlantic this species seems to be widely distributed, being known both from the area round the Azores (SARS 1925) and from the waters south of Davis Stræde (JESPERSEN 1934), but curiously enough it does not seem to have been identified elsewhere in the Atlantic or adjoining seas. In arctic areas outside East Greenland it has been found by the Nansen Expedition in the Polar Basin (SARS 1900).

Fam. *Augaptilidae.*

35. *Augaptilus glacialis* G. O. SARS.

Augaptilus glacialis SARS 1900, p. 88, pls. 26—27.
Augaptilus zetesios WOLFENDEN 1902, p. 369, pl. III.
Augaptilus glacialis SARS 1925, p. 254, pl. LXXVI.

East Greenland records:

Augaptilus glacialis KOEFOED, E. 1909, p. 158.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* 71°22′ N.—18°58′ W., off Kong Oscars Fjord, a few specimens taken in a vertical haul from 1000—800 m.

Distribution: Very widely distributed in the northern Atlantic and adjacent arctic waters. The southern limit in the Atlantic, where it only occurs in great depths, is the Strait of Gibraltar and the waters round the Azores. In West Greenland waters it is known from the Davis Stræde and Baffin Bugt, where it has exclusively been taken in horizontal hauls with 1000—3000 m w. (JESPERSEN 1934), but it does not seem to be known along the American coasts of the Atlantic. Furthermore it has been identified in the Faroe-Shetland Channel, as well as in the waters round Spitsbergen and in Norwegian Sea.

Fam. *Acartiidae.*

36. *Acartia longiremis* (LILLJEBORG).

Dias longiremis LILLJEBORG 1853, p. 181, pl. XXIV.
Acartia longiremis SARS 1903, p. 149, pls. XCIX—C.

East Greenland records:

Acartia longiremis JESPERSEN, P. 1939, p. 71.

Occurrence at East Greenland: The species beyond doubt occurs along the greater part of the coast of East Greenland. Thus it has been identified in various localities along the distance from Kap Farvel and as far as the Kejser Franz Joseph Fjord area. With the exception that the species was found in very considerable quantities (about 61.5 per cent of the total number of copepods) in a single sample of plankton from Angmagssalik ($^{8}/_{9}$ 1932), it has everywhere been met with in small numbers (JESPERSEN 1939).

Distribution: The distribution of the species is pronouncedly northern. In West European waters it goes as far south as the English Channel, and from there it extends in a northerly direction through the North Sea and the Norwegian Sea to the waters round Iceland and Greenland; on the American side of the Atlantic it then goes as far south as about 40° N. The probable occurrence of the species even farther north than in the Kejser Franz Joseph Fjord area appears from the fact that the Nautilus Expedition 1931 identified it at several stations in the waters northwest of Spitsbergen (FARRAN 1936). In West Greenland waters it was recorded as far north as in the northern part of Baffin Bugt where it was, however, only found in the western side at Ellesmere Island (JESPERSEN 1934). On the other hand, it hardly occurs in the more open areas of the northern Atlantic, and in the Danmark Stræde it only occurs in very small quantities farther off land. For further particulars of the distribution of the species see STEUER 1933, p. 278, fig. 2 and JESPERSEN 1934, p. 122, fig. 31.

Remarks: The species which is a rather pronounced surface-form is beyond doubt of most frequent occurrence rather near the coast, as

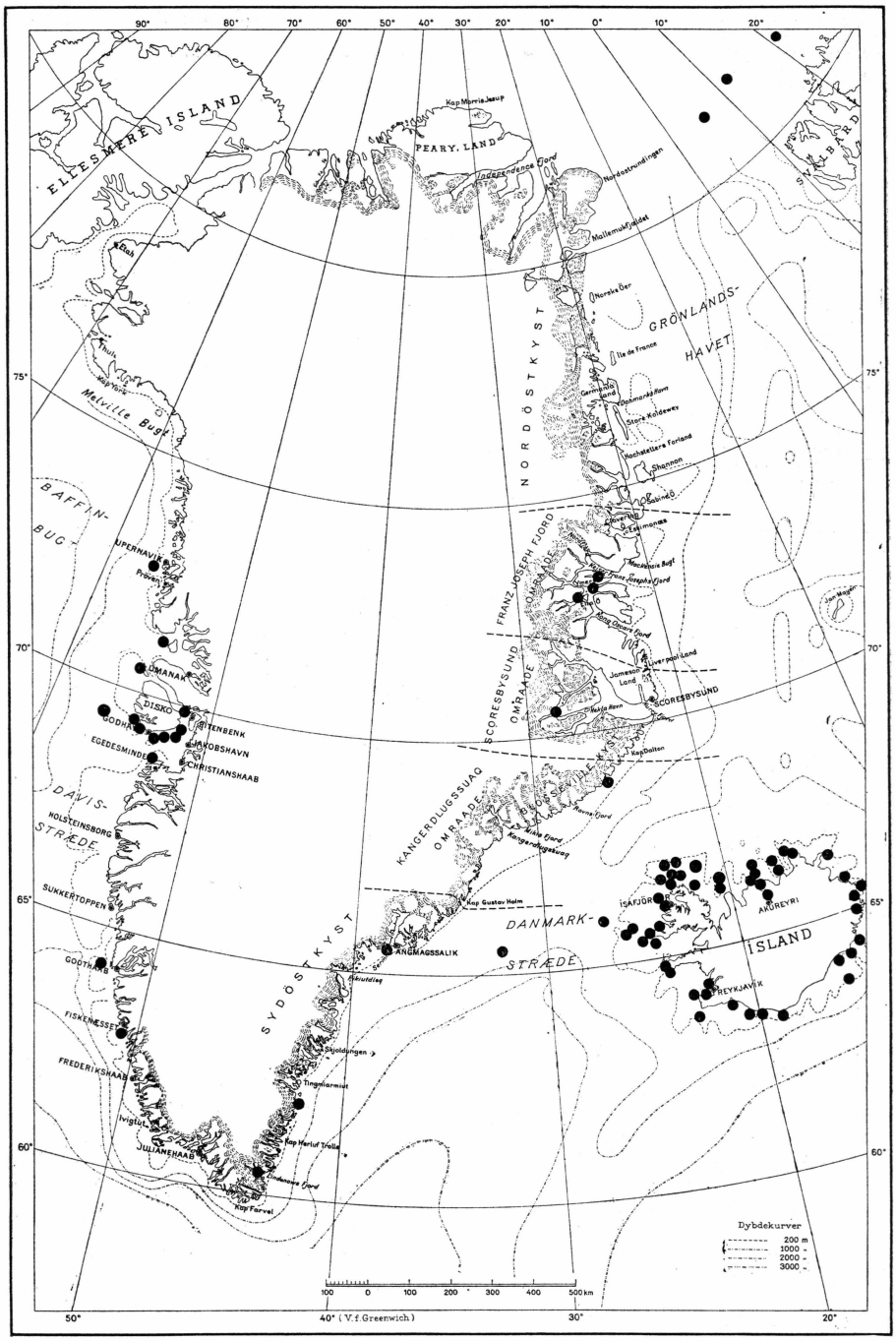

Fig. 9. *Acartia longiremis* (LILLJEBORG). Occurrence in the waters round Greenland.

appears from the finding places round Iceland in the chart fig. 9, which is based upon the collections of the "Dana" round Iceland and in the Danmark Stræde in the years 1924—1934.

HARPACTICOIDA

Fam. *Longipediidae.*

37. *Canuella furcigera* G. O. SARS.

Canuella furcigera SARS 1911, p. 18, pl. X.

East Greenland records:

Canuella furcigera LANG, KARL. 1936, p. 4.

Occurrence at East Greenland: *North East Coast:* in 74°55′ N. —17°59′ W., situated in the vicinity of Shannon Island (LANG 1936).

Distribution: According to LANG l. c. this species is further known from Oslo Fjord, Roscoff and Woods Hole.

Fam. *Ectinosomidae.*

38. *Ectinosoma neglectum* G. O. SARS.

Ectinosoma neglectum SARS 1911, p. 31, pl. XVII.
Ectinosoma neglectum WILLEY 1920, p. 24, figs. 29—32.

East Greenland records:

Ectinosoma neglectum JESPERSEN, P. 1939, p. 73.

Occurrence at East Greenland: *South East Coast:* a few specimens of this species have been taken in a surface haul, 62° N.—41°30′ W. (JESPERSEN 1939).

Distribution: This species is widely distributed in arctic as well as in temperate seas and is known from both sides of the northern Atlantic. Along the American coast it has been met with as far south as the Gulf of Maine (BIGELOW 1926), and along Western Europe it has, besides at the coasts of Norway (SARS l. c.), been found in the Mediterranean (LANG 1936). Further, it is also recorded off Franz Joseph Land (SMIRNOV 1932).

39. ?*Ectinosoma finmarchicum* T. SCOTT.

Ectinosoma finmarchicum WILLEY 1920, p. 26, fig. 27.
Ectinosoma finmarchicum FARRAN 1936, p. 408, fig. 2.

East Greenland records:

Ectinosoma finmarchicum JESPERSEN, P. 1939, p. 72.

Occurrence at East Greenland: *South East Coast*: in 60°47′ N. —42°34′ W. (Dana St. 4677), which is situated immediately off the

coast of East Greenland slightly north of Lindenows Fjord, a few specimens of the genus *Ectinosoma* have been taken in a vertical haul from 50—0 m, and they probably belong to this species (JESPERSEN 1939).

Distribution: As this species is a pronouncedly arctic form it is rather natural that it should occur in the cold East Greenland current. It has thus before now been identified in Varanger Fjord in northern Norway (T. SCOTT 1903), the Kara Sea (JASCHNOV 1927), off Franz Joseph Land (SMIRNOV 1932), in the waters north of Spitsbergen (FARRAN l. c.) and along the northern coast of Alaska (WILLEY l. c.).

40. *Microsetella norvegica* (BOECK).

Setella norvegica BOECK 1864, p. 281.
Ectinosoma atlanticum BRADY 1880, p. 13, pl. 38.
Microsetella norvegica SARS 1911, p. 44, pl. XXIV.

East Greenland records:

Microsetella atlantica CLEVE, P. T. 1900, p. 7.
Microsetella norvegica USSING, H. 1938, p. 11.
Microsetella norvegica JESPERSEN, P. 1939, p. 73.

Occurrence at East Greenland: Whereas the species seems to be of infrequent occurrence in the interiors of the East Greenland fjords, it is common in the more open waters along the coasts of East Greenland as well as in the Danmark Stræde, and upon the whole it is a rather pronouncedly oceanic form.

Distribution: Distributed both along the European and the American coasts of the northern Atlantic and widely distributed in all adjoining arctic seas. In West Greenland waters it has been met with as far north as in 76° N. (JESPERSEN 1923), and between North East Greenland and Spitsbergen it has been identified as far north as in about 81° N. (FARRAN 1936).

Biology: In the systematic collections of plankton, which were undertaken all the year round off Eskimonæs and Ella Ø, this species occurred in such insignificant quantities that it has not been possible to demonstrate a definite variation in the number of individuals at different seasons (USSING 1938). In the months June and August many egg-bearing females have been met with along the coast from Angmagssalik to Kap Farvel from which it appears that in these waters the species spawns in the summer.

Remarks: As to the distribution of the species in the Danmark Stræde it should be mentioned that it occurs with particular frequency in the more open parts of this area. Near the coasts of Iceland it occurs rather sparsely, and the same applies partly to the coastal waters along East Greenland, whereas in the more central parts of the Danmark

Stræde, at any rate south of 66° N., it was found in considerable quantities (see JESPERSEN 1939, p. 74, fig. 32).

41. *Bradya typica* BOECK.

Bradya typica BOECK 1872, p. 47.
Bradya typica SARS 1911, p. 46, pl. XXV.

East Greenland records:

Bradya typica MADSEN, HOLGER 1936, p. 17.

Occurrence at East Greenland: Occurring in the tidal zone of Kejser Franz Joseph Fjord and Scoresby Sund Fjord (MADSEN 1936).

Distribution: Finding places: Polar islands north of Grinnell Land, Spitsbergen, Franz Joseph Land, Finmarken, Norway and England.

Fam. *Harpacticidae.*

42. *Harpacticus gracilis* CLAUS.

Harpacticus gracilis CLAUS 1863, p. 135, pl. XIX.
Harpacticus gracilis SARS 1911, p. 52, pl. XXX.

East Greenland records:

Harpacticus gracilis DAMAS, D. & KOEFOED, E. 1909, p. 437.

Occurrence at East Greenland: In the report of the Duc d'Orléans Expedition (DAMAS and KOEFOED 1909) this species is recorded as having been taken at some stations off North East Greenland between about 75°—78° N. and 12°—15° W. It may, however, be doubtful whether the species found is really *Harpacticus gracilis* CLAUS.

Distribution: According to WILSON (1932) this species has been identified in the following places: the British Isles, the Kiel Bay, the Mediterranean and the Norwegian Sea as well as in various localities along the Atlantic coast of U. S. A.

43. *Harpacticus chelifer* (O. FR. MÜLLER).

Cyclops chelifer MÜLLER 1792, p. 114, pl. XIX.
Harpacticus chelifer SARS 1911, p. 49, pls. XXVII—XXVIII.

East Greenland records:

Harpacticus chelifer WESENBERG-LUND, C. 1896, p. 142.
Harpacticus chelifer STEPHENSEN, K. 1913, p. 328.

Occurrence at East Greenland: *North East Coast:* Sabine Ø. *Scoresby Sund:* Hekla Havn on Danmark Ø, 70°27′ N., and 70°32′ N.—15°28′ W.

Distribution: This species is very widely distributed. Thus SARS (l. c.) mentions the British Isles, Heligoland, the coast of Bohuslän, the coast of France, the Arctic Ocean, the coast of North America and Ceylon.

44. *Harpacticus uniremis* KRØYER.

Harpacticus uniremis KRØYER 1845, pl. 43.
Harpacticus chelifer var. arctica POPPE 1885.
Harpacticus uniremis SARS 1911, p. 51, pl. XXIX.

East Greenland records:

Harpacticus uniremis LANG, KARL. 1936, p. 14.
Harpacticus uniremis MADSEN, HOLGER 1936, p. 14.
Harpacticus uniremis JESPERSEN, P. 1939, p. 75.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* Clavering Ø. *Kangerdlugssuaq:* Barclay Bugt, Ravns Fjord and Kap Tordenskjold.

Distribution: Occurs beyond doubt in most arctic areas, but so far towards south along the coast of Western Europe that it extends far into the Mediterranean. On the American side of the Atlantic the southern limit of its occurrence is presumably at Woods Hole (FISH 1925). In arctic regions the species has i. a. been met with in arctic Canada (WILLEY 1920, 1923), in Upernivik Isfjord in West Greenland (JESPERSEN 1934), off Franz Joseph Land (SMIRNOV 1932) and in Behring Sea (POPPE l. c.).

45. *Harpacticus superflexus* WILLEY.

Harpacticus superflexus WILLEY 1920, p. 25, figs. 39—46.

East Greenland records:

Harpacticus superflexus JESPERSEN, P. 1939, p. 75.

Occurrence at East Greenland: *Scoresby Sund:* From here a single specimen of this species has been taken in a surface haul.

Distribution: The species is furthermore known from arctic Canada, the Kara Sea and the White Sea.

46. *Zaus spinatus* GOODSIR.

Zaus spinatus GOODSIR 1845, p. 326, pl. XI.
Zaus spinosus CLAUS 1863, p. 146, pl. 22.
Zaus spinatus SARS 1911, p. 57, pl. XXXI.

East Greenland records:

Zaus spinatus WESENBERG-LUND, C. 1896, p. 143.
Zaus spinatus STEPHENSEN, K. 1913, p. 335.
Zaus spinatus MADSEN, HOLGER 1936, p. 14.

Occurrence at East Greenland: *North East Coast:* At Sabine Ø (about 74°30′ N.). *Kejser Franz Joseph Fjord* and *Scoresby Sund Fjord.*

Distribution: Besides in East Greenland this species is widely distributed over other arctic areas as e. g. arctic Canada, Novaja-Zemlja and Franz Joseph Land, but otherwise it occurs rather far towards south along the European as well as the American coasts of the northern Atlantic.

47. *Zaus Goodsiri* BRADY.

Zaus ovalis CLAUS 1863, p. 146, pl. 13.
Zaus Goodsiri BRADY 1880, p. 156, pl. LXVI.
Zaus Goodsiri SARS 1911, p. 59, pl. XXXV.

East Greenland records:

Zaus Goodsiri STEPHENSEN, K. 1913, p. 335.

Occurrence at East Greenland: The only mention of the occurrence of this species at East Greenland is to be found in BUCHHOLZ (1874), who without any more detailed indication of locality mentions East Greenland as its place of occurrence.

Distribution: Like the foregoing species found in arctic regions, as well as in temperate areas on both sides of the Atlantic.

Fam. ***Idyaeidae.***

48. *Idyaea furcata* (BAIRD).

Canthocamptus furcatus BAIRD 1850, p. 210, pls. XXV and XXX.
Tisbe furcata CLAUS 1863, p. 116, pl. XV.
Idya furcata SARS 1911, p. 88, pls. LI—LII.

East Greenland records:

Idya furcata DAMAS, D. & KOEFOED, E. 1909, p. 437.
Idya furcata STEPHENSEN, K. 1913, p. 329.
Tisbe furcata MADSEN, HOLGER. 1936, p. 14.
Idyaea furcata JESPERSEN, P. 1939, p. 75.

Occurrence at East Greenland: The species presumably occurs along the whole of the coast of East Greenland from south to north.

Distribution: This species seems in particular to occur in rather pronouncedly arctic areas and is here i. a. known from the west coast of Greenland, arctic Canada, Spitsbergen and Franz Joseph Land. Further, its distribution must be characterized as cosmopolitan, seeing that besides in western European waters it has been identified in the Mediterranean and the Red Sea, as well as off New Zealand and Chatham Islands.

49. *Idyaea gracilis* TH. SCOTT.

Idya gracilis SCOTT 1894, p. 171, pl. IV.
Idya gracilis SARS 1911, p. 94, pl. LV.
Idyaea gracilis LANG, KARL 1936, p. 17, fig. 20.

East Greenland records:

Idyaea gracilis LANG, KARL 1936, p. 17.
Idyaea gracilis JESPERSEN, P. 1939, p. 76.

Occurrence at East Greenland: *Scoresby Sund*: several individuals have been identified in this fjord by the Swedish Greenland Expedition 1899, as well as by Danish expeditions.

Distribution: From arctic areas, i. e. besides East Greenland the Polar islands north of Grinnell Land and the Finmark coast, the species is to be found rather far south in temperate regions. Along the coasts of Western Europe it has e. g. been met with as far south as off Roscoff and in the western part of the Atlantic off Bermudas.

Fam. *Thalestridae.*

50. *Thalestris frigida* T. SCOTT.

Thalestris frigida T. SCOTT 1899, p. 108, pls. 7—8.
Phyllothalestris frigida SARS 1909, p. 23, pl. IV.

East Greenland records:

Thalestris frigida LANG, KARL 1936, p. 19.

Occurrence at East Greenland: *North East Coast:* The species is represented by a single specimen taken at Lille Pendulum Ø (about 74°35′ N.).

Distribution: Also known from the waters round Ellesmere Land, Spitsbergen and Franz Joseph Land.

51. *Parathalestris Jacksoni* (T. SCOTT).

Thalestris Jacksoni T. SCOTT 1899, p. 109, pl. 8.
Parathalestris Jacksoni SARS 1911, p. 114, pl. LXIX.

East Greenland records:

Parathalestris Jacksoni JESPERSEN, P. 1939, p. 76.

Occurrence at East Greenland: *Kangerdlugssuaq:* Barclay Bugt in 69°15′ N.—24°50′ W. where adult as well as juvenile specimens in various stages have been found.

Distribution: The principal occurrence of the species is undoubtedly in arctic regions, where it has been found in several localities, as e. g. Franz Joseph Land, north of Grinnell Land, off the coast of Finmarken, as well as off Spitsbergen. Along the coasts of Europe it has been met with as far south as on the southern coast of Norway and off the American coasts of the Atlantic in the Gulf of Maine.

52. *Halithalestris Croni* (KRØYER).

Harpacticus Croni Krøyer 1845, pl. 43, fig. 3.
Thalestris serrulata BRADY 1880, p. 133, pl. 59.
Halithalestris croni VAN BREEMEN 1908, p. 176, fig. 190.
Halithalestris Croni SARS 1911, p. 118, pl. LXXII.

East Greenland records:

Halithalestris Croni JESPERSEN, P. 1939, p. 76.

Occurrence at East Greenland: *South East Coast:* At some of the "Dana" stations in the western part of the Danmark Stræde a few individuals of this species have been found in surface hauls viz. St. 4227, $^{17}/_{7}$ 1931, 64°45′ N.—36°30′ W.; St. 4234, $^{19}/_{7}$ 1931, 63°32′ N.—35°57′ W., and St. 4235, $^{19}/_{7}$ 1931, 63°51′ N.—33°51′ W. At the former station which is situated south of Angmagssalik a female bearing egg sacs was found.

Distribution: This pronouncedly pelagic Harpacticid must rather be characterized as an Atlantic form, but in West Greenland waters it has been met with as far north as Melville Bugt in 74°55′ N. —62°45′ W. The distribution in the seas adjoining Greenland will appear from the chart fig. 10, which further shows the rather frequent occurrence along the coasts of Iceland. The finding places indicated are based upon the following papers: JESPERSEN 1923 and 1939, STEPHENSEN 1913 as well as collections made by the research vessel "Dana" in the years 1924—34. From northern parts it is furthermore known from the waters off Spitsbergen and Finmarken, but it passes along the coasts of Western Europe as far south as the English Channel. The most southerly finding places along the Atlantic coast of North America are the Gulf of Maine and Woods Hole.

53. *Rhynchothalestris rufocincta* (NORMAN).

Thalestris rufocincta NORMAN in BRADY 1880, p. 125, pl. LVII.
Rhynchothalestris rufocincta SARS 1911, p. 120, pls. LXXIII—LXXIV.

East Greenland records:

Thalestris rufocincta WESENBERG-LUND, C. 1895, p. 142.

Occurrence at East Greenland: WESENBERG-LUND (1895) mentions *Thalestris rufocincta* NORMAN as having been found in 74°17′ N. —15°20′ W., which is situated very nearly off Clavering Ø.

Distribution: SARS (l. c.) only mentions the following localities: Norway, the British Isles and the coast of France. The occurrence at East Greenland, therefore, seems rather curious, but a mistake of identity with the rather closely related species *Rhynchothalestris helgolandica* (CLAUS) which is i. a. known from Spitsbergen and Franz Joseph

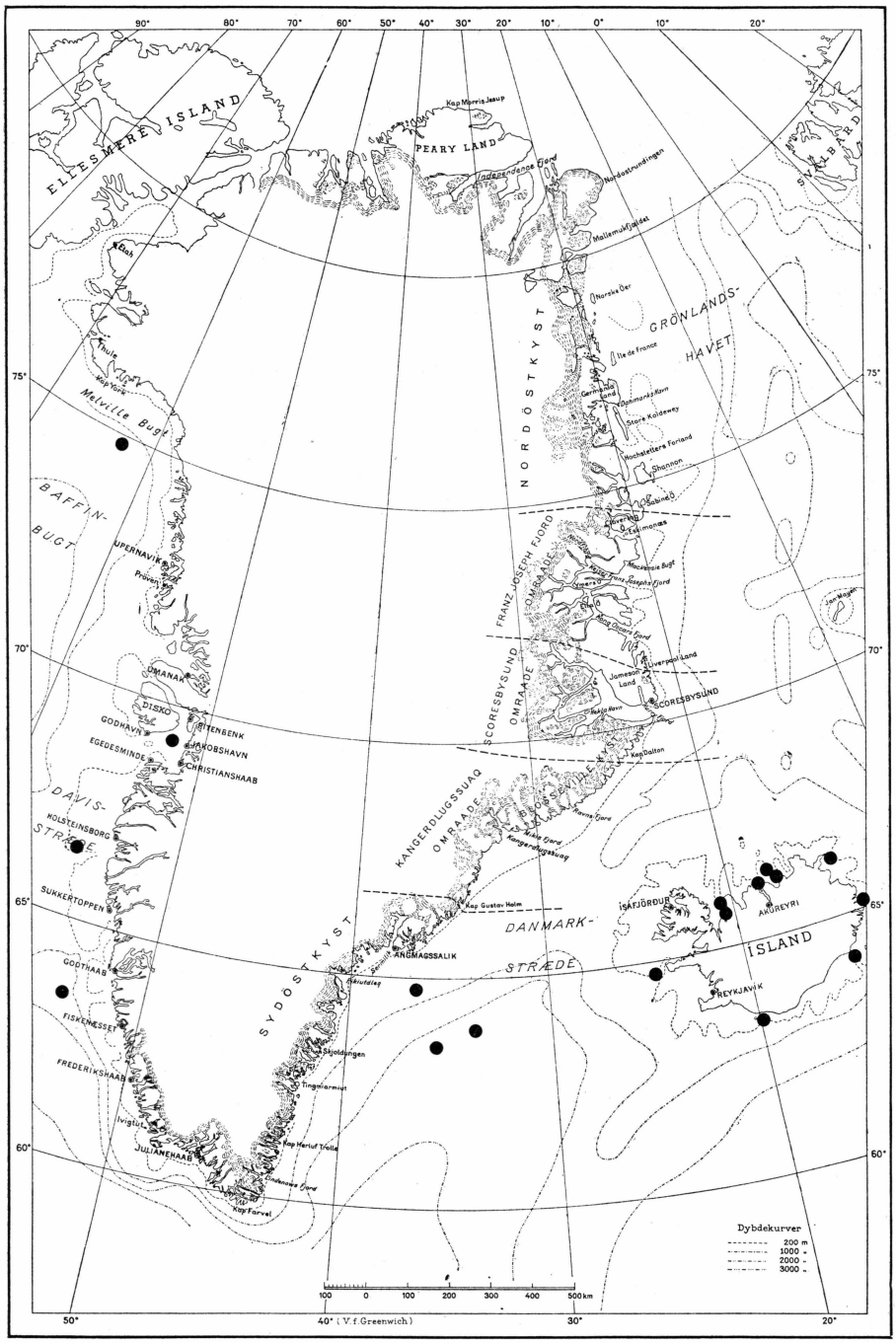

Fig. 10. *Halithalestris Croni* (KRØYER). Occurrence in the waters round Greenland.

Land seems to be excluded, seeing that WESENBERG-LUND in the above-mentioned paper records this species from the area round Jan Mayen.

54. *Dactylopusia vulgaris* G. O. SARS.

Dactylopus Strömi CLAUS 1863, p. 126, pl. XVI.
Dactylopus tisboides GIESBRECHT 1884, p. 125.
Dactylopusia vulgaris SARS 1911, p. 128, pl. LXXIX.

East Greenland records:

Dactylopus Strömii WESENBERG-LUND, C. 1895, p. 141.

Occurrence at East Greenland: *Scoresby Sund:* Hekla Havn, Danmark Ø (70°27′ N.).—*South East Coast:* 65°37′ N.—37°30′ W.

Distribution: Widely distributed in arctic areas, being for instance known from the waters north of Grinnell Land and off Bjørne Ø and Spitsbergen, but extends rather far south on both sides of the Atlantic. Thus it is known as far south as from the Mediterranean, and along the east coast of U.S.A. it is at any rate found as far south as at Woods Hole (LANG 1936).

55. *Dactylopusia glacialis* SARS.

Dactylopusia glacialis SARS 1909, p. 25, pl. V.

East Greenland records:

Dactylopusia glacialis JESPERSEN, P. 1939, p. 77.

Occurrence at East Greenland: *Scoresby Sund:* at the mouth of this fjord a single female bearing an egg sac has been taken.

Distribution: The species is hitherto only known from a couple of localities and in pronouncedly arctic areas, viz. off Grinnell Land and Karl XII's Ø, Spitsbergen.

56. *Amenophia peltata* BOECK.

Amenophia peltata BOECK 1864, p. 269.
Thalestris peltata BRADY 1880, vol. II, p. 138, pl. LIII.
Amenophia peltata SARS 1911, p. 136, pls. LXXXIII—LXXXIV.

East Greenland records:

Amenophia peltata JESPERSEN, P. 1939, p. 77.

Occurrence at East Greenland: *Scoresby Sund:* off the mouth of the fjord. *South East Coast:* Karra about 62° N.—41°30′ W. (JESPERSEN 1939).

Distribution: This species seems to be rather widely distributed, being furthermore known i. a. from north of Grinnell Land, the North Sea, Skagerak and Øresund.

Fam. *Diosaccidae.*

57. *Amphiascus nasutus* (Boeck).

Dactylopus Strömii var. arcticus T. Scott 1899.
Amphiascus nasutus Sars 1911, p. 153, pl. XCV.
Amphiascus nasutus Lang 1936, p. 21, figs. 21—22.

East Greenland records:

Amphiascus nasutus Jespersen, P. 1939, p. 77.

Occurrence at East Greenland: *South East Coast:* at Angmagssalik, where the species has been found in fairly large numbers.

Distribution: Particularly in arctic areas the species is widely distributed. Thus it is i. a. known from Spitsbergen, Franz Joseph Land, arctic Canada and Alaska, and it also occurs along the Western European coasts as far south as in the Mediterranean.

Fam. *Laophontidae.*

58. *Laophonte horrida* Norman.

Cleta minuticornis Buchholz 1874, p. 393, pl. XV.
Laophonte horrida Norman 1876, p. 206.
Laophonte horrida Sars 1911, p. 246, pls. CLXVI—CLXVII.

East Greenland records:

Cleta minuticornis Buchholz 1874, p. 393.

Occurrence at East Greenland: The species has been identified as occurring at East Greenland, however, without specification of locality.

Distribution: This species has been found in several localities in pronouncedly arctic waters. Besides at West Greenland it is thus known from the Polar islands north of Grinnell Land, from Spitsbergen, Bjørne Ø, Franz Joseph Land and the coast of Finmarken, but its area of distribution extends far towards south on both sides of the Atlantic. In European waters it has thus been met with as far south as in the Mediterranean and along the east coast of America at Woods Hole.

59. *Laophonte Strømi* (Baird) (= *L. curticauda* Brady, non Boeck).

Laophonte Strömi Baird 1850, p. 208, pl. XXVI.
Laophonte Strömi Sars 1911, p. 251, pls. CLXXI—CLXXII.

East Greenland records:

Laophonte strömi Madsen, Holger 1936, p. 29.

Occurrence at East Greenland: Kejser Franz Joseph Fjord; Scoresby Sund Fjord.

Distribution: Furthermore known from Franz Joseph Land, Norway and the British Isles.

60. *Laophonte curticauda* BOECK.

Laophonte curticauda BOECK 1864, p. 278.
Heteropsyllus curticaudatus T. SCOTT 1894, p. 252, pls. 8—9.
Laophonte curticauda SARS 1911, p. 252, pl. CLXXIII.

East Greenland records:

Laophonte curticauda WESENBERG-LUND, C. 1895, p. 141.

Occurrence at East Greenland: *Scoresby Sund:* Danmark Ø. *South East Coast:* Angmagssalik.

Distribution: This species occurs i. a. at Franz Joseph Land, Norway, the British Isles and Heligoland.

Fam. *Cletodidae.*

61. *Mesocletodes brevifurca* LANG.

Mesocletodes brevifurca LANG 1936, p. 47, figs. 92—99.

East Greenland records:

Mesocletodes brevifurca LANG, KARL 1936, p. 48.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* a few specimens have been taken by the Swedish Greenland Expedition 1899.

Distribution: Besides on the coast of East Greenland the species is only known from Spitsbergen, where in 1898 a single specimen was met with in 81°14′ N.—22°50′ E. and near Jan Mayen, 71° N.—8°52′ W. (LANG l. c.).

Fam. *Tachidiidae.*

62. *Tachidius* sp.

East Greenland records:

Tachidius (longicornis?) MADSEN, HOLGER 1936, p. 29.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* A species of the genus *Tachidius* was found in lagoons.

63. *Robertsonia tenuis* BRADY.

Robertsonia tenuis BRADY 1880, p. 25, pl. XLI.
Robertsonia tenuis SARS 1911, p. 334, pl. CCXXII.

East Greenland records:

Robertsonia tenuis WESENBERG-LUND, C. 1895, p. 141.

Occurrence at East Greenland: *Scoresby Sund:* Danmark Ø (70°27′ N.), where $^5/_3$ 1892 it was found in six specimens.

Distribution: The species is known from the Arctic Ocean and from the waters off Spitsbergen, Franz Joseph Land, Norway and the British Isles.

64. *Danielssenia Stefanssoni* Willey.

Danielssenia stefanssoni Willey 1920, pp. 39—42, figs. 60—67.

East Greenland records:

Danielssenia Stefanssoni Jespersen, P. 1939, p. 78.

Occurrence at East Greenland: *Kangerdlugssuaq:* Barclay Bugt (69°15′ N.—24°50′ W.) where a few specimens were taken in July 1932.

Distribution: To the knowledge of the author this species is hitherto only known from Dolphin and Union Straits in arctic Canada.

CYCLOPOIDA

Fam. *Oithonidae.*

65. *Oithona atlantica* Farran.

Oithona spinirostris Claus 1863, p. 105, pl. XI.
?Oithona plumifera Mrazek 1902, vol. II.
Oithona atlantica Farran 1908, p. 500.
Oithona atlantica Rosendorn 1917, p. 12, fig. 2.
Oithona spinirostris Sars 1918, p. 6, pls. I—II.

East Greenland records:

Oithona plumifera Cleve, P. T. 1900, p. 7.
Oithona plumifera Damas, D. & Koefoed, E. 1909, p. 437.
Oithona atlantica Jespersen, P. 1939, p. 78.

Occurrence at East Greenland: This species has been found in several localities along the whole of the coast of East Greenland as well as in the Danmark Stræde, but everywhere in comparatively small quantities.

Distribution: The species must presumably be characterized as an Atlantic form which, however, penetrates far into arctic areas. Besides at East Greenland it has thus been identified as far north as in the waters north of Spitsbergen about 81°50′ N. In West Greenland waters, on the other hand, it is not known farther north than in Davis Stræde.

66. *Oithona similis* Claus.

Oithona similis Claus 1866, p. 14.
Oithona similis Sars 1918, pp. 8 and 207, pl. III.

East Greenland records:

Oithona similis CLEVE, P. T. 1900, p. 7.
Oithona similis DAMAS, D. & KOEFOED, E. 1909, p. 436.
Oithona similis USSING, H. 1938, p. 11.
Oithona similis JESPERSEN, P. 1939, p. 79.

Occurrence at East Greenland: In East Greenland waters this species is one of the most commonly occurring copepods, being practically met with wherever investigations have been undertaken, and further it frequently occurs in very considerable quantities in the fjords as well as in the open waters along the coast. In the interiors of the fjords the species seems to occur in greatest quantities in the middle parts, whereas it occurs in a relatively smaller number in the innermost areas of the latter.

Distribution: This species which is of common occurrence in large parts of the Atlantic, along the coast of Europe and America as well as in the more central areas, is also widely distributed in all adjacent arctic seas. Thus in pronouncedly arctic regions it has, besides in East Greenland, been met with off arctic Canada, in Baffin Bugt and Smith Sund, off Spitsbergen, Franz Joseph Land and in Barents Sea and the White Sea.

Biology: In the Kejser Franz Joseph Fjord area this species does not seem to show any typical variation in the number of individuals according to the season, seeing that in summer as well as in winter it occurs in considerable quantities in the upper water layers. The species probably propagates all the year round in the East Greenland fjords, seeing that masses of eggs as well as nauplii are to be found there at all seasons (USSING 1938). In the summer egg-bearing females are met with in great quantities along the southern coast of East Greenland and also in the Danmark Stræde (JESPERSEN 1939).

Fam. *Cyclopidae.*

67. *Euryte longicauda* PHILIPPI.

Euryte longicauda PHILIPPI 1843, p. 63, pl. III.
Thorellia brunnea BOECK 1864, p. 26.
Euryte longicauda GIESBRECHT 1900, p. 57, pl. 4.
Euryte longicauda SARS 1918, p. 26, pl. XIII.

East Greenland records:

Thorellia brunnea STEPHENSEN, K. 1913, p. 334.

Occurrence at East Greenland: *North East Coast:* Sabine Ø (74°30′ N.). Further in several localities without detailed specification.

Distribution: This species is known in arctic areas from West Greenland, Franz Joseph Land, polar islands north of Grinnell Land, and, as mentioned above, from East Greenland; also from Norway, the British Isles, the coasts of France and the Mediterranean.

Fam. *Oncaeidae.*

68. *Oncaea borealis* G. O. Sars.

Oncaea conifera Sars 1900, p. 113, pl. 32.
Oncaea borealis Sars 1918, p. 191, pl. CVIII.

East Greenland records:

Oncæa conifera Cleve, P. T. 1900, p. 7.
Oncoea conifera Damas, D. & Koefoed, E. 1909, p. 437.
Oncaea borealis Ussing, H. 1938, p. 11.
Oncaea borealis Jespersen, P. 1939, p. 81.

Occurrence at East Greenland: This species is beyond doubt found in varying quantities along the entire coast of East Greenland, where it is met with in the fjords as well as out in more open water. In the western part of the Danmark Stræde it seems in particular to be of frequent occurrence immediately along the east coast of Greenland, whereas it occurs in rather small quantities in the more central areas of the southern part of the Danmark Stræde.

Distribution: This northern form has its chief area of distribution in arctic seas, being i. a. known as far north as in the waters round Franz Joseph Land and Spitsbergen, though penetrating rather far south in the northern Atlantic. On the American side it is thus known so far south as in the Woods Hole region, and on the European side off the British Isles.

Biology: Whereas the species in the East Greenland fjords in winter only occurs in small quantities in the upper water layers, it is in summer (June-October) a particularly frequent surface form (Ussing 1938). The increase of the number of individuals is particularly striking in July, and as this increase chiefly consists of juvenile stages, it has, according to Ussing, presumably some bearing upon propagation. According to the investigations at hand from the East Greenland fjords, the chief spawning takes place in April-May, but individuals in copulation may for that matter be met with at all times of the year.

69. *Oncaea notopus* Giesbrecht.

Oncaea notopus Giesbrecht 1891, p. 417; 1892, p. 591, pl. 47.
Oncaea notopus Rose 1933, p. 299, fig. 382.

East Greenland records:

Oncoea notopus Damas, D. & Koefoed, E. 1909, p. 437.

Occurrence at East Greenland: *North East Coast:* 78°06′ N.—15°06′ W.

Distribution: This species is very widely distributed. As f. i. shown by the following finding places recorded by ROSE (l. c.): the Polar Sea, the Atlantic west of Ireland, the Pacific Ocean, the Antarctic Ocean and the Suez Canal.

70. *Oncaea minuta* GIESBRECHT.

Oncaea minuta GIESBRECHT 1892, p. 591, pl. 47.
Oncaea minuta SARS 1918, p. 217, pl. CXVIII.

East Greenland records:

Oncæa minuta CLEVE, P. T. 1900, p. 7.

Occurrence at East Greenland: The Swedish Expedition to Greenland 1899 found specimens of the genus *Oncaea*, which CLEVE (1900) refers to this species. It was met with at two stations, which are situated near the east coast of Greenland off Traill Island and Liverpool Land, viz. St. 24, 72°28′ N.—21°48′ W. and St. 27, 71°30′ N.—21°00′ W.

Distribution: Like the preceding species this is very widely distributed: the northern Atlantic, the Mediterranean, the Pacific and the Indian Ocean (SARS l. c.). According to LINKO (1912) and WIRKETIS (1926) the species is furthermore found at the Murman coast and in the White Sea.

B. Copepoda Parasita et Hemiparasita.

The species of copepods classed under this group belong to the sub-orders Cyclopoida, Notodelphyoida, Caligoida and Lernaeopodoida.

CYCLOPOIDA

Fam. *Dyspontiidae.*

71. *Bradypontius unidens* H. J. HANSEN.

Bradypontius unidens HANSEN 1923, p. 16, pl. II.

East Greenland records:

Bradypontius unidens HANSEN, H. J. 1923, p. 16.

Occurrence at East Greenland: *South East Coast:* off Ameralik, 65°51′ N. (HANSEN l. c.).

Distribution: Exclusively known from East Greenland.

Fam. *Cancerillidae.*

72. *Parartotrogus arcticus* (T. Scott) G. O. Sars.

Parartotrogus Richardi var. arcticus T. Scott 1901, p. 352, pl. VI.
Parartotrogus arcticus Sars 1918, p. 136, pl. LXXIX.

East Greenland records:

Parartotrogus arcticus Hansen, H. J. 1923, p. 18.

Occurrence at East Greenland: *Kejser Franz Joseph Fjord:* a few specimens of this species are identified in 72°27′ N.—19°56′ W.

Distribution: Otherwise known from the most northerly coast of Norway, off Spitsbergen and near Novaja Zemlja.

NOTODELPHYOIDA

Fam. *Botryllophilidae.*

73. *Schizoproctus inflatus* Aurivillius.

Schizoproctus inflatus Aurivillius 1885, p. 248, pl. 9.
Schizoproctus inflatus Sars 1921 a, p. 72, pl. XXXIV.

East Greenland records:

Schizoproctus inflatus Hansen, H. J. 1923, p. 26.

Occurrence at East Greenland: *South East Coast:* 67°14′ N.

Distribution: Furthermore known from West Greenland, Finmarken and Spitsbergen as well as arctic Canada (Wilson 1920).

CALIGOIDA

Fam. *Caligidae.*

74. *Caligus rapax* Milne-Edwards.

Caligus rapax Milne-Edwards 1840, p. 453, pl. 38.
Caligus rapax Wilson 1905, p. 568, pl. VII.

East Greenland records:

Caligus rapax Hansen, H. J. 1923, p. 29.
Caligus sp. Stephensen, K. 1933, p. 10.

Occurrence at East Greenland: *Scoresby Sund:* Hekla Havn, 70°27′ N. A few specimens of the genus *Caligus* which are not determined as to species have further been met with at Angmagssalik, 65°30′ N.

Distribution: This species is widely distributed, seeing that it is furthermore known from Iceland, the Faroes, the British Isles, the Danish waters and the Mediterranean, as well as from the Atlantic coasts of North America.

LERNAEOPODOIDA

Fam. *Lernaeopodidae.*

75. *Salmincola carpionis* (KRØYER).

Lernæopoda carpionis KRØYER 1837, p. 268, pl. 11; 1863, p. 351, pl. 14.
Salmincola carpionis WILSON 1920, p. 8.

East Greenland records:

Lernæopoda carpionis WESENBERG-LUND, C. 1896, p. 143.
Lernæopoda carpionis STEPHENSEN, K. 1912, p. 551.

Occurrence at East Greenland: *North East Coast:* Hvalrosodde, 76°55′ N. *Scoresby Sund:* Danmark Ø, 70°27′ N.

Distribution: Outside West Greenland, where the species is common, it is only known from Iceland.

76. *Salmincola alpina* OLSSON.

Lernæopoda alpina OLSSON 1877, p. 82, pl. IV.
Salmincola alpina HANSEN 1923, p. 51, pl. III.

East Greenland records:

Salmincola alpina HANSEN, H. J. 1923, p. 52.

Occurrence at East Greenland: *Scoresby Sund:* Hekla Havn, 70°27′ N.

Distribution: Outside East Greenland the species has been found off the west coast of Greenland, as well as off Iceland and Sweden.

77. *Lernaeopoda elongata* (GRANT).

Lernæa elongata GRANT 1827, p. 147, pl. II.
Lernæopoda elongata KRØYER 1837, p. 259, pls. II—III.
Lernaeopoda elongata WILSON 1915, p. 637, pl. 39.

East Greenland records:

Lernaeopoda elongata HANSEN, H. J. 1923, p. 53.

Occurrence at East Greenland: *South East Coast:* Angmagssalik, about 65°30′ N.

Distribution: The species is widely distributed, being furthermore known from West Greenland, Iceland, the Faroes, the British Isles, Belgium, Skagerak and the western coast of Norway.

78. *Clavella uncinata* (O. F. MÜLLER).

Lernæa uncinata O. F. MÜLLER 1779, p. 38, pl. 33.
Anchorella uncinata KRØYER 1837, p. 290, pl. III; 1863, p. 384.
Clavella uncinata WILSON 1915, p. 680, pls. 27, 48, 49.

East Greenland records:

Anchorella uncinata STEPHENSEN, K. 1912, p. 551.
Clavella uncinata HANSEN, H. J. 1923, p. 60.

Occurrence at East Greenland: *North East Coast:* Danmarks Havn, 76°45′ N.

Distribution: Widely distributed in North-Atlantic waters, being i. a. known from West Greenland, Iceland, the Faroes and along the east coast of North America. The species has further been met with at the west coast of South America (WILSON 1923).

79. ?*Clavella agilis* (KRØYER).

Anchorella agilis KRØYER 1863, p. 374 & 384, pl. 16.
Clavella agilis WILSON 1920, p. 6.

East Greenland records:

Anchorella agilis KOEFOED, E. 1909, p. 144.

Occurrence at East Greenland: *North East Coast:* 77°31′ N.—18°24′ W. As HANSEN (1923, p. 59), however, doubts the justification of distinguishing between *Clavella agilis* (KRØYER) and *Clavella uncinata* (O. F. MÜLLER), there is a probability that the specimen mentioned above from the Duc d'Orléans Expedition should most correctly be classed under the latter species.

Fam. ***Choniostomatidae.***

80. *Sphæronella Munnopsidis* H. J. HANSEN.

Sphæronella Munnopsidis H. J. HANSEN 1897, p. 168, pl. X.

East Greenland records:

Sphæronella Munnopsidis HANSEN, H. J. 1923, p. 73.

Occurrence at East Greenland: *Scoresby Sund:* Turner Sund, 69°44′ N. and Hurry Fjord, 70°50′ N.

Distribution: As far as is known the species is otherwise only known from the Kara Sea.

81. *Choniostoma mirabile* H. J. HANSEN.

Choniostoma mirabile HANSEN 1886, p. 271, pl. XXIV; 1897, p. 171, pls. X—XI.

East Greenland records:

Choniostoma mirabile HANSEN, H. J. 1923, p. 77.

Occurrence at East Greenland: *South East Coast:* Angmagssalik, 65°30′ N.

Distribution: Further known from the Kara Sea as well as from the waters southwest of Iceland.

Fam. *Herpyllobiidae.*

82. *Herpyllobius arcticus* STEENSTRUP & LÜTKEN.

Herpyllobius arcticus STEENSTRUP & LÜTKEN 1861, p. 426, pl. 15.
Silenium Polynoës KRØYER 1863, p. 403, pl. 18.
Silenium Polynoës CLAUS 1875, p. 18, pl. 23.
Herpyllobius arcticus LEVINSEN 1877, p. 363, pl. 6.
Herpyllobius arcticus SØREN JENSEN 1900, p. 84, pls. 1—2.

East Greenland records:

Herpyllobius arcticus STEPHENSEN, K. 1912, p. 550.
Herpyllobius arcticus HANSEN, H. J. 1923, p. 81.

Occurrence at East Greenland: *North East Coast:* Danmarks Havn, 76°45′ N., Hvalrosodde 76°55′ N. *South East Coast:* Tasiusak 65°37′ N.

Distribution: Outside East Greenland the species has been met with i. a. in West Greenland waters and in the Kara Sea, as well as off Iceland, the Faroes and along the Atlantic coast of North America.

83. *Saccopsis Terebellidis* LEVINSEN.

Saccopsis Terebellidis LEVINSEN 1877, p. 374, pl. VI.

East Greenland records:

Saccopsis Terebellidis HANSEN, H. J. 1923, p. 82.

Occurrence at East Greenland: *South East Coast:* Tasiusak, 65°37′ N.

Distribution: Further only known from various localities along the west coast of Greenland, as well as from the Pacific (WILSON 1935).

84. *Aphanodomus Terebellae* (LEVINSEN).

Crypsidomus Terebellæ LEVINSEN 1877, p. 25, pl. VI.
Crypsidomus Terebellæ WILSON 1920, p. 9.
Crypsidomus Terebellæ HANSEN 1923, p. 83.
Aphanodomus terebellae WILSON 1924, p. 15.

East Greenland records:

Aphanodomus terebellæ STEPHENSEN, K. 1933, p. 10.

Occurrence at East Greenland: *Kangerdlugssuaq:* about 68°20′ N.—32° W.

Distribution: West Greenland, about 61°—73° N., and East Greenland. It has previously been found off Maine and in the Kara Sea in about 100 m.

II. Zoogeographical Remarks regarding the marine Copepods of East Greenland.

As appears from the above synopsis of the marine copepods met with in East Greenland waters, a total of 84 species are known from these waters, being distributed in the following manner under the various sub-orders:

Calanoida	36	species
Harpacticoida	28	—
Cyclopoida	8	—
Notodelphyoida	1	—
Caligoida	1	—
Lernaeopodoida	10	—

In the synopsis given below of the distribution of the various species of copepods which have been met with at East Greenland, attention has only been paid to their occurrence in the waters round Greenland, Spitsbergen, Iceland, northern Norway and the sea north of Russia. In the tables the names used for the various land areas are to be understood thus that they refer to the sea along and round these areas. The waters along West and East Greenland respectively, as well as round Spitsbergen and Iceland speak for themselves. By northern Norway is meant the coast stretch north of Lofoten, and by the waters north of Russia the sea round Franz Joseph Land and Novaja Zemlja, as well as the north coast of Russia from the Murman coast towards east. The latter area, therefore, in particular includes the Barents Sea, the White Sea, and the Kara Sea.

In the following synopsis the species are divided into two groups: *Copepoda natantia* and *Copepoda parasita* et *hemiparasita.*

Table 1. Synopsis of the Distribution of the marine Copepods occurring at East Greenland.

I. Copepoda natantia.

	West Greenland	East Greenland	Spitsbergen	Iceland	North. Norway	North of Russia
CALANOIDA						
Calanus finmarchicus (Gunner)	×	×	×	×	×	×
Calanus hyperboreus Krøyer	×	×	×	×	×	×
Neocalanus gracilis (Dana)	..	×	..	..	..	..
Eucalanus elongatus (Dana)	×	×	..	×	..	..

Table 1 (continued).

	West Greenland	East Greenland	Spitsbergen	Iceland	North. Norway	North of Russia
Rhincalanus nasutus GIESBR.	×	×	..	×	×	..
Pseudocalanus minutus (KRØYER)	×	×	×	×	×	×
Microcalanus pygmæus SARS	×	×	×	×	×	×
Spinocalanus abyssalis GIESBR.	×	×	..	×	×	×
Spinocalanus magnus WOLFEND.	×	×	×	..	..	..
Bradyetes brevis FARRAN	..	×	..	..	..	..
Aetideopsis rostrata SARS	×	×	×	×	..	×
Chiridius armatus (BOECK)	×	×	×	×	×	×
Chiridius obtusifrons SARS	×	×	×	×	×	×
Gaidius tenuispinus SARS	×	×	×	×	×	×
Euchirella rostrata (CLAUS)	×	×	..	×	..	..
Pareuchaeta norvegica (BOECK)	×	×	×	×	×	×
Pareuchaeta glacialis (HANSEN)	×	×	×	×	..	×
Xanthocalanus fallax SARS	..	×	..	..	..	..
Xanthocalanus borealis SARS	?	×	..	×	..	×
Oothrix bidentata FARRAN	..	?	..	..	..	..
Undinella oblonga SARS	×	×	..	..	..	×
Scaphocalanus magnus (T. SCOTT)	×	×	×	×	..	×
Scaphocalanus brevicornis (SARS)	..	×	×	..	..	×
Scolecitricella minor (BRADY)	×	×	×	×	×	..
Scolecithricella ovata (FARRAN)	×	×	..	?	..	..
Temora longicornis (O. F. MÜLLER)	×	?	×	×	×	×
Temorites brevis SARS	..	×	..	..	..	×
Metridia longa (LUBBOCK)	×	×	×	×	×	×
Metridia lucens BOECK	×	×	×	×	×	×
Metridia Boecki GIESBR.	×	?	..	..	..	..
Pleuromamma robusta (DAHL)	×	×	..	×	×	..
Centropages hamatus (LILLJEB.)	×	×	..	×	×	×
Heterorhabdus norvegicus (BOECK)	×	×	×	×	×	×
Heterorhabdus compactus SARS	×	×	..	..	..	×
Augaptilus glacialis SARS	×	×	×	..	..	..
Acartia longiremis (LILLJEB.)	×	×	×	×	×	×
HARPACTICOIDA						
Canuella furcigera SARS	..	×	..	..	..	..
Ectinosoma neglectum SARS	..	×	×	..	..	×
Ectinosoma finmarchicum T. SCOTT	..	?	×	..	×	×
Microsetella norvegica (BOECK)	×	×	×	×	×	×
Bradya typica BOECK	..	×	×	..	×	×
Harpacticus gracilis CLAUS	..	?	..	..	..	..
Harpacticus chelifer (O. F. MÜLLER)	×	×	..	×	×	×
Harpacticus uniremis KRØYER	×	×	×	..	×	×
Harpacticus superflexus WILLEY	..	×	..	..	..	×
Zaus spinatus GOODSIR	×	×	..	..	?	×
Zaus Goodsiri BRADY	..	×	×	..	..	..

Table 1 (continued).

	West Green-land	East Green-land	Spits-bergen	Ice-land	North. Nor-way	North of Russia
Idyaea furcata (Baird)	×	×	×	×	×	×
Idyaea gracilis T. Scott	..	×	..	..	×	..
Thalestris frigida T. Scott	..	×	×	..	..	×
Parathalestris Jacksoni (Scott)	..	×	×	..	×	×
Halithalestris Croni (Krøyer)	×	×	×	×	×	×
Rhynchothalestris rufocincta (Norm.)	..	×	..	..	..	..
Dactylopusia vulgaris Sars	..	×	×	×	×	..
Dactylopusia glacialis Sars	..	×	×	..	..	..
Amenophia peltata Boeck	..	×	..	..	..	..
Amphiascus nasutus (Boeck)	..	×	×	×	×	×
Laophonte horrida Norm.	×	×	×	..	×	×
Laophonte Strömi (Baird)	..	×	..	..	..	×
Laophonte curticauda Boeck	..	×	..	..	..	×
Mesocletodes brevifurca Lang	..	×	×	..	..	..
Robertsonia tenuis Brady	..	×	×	..	..	×
Danielssenia Stefanssoni Willey	..	×	..	..	..	..
CYCLOPOIDA						
Oithona atlantica Farran	×	×	×	×	×	×
Oithona similis Claus	×	×	×	×	×	×
Euryte longicauda Philippi	×	×	..	..	..	×
Oncaea borealis Sars	×	×	×	×	×	×
Oncaea notopus Giesbr.	..	×	×	..	..	×
Oncaea minuta Giesbr.	..	×	..	..	..	×

The free-living copepods belonging to the sub-order *Calanoida* are, with a few exceptions, species which also occur along the west coast of Greenland, and many species have a wide distribution in all northern seas. Of the 36 species belonging to *Calanoida* only one, *Bradyetes brevis* Farran, is hitherto known from East Greenland only. For several more southerly species the northern limit of their distribution is, beyond doubt, along the coast of East Greenland and particularly at the more southerly part of the latter. This i. a. applies to the following species:

Neocalanus gracilis (Dana).
Eucalanus elongatus (Dana).
Rhincalanus nasutus Giesbr.
Euchirella rostrata (Claus).
Scolecithricella ovata (Farran).
Pleuromamma robusta (Dahl).
Centropages hamatus (Lilljeb.).

The copepod fauna along the northern parts of the coast of East Greenland is very like the copepod fauna in the West Greenland waters

north of Davis Stræde. The following 5 species of *Calanoida* which have been met with off the coast of North East Greenland have, however, not hitherto been identified in the Baffin Bugt and the waters north of it along West Greenland:

Xanthocalanus fallax SARS.
Scaphocalanus brevicornis (SARS).
Scolecithricella minor (BRADY).
Temorites brevis SARS.
Heterorhabdus compactus SARS.

In the West Greenland waters north of Davis Stræde several species of the sub-order *Calanoida* have been taken, which have not been identified in North East Greenland waters. These are, however, in the main pronouncedly bathypelagic species, seeing that in the former area fishing has been carried out at considerably greater depths than off North East Greenland (see JESPERSEN 1934, pp. 133—34).

Twenty-eight species in all of the sub-order *Harpacticoida* have been identified off East Greenland. A comparison with West Greenland is, as far as this group is concerned, of no great value, seeing that very limited investigations of harpacticids have been made in West Greenland waters, but as appears from table 1 above, many of the species occurring at East Greenland are known from the waters off Spitsbergen and other northern waters. Our knowledge of the occurrence of the harpacticids off Iceland is, however, still very defective. In the above survey there are 4 species of the sub-order *Harpacticoida*, which are unrecorded except from East Greenland, viz.

Canuella furcigera SARS.
Rhynchothalestris rufocincta (NORM.).
Amenophia peltata BOECK.
Danielssenia Stefanssoni WILLEY.

As the three upper species are, however, known from southern areas of the Western-European waters, it is probable that they also occur off Iceland. The latter species, *Danielssenia Stefanssoni*, however, outside East Greenland is only known from arctic Canada.

The species belonging to the sub-order *Cyclopoida* which have been met with at East Greenland are rather pronouncedly oceanic species, for which reason they are presumably also to be found in most other northern seas.

Looking upon the distribution of the parasitic and semiparasitic copepods which have been met at Greenland, and of which 14 species in all are known, the information available from various waters is so

Table 2. Synopsis of the Distribution of the marine Copepods occurring at East Greenland.

II. Copepoda parasita et hemiparasita.

	West Green-land	East Green-land	Spits-bergen	Ice-land	North. Nor-way	North of Russia
CYCLOPOIDA						
Bradypontius unidens HANSEN	..	×	..	..	..	..
Parartotrogus arcticus SARS	..	×	×	..	×	×
NOTODELPHYOIDA						
Schizoproctus inflatus AURIV.	×	×	×	..	×	..
CALIGOIDA						
Caligus rapax MILNE-EDW.	..	×	..	×	..	..
LERNAEOPODOIDA						
Salmincola carpionis (KRØYER)	×	×	..	×	..	..
Salmincola alpina OLSSON	×	×	..	×	..	..
Lernaeopoda elongata GRANT	×	×	..	×	..	..
Clavella uncinata (O. F. MÜLLER)	×	×	..	×	..	..
Clavella agilis (KRØYER)	?	?	..	..	..	..
Sphæronella Munnopsidis HANSEN	..	×	..	..	..	×
Choniostoma mirabile HANSEN	..	×	..	×	..	×
Herpyllobius arcticus STEENSTR. & LÜTKEN	×	×	..	×	..	×
Saccopsis Terebellidis LEV.	×	×	..	..	..	..
Aphanodomus Terebellæ (LEV.)	×	×	..	..	..	×

scarce that it is hardly possible to form a reliable idea of the distribution of the various species; thus only few facts whatsoever are at hand from Spitsbergen and northern Norway. According to the material before us, it seems, however, as if most species are rather widely distributed in the northern seas. Only a single one of the species identified at East Greenland viz. *Bradypontius unidens* H. J. HANSEN is hitherto exclusively known from the east coast of Greenland. Besides this species there are, however, four viz. *Parartotrogus arcticus* SARS, *Caligus rapax* MILNE-EDW., *Sphæronella Munnopsidis* HANSEN and *Choniostoma mirabile* HANSEN which have been met with at East Greenland, though not hitherto identified in West Greenland waters. In this connection it must, however, be borne in mind that the material investigated from West Greenland waters is on an average considerably larger than that investigated from East Greenland, and so it is possible that in Greenland these species only occur along the east coast.

When considered collectively, the marine copepod fauna in East Greenland waters must be characterized as rather homogeneous, the

general impression being that it comprises comparatively few species. This in particular applies to the northern areas along the coast of East Greenland, where all the copepods which play any part from a quantitative point of view are boreal and arctic and partly circumpolar species. In more southerly latitudes along the coast of East Greenland the same species are numerically predominant as in the East Greenland current, but here there is a stronger intermixture of more pronouncedly Atlantic forms. In all essentials the composition of the East Greenland copepod-fauna corresponds with that of the fauna along the more northerly coast of West Greenland (Baffin Bugt and the waters situated to the nòrth of it). The predominant species are in the main the same, which make up the bulk of copepods in the West and East Greenland waters and in the seas round Spitsbergen, Iceland, northern Norway and north of Russia. The East Greenland fauna seems in particular to have many points of resemblance with the fauna in the waters round Spitsbergen and in the Barents Sea and the White Sea, which undoubtedly has some connection with the more or less corresponding hydrographical conditions in these seas.

LIST OF LITERATURE

Aurivillius, C. W. S. (1885). Krustaceer hos arktiske Tunikater. Vega Expeditionens vetenskaplige Arbeten. Vol. IV.

— (1896). Das Plankton der Baffins Bay und Davis' Strait. Zoologiska Studier. Festskrift Wilh. Lilljeborg. Upsala.

Baird, W. (1850). Natural History of the British Entomostraca. Ray Society, London.

Bernstein, T. (1932). Zooplankton of the Franz-Joseph Land Region. Trans. Arctic Institute, Tom. II, Leningrad.

Bigelow, H. B. (1915). Exploration of the Coast Water between Nova Scotia and Chesapeake Bay, July and August 1913, by the U. S. Fisheries Schooner Grampus. Oceanography and Plankton. Bull. Mus. Comp. Zoology Harvard College, Vol. LIX, No. 4.

— (1922). Exploration of the coastal Water off the northeastern States in 1916 by the U. S. Fisheries Schooner Grampus. Ibid., Vol. LXV, No. 5.

— (1926). Plankton of the Offshore Waters of the Gulf of Maine. Bull. Bureau Fisheries, Vol. XL, Part II.

Boeck, A. (1864). Oversigt over de ved Norges Kyster iagttagne Copepoder. Christiania Vid. Selsk. Forh. 1864.

— (1872). Nye Slægter og Arter af Saltvandscopepoder. Ibid. 1872.

Bogorov, B. G. (1932). Materials on the Biology of the Copepods of the Barents and the White Seas. Bulletin of the State Oceanogr. Institute, No. 4, Moscow. (In Russian, English summary).

Brady, G. St. (1880). A Monograph of the free and semi-parasitic Copepoda of the British Islands. Vol. II—III, 1880.

— (1883). Report on the Copepoda collected by H. M. S. Challenger during the Years 1873—76. Report Challenger, Vol. VIII, Part 23.

Breemen, P. J. v. (1908). Copepoden. Nordisches Plankton. Bd. IV, Entomostraca, VIII.

Buchholz (1874). Crustaceen; Zweite deutsche Nordpolarfahrt 1869—70 unter Führung des Kapt. Koldewey, Vol. 2, Wiss. Ergebn. 1874, p. 262.

Claus, C. (1863). Die freilebenden Copepoden mit besonderer Berücksichtigung der Fauna Deutschlands, der Nordsee und des Mittelmeeres. Leipzig.

— (1866). Die Copepoden-Fauna von Nizza etc. Schrift. Ges. Naturw. Marburg. Suppl. Bd. 9.

— (1875). Ueber die Entwickelung, Organisation und systematische Stellung der Arguliden. Zeitschr. wiss. Zool. Vol. 25.

Cleve, P. T. (1900). Report on the Plankton collected by the Swedish Expedition to Greenland in 1899. Kgl. Svenska Vetenskaps-Akadem. Handl. Band 34, No. 3.

CLEVE, P. T. (1900a). The seasonal Distribution of Atlantic Plankton Organisms. Göteborg.

DAHL, F. (1893). Pleuromma, ein Krebs mit Leuchtorgan. Zool. Anzeiger, Vol. 16.

DAMAS, D. & KOEFOED, E. (1909). Le Plankton de la Mer du Grönland. In: Croisière Océanographique acc. a b. de la Belgica dans la Mer du Grönland 1905 (Duc d'Orléans).

DANA, J. D. (1849). Conspectus crustaceorum in orbis terrarum circumnavigatione C. Wilkes. Proc. Am. Acad. Arts and Science, Vol. 2.

— (1855). Crustacea of the United States Expl. Expedition. 1855.

FARRAN, G. P. (1905). Report on the Copepoda of the Atlantic Slope off Counties Mayo and Galway. Ann. Rep. Fish. Ireland 1902—03, Pt. II, App. II.

— (1908). Second Report on the Copepoda of the Irish Atlantic Slope. Fisheries, Ireland, Scientific Investigations, 1906, II.

— (1908a). Note on the Copepod Genus *Oithona*. Ann. Mag. Nat. Hist. (8), Vol. II, pp. 498—503.

— (1920). On the local and seasonal Distribution of the pelagic Copepoda of the South-West of Ireland. Cons. Int. l'Expl. de la Mer. Publications de Circonstance, No. 73.

— (1926). Biscayan Plankton collected during a Cruise of H. M. S. "Research" 1900. Part XIV. The Copepoda. Linnean Society's Journal-Zoology, Vol. XXXVI.

— (1936). The Arctic Plankton collected by the Nautilus Expedition, 1931. Part II: Report on the Copepoda. Ibid., Vol. XXXIX.

— (1936 a). *Bradyetes brevis*, a new Species of Copepod from East Greenland. Ann. and Magazine of Natural History, Ser. 10, Vol. XVIII, pp. 238—41.

FISH, CH. J. (1925). Seasonal Distribution of the Plankton of the Woods Hole Region. Bull. Bur. Fisheries, Vol. XLI, Document No. 975.

GIESBRECHT, W. (1884). Die freilebenden Copepoden der Kieler Foehrde. 4. Ber. Comm. deutsch. Meere 1877—81, Jahrg. VII—XI.

— (1891). Elenco dei Copepodi pelagici raccolti dal tenente di vascello G. Chierchia durante il viaggio della R. Corvetta "Vettor Pisani" negli anni 1882—85, e dal tenente di vascello F. Orsini nel Mar Rosso, nel 1884. Atti. Accad. Lincei Roma (4) Rend. v. 7, 1891.

— (1892). Systematik und Faunistik der pelagischen Copepoden des Golfes von Neapel. Fauna und Flora Golf. Neapel, Vol. 19.

— (1895). Die pelagischen Copepoden. Report on the Dredging Operations off the west Coast of Central America to the Galapagos. Bull. Mus. Comp. Zool. Harvard Coll. Vol. XXV, No. 12.

— (1900). Mitteilungen über Copepoden. 12. Die littoralen Cyclopiden des Golfes von Neapel. Mitt. Zool. Stat. Neapel, Vol. 14.

GOODSIR, H. D. S. (1843). Account of the maidre of the Fishermen, and Descriptions of some new Species of Crustaceans. Edinburgh New Phil. Journal, Vol. 35.

— (1845). On several new Species of Crustaceans allied to Saphirina. Ann. Mag. Nat. History, Vol. XVI.

GRANT (1827) in BREWSTER, Edinburgh Journal of Science, vol. VII.

GUNNERUS, J. E. (1765). Nogle smaa rare, mestendelen nye norske Sødyr, beskrevene. Skrift. Kjøbenhavnske Selskap, Vol. 10.

HANSEN, H. J. (1886). Oversigt over de paa Dijmphna-Togtet indsamlede Krebsdyr. Dijmphna Togtets zool. bot. Udbytte. Copenhagen.

— (1897). The Choniostomatidæ, a Family of Copep., parasites on Crust. Malac. Copenhagen.

Hansen, H. J. (1923). Crustacea Copepoda II. Copepoda parasita and hemiparasita. The Danish Ingolf-Expedition. vol. III. part 7.

Herdman, W. A., Thompson, I. C. and Scott, A. (1898). On the Plankton collected continuously during two Traverses of the North Atlantic 1897. Trans. Liverpool Biol. Society, Vol. XII.

Jaschnov, W. A. (1927). Das Zooplankton des Karischen Meeres. Ber. Wissensch. Meeresinst. Vol. II, Lief. 2. Moscow.

Jensen, Søren (1900). Nogle Oplysninger om . . . *Herpyllobius arcticus*. Overs. Kgl. Danske Vid. Selsk. Forhandl. 1900.

Jespersen, P. (1923). Dr. Thorild Wulff's Plankton-Collections in the Waters West of Greenland. Metazoa. (II Thule Expedition til Grønlands Nordkyst 1916—18, No. 4). Medd. om Grønland, Vol. LXIV.

— (1934). The Godthaab Expedition 1928. Copepoda. Medd. om Grønland, Bd. 79, No. 10.

— (1937). On the Size of *Calanus hyperboreus* Krøyer in West Greenland Waters. Int. Rev. Hydrobiol. u. Hydrographie, Bd. 34.

— (1939). Investigations on the Copepod Fauna in East Greenland Waters. Medd. om Grønland, Bd. 119, No. 9.

Koefoed, E. (1909). Océanographie et Biologie. Journal des Stations. In: Croisière Océanographique acc. a b. de la Belgica dans la Mer du Grönland 1905 (Duc d'Orléans).

Krøyer, H. (1837). Om Snyltekrebsene, især med Hensyn til den danske Fauna. Naturhist. Tidsskrift, 1 Rk., Bd. I.

— (1838). Grønlands Amfipoder. Danske Vid. Selsk. Nat. Mat. Afhandl., Bd. 7.

— (1845). Crustacés. In Gaimard: Voyages de la commission scientifique du Nord en Scandinavie etc. Paris.

— (1849). Karcinologiske Bidrag. Naturhist. Tidsskrift, 2. Rk., Bd. II.

— (1863). Bidrag til Kundskab om Snyltekrebsene. Ibid., 3. Rk., Bd. II.

Lang, Karl (1936). Die während der schwedischen Expedition nach Spitzbergen 1898 und nach Grönland 1899 eingesammelten Harpacticiden. Kgl. Svenska Vet.-Akad. Handl., 3 Ser., Bd. 15, Nr. 4.

Levinsen, G. M. (1877). Om nogle parasitiske Krebsdyr, der snylte hos Annelider. Vid. Medd. Naturh. Foren. Kjøbenhavn 1877.

Lilljeborg, W. (1853). De crustaceis ex ordinibus tribus: Cladocera, Ostracoda et Copepoda, in Scania occurrentibus. Lund.

Linko, A. K. (1907). Untersuchungen über das Plankton des Barents Meeres. Wissensch.-praktisch. Murman Expedition. (In Russian).

— (1912). The Plankton at Murman coast in relation to the fisheries in 1903-05. Wissensch.-praktisch. Murman Expedition. Bericht über Tätigkeit 1905. (In Russian).

— (1915). The Plankton at Murman coast in relation to the fisheries in 1906. L'expédition scientifique. Resumé des resultats. (In Russian).

Lubbock, J. (1854). On some Arctic Species of Calanidae. Ann. Mag. Nat. Hist., ser. 2, vol. 14.

Lysholm, B. and Nordgaard, O. (1921). Copepoda collected on the cruise of the M/S »Armauer Hansen« in the North Atlantic, 1913. Bergens Museums Aarbok 1918—19, Naturv. Rk. Nr. 2.

Madsen, Holger (1936). Investigations on the Shore Fauna of East Greenland with a Survey of the Shores of other Arctic Regions. Medd. om Grønland, Bd. 100, No. 8.

Milne-Edwards, H. (1840). Histoire naturelle des Crustacées. T. III., Paris.

MRÀZEK, A. (1902). Arktische Copepoden. Fauna Arctica, Bd. II.
MÜLLER, O. F. (1779). Zoologica Danica. Vol. I. Kiøbenhavn.
— (1792). Entomostraca seu Insecta Testacea quae in aquis Daniae et Norvegiae reperit, descripsit et iconibus illustravit. Frankfurt a. M.
NORDGAARD, O. (1905). Hydrographical and biological Investigations in Norwegian Fiords. Bergens Museum. Bergen.
NORMAN, A. M. (1876). Report on the »Valorous« Expedition to Davis Strait in 1875. Proc. Roy. Soc. London, No. 173.
OLSSON, P. (1877). Öfv. kgl. Svenska Vet. Förhandlingar 1877, No. 5.
PHILIPPI, A. (1843). Fernere Beobachtungen über die Copepoden des Mittelmeeres. Arch. Naturg., 9. Jahrg,, 1. Bd.
PINHEY, K. F. (1926). Entomostraca of the Belle Isle Strait Expedition, 1923, with Notes on other Planktonic Species. Part I. Contrib. Canadian Biology and Fisheries, N.S., Vol. III, No. 6.
— (1927). Ibid., Part II; and a Record of other Collections in the Region. Ibid., Vol. III, No. 13.
POPPE, S. A. (1885). Die freilebenden Copepoden des Jahdebusens. I. Abhandl. Nat. Ver. Bremen, Bd. 9.
ROSE, M. (1933). Copépodes pélagiques. Faune de France. Vol. 26.
ROSENDORN, J. (1917). Die Gattung *Oithona*. Wiss. Ergebn. Deutsch. Tiefsee-Expedition "Valdivia" 1898—99. Bd. XXIII, Heft 1.
SARS, G. O. (1900). Crustacea. The Norwegian North Polar Expedition 1893—96. Scientific Results, V.
— (1903). An Account of the Crustacea of Norway. Vol. IV. Copepoda, Calanoida. Bergen.
— (1907). Notes supplémentaires sur les Calanoidés de la Princesse-Alice. Bulletin Institut Océanographique, No. 101.
— (1909). Crustacea. Rep. 2nd Norweg. Arctic Expedition in the "Fram" 1898—1902. No. 18.
— (1911). An Account of the Crustacea of Norway. Vol. V. Copepoda, Harpacticoida.
— (1918). An Account of the Crustacea of Norway. Vol. VI. Copepoda, Cyclopoida.
— (1921). An Account of the Crustacea of Norway. Vol. VII. Copepoda, Supplement.
— (1921a). An Account of the Crustacea of Norway. Vol. VIII. Copepoda. Monstrilloida & Notodelphyoida.
— (1925). Copépodes particulièrement bathypélagiques provenant des campagnes scientifiques du Prince Albert Ier de Monaco. Résultats des Campagnes Scientifiques. Fasc. LXIX.
SCOTT, A. (1909). The Copepoda of the Siboga Expedition. Part I. Free-swimming, littoral, and semi-parasitic Copepoda. Siboga-Expeditie, Monogr. XXIXa.
SCOTT, TH. (1894). Report on the Entomostraca from the Gulf of Guinea collected by John Rattray. Trans. Linn. Soc. London, Zool. Ser. 2, vol. VI.
— (1899). Report on the Marine and Freshwater Crustacea from Franz-Josef Land, collected by Mr. S. Bruce, of the Jackson-Harmsworth Expedition. Journ. Linn. Soc. Zool. Vol. XXVII.
— (1901). On some Entomostraca collected in the Arctic Seas in 1898 by W. S. Bruce. Ann. Mag. Nat. History, Vol. VIII, Ser. 7.
— (1903). Notes on some Copepoda from the Arctic Seas coll. by A. M. Norman. Ann. Mag. Nat. Hist., Ser. 7, Vol. 11.
— (1911). Copepoda. Cons. Int. l'Expl. de la Mer. Résumé des observations sur le plankton etc. 1902—08. Deuxième Partie.

Smirnov, S. S. (1932). Zur Fauna der marinen Copepoda-Harpacticoida von Franz-Joseph Land. Trans. Arctic Institute. Tom. II. Leningrad. (In Russian, German summary).

— (1935). Über die angebliche *Oothrix bidentata* Farran aus dem Weissen Meer. Zoologischer Anzeiger, Bd. 109.

Spärck, R. (1933). Contributions to the animal Ecology of the Franz Joseph Fjord and adjacent East Greenland Waters. I—II. Medd. om Grønland. Bd. 100. Nr. 1.

Sømme, J. D. (1929). Note on the Northern Limit of the Distribution of *Rhincalanus nasutus* Giesbrecht. Cons. Int. l'Expl. de la Mer. Journal du Conseil, Vol. IV.

Steenstrup, Jap. & Lütken, Chr. F. (1861). Bidrag til Kundskaben om det aabne Havs Snyltekrebs og Lernæer. Kgl. Vid. Selsk. Skr. 5. Rk., naturh. og math. Afd., Bd. 5.

Stephensen, K. (1912). Report on the Malacostraca, Pycnogonida and some Entomostraca collected by the Danmark-Exped. to N. E. Greenland. Medd. om Grønland, Vol. 45, no. 11.

— (1913). Grønlands Krebsdyr og Pycnogonider (Conspectus Crustaceorum et Pycnogonidorum Groenlandiæ). Medd. om Grønland, Vol. XXII.

— (1933). Crustacea and Pycnogonida. The Scoresby Sound Committee's 2nd East Greenland Expedition in 1932 to King Christian IX's Land. Ibid, Vol. CIV, No. 15.

Steuer, Ad. (1932). Copepoda 6: *Pleuromamma* Giesbr. 1898 der Deutschen Tiefsee-Expedition. Wiss. Ergebn. Deutsch. Tiefsee-Expedition "Valdivia" 1898—99, Bd. XXIV, Heft 1.

— (1933). Zur planmässigen Erforschung der geographischen Verbreitung des Haliplanktons, besonders der Copepoden. Zoogeographica, Bd. 1, Heft 3.

Størmer, L. (1929). Copepods from the "Michael Sars" Expedition, 1924. Cons. Int. l'Expl. de la Mer. Rapp. & Procès-Verbaux, Vol. LVI.

Ussing, H. (1938). The Biology of some important Plankton Animals in the Fjords of East Greenland. Medd. om Grønland, Vol. 100.

Vanhöffen, E. (1897). Die Fauna und Flora Grönlands. Drygalski: Grönland-Expedition der Gesellschaft für Erdkunde zu Berlin 1891—93.

Wesenberg-Lund, C. (1895). (Østgrønlands) Fersk- og Saltvandsentomostraca. Medd. om Grønland, Vol. 19.

Willey, A. (1918). Report on the Copepoda obtained in the Gulf of St. Lawrence and adjacent Waters, 1915. Canadian Fisheries' Expedition, 1914—15.

— (1920). Marine Copepoda. Rep. Canadian Arctic Exp. 1913—18, Vol. VII, Crustacea, Part K.

— (1923). Notes on the Distribution of Free-living Copepoda in Canadian Waters. Contrib. Canadian Biology, N. S., Vol. I.

Wilson, Chas B. (1905). The Caliginæ. Proc. U. S. Nat. Mus., vol. 28.

— (1915). The Lernaeopodidæ. Ibid., vol. 47.

— (1920). Parasitic Copepoda. Rep. Canadian Arctic Exp. 1913—18, vol. VII, part L.

— (1923). Parasitic Copepods in the Collection of the Riksmuseum at Stockholm. Arkiv för Zoologi, Bd. 15, No. 3.

— (1924). New North American Parasitic Copepods, new Hosts, and Notes on Copepod Nomenclature. Proc. U. S. Nat. Mus., vol. 64, art. 17.

— (1932). The Copepods of the Woods Hole Region Massachusetts. U. S. National Museum, Bulletin 158.

WILSON, CHAS B. (1932a). The Copepod Crustaceans of Chesapeake Bay. Proc. U. S. Nat. Mus., Vol. 80, Art. 15.

— (1935). Parasitic Copepods from the Pacific Coast. The Americ. Midland Naturalist, Vol. 16, no. 5.

WIRKETIS, M. A. (1926). Das Zooplankton des Weissen Meeres. Inst. Hydrol. Expl. des Mers d'U.R.S.S. Vol. 3.

— (1928). Some Evidence on the Zooplankton in the Barents Sea along the Kola Meridian. Ver. Inst. zur Erforschung des Nordes. Vol. 37.

WITH, C. (1915). Copepoda I. Calanoida Amphascandria. The Danish Ingolf-Expedition, Vol. III, Pt. 4.

WOLFENDEN, R. N. (1902). The Plankton of the Faröe Channel and Shetlands. Preliminary Notes on some Radiolaria and Copepoda. Journ. Mar. Biol. Association, Vol. VI.

— (1903). On the Copepod Subfamily *Aetidiinae*, with a proposed Revision of the Classification. Rep. Brit. Assoc. Belfast 1902.

— (1904). Notes on the Copepoda of the North Atlantic Sea and the Faröe Channel. Journ. Mar. Biol. Association, Vol. VII, No. 1.

Færdig fra Trykkeriet den 17. Marts 1939.