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

PYCNOGONIDA

BY

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WITH 7 FIGURES IN THE TEXT

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BIANCO LUNOS BOGTRYKKERI A/S
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The first record on Pycnogonids from East Greenland was given by Buchholz 1874 who lists three species, two of which (viz., *Nymphon grossipes* and *N. mixtum*) are now considered synonymous, and the third (*N. hirtum*) is probably not named under its correct name.

Then follow several other authors (see the table below), but most of them have but very few (up to 5—6) species. The most important of all these papers is Lönnberg 1903 who has no less than 11 species, 6 of which are new to East Greenland.

The literature on the Pycnogonids of East Greenland	Buchholz 1874	H. J. Hansen 1895	Meinert 1899	Lönnberg 1903	Grieg 1909	K. Stephensen 1912	P. Remy 1928	K. Stephensen 1933 b	Thorson 1933, Bertelsen 1937	The present paper
1. *Paranymphon spinosum*	..	..	×	..	..	..	..	..	..	×
2. *Boreonymphon robustum*	..	×	..	×	×	..	..	×	..	×
3. *Chætonymphon hirtipes*	..	×	..	×	×	×	×	×	×	×
4. — *spinosissimum*	..	..	..	..	..	..	..	..	..	×
— *hirtum?*	×	..	..	..	..	..	..	..	..	(?)
5. — *macronyx*	..	×	..	×	×	..	..	..	..	×
6. *Nymphon grossipes* (incl. *mixtum*)	×	×	..	×	×	×	..	..	..	×
— *brevitarse?*	..	..	..	..	..	..	..	..	..	?
7. — *microrhynchum*	..	..	..	..	..	..	..	..	..	×
8. — *longitarse*	..	..	..	..	..	..	..	..	..	×
9. — *sluiteri*	..	..	..	×	..	..	..	..	..	×
10. — *strømi* (incl. *gracilipes*)	..	×	..	×	×	×	..	×	..	×
11. — *elegans*	..	..	..	×	×	..	..	..	..	×
12. — *longimanum*	..	..	..	×	..	..	..	..	..	×
13. — *serratum*	..	..	×	..	..	×	..	..	..	×
14. *Pseudopallene circularis*	..	..	..	..	..	..	..	×	..	×
15. *Cordylochele malleolata*	..	..	..	..	..	..	..	..	..	×
16. — *brevicollis*	..	..	..	×	..	..	..	..	..	×
17. *Eurycyde hispida*	..	×	..	..	..	×	..	..	..	×
18. *Colossendeis proboscidea*	..	..	..	×	..	..	..	..	..	×
19. — *angusta*	..	..	..	×	..	..	..	..	..	×
20. *Pycnogonum crassirostre*	..	..	..	..	..	..	..	..	..	×

The present paper is intended to give a summary of our present knowledge with the Pycnogonidan fauna of East Greenland in depths down to about 400 m and is based partly on literature, partly on the rather great material in the Zoological Museum of Copenhagen originating from the Danish expeditions during the latest decennium. These expeditions have explored notably the great fjord complexes in the Franz Joseph Fjord area and the Scoresbysund area (between 70° and 75° N) and the Lindenowfjord area (61° N), whereas the open coast stretches, from 61° N to 70° N, are still rather deficiently known.

At present 20 species of Pycnogonids are known from East Greenland waters down to about 400 m, + 2 uncertain species; 5 species are here recorded as new to the fauna; they are the following: *Chætonymphon spinosissimum*, *Nymphon microrhynchum*, *N. longitarse*, *Cordylochele malleolata*, and *Pycnogonum crassirostre*.

Synopsis of the Species.

1. *Paranymphon spinosum* Caullery.

Paranymphon spinosum Caullery 1896, p. 361, pl. 12 figs. 1—6.
— — Meinert 1899, p. 46, pl. 4 figs. 20—28.
— — Bouvier 1917, p. 16, pl. 2 fig. 2 (col. fig.). pl. 3 figs. 3—6.

East Greenland record:

Paranymphon spinosum Meinert 1899 p. 46.

Occurrence at East Greenland:

Sydøstkyst: 64°56′ N, 36°19′ W, about 375 m, 4.1°, sand (Meinert).

Distribution: West of Greenland 63°30′ N, 54°25′ W, about 1000 m, 3.3°; SSE. of Rockall 54°28′ N, 11°44′ W, about 2300 m; Bay of Biscay 650 m, 950 m and 1710 m, mud; off Portugal 36°42′ N, 8°40′ W, 750 m. Is an Atlantic deep-sea species.

2. *Boreonymphon robustum* (Bell) (Fig. 1).

Boreonymphon robustum G. O. Sars 1891, p. 115, pl. 12 fig. 2.
— — Schimkewitsch 1930, p. 309, with lit.
Nymphon — Appellöf 1916, pp. 23—29.

East Greenland records:

Nymphon robustum H. J. Hansen 1895, p. 125.
— — Meinert 1899, p. 45.
Boreonymphon robustum Lönnberg 1903, p. 357.
— — Grieg 1909. p. 544 (44).
— — K. Stephensen 1913, p. 404 (no new records).
Nymphon — Appellöf 1916, p. 23—24 (no new records).
Boreonymphon — K. Stephensen 1933b, p. 10.

Occurrence at East Greenland (Fig. 1):

Nordøstkyst: 75°58′ N, 14°08′ W, 300 m (Grieg 1909). 74°35′ N, 18°15′ W, 150 m, mud and stones (Lönnberg 1903). Kap Borlase Warren, 200 m, 1 specimen.

Franz Josephs Fjord area: between Bontekoe Ø og Mackenzie Bugt, 250 m, mud; Mackenzie Bugt, 12—15 m, mud; off Mackenzie Bugt, 100 m, mud; Moskusoksefjord, outer part, 220 m, mud, and inner part, 100 m, mud; Franz Josephs Fjord, mouth, 200—300 m, mud; 73°55′ N, 19°20′ W, 150 m, mud; 73°32′ N, 24°35′ W, 100—110 m; 72°56′ N, 24°19′ W, 125 m; 72°28′ N, 21°48′ W, 180 m; 72°25′ N, 17°56′ W, 300 m, stones and sand (LÖNNBERG 1903). 72°53′ N, 20°36′ W, 175 m, large stones; 72°26′ N, 19°35′ N, 190 m (H. J. HANSEN 1895). 5 miles S. of Bontekoe Ø, clay with a few stones, a few specimens incl. 1 with large young (taken 2.-VIII-1932); Franz Josephs Fjord, close E. of Zoologdalen, 180 m, clay with stones, 1 specimen; Nordfjord, 3 miles off the danish house, 205 m, clay, 1 specimen; between Kap Weber and Ymers Ø, 400 m, clay with very large stones, a few specimens; Dusénfjord, W. of Kap Graah, 150 m, brown clay, 1 with small young (taken 12.VIII.1932); Dusénfjord, the west end of the broad part, 240 m, clay, several specimens with large young (taken 11.-VIII-1932); inside the western end of Antarctic Sund, 230 m, large stones, clay, 1 specimen; Solitærbugt, Ella Ø, 14—320 m, 5 occurrences (viz., 14—22 m, clay, 1 specimen; 53—56 m, clay, stones, 1 with large young (taken 26.-IX-1932); 68—74 m, stones, coarse gravel, 1 specimen; 85—95 m, stones, clay, 1 small specimen; and 320 m, clay, 1 small specimen); between Maria Ø and Ella Ø, 250 m, clay with gravel and big stones, 1 specimen; Kap Hedlund, Kempes Fjord, 42—48 m, clay, 1 specimen, 48—49 m, clay and Fucus, 1 specimen, and 70—85 m, clay and small stones, 1 specimen; Forsblads Fjord, 100 m, 1 specimen, and 175—100 m, 1 specimen; Fleming Inlet, 225 m, red clay, 2 specimens.

Scoresbysund area: Scoresby Sund, 10—50 m (H. J. HANSEN 1895). 70°26′ N (MEINERT 1899. Kap Tobin, 110 m, stones, 1 specimen; Kap

Depths in meters	Numbers of hauls					
	Nordøst-kyst	Franz Josephs Fjord area	Scoresby-sund area	Kanger-dlugssuaq area	Sydøst-kyst	
0— 25	..	2	1	1	—	4
26— 50	..	2	2	—	1	5
57— 75	..	2	1	..	—	3
76—100	—	5	1	..	..	6
> 100—150	1	5	2	..	..	8
> 150—200	1	4	—	..	..	5
> 200—300	1	10	1	..	..	12
> 300—400	—	2	—	..	..	2
> 400	..	—	..	..	1	—
Numbers of hauls	3	32	8	1	2	46

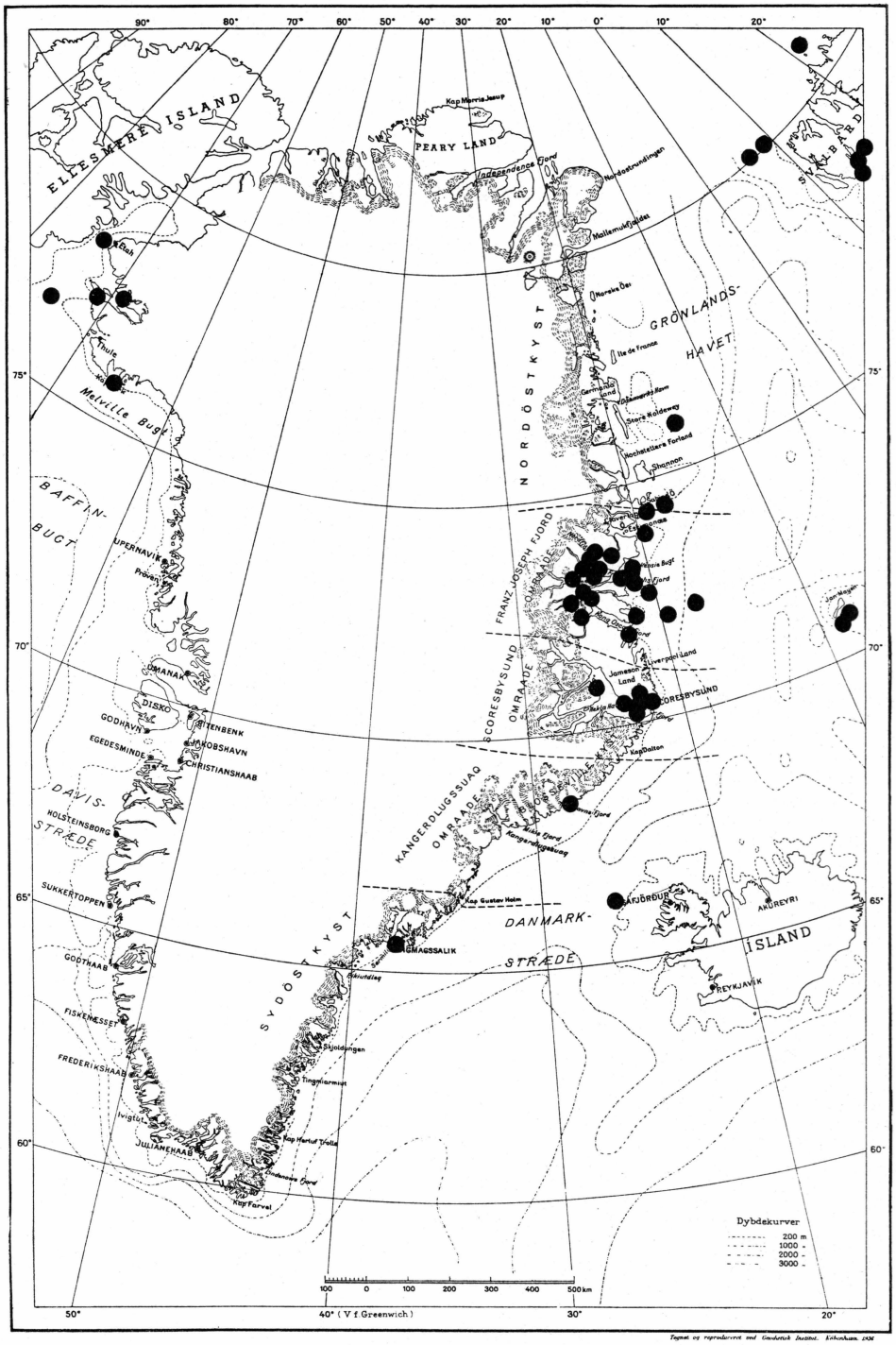

Fig. 1. Boreonymphon robustum (after Appellöf 1916, Bouvier 1914, Meinert 1899, Möbius 1900, G. O. Sars 1891, K. Stephensen 1933, and the present paper).

Hope, 225 m, clay with stones, 3 specimens; Hurry Inlet, in and near mouth, 14—0 m, 2 specimens, one of which has eggs (taken 7.-VIII-1900), 60—75 m, algæ, stones, a little clay, 5 specimens, and 100 m, clay with stones, 2 specimens; Kap Hooker, Jameson Land, 150 m, stones and clay, about 10 specimens incl. 1 ovig. and several with young (taken 27.-VII-1933); Solvigen, Nordvestfjord, 37—30 m, clay, 1 specimen with young (taken 24.-VII-1933)

Kangerdlugssuaq area: Ravns Fjord, 1 specimen found dead on the beach (K. STEPHENSEN 1933b).

Sydøstkyst: 66°18′ N, 25°59′ W, about 600 m, ÷ 0.75° (MEINERT 1899). Angmagssalik, about 36 m, 2 specimens.

In East Greenland waters it is found in 46 hauls, rather evenly distributed from the upper littoral zone down to 300 m, and usually there is but a single specimen per haul; but in the deep Arctic Basin it is among the Pycnogonids "the most numerous and characteristic species" (APPELLÖF 1912, p. 20).

Size etc. Several of the East Greenland specimens are very large, up to 23 mm in length, with an extent of about 145 mm (G. O. SARS l. c. says 22 mm and 154 mm).

Ovigerous specimens were taken the following dates: 1 specimen (23 × 135 mm) 27.-VII (Kap Hooker), and 1 specimen (21 × 145 mm) 7.-VIII (Hurry Inlet, 14—0 m).

Specimens with young were taken the following dates: 24.-VII (Nordvestfjord; the young small, extent c. 15 mm); 24.-VII (75°58.5′ N, 14°08′ W, the larvæ are in "the third stage"; *fide* GRIEG l. c.); 27.-VII (Kap Hooker; the young extend 20-30 mm); 2.-VIII (Bontekoe Ø; extent 25 mm); 11.-VIII (Dusénfjord; extent 40 mm); 12.-VIII (Dusénfjord; extent 10 mm); and 26.-IX (Dusénfjord, extent c. 23 mm).

Distribution. EKMAN (1935, p. 382) calls it arctic eurybathic. It is widely distributed in the Arctis, probably circumpolar (see K. STEPHENSEN 1933a, p. 4, with map); see also DERJUGIN 1935, p. 16.

3. *Chætonymphon hirtipes* (BELL) (Figs. 2—3).

Chætonymphon hirtipes G. O. SARS 1891, p. 103, pl. 11 fig. 2.
— *spinosum* SCHIMKEWITSCH 1930, p. 335, figs.

East Greenland records:

Chætonymphon hirtipes H. J. HANSEN 1895, p. 124.
— *spinosum* MEINERT 1899, p. 44.
— *hirtipes* LÖNNBERG 1903, p. 356.
— — GRIEG 1909, p. 543 (43).
— — K. STEPHENSEN 1912, p. 553.

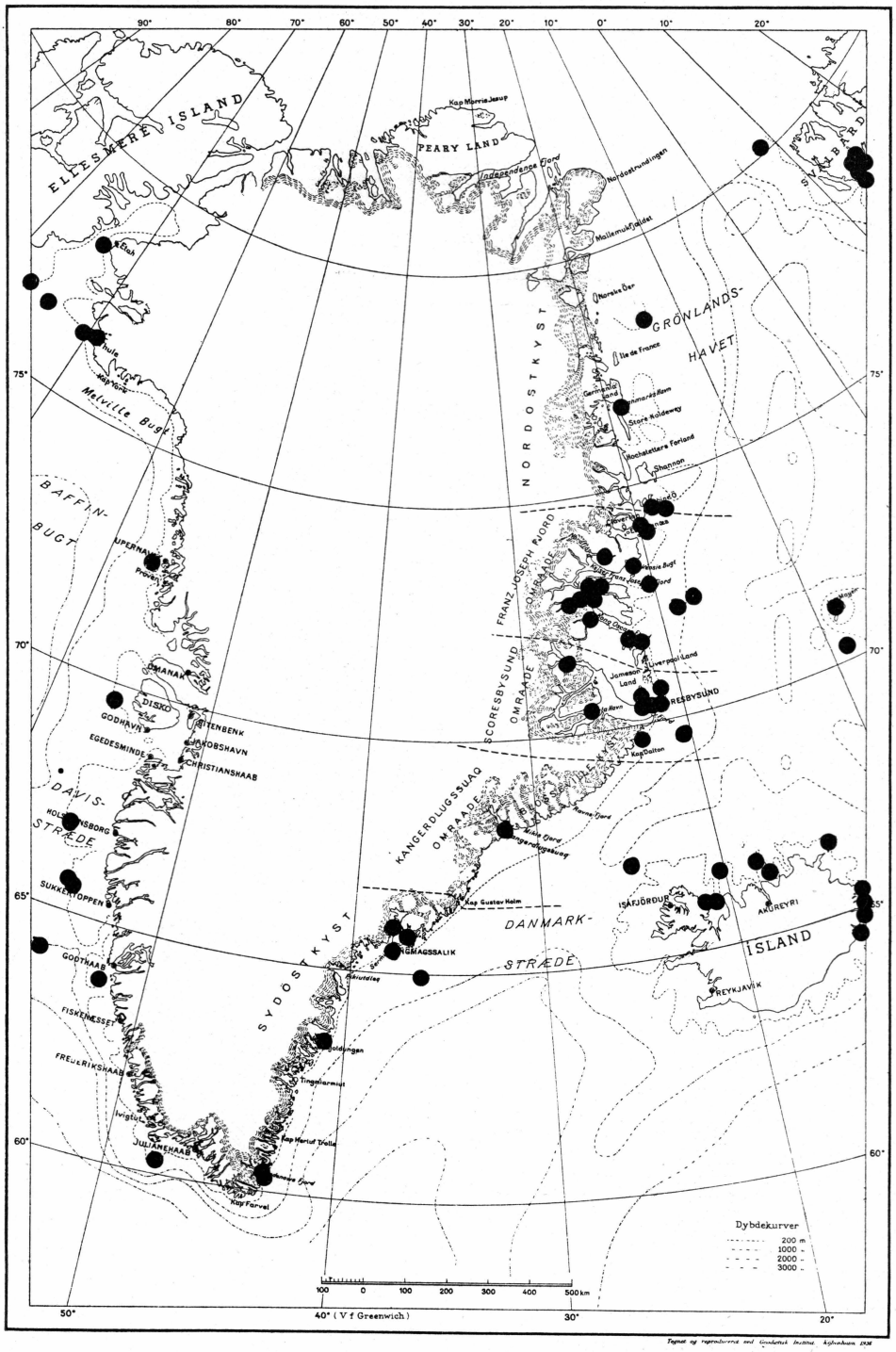

Fig. 2. Chaetonymphon hirtipes.

Chætonymphon hirtipes K. STEPHENSEN 1913, p. 401 (no new records).
— — REMY 1928, p. 230.
— — K. STEPHENSEN, 1933b, p. 10.
— — THORSON 1933, pp. 14, 22, 30, 32, 38, 40.
— — BERTELSEN 1937, pp. 42, 44, 46, 56.
? *Nymphon hirtum* BUCHHOLZ 1874, p. 397 (see under the next species).

Occurrence at East Greenland (Fig. 2):

Nordøstkyst: 78°09′ N, 14°01′ W, 75 m (GRIEG 1909). Off Maroussia 150—170 m, Hydroids, hard bottom (K. STEPHENSEN 1912). 74°35′ N, 18°15′ W, 150 m, mud and stones; 74°30′ N, 18°40′ W, 80—100 m, mud and stones (LÖNNBERG 1903).

Franz Josephs Fjord area: Off Mackenzie Bugt, 100 m, mud; Mackenzie Bugt, 3—10 m, mud and sand with Laminariæ, and 12—35 m, mud; between Bontekoe Ø and Mackenzie Bugt, 250 m; 73°24′ N, 21°25′ W, 70 m; 72°25′ N, 17°56′ W, 300 m, sand and stones (LÖNNBERG 1903). 72°26′ N, 19°35′ W, 200 m; 72°25′ N, 19°35′ W, c. 250 m (H. J. HANSEN 1895). Kap Borlase Warren, 200 m, 3 specimens; Eskimonæs, Østhavn, 55—50 m, gravelly clay, 1 specimen; Moskusoksefjord, 15 m, 2 specimens (one of these has eggs, taken 11.-VIII-1930); Franz Josephs Fjord close E. of Zoologdalen, 180 m, clay with stones, 2 specimens; Dusénfjord, W. of Kap Graah, 150 m, brown clay, 2 specimens; Dusénfjord, western end of the broad part, 240 m, clay, numerous specimens (incl. several with eggs, 11.-VIII-1932); Sofias Sund, close E. of Botanikerbugt, 210 m, reddish clay with stones and gravel, 1 specimen; Carl Jacobsens Bugt, Ymers Ø, 14 m, clay, 1 specimen with eggs (2.-IX-31); between Maria Ø og Ella Ø, 250 m, clay with gravel and big stones, about 10 specimens; Solitærbugt, Ella Ø, 14—92 m, 46 hauls (the depths are: 14—22 m, 19—21 m, > 20 m, 22—24 m, 24—25 m, 25—27 m, 25—31 m (2 hauls), 27 m, 28—30 m, 28—31 m, 30—32 m, 32—38 m, 34—35 m, 34—37 m, 35—41 m, 37—37 m, 38—32 m, 34—38 m, 37—40 m, 38—38 m, 38—42 m, 38—44 m, 40 m, 41—41 m, 43—44 m, 44—44 m, 44—48 m, 45—50 m, 48—52 m (2 hauls), 50—52 m, 51—51 m, 54—52 m, 55 m, 55—65 m, 60—64 m, 60—65 m, 60—70 m, 67—71 m, 80—90 m, 84—88 m, 85—95 m, 89—92 m); in these hauls the bottom varies from stones and shells etc. to clay, according to the depths; each haul contents but 1—3 (5) specimens, and there were some ovigerous specimens taken the following dates: 23.-VI-1931 (45—50 m), 13.-IX-1931 (30—32 m), 20.-IX1931 (28—30 m) 28.-IX-1931 (67—71 m and 89—92 m), 10.-X-1932 (14—22 m). Kap Hedlund, Kempes Fjord, 15—80 m, 16 hauls, 1—4 specimens per haul (the depths are: 15—16 m, 24—26 m, 25—29 m, 26—35 m, 28—23 m, 30—30 m, 31—35 m, 49—53 m, 55—59 m, 57—60 m, 59—63 m, 60—63 m, 67—75 m, 70—74 m, 71—80 m, 85 m, and 85—90 m) and the bottom is clay, in a few

cases with stones. Forsblads Fjord, 175—100 m, clay with stones and gravel, 1 specimen; N. of Kap Biot, 115 m, clay with a little gravel and a few stones, 1 specimen; 2 miles N. of Kap Wardlaw, 250 m, clay with big stones, 1 specimen.

Scoresbysund area: Scoresby Sund 10—50 m; 69°25′ N, 20°01′ W, about 300 m, big stones and clay (H. J. Hansen 1895). Rosenvinges Bugt, 70 m (P. Remy 1928). Rathbone Ø, 175 m, 1 specimen; Scoresby Sund, off Rosenvinges Bugt, 300 m, stones, about 10 specimens; Hvalrosbugt, depth?, sand and clay, 3 specimens, one of which is ovigerous (taken 2.-IX-1927); Kap Tobin, 110 m, stones, 2 specimens, one of which has young (taken 21.-VIII-1900). Hurry Inlet, in and near the mouth, 20 m, clay, 8 specimens incl. 1 ovigerous (taken 21.-VIII-1900), 100 m, clay with stones, about 10 specimens, and 142 m, clay, 1 specimen. Hurry Inlet, 14—0 m, 6 specimens. Hurry Inlet, off Konstabelpynten, 7—10 m, sand, about 10 specimens including several ovigerous (taken 7.-VII-1933), and 18-22 m, clay, about 10 specimens. Hurry Inlet, near Fame Øerne, 15—18 m, clay, Laminariæ and red algæ, about 5 specimens, and 25—25 m, clay, 2 specimens. Kap Hooker, Jamesons Land, 150 m, stones and soft clay, 2 specimens; Danmarks Ø, 10—17 m, clay and gravel, 4 specimens, and 27—31 m, clay and gravel, 1 specimen. Nordbugt, Nordvestfjord, 10—18 m, clay, 1 specimen, and 37—30 m, clay, 1 specimen. Turner Sund, 225 m, stones, 4 specimens, one of which has eggs (taken 26.-VII-1900).

Kangerdlugssuaq area: Kangerdlugssuaq: 100 m wire out, gravel, and 70 m, stony bottom, and 40—50 m (K. Stephensen 1933b). Kangerdlugssuaq, 9—100 m, 13 hauls (viz., 9—11 m, 1 specimen; 10—15 m, about 50 specimens including several ovigerous, taken 29.-VIII-1933; 20—25 m, 2 hauls, about 15 specimens, including 1 ovigerous, taken 25.-VIII-1933; 25 m, about 10 specimens; 30—40 m, 2 specimens; 40 m, about 10 specimens; 40—45 m, about 25 specimens, including several ovigerous, taken 28.-VIII-1933; 50 m, about 100 specimens, including several ovigerous, taken 18.-VIII-1933; 50—60 m, 3 specimens; 60—70 m, 3 specimens; 75—100 m, 2 specimens; 90—100 m, 1 specimen).

Sydøstkyst: Tasiusak, Angmagssalik, depth?; 64°56′ N, 36°19′ W, about 375 m, 3.3° (Meinert 1899). Angmagssalik, 22 m, stones, brown algæ, 2 specimens, and off the harbour, 45 m, 2 specimens; Tasiusak near Angmagssalik, 40—100 m, 5 hauls (viz., 45—50 m, 40—60 m, 50—80 m, 60—100 m, and about 100 m), 1—a few specimens per haul; the fowling cliff in Sermilik, 100 m, 1 specimen; Ikatek near Sermilik, 200 m, 1 specimen; 63°32′ N, 41°51′ W, $2^1/_2$—20 m, 1 specimen; Kekertaksiak (about 60°15′ N), 6 occurrences 60—120 m (viz., 60—70 m (3 times), 75—90 m, 80 m, and 120 m), sand, gravel, stones, dead Bry-

ozoa, 1—47 specimens per sample, and some of the specimens were egg-bearing (taken 13.-VII-1935); Lindenowfjord, 100—150 m and 125—150 m, gravelly clay, 6 specimens (one of them was egg-bearing, taken 17.-VII-1935).

As appears from the above it is taken from about 78° N to 60° N in 151 hauls (viz., 23 hauls cited from literature, 126 hauls from previously not published material from danish expeditions, and 2 hauls with the depth not noted). The number of hauls is much greater than

Depths in meters	Numbers of hauls					
	Nordøst-kyst	Franz Josephs Fjord area	Scoresby-sund area	Kanger-dlugssuaq area	Sydøst-kyst	Total number
0— 25	—	11	8	5	2	26
> 25— 50	—	37	3	6	3	49
> 50— 75	1	18	1	3	4	27
> 75—100	1	8	1	2	5	17
> 100—125	—	1	1	—	1	3
> 125—150	1	3	2	..	2	8
> 150—175	1	—	1	..	—	2
> 175—200	—	4	—	..	1	5
> 200—250	..	5	1	..	—	6
> 250—300	..	2	3	..	—	5
> 300—400	..	—	—	..	1	1
	4	89	21	16	19	149

that of any other East Greenland Pycnogonid; but strange enough there are usually but 1—2 specimens per haul. In a few hauls there were about 10 specimens, in only three hauls (depths 10—15 and 50 m, and 60—70 m) about 50—100 specimens. Though it is found in depths from the beach down to 400 m, it is most abundant in not deep water, 0—100 m (119 out of 149 hauls 0—400 m), but especially from > 25—50 m (49 hauls). The bottom varies in accordance with the depth, from algæ and stones to clay.

Eggbearing specimens were found from 23.-VI to 10.-X. The dates (and the depths) were as follows: 23.-VI (45—50 m); 7.-VII (7—10 m); 13.-VII (60—70 m); 17.-VII (100—150 m); 26.-VII (225 m), 11.-VIII (15 and 240 m); 18.-VIII (50 m and 40—50 m); 21.-VIII (20 m and 110 m); 25.-VIII (20—25 m); 28.-VIII (40—45 m); 29.-VIII (10—15 m); 2.-IX (14 m and ? m); 13.-IX (30—32 m); 20.-IX (28—30 m); 28.-IX (67—71 m and 89—92 m); 10.-X (14—22 m).

Distribution (Map fig. 3). Very often this species has been confused or confounded with other species of the genus (viz., *Ch. spinosis-*

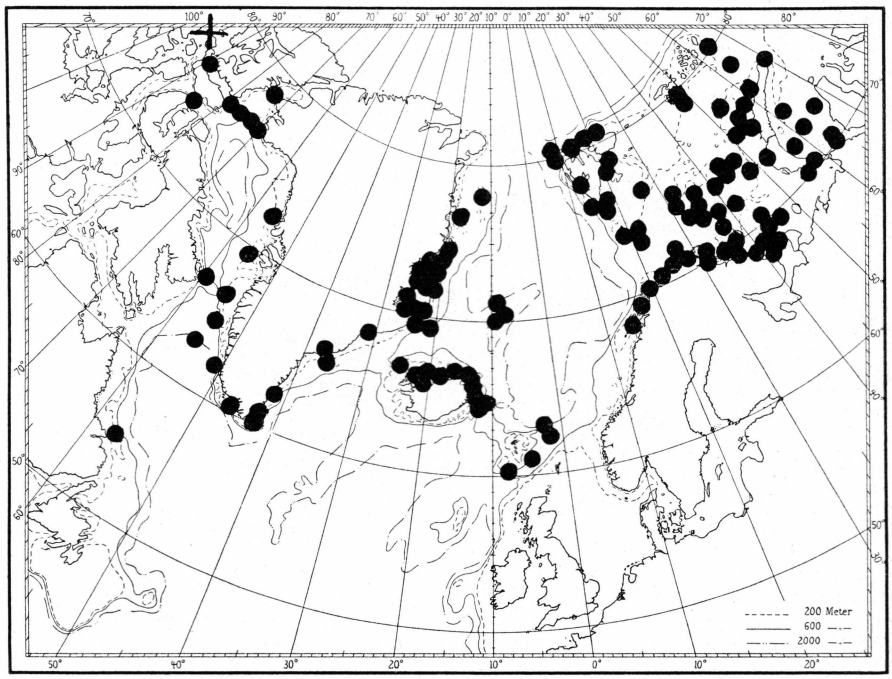

Fig. 3. Chætonymphon hirtipes (non spinosissimum). The cross denotes the type-locality).

simum and *C. hirtum*), and therefore the distribution cannot be given exactly; and as several papers have appeared after my report on the species in 1933 (p. 8, with map), I propose to give a new, revised and augmented list of localities with a new map. The records below apply with certainty to this species (—*Ch. spinosum* SCHIMKEWITSCH 1930 is *Ch. hirtipes* (BELL), *fide* DERJUGIN 1935, p. 17—).

BELL's type-locality of *Nymphon hirtipes* was Northumberland Sound (near the north-east point of North Devon, c. 77° N, 97° W).

Arctic America: off Cockburn Point, Dolphin and Union Strait, Arctic Canada (c. 70° N, 115° W), 100 m (COLE 1921, p. 4). NE. America, several localities, to Halifax (see K. STEPHENSEN 1933a, p. 8—9). W. Greenland, several localities 60°—79° N, 120—1100 m (K. STEPHENSEN 1933 a, p. 8). E. Greenland (see above). S. of Jan Mayen, 128 m, ÷ 0.6°, grey dark sabulous clay (G. O. SARS 1891, p. 106). Jan Mayen, 400 m (K. STEPHENSEN 1935, p. 8). Jan Mayen, 100 m and 100—120 m, SØREN JENSEN leg. 1900, and S. of Jan Mayen 700 m ("Ingolf" St. 116) (specimens in Zool. Museum, Copenhagen). NW, N. and E. of Iceland, 55—250 (446) m (K. STEPHENSEN 1937, p. 2) (but not the Faroes, see K. STEPHENSEN 1929). E. of Iceland 547 m, ÷ 0.3° (G. O. SARS 1891, p. 107). Faroe Channel and NE. of the Hebrides and NE. of the

Shetlands, about 550—1300 m (HOEK 1885, p. 3; NORMAN 1908, p. 219; and K. STEPHENSEN 1935, p. 8). N. Norway: "On the coast of Norway I have only observed this species in the Arctic region, where however in some localities, e. g. Vadsø, it is rather common at a depth of 100—200 m" (G. O. SARS 1891, p. 106). Very abundant from Balstad (Lofoten, c. 68° N) to Varangerfjord, (10) 35—200 (400) m (K. STEPHENSEN 1935, p. 8). N. and E. of Finmark, 6 occurrences, 269—360 m, ÷ 1.4°—+ 3.5° (G. O. SARS 1891, p. 106). Between Norway and Bear Island, 394 m (BOUVIER 1917, p. 22). Between Norway and Spitsbergen, several occurrences, 94—275 m, sand, corals, clay, temp. (when noted) ÷ 1.4°—+ 2.65° (K. STEPHENSEN 1935, p. 8). S. of Spitsbergen, 3 occurrences, 128—267 m, ÷ 1.1°—+ 1.6°, and NW. of Spitsbergen, 475 m, 1.1° (G. O. SARS 1891, p. 106). NW. of Spitsbergen, 3 occurrences, 22—310 m (GRIEG 1909, p. 23 (523)). W. Spitsbergen: Icefjord, numerous occurrences, 5—406 m, ÷ 1.67°—+ 3.78°, clay with stones etc. (several authors, see APPELLÖF 1916, p. 6). Spitsbergen, 17 occurrences, 20—243 m (SCHIMKEWITSCH 1930, p. 354), and 3 localities, 102—430 m (BOUVIER 1917, p. 22). Spitsbergen: Nordøyene and Hopen Eiland, 200 m (K. STEPHENSEN 1935, p. 8). Barents Sea and Murman Coast, extremely abundant, 10—413 m (SCHIMKEWITSCH 1930, pp. 337—354, and probably also HELLER 1878, p. 42 (*N. hirtum*) and MIERS 1881, p. 49 (*N. hirtum*)), but not White Sea (see DERJUGIN 1928, pp. 290—292, and 1935, p. 139). Franz Josephs Land, 3 occurrences, 60—175 m (CARPENTER 1898, p. 631, and probably also Heller 1878, p. 42 (*N. hirtum*) and MIERS 1881, p. 49 (*N. hirtum*)); and SCHIMKEWITSCH (1930, pp. 338 and 356) has 4 localities, 26—362 m, from the same area. Kara Sea, numerous occurrences, 17—200 m (H. J. HANSEN 1886, p. 160 (6); SCHIMKEWITSCH 1930, p. 336). Sibirian Polar Sea to about 125° E (SCHIMKEWITSCH 1930, p. 336; DERJUGIN 1935, p. 17).

According to the above it belongs to the Arctic area (EKMAN (1935, p. 382) terms it an arctic eurybathic species), but occurs also in adjacent subarctic waters; probably it is circumpolar. Usually the depth is 0—400 m, rarely markedly deeper, and the temperature negative or a trifle above 0° (up to c. 4°).

As mentioned above *Ch. hirtipes* sens. str. has very often been confounded with the next species, *Ch. spinosissimum* NORMAN.

4. *Chætonymphon spinosissimum* NORMAN (Fig. 4).

Chætonymphon spinosum G. O. SARS 1891, p. 107, pl. 11 fig. 3.
— *spinosissimum* K. STEPHENSEN 1933a, p. 6 (with lit., map etc.)

Occurrence at East Greenland.

Sydøstkyst: Lindenowfjord, 400—600 m, clay and Foraminifera, 2 specimens (taken 28.-7-1935).

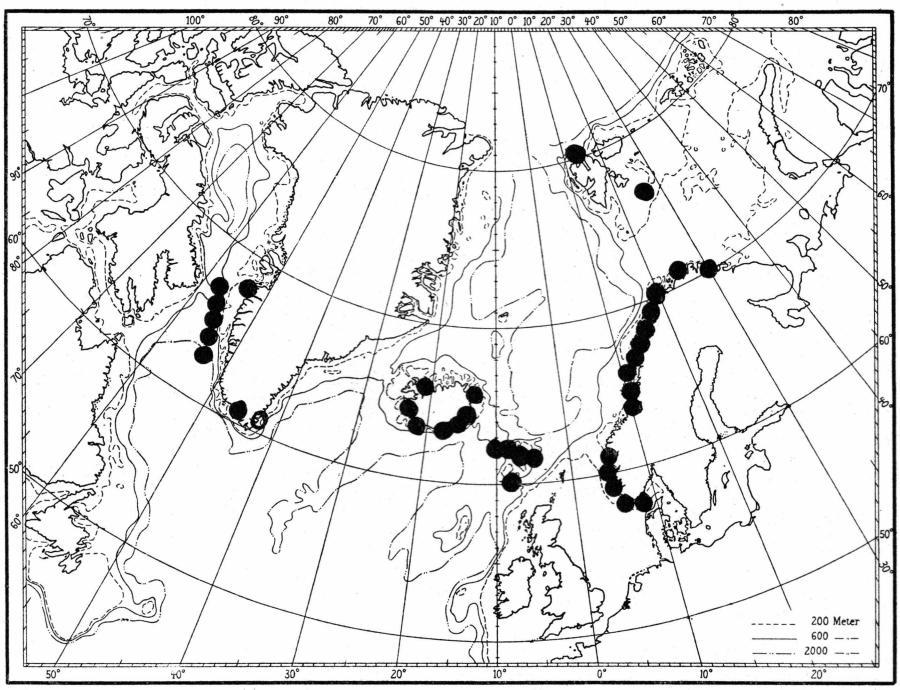

Fig. 4. Chætonymphon spinosissimum (non Ch. hirtipes) (after Bouvier 1917, K. Stephensen 1929, 1933, 1935, and 1937). One locality is outside the map, viz., 44°35′ N, 57°13′ W, 300 m (Norman 1908).

The species is new to East Greenland; it was taken together with *Pycnogonum crassirostre.*

Distribution (Fig. 4). Below I give the distribution of this species, so far as the determination may be ascertained with certainty.

E. America 44°35′ N, 57°13′ W, 300 m (Norman 1908, p. 220). W. of Greenland 60°—68° N, 62—1400 m, several occurrences (K. Stephensen 1933a, p. 7). N., E. and S. of Iceland, 51—326 m, 11 occurrences (K. Stephensen 1937, p. 1). The Faroes, 260 m, 1 occurrence (K. Stephensen 1929, p. 2). The Faroe-Shetland depression, 1260 m, and two localities SW. of the Faroes, 450 and 460 m (K. Stephensen 1935, p. 6). Norway, from Skagerrak to Vadsø, 50—400 m, numerous occurrences (K. Stephensen 1935, p. 6). Spitsbergen: Hopen Eiland, 200 m (K. Stephensen 1935, p. 7), and N. of Spitsbergen 80°01′ N, 10°51′15″ E, 430 m (Bouvier 1917, p. 23).

From the localities listed above and from the map (fig. 4) it may be seen that it is a more southerly species than *Ch. hirtipes;* probably it is a boreal species, with very few occurrences in truly arctic waters.

[*Chætonymphon hirtum* (KRØYER).

Chætonymphon hirtum G. O. SARS 1891, p. 111, pl. 11 fig. 1.
— — SCHIMKEWITSCH 1930, p. 327, figs.
— — GILTAY 1928, p. 209, with lit., fig.
— — DERJUGIN 1935, p. 19.

East Greenland record:

Nymphon hirtum BUCHHOLZ 1874, p. 397.

Occurrence at East Greenland:

BUCHHOLZ's record of this species seems to be very uncertain; probably it was a specimen of *C. hirtipes* (see species no. 3, above). BUCHHOLZ writes in extenso as follows: "*Nymphon hirtum* KRØYER, l. c., p. 113. Ein kleines Exemplar dieser Art von 5 mm von Ostgrönland (Nordshannon), sowie zwei sehr grosse von H. VON HEUGLIN in Storfjord (Spitsbergen) gesammelte, 14 mm lange, von denen das eine ein mit Eiern versehen weibliches, das andere ein männliches Exemplar; bei letzterm sind die vierten Glieder an allen Fusspaaren beträchtlich dicher als bei ersterm". Since BUCHHOLZ's days *Ch. hirtum* is not taken in East Greenland; in the very large material of Pycnogonids in the Zoological Museum, Copenhagen, there is no specimen from E. Greenland.

Distribution. *Ch. hirtum* is a sublittoral, probably boreal species; KRØYER's type was from "the coasts of Iceland". It is known from S., W. and NW. Iceland (K. STEPHENSEN 1937, p. 2), the Faroes, 60—112 m (K. STEPHENSEN 1929, p. 2), from Shetland to Ireland (see Norman 1908, p. 218), White Sea (Solowetski Isl.) and Murman Sea, 12—182 m (SCHIMKEWITSCH l. c., and DERJUGIN 1935, p. 19), Norway from North Cape to Skagerrak (but not between 58° N. and 67° N), 10—100 (306) m (see K. STEPHENSEN 1935, p. 7), Belgium, 22 m (GILTAY l. c.), but not France (BOUVIER 1923, p. 31).]

5. *Chætonymphon macronyx* G. O. SARS (Fig. 5).

Chætonymphon macronyx G. O. SARS 1891, p. 111, pl. 12 fig. 2.
— — SCHIMKEWITSCH 1930, p. 365, figs.

East Greenland records:

Chætonymphon macronyx H. J. HANSEN 1895, p. 125.
— — LÖNNBERG 1903, p. 357.
— — GRIEG 1909, p. 544 (44).
— — K. STEPHENSEN 1913, p. 403 (no new records).

Occurrence at East Greenland:

Nordøstkyst: between 75°58′ N, 14°8′ W, and 75°59′ N, 14°12′ W, 300 m (GRIEG 1909).

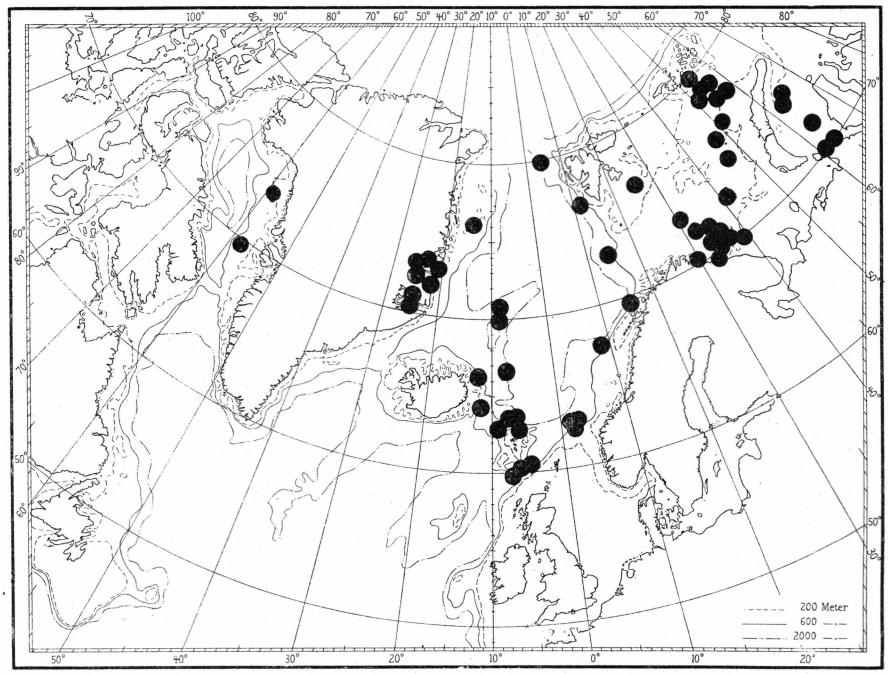

Fig. 5. Chætonymphon macronyx (after Carpenter 1898, Derjugin 1935, H. J. Hansen 1887, Meinert 1899, Norman 1908, G. O. Sars 1891, Schimkewitsch 1930, and K. Stephensen 1933a and 1935) (2 localities N. of Baffin Land are omitted, as they could not be noted exactly, and the same applies to some localities in the Kara Sea (H. J. Hansen 1887)).

Franz Joseph Fjord area: Mackenzie Bugt, 1—3 m, sand, and 12—18 m, mud; off Franz Josephs Fjord, between Bontekoe Ø and Mackenzie Bugt, 250 m, mud; inner part of Moskusokse Fjord, 100 m, mud, and outer part of the same fjord, 220 m, mud (LÖNNBERG 1903). 5 miles S. of Bontekoe Ø, 245 m, clay with a few stones, 1 specimen; Moskusoksefjord, off Mt. Ancher, 95 m, clay with big stones, 2 specimens; Dusénfjord, western end of the broad part, 240 m, clay, several specimens, some of them egg-bearing (taken 11.-VIII-1932); Dusénfjord, W. of Kap Graah, brown clay, 2 specimens; Eleonora Bay, 65—38 m, clay, 1 ovigerous specimen (taken 6.-VIII-1932); Kap Hedlund, Kempes Fjord, 35—90 m, 11 occurrences (viz., 33—35 m, 50 m, 52—55 m, 55—59 m, 60—63 m, 70—74 m, 70—85 m, 83—85 m, 85 m, 85—90 m (2 occurrences)), clay, 1—4 specimens per haul (in one case, 85—90 m, about 20 specimens); in one of the samples from Kap Hedlund (taken 14.-VII-1932) 85—90 m, there are two ovigerous specimens and one with embryos, in another (taken 10.-VII-1932), 85—90 m, one specimen has young; 2 miles N. of Kap Wardlaw, 250 m, clay with big stones, 2 specimens, one of which is ovigerous (taken 22.-VIII-1932);

N. of Kap Biot, 115 m, clay with a little gravel and a few stones, 1 specimen.

Scoresbysund area: Hekla Havn (H. J. HANSEN 1895). Nordbugt, Nordvestfjord, 28 m, clay, 1 specimen; Jameson Land, off Bjørne Øerne, 20—30 m, sandy clay, 3 specimens.

According to the above it is known from 27 occurrences in East Greenland, about $70^1/_2°$—76° N, 1—300 m.

Distribution (Map fig. 5). EKMAN (1935, p. 382) terms it an arctic eurybathic species. It is bound to the deep basin in Baffin Bay and the Arctic Polar Basin with adjacent arctic waters, from W. of Baffin Bay to Taimyr Bay, depths 1—1321 m (for references to literature, see K. STEPHENSEN 1937, p. 9; see also DERJUGIN 1935, p. 19). New locality: Baffin Bay 73°12′ N, 58°08′ W, 850 m, 1 specimen ("Godthaab"-Exped. st. 64, 28.-VII-1928).

6. *Nymphon grossipes* (O. FABRICIUS?) KRØYER (Fig. 6).

Nymphon grossipes G. O. SARS 1891, p. 65, pl. 6 fig. 2.
— — SCHIMKEWITSCH 1930, p. 400, lit., figs.
— — DERJUGIN 1935, p. 34.
— — K. STEPHENSEN 1933a, p. 11, with lit., etc.
— *mixtum* G. O. SARS 1891, p. 68, pl. 6 fig. 3.
— — DERJUGIN 1935, p. 39.
— *grossipes* = *N. mixtum*, APPELLÖF 1916, p. 13, figs. 5—6.
non[1]) — *glaciale* G. O. SARS 1891, p. 63, pl. 6 fig. 1.

East Greenland records:

Nymphon grossipes, *N. mixtum* BUCHHOLZ 1874, p. 396, p. 397.
— — H. J. HANSEN 1895, p. 124.
— *mixtum* LÖNNBERG 1903, p. 354.
— *grossipes* GRIEG 1909, p. 543 (43).
— *mixtum* K. STEPHENSEN 1912, p. 552.
— *grossipes* — 1913, p. 389 (no new records).

Occurrence at East Greenland.

Nordøstkyst: 78°09′ N, 14°01′ W, 100 m (GRIEG 1909). In and near Danmarks Havn, 3 occurrences, 20—170 m, varying bottom (K. STEPHENSEN 1912). N. Shannon and East Greenland without special locality (BUCHHOLZ 1874). 74°30′ N, 18°40′ W, 150—190 m, mud and stones (LÖNNBERG 1903).

Franz Joseph Fjord area: 73°55′ N, 19°20′ W, 275 m, mud (LÖNNBERG 1903). 72°53′ N, 20°36′ W, 180 m, big stones; 72°26′ N, 19°35′ W,

[1]) *N. glaciale* LILLJEBORG (= *N. glaciale* G. O. SARS) is usually considered synonymous with *N. grossipes* KR.; but DERJUGIN (1935, pp. 48, 49, 140) has stated that it represents a form of *N. brevirostre* HODGE (= *N. brevitarse* KRØYER).

200 m (H. J. Hansen 1895). W. of Kap Mary, Clavering Ø, 22 m, stony bottom, 2 specimens. Dusénfjord, western end of the broad part, 240 m, clay, 1 ovig. (11.-VIII-1932), extends 60 mm. Solitærbugt, Ella Ø, 48—52 m, stones, shells, clay, 1 specimen.

Scoresbysund area: off Rosenvinges Bugt, 300 m, stones, 1 specimen. Hurry Inlet, near the mouth, 25—25 m, sand with algæ, 1 specimen. ? Hurry Inlet, 2 km inside the mouth, 30 m, algæ, stones, 1 specimen (but the determination uncertain). Henry Land, 40 m, 2 specimens.

Kangerdlugssuaq area: Kangerdlugssuaq, 10—15 m, 40 m, and 50 m, 3 specimens.

Sydøstkyst: Tasiusak near Angmagssalik, 40—60 m, stony bottom, a few algæ, several specimens, and 60—100 m, 1 specimen. Lindenowfjord, 8 occurrences, 25—150 m (viz., 25, 25—30, 30—50 (2 samples), 40—50 (2 samples), 35, and 100—150 m), gravel with or without Laminariæ, clay, or Bryozoa, 1 specimen (or 2) per haul. A few of the specimens from the Lindenowfjord had eggs, viz., 25 m (22.-VII), 25—30 m (24.-VII), 30—50 m (22.-VII), and 100—150 m (28.-VII; embryos).

Remarks. The East Greenland specimens examined by the present author agree fairly well with *N. mixtum*, as described G. O. Sars l. c., but in the majority the auxiliary claws are too short, usually but one third of the claw.

The two specimens from Kap Mary are rather peculiar. The oculiferous tubercle does not terminate (as in Sars's p. 6: 6 fig. 3c) "in a sharp conical point", but is low and apically obtusely pointed, taking an intermediary position between *N. microrhynchum* and *N. sluiteri* (Sars 1891, pl. 7 figs. 1c and 2c). The chelifori are more stout than in *N. mixtum* (Sars l. c., pl. 6 fig. 3d), but agree well with *N. microrhynchum* (Sars pl. 7 fig. 1d); the same applies to the palpi (cf. Sars pl. 6 fig. 3e and pl. 7 fig. 1e); but the third joint is a trifle shorter than the second joint (Sars's text, but not his figure). The egg-bearing legs in ♂ are much shorter than in *N. mixtum* (Sars pl. 6 fig. 3a), about as in *N. grossipes* (Sars pl. 6 fig. 2a), but longer than in *N. michrorhynchum* (Sars pl. 7 fig. 1b). The walking legs agree fairly well with those of *N. mixtum*, but the length ratio of first and second tarsal joint is 7 : 6 (in *N. mixtum* (fide Sars) 2 : 1 or (more rarely) 4 : 3). First tarsal joint (in all pairs of legs) terminates in a stout spine, second joint (of all 4 pairs of legs) has along the distal half of the inner edge 5 stout spines (*N. mixtum* has 7—8 spines along the whole of the inneredge, not only in its distal half). The claw is but two fifths of the length of second tarsal joint (in *N. mixtum* half the length), and the auxiliary claws are half the length of the claw (in *N. mixtum* about two thirds).

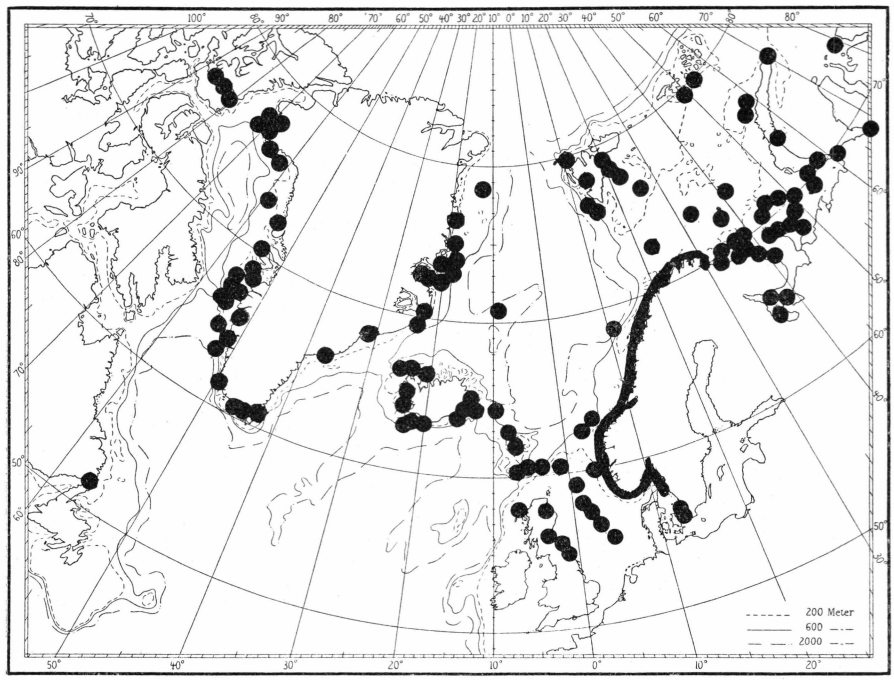

Fig. 6. Nymphon grossipes (incl. N. mixtum) (after Appellöf 1916, Derjugin 1935, Norman 1908, Ørjan Olsen 1916, Rodger 1893, G. O. Sars 1891, Schimkewitsch 1930, K. Stephensen 1913, 1929, 1933a, 1935a and b, and present paper).

Distribution (Fig. 6). Probably circumpolar; it is a low-arctic-boreal, eurybathic species. Further see K. STEPHENSEN 1933a, p. 11, with references to literature, and K. STEPHENSEN 1935, p. 11.

Nymphon (*brevitarse* KRØYER?)[1].

Nymphon brevitarse G. O. SARS 1891, p. 61, pl. 5 fig. 3.
— — SCHIMKEWITSCH 1930, p. 395, fig.

Occurrence at East Greenland:

Scoresbysund area: Henry Land, 40 m, SØREN JENSEN leg. 21.-VII-1900, 1 specimen. Previously not found in East Greenland waters.

Remarks. The determination is not quite certain, for in some essentials it does not agree with SARS l. c. It is twice the size noted by

[1]) I prefer here to keep the specific name of *brevitarse* KRØYER, though DERJUGIN 1935, pp. 41 seq. and 140 has stated that "*Nymphon glaciale* LILLJEBORG, *N. rubrum* HODGE and *N. brevitarse* KRØYER represent forms of the same species, to which we have left the denomination *N. brevirostre*, given it by HODGE for the species inhabiting the districts of Great Britain and the North sea. All specific characters without any exception, transgress".

Sars. The cheliferi and palpi agree with Sars, but the oculiferous tubercle is a little two high. First tarsal joint in length equal to second joint (—in two legs it is however, much shorter, but the distal end of these legs seems to be in regeneration—). Second tarsal joint, with claw and auxiliary claws, agrees with Sars fig. 3g, but has about 3 stout spines (5—6 in Sars's fig.).

Distribution: Straits of Belle isle, Labrador, off Norman's Light, 110 m (Rodger 1893, p. 156), and Renbugten (near Jones Sound). W. Greenland without special locality (type-locality), Godhavn and Egedesminde 100 m; South Cape, Spitsbergen, 70 m; Novaja Zemlya, 18—23 m, Franz Joseph Land, 36 m; White Sea, 24 m; Barents Sea 67°55′ N, 47°25′ E, 50—0 m; Murman Coast (Schimkewitsch l. c.; see also K. Stephensen 1933a, p. 10).

7. *Nymphon microrhynchum* G. O. Sars.

Nymphon microrhynchum G. O. Sars 1891, p. 73, pl. 7 fig. 1.
— — Schimkewitsch 1930, p. 443.
— *longitarse* H. J. Hansen 1886, p. 169 (15), pl. 18 fig. 3.

Occurrence at East Greenland:

Franz Joseph Fjord area: 72°53′ N, 20°36′ W, 180 m, big stones, 1 specimen, Deichmann leg. 1891. 72°26′ N, 19°35′ W, 200 m, Deichman leg., 2 specimens. The species is new to East Greenland.

Remarks. These specimens agree excellently with Sars l. c., i. a. in the very characteristic oculiferous tubercle, palpi, cheliferi, tarsi etc.

Distribution. Kara Sea, exact locality not noted (*N. longitarse*, H. J. Hansen l. c.). Kara Sea 79°10′ N, 78°50′ E, 105 m; 79°09′ N, 78°30′ E, 90 m; 78°33′ N, 86°20′ E, 119 m; 76°13′ N, 85°38′ E, 53 m (Derjugin 1935, p. 32). Kara Sea, 80—100 m, exact locality not noted (G. O. Sars l. c.). White Sea (Schimkewitsch l. c.; Derjugin 1928, p. 291). A high-arctic species.

8. *Nymphon longitarse* Krøyer (non H. J. Hansen).

Nymphon longitarse G. O. Sars 1891, p. 75, pl. 7 fig. 3.
— — Schimkewitsch 1930, p. 434, figs.

Occurrence in East Greenland:

Scoresbysund area: Hurry Inlet, 14—0 m, Søren Jensen leg. 1900, 4 specimens; Hurry Inlet, western side, off Konstabelpynten, 7—10 m, sand, 3 specimens; Nordbugt, Nordvestfjord, 10—18 m, grey clay, 3 specimens; Henry Land, 40 m, Søren Jensen leg. 1900, 1 specimen.

Sydøstkyst: Kekertaksiak, 60—70 m, sand, gravel, Bryozoa, 3 specimens; Lindenowfjord, 25—50 m, 32 m, and 100—125 m, sand, gravel, etc., 1—2 specimens per haul. 1 specimen from the Lindenowfjord, 32 m (22.-VII) is egg-bearing.

The species is new to East Greenland.

Remarks: These specimens agree fairly well with SARS l. c., but the neck is a little too short, and a few of the specimens are a trifle larger than the measures noted in SARS fig. 3. In the specimen from Henry Land the right palp has 5th joint twice as long as 4th joint; but in the left palp it agrees with SARS's fig. The East Greenland specimens seem to belong to var. *brevicollis* LOSINSKY (DERJUGIN 1935, p. 31, fig.).

Distribution: A low-arctic-boreal, littoral-sublittoral species, see K. STEPHENSEN 1933a, p. 13, with map. Additional localities: ? East and South Iceland, 55—110 m (K. STEPHENSEN 1937, p. 4); Norway, several occurrences from Hardangerfjord to Vadsø, 30—80 (240) m (K. STEPHENSEN 1935, p. 13); Russian Polar Sea (DERJUGIN 1935, p. 31).

9. *Nymphon sluiteri* HOEK.

Nymphon sluiteri G. O. SARS 1891, p. 73, pl. 7 fig. 2.
— — SCHIMKEWITSCH 1930, p. 425, figs.

East Greenland records:

Nymphon sluiteri LÖNNBERG 1903, p. 354.
— — K. STEPHENSEN 1913, p. 398 (no new records).

Occurrence at East Greenland:

Nordøstkyst: 74°30′ N, 18°40′ W (south east of Hvalros Ø), 80—100 m, mud and stones (LÖNNBERG).

Franz Joseph Fjord area: Mackenzie Bugt, 1—3 m, sand, and 12—15 m, mud (LÖNNBERG). Moskusoksefjord, off Mount Anker, 95 m, clay with big stones, 2 specimens (taken 3.-VIII-1932), one of them with small embryos.

Scoresbysund area: Hvalrosbugt, depth?, sand and clay, 1 specimen. Hurry Inlet, near the mouth, 25 m, sand and algæ, 1 specimen, and 60—75 m, algæ, stones, clay, 1 specimen.

Kangerdlugssuaq area: Kangerdlugssuaq, 10—15 m, 1 ovig. (taken 29.-VIII-1933), and 20—25 m, 1 specimen.

Distribution: An arctic, probably circumpolar species, see K. STEPHENSEN 1933, p. 14, with map. It is very eurybathic, 1—1000 m. Additional localities, see DERJUGIN 1935, p. 34.

10. *Nymphon strømi* KRÖYER (incl. *N. gracilipes* HELLER).

Nymphon strømi G. O. SARS 1891, p. 80, pl. 8 fig. 2.
— *gracilipes* G. O. SARS 1891, p. 83, pl. 8 fig. 3.
— *giganteum* NORMAN 1908, p. 214.
— *strømi* APPELLÖF 1916, p. 8, figs.
— — SCHIMKEWITSCH 1930, p. 451, figs.
— — var. *gracilipes* SCHIMKEWITSCH 1930, p. 458, fig.

East Greenland records:

Nymphon strømi f. *strømi*, f. *gracilipes* H. J. HANSEN 1895, p. 124.
— — f. *gracilipes* LÖNNBERG 1903, p. 355.
— — + *N. strømi* f. *gracilipes* GRIEG 1909, p. 543 (43).
— — K. STEPHENSEN 1912, p. 553.
— — — 1913, p. 392 (no new records).
— — — 1933b, p. 10.

Occurrence at East Greenland:

Nordøstkyst: 77°31′ N, 18°24′ W, 275 m (GRIEG). Maroussia, 150—170 m, hydroids, hard bottom; 76°06′ N, 13°26′ W, 200—250 m, mud and gravel (K. STEPHENSEN 1912). 74°35′ N, 18°35′ W (SE. of Pendulum Ø), 150 m, mud (LÖNNBERG).

Franz Joseph Fjord area: 73°55′ N, 19°20′ W, 150 m, mud; Mackenzie Bugt, 100 m, mud, 12—35 m, mud, and 12—18 m, mud; Moskusokse Fjord, 220 m, mud, and 100 m, mud (LÖNNBERG); 72°53′ N, 20°36′ W, 175 m, large stones (H. J. HANSEN). Franz Joseph Fjord, close East of Zoologdalen, 180 m, 2 specimens; Moskusoksefjord, off Mt. Anker, 95 m, clay with large stones, 2 specimens; Dusénfjord, W. of Kap Graah, 150 m, brown clay, 3 specimens, and western end of the broad part, 240 m, several specimens; between Maria Ø and Ella Ø, 150 m, clay with gravel and big stones, 2 specimens; Kap Hedlund, Kempes Fjord, 85—90 m, clay, 1 specimen; Forsblads Fjord, 175—100 m, clay with stones and gravel, 3 specimens; 2 miles N. of Kap Wardlaw, 250 m, clay with stones, 2 specimens; Kap Tobin, 110 m, 2 specimens.

Scoresbysund area: 69°25′ N, 20°01′ W, 300 m, big stones and clay (H. J. HANSEN). Scoresbysund, off Rosenvinges Bugt, 300 m, stones, 1 specimen; Hurry Inlet, 80 m, "Pourquoi pas?" leg. 1934, 1 specimen; Hurry Inlet, the mouth, 10 m, clay with stones, 3 specimens, and near Fame Øerne, 18—22 m, clay, 1 specimen; Kap Hooker, 150 m, stones and clay, several specimens; 8 miles inside Kap Hooker, 12 m, sandy clay, 1 specimen; Jameson Land, off Bjørne Øerne, 20—30 m, sandy clay, several small specimens; Kap Brewster, 450 m, 1 specimen; Turner Sund, 225 m, 1 specimen.

Kangerdlugssuaq area: Kangerdlugssuaq, behind the second dead glacier, 450 m. wire out, 1 specimen (K. STEPHENSEN 1933 b). Kan-

gerdlugssuaq, 10—15 m, several specimens, 40 m, 1 specimen, 60—70 m, 1 specimen, and 90—100 m, 1 specimen.

Sydøstkyst: Angmagssalik, 1 specimen; Tasiusak near Angmagssalik, 2 occurrences, 2 specimens.

The depths of the hauls were as follows: 10—25 m, 5 hauls; 25—100 m, 9 hauls; > 100—200 m, 10 hauls; > 200—300 m, 8 hauls, and 450 m, 1 haul.

Remarks. A few of the East Greenland specimens examined by the present author agree fairly well with *N. strømi*, as described by SARS (Maroussia; 76°06′ N; 72°53′ N; Kap Brewster; Turner Sund; Angmassalik; Tasiusak). All the other specimens agree better with *N. gracilipes* or are intermediate forms between this species and *N. strømi*. Nearly all specimens have the auxiliary claws very short (as in *N. gracilipes*). A few specimens (from Jamesons Land, and all the specimens from Kangerdlugssuaq) have the two distal joints in the palps too short.

Specimens with egg-balls were taken the following dates: 15.-VII Kap Hooker, 150 m; 24.-VII 72°53′ N, 20°36′ W, 180 m; 27.-VII Kap Hooker, 12 m; 11.-VIII Dusénfjord, 150 m; 8.-VIII Franz Joseph Fjord, Zoologdalen, 180 m; 21.-VIII Kap Tobin, 110 m; 22.-VIII Kap Wardlaw, 250 m; 25.-VIII between Maria Ø and Ella Ø, 150 m; 29.-VIII Scoresby Sund, off Rosenvinges Bugt, 300 m, and Kangerdlugssuaq, 10—15 m.

Specimens with young were taken 22.-VIII Kap Brewster, 450 m.

Distribution. Widely distributed in arctic and boreal waters, see K. STEPHENSEN 1933a, p. 16. Additional localities, see DERJUGIN 1935, p. 21.

11. *Nymphon elegans* H. J. HANSEN.

Nymphon elegans G. O. SARS 1891, p. 86, pl. 9 fig. 1.
— — SCHIMKEWITSCH 1930, p. 478, figs.

East Greenland records:

Nymphon elegans LÖNNBERG 1903, p. 356.
— — GRIEG 1909, p. 543 (43).
— — K. STEPHENSEN 1913, p. 394 (no new records).

Occurrence at East Greenland:

Nordøstkyst: 77°31′ N, 18°24′ W, 275 m (GRIEG). 76°06′ N, 13°26′ W, 200—250 m, clay and gravel, Danmark-Exped. St. 104b, 1 young specimen, determination not certain.

Franz Joseph Fjord area: Between Bontekoe Ø and Mackenzie Bugt, 250 m, mud; 72°25′ N, 17°56′ W, 300 m, stones and sand (LÖNNBERG).

Scoresbysund area: Scoresbysund, mouth of Rosenvinges Bugt, 300 m, 1 specimen; Kap Hooker, Jameson Land, 150 m, stones and clay, 3 specimens.

Sydøstkyst: Tasiusak near Angmagssalik, 40—60 m, stony bottom with a few algæ, 2 specimens; ibid. 50—80 m, 1 specimen, and 100 m, 1 specimen.

Distribution: A high-arctic species (see K. Stephensen 1933, p. 17, and 1935, p. 21). Additional locality: Nugarsuk, Lichtenaufjord, southern West Greenland, 300 m, 1 specimen (Zool. Museum, Copenhagen). Additional localities, see Derjugin 1935, p. 22.

12. *Nymphon longimanum* G. O. Sars.

Nymphon longimanum G. O. Sars 1891, p. 93, pl. 10 fig. 1.
— — Schimkewitsch 1930, p. 489.

East Greenland record:

Nymphon longimanum Lönnberg 1903, p. 356.

Occurrence at East Greenland:

Franz Joseph Fjord area: Mackenzie Bugt, 1—3 m, sand, and 3—10 m, mud (Lønnberg).

Scoresbysund area: Between Kap Leslie and Jameson Land, 385 m, soft clay, 1 specimen with eggs, 7 mm in total length, taken 21.-VIII-1933. This specimen has the tarsal joints longer than in Sars's fig.; for the rest it seems to agree fairly well with Sars l. c.

Remarks. The type which is "apparently a female" (G. O. Sars) is from Kara Sea; Lönnberg has no description of his East Greenland specimens. The new East Greenland specimen from Scoresbysund area agrees fairly well with Sars l. c., but differs in some essentials in the legs. The legs, especially the tarsal joints, are somewhat more slender than in Sars's figure. Sars writes that they are "a trifle more than 4 times as long as the body", and this holds good regarding the new Greenland specimen; but second tarsal joint is not quite $1^1/_3$ time as long as first tarsal joint (Sars says "almost a half longer"), and both of the joints are much narrower than in Sars's fig.: first tarsal joint is about 7 times, second joint even about 9 times as long as broad, but according to Sars's fig. first joint is 5 times, second joint 8 times as long as it is broad. Dactylus is a trifle more slender and longer than drawn by Sars.

Distribution: A high-arctic species. Jan Mayen 70°47′ N, 8°22′ W, 140 m (*N. long.* var. *le danoisi* Bouvier 1914, pp. 217, 218). Kara

Sea, 110 m (STUXBERG; G. O. SARS). "Widely spread [in the Kara Sea] is the comparatively rare species *N.* (*Chætonymphon*) *longimanum*" (DERJUGIN 1935, p. 140 and p. 20). East of Bonnevie Island c. 76° N, 95° E, 4 occurrences, 17—20 m, and Middendorf Bay, West Taimyr c. 76° N, 93° E, 13—46.6 m (SCHIMKEWITSCH). It is by HELFER 1909 uncorrectly noted from Skagerrak (see K. STEPHENSEN 1935, p. 22).

13. *Nymphon serratum* G. O. SARS.

Nymphon serratum G. O. SARS 1891, p. 95, pl. 10 fig. 2.
— — SCHIMKEWITSCH 1930, p. 496, figs.

East Greenland records:

Nymphon serratum MEINERT 1899, p. 37.
— — K. STEPHENSEN 1912, p. 553.

Occurrence at East Greenland:

Nordøstkyst: Maroussia, 150—170 m, hydroids, hard bottom; Øresund, 40—60 m, hydroids, hard bottom (K. STEPHENSEN).

Scoresbysund area: Turner Sund, 225 m, stones, SØREN JENSEN leg. 1900, 1 specimen.

Sydøstkyst: 64°56′ W, 36°19′ W, c. 385 m, 4.1° (or 65°31′ N, 30°45′ W, 400 m) (MEINERT).

Distribution: A widely distributed pan-arctic species, see K. STEPHENSEN 1933a, p. 18.

14. *Pseudopallene circularis* GOODSIR.

Pseudopallene circularis G. O. SARS 1891, p. 38, pl. 3 fig. 3.
— — SCHIMKEWITSCH 1930, p. 260, figs.

East Greenland record:

Pseudopallene circularis K. STEPHENSEN 1933b, p. 11.

Occurrence at East Greenland:

Scoresbysund area: Henry Land and Henry Ø (c. 69°35′ N), 40 m, stones, SØREN JENSEN leg. 1900, 2 specimens.

Kangerdlugssuaq area: Kangerdlugssuaq, 10 m, 1 egg-bearing specimen, taken 11.-VIII-1932 (K. STEPHENSEN).

Sydøstkyst: Angmagssalik, depth?, KRUUSE leg. 1902, 1 specimen; Tasiusak (near Angmagssalik), 30—40 m, rocks with many algæ, 1899, 1 specimen, and 40—60 m, stony bottom with a few algæ, 1899, 3 specimens.

Distribution: Probably low-arctic-boreal. For special localities see K. STEPHENSEN 1933a, p. 21, 1935, p. 25, and 1937, p. 6.

15. *Cordylochele malleolata* (G. O. Sars)

Cordylochele malleolata G. O. Sars 1891, p. 45, pl. 4 fig. 1.
— — Schimkewitsch 1930, p. 294, fig.

East Greenland record:

Cordylochele malleolata Meinert 1899, p. 50.

Occurrence at East Greenland:

Scoresbysund area: Kap Hooker, Jameson Land, 150 m, stones, clay, 1 specimen.

Off Sydøstkyst: 66°16′ N, 25°20′ W, 550 m, ÷ 0.2°, Wandel leg. 1891, 1 specimen. 64°18′ N, 27°00′ W, 560 m, 5.8° (Meinert 1899).

Distribution: Found both North and South of the ridge, depth 73—950 m, temp. ÷ 1.0° — + 10°. Further see K. Stephensen 1933a, p. 25 and Derjugin 1935, p. 13. It is probably pan-arctic, eurybathic.

16. *Cordylochele brevicollis* G. O. Sars.

Cordylochele brevicollis G. O. Sars 1891, p. 49, pl. 4 fig. 2.
— — Schimkewitsch 1930, p. 298, figs.

East Greenland records:

Cordylochele brevicollis Lönnberg 1903, p. 353.

Occurrence at East Greenland:

Nordøstkyst: 74°30′ N, 18°40′ W (SE. of Hvalros Ø), 80—100 m, mud and stones (Lönnberg).

Franz Joseph Fjord area: Mackenzie Bugt, 12—35 m, mud; outer part af Moskusoksefjord, 220 m (Lönnberg). Franz Joseph Fjord, E. of Zoologdalen, 180 m, clay with stones, 1 specimen; between Maria Ø and Ella Ø, 250 m, clay with gravel and big stones, 2 specimens; Solitærbugt, Ella Ø, 54—52 m, clay, stones, 1 specimen. Fleming Inlet, 225 m, red clay, 1 specimen.

Scoresbysund area: Kap Hooker, Jameson Land, 150 m, clay and stones, 1 egg-bearing specimen, taken 27.-VII-1933.

In addition there is a specimen labelled "Canning Ø, 375 m, East Greenland-Exped. 8.-IX-1900". Canning Ø is an island off the south eastern coast of King Wilhelms Land (W. of Shannon Ø); but in that case the date cannot be correct, for (—according to the map plate 5, Meddel. om Grønl., vol. 27—) on 8.-IX the expedition proved to be West of NW. Iceland, about one fifth of the route from Isafjord to Angmagssalik.

Distribution: A pan-arctic (? or high-arctic) species, widely distributed (see K. Stephensen 1933a, p. 25, and Derjugin 1935, p. 13).

17. *Eurycyde hispida* (KRØYER).

Eurycyde hispida G. O. SARS 1891, p. 128, pl. 14 fig. 1.
— — SCHIMKEWITSCH 1930, p. 95, figs.

East Greenland records:

Eurycyde hispida H. J. HANSEN 1895, p. 125.
— — K. STEPHENSEN 1912, p. 553.

Occurrence at East Greenland:

Nordøstkyst: Stormbugt, 20—40 m, Delesseria, hard bottom (K. STEPHENSEN).

Franz Joseph Fjord area: W. of Kap Mary, Clavering Ø, 22 m, stones, 1 specimen.

Scoresbysund area: Hekla Havn (H. J. HANSEN 1895). Danmarks Ø, 1 specimen.

Sydøstkyst: Angmagssalik, depth?, KRUUSE leg. 1902, 2 specimens; Tasiusak near Angmagssalik, 40—60 m, stony bottom, a few algæ, 3 specimens.

Distribution: A low-arctic (?) species, littoral-sublittoral.

18. *Colossendeis proboscidea* (SABINE).

Colossendis proboscidea G. O. SARS 1891, p. 138, pl. 15 fig. 1.
— — SCHIMKEWITSCH 1930, p. 27, fig.
Anomorhynchus smithi MIERS 1881, p. 50, pl. 7 figs. 6—8.

East Greenland record:

Colossendeis proboscidea LÖNNBERG 1903, p. 358.
— — K. STEPHENSEN 1913, p. 407 (no new records).

Occurrence at East Greenland:

Franz Joseph Fjord area: Outer part of Moskusokse Fjord, 220 m, mud (LÖNNBERG). 5 miles S. of Bontekoe Ø, 245 m, clay with a few stones, 1 specimen; Ella Ø, 37—40 m, stony bottom with clay, 1 specimen.

Scoresbysund area: Kap Tobin, near the shore, 2 specimens; Kap Hooker, Jameson Land, 150 m, stones, clay, 1 specimen.

Sydøstkyst: Angmagssalik, in the fjord, depth?, 1 specimen.

Distribution: A character form of the Polar Basin (and the deep Baffin Bay); also in other arctic waters, e. g. Barents Sea, Kara Sea, etc. Further see K. STEPHENSEN 1933a, p. 28, with map.

19. *Colossendeis angusta* G. O. SARS.

Colossendeis angusta G. O. SARS 1891, p. 140, pl. 15 fig. 2.
— — SCHIMKEWITSCH 1930, p. 39, fig.

East Greenland records:

Colossendeis angusta LÖNNBERG 1903, p. 359.
— — K. STEPHENSEN 1913, p. 40 (no new records).

Occurrence at East Greenland:

Nordøstkyst: 74°55′ N, 17°59′ W, 350 m (LÖNNBERG).

Franz Joseph Fjord area: Mackenzie Bugt, 12—18 m, mud, and 100 m, mud (LÖNNBERG).

Distribution: North of the ridges West and East of Greenland its distribution is somewhat identic with that of *C. proboscidea*; but there are, too, several finds in the deep North Atlantic South of the ridge. Further see K. STEPHENSEN 1933a, p. 28, with map. Probably it is a high-arctic species.

20. *Pycnogonum crassirostre* G. O. SARS.

Pycnogonum crassirostre G. O. SARS 1891, p. 12, pl. 1 fig. 2.
— — K. STEPHENSEN 1933a, p. 30.

Occurrence at East Greenland:

Sydøstkyst: Lindenowfjord, 400—600 m, clay and Foraminifera, 28.-VII-1935, 1 specimen. The species is new to East Greenland.

The specimen is 6 mm in total length and is somewhat more stout than shown in SARS's fig., and proboscis is a trifle more acute; but abdomen has the rounded apex characteristic of *P. crassicorne*.

Distribution: A north-Atlantic species, depths 100—600 m (see K. STEPHENSEN l. c., with map).

General Remarks.

20 species of Pycnogonida are known from East Greenland waters in depths down to about 400 m, and the greater part of the material has been brought together by the Danish investigations carried out in the later years. These expeditions have collected material from about 75° N to Lindenowfjord (c. 60° N) (see the map fig. 7).

From table 1 it is seen that the investigations (carried out by Danish and other expeditions) have been much more extensive in the Franz Joseph Fjord and the Scoresbysund areas than in any other area of the coast: the Franz Joseph Fjord area has given 13 species in 187 samples, the Scoresbysund area 15 species in 64 samples; in the three other areas there are much smaller numbers of hauls.

Table 1.

The Pycnogonida of East Greenland	Number of hauls (down to about 400 m)						Zoogeographical position
	I[1])	II	III	IV	V	I—V	
1. *Paranymphon spinosum*	—	—	—	—	1	1	N. Atlantic, deep sea
2. *Boreonymphon robustum*	3	32	9	1	2	47	arctic eurybathic
3. *Chætonymphon hirtipes*	4	89	21	16	19	149	arctic eurybathic
4. — *spinosissimum*	—	—	—	—	(1)	(1)	? N. Atlantic, eurybathic
5. — *macronyx*	1	23	3	—	—	27	arctic eurybathic
6. *Nymphon grossipes* (incl. *mixtum*)	6	6	4	3	10	29	low-arctic-boreal
7. — *microrhynchum*	—	2	—	—	—	2	high-arctic
8. — *longitarse*	—	—	4	—	4	8	low-arctic-boreal
9. — *sluiteri*	1	3	3	2	—	9	arctic eurybathic
10. — *strømi* (incl. *gracilipes*)	4	16	10	5	3	38	low-arctic-boreal
11. — *elegans*	2	2	2	—	3	9	high-arctic
12. — *longimanum*	—	2	1	—	—	3	high-arctic
13. — *serratum*	2	—	1	—	1	4	pan-arctic
14. *Pseudopallene circularis*	—	—	1	1	3	5	low-arctic-boreal
15. *Cordylochele malleolata*	—	—	1	—	(2)	1(+2)	pan-arctic, eurybathic
16. — *brevicollis*	1	6	1	—	—	8	pan-arctic (?, high-arctic)
17. *Eurycyde hispida*	1	1	2	—	2	6	low-arctic?
18. *Colossendeis proboscidea*	—	3	2	—	1	6	high-arctic
19. — *angusta*	1	2	—	—	—	3	pan-arctic
20. *Pycnogonum crassirostre*	—	—	—	—	(1)	(1)	? N. Atlantic, eurybathic
Number of hauls...	26	187	65	28	49 (+4)	355 (+4)	

[1]) Nordøstkyst; II: Franz Joseph Fjord area; III: Scoresbysund area; IV: Kangerdlugssuaq area; V: Sydøstkyst.

From the same table it is evident, too, that the majority of species are known from but rather few occurrences, 1 or 2 up to 8—9. But 5 species are found over 20 times, viz., *Nymphon grossipes* (29 hauls), *Chætonymphon macronyx* (27 occurrences), *Nymphon strømi* (38 occurrences), *Boreonymphon robustum* (47 occurrences), and *Chætonymphon hirtipes* (149 occurrences). The last-named species is the most abundant Pycnogonid not only at East Greenland, but also in other arctic areas, i. a. Icefjord (Spitsbergen; APPELLÖF pp. 6, 19) and the Russian seas (243 samples out of a total of 1011 samples of all Russian species; SCHIMKEWITSCH 1930, pp. 336—356).

Comparison of the Pycnogonid faunas of East and West Greenland. From table 2 we see that all the 20 species found at East Greenland are known also from West Greenland, except two, viz., *Nymphon microrhynchum* and *N. longimanum* which are high-arctic species and are found at East Greenland not South of c. 70° N.

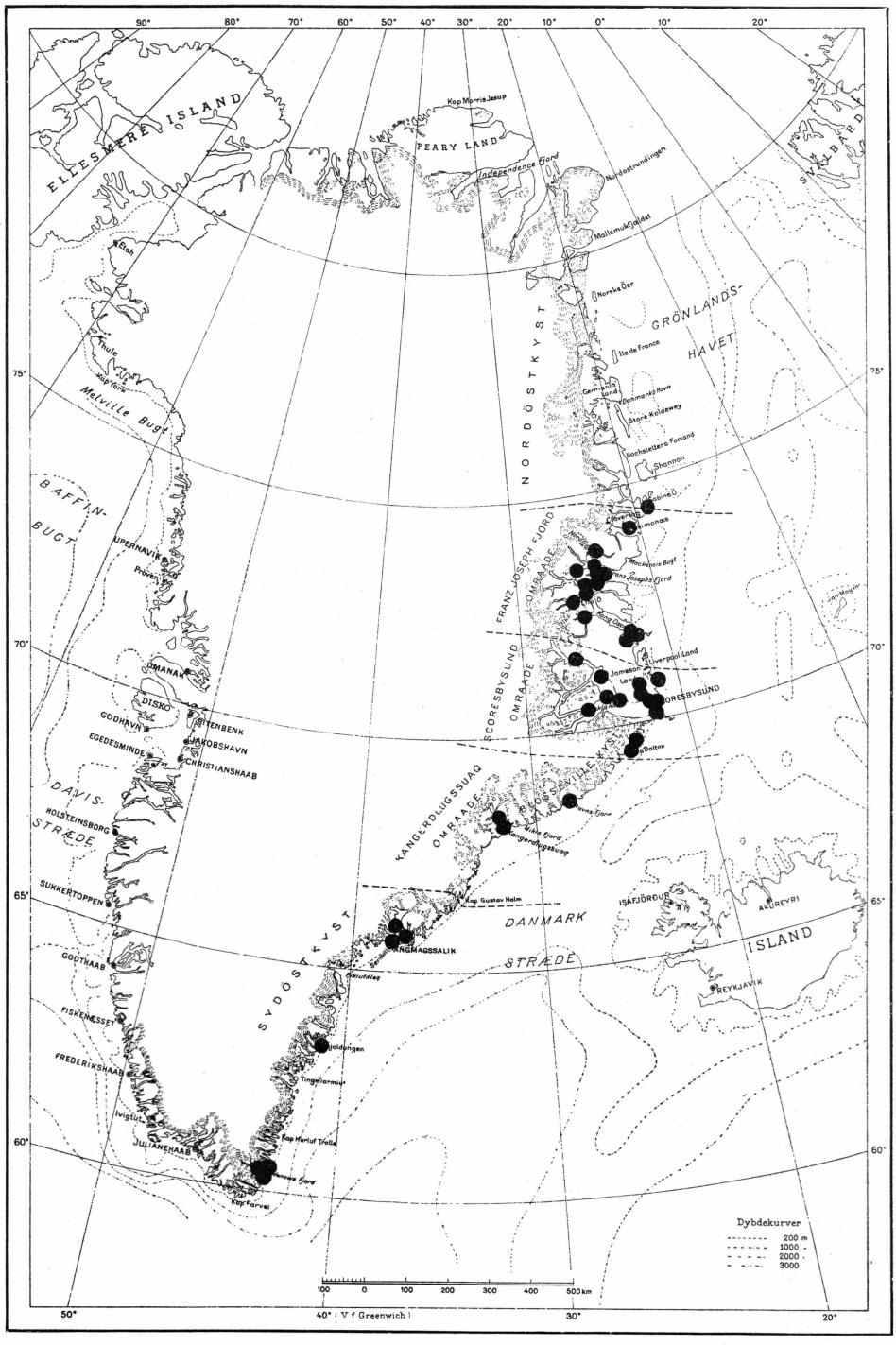

Fig. 7. Pycnogonida. East Greenland localities from Danish expeditions from the last decennium (and a few, previously not published localities from the Danish East Greenland expedition 1900).

Also if we compare the total fauna of Pycnogonids from West Greenland (20 species from 0—about 400 m, + 6 species found only in greater depths) with that of East Greenland (20 species), we find that the majority of species are common to the two areas. 2 species are found at East Greenland, not at West Greenland (see above). In return West Greenland has 6 (7?) species not known from East Greenland; they are: *Nymphon brevitarse* (possibly also found at East Greenland), *N. macrum*, *N. micronyx*, *N. megalops*, *Pseudopallene spinipes*, *Phoxichilidium femoratum*, *Pycnogonum littorale*. Their distribution at West Greenland etc. is given below:

Nymphon brevitarse (see above, p. 20). West Greenland c. 69° N, 100 m; also Spitsbergen, but not Iceland. Arctic (or arctic-boreal).

Table 2.

The Pycnogonida in the northern Atlantic with adjacent arctic waters, depths about 400 m	NE. America	W. Greenland	E. Greenland	Jan Mayen	Iceland	The Faroes	N. Norway (incl. Lofoten)	Spitsbergen	Fr. Joseph Land	Barents Sea, White Sea
Paranymphon spinosum CAULLERY	—	(×)[2]	×	—	—	—	—	—	—	—
Boreonymphon robustum (BELL)	×	×	×	×	—	—	×	×	×	×
Chætonymphon spinosissimum NORMAN	×	×	(×)	—	×	×	×	×	—	—
— *hirtipes* (BELL), sens. str.	×	×	×	×	×	—	×	×	×	×
— *hirtum* (FABR.)	—	—	[?]	—	×	×	×	—	—	×
— *macronyx* G. O. SARS	×	×	×	×	—	—	×	×	×	×
Nymphon rubrum HODGE (incl. var. *intermedia* SCHIMK.)	—	—	—	—	—	—	×	×	—	×
— *piluliferum* CARPENTER (incl. var. *abbreviata* CARP.)	—	—	—	—	—	—	—	—	×	—
— *grossipes* (O. FABR.?) KR. (incl. *mixtum* KR.)	×	×	×	×	×	×	×	×	×	×
— *brevirostre* HODGE	—	—	—	—	—	—	×	—	×	×
— *brevitarse* KRØYER	×	×	?	—	—	—	—	×	×	×
— *microrhynchum* G. O. SARS	?	—	×	—	—	—	—	?	—	×
— *longitarse* KRØYER	×	—	×	—	×	—	×	×	×	×
— *sluiteri* HOEK	×	(×)	×	—	—	—	×	×	×	×
— *leptocheles* G. O. SARS	—	(×)	—	—	×	—	×	—	—	×
— *strømi* KR. (incl. *N. gracilipes* HELLER)	×	×	×	×	×	×	×	×	×	×
— *elegans* H. J. HANSEN	×	×	×	—	—	—	×	×	×	×
— *macrum* WILSON	×	×	—	—	×	—	×	—	—	×
— *longimanum* G. O. SARS	—	—	×	×	—	—	—	—	—	—
— *micronyx* G. O. SARS	—	×	—	—	—	—	—	—	—	×
— *schimkewitschi* LOSINSKY (non *N. sarsi* MEINERT)[1]	—	—	—	—	—	—	—	×	—	×
— *serratum* G. O. SARS	—	×	×	×	×	—	×	×	×	×
— *megalops* G. O. SARS	—	×	—	—	×	—	—	×	—	—

[1]) See DERJUGIN 1935, p. 25.
[2]) (×) = found in the area, but only in depths > 400 m.

Table 2 (continued).

The Pycnogonida in the northern Atlantic with adjacent arctic waters, depths < about 400 m	NE. America	W. Greenland	E. Greenland	Jan Mayen	Iceland	The Faroes	N. Norway (incl. Lofoten)	Spitsbergen	Fr. Joseph Land	Barents Sea, White Sea
Pallene brevirostris JOHNSTON	×	—	—	—	—	×	—	—	—	—
Pseudopallene circularis (GOODSIR)	×	×	×	—	×	×	×	—	—	×
— *spinipes* (O. FABR.)	—	×	—	—	×	—	×	—	×	×
Cordylochele malleolata G. O. SARS	—	(×)	×	—	—	—	×	×	—	—
— *brevicollis* G. O. SARS	—	×	×	—	×	—	×	×	—	—
— *longicollis* G. O. SARS	—	(×)	—	—	—	—	×	—	—	—
Phoxichilidium femoratum (RATHKE)	×	×	—	—	×	×	×	—	—	×
Anoplodactylus petiolatus (KRØYER)	—	—	—	—	—	×	—	—	—	—
— *lentus* WILSON	×	—	—	—	—	—	—	—	—	—
Eurycyde hispida (KRØYER)	×	×	×	—	—	—	×	×	—	×
Ammothea lævis (HODGE)	—	—	—	—	×	×	×	—	—	—
— *borealis* SCHIMK.[3])	—	—	—	—	—	—	—	×	—	—
— *scabra* WILSON	×	—	—	—	—	—	—	—	—	—
Tanystylum orbiculare WILSON	×	—	—	—	—	—	—	—	—	—
Colossendeis proboscidea (SABINE)	—	×	×	×	×	—	×	×	×	×
— *angusta* G. O. SARS	—	(×)	×	—	—	—	—	—	—	×
— *macerrima* WILSON	—	—	—	—	×	—	—	—	—	—
— *colossea* WILSON	×	—	—	—	—	—	—	—	—	—
Pycnogonum littorale (STRÖM)	×	×	—	—	×	×	×	—	—	×
— *crassirostre* G. O. SARS	×	×	(×)	—	×	—	×	—	—	—
Number of species...	21 +1?	20 (+6)	18 (+2) +2?	8	19	10	26	19 +1?	14	25

[3]) See DERJUGIN 1935, p. 59.

Nymphon macrum (see K. STEPHENSEN 1933a, p. 10). West Greenland 60°—66½° (68°) N, (66) 256—740 (1096) m, temp. (0.8°) 3.3°—3.8°. Deep North Atlantic.

Nymphon micronyx (K. STEPHENSEN 1933a, p. 18). West Greenland c. 69° N, 100 m; not Iceland or Spitsbergen. Arctic littoral.

Nymphon megalops (K. STEPHENSEN 1933a, p. 19). West Greenland 67° N, 150 m; Iceland, Spitsbergen. Mainly the deep Polar Basin.

Pseudopallene spinipes (K. STEPHENSEN 1933a, p. 21, and 1935, p. 25). West Greenland 62°—72½° N, 40—100 m. Iceland, Spitsbergen; from Kara Sea and Franz Joseph Land to W. Norway (Bergen).

Phoxichilidium femoratum (K. STEPHENSEN 1933a, p. 26, and 1935, p. 28). West Greenland 61°—70° N, East America, Iceland, not Spitsbergen; Europe from the White Sea to the Faroes. Rather shallow water; a form characteristic of the beach.

Pycnogonum littorale (K. STEPHENSEN 1933a, p. 30, with map). West Greenland 61° N, 260 m; boreal, usually not deep water.

Though the intensity of collecting activities has not been as great in the two southernmost areas (S. of about 70° N) as farther to the North, nevertheless 14 species of Pycnogonids are known from the southern half of East Greenland (table 3).

Table 3.

	Southernmost occurrence	
	W. Greenland	E. Greenland
1. *Paranymphon spinosum*[1]	63½° N (1096 m)	65° N (375 m)
2. *Boreonymphon robustum*	66° N	66° N
3. *Chætonymphon hirtipes*	60° N	63½° N
4. — *spinosissimum*[1]	68° N (62 m)	61° N (400—600 m)
6. *Nymphon grossipes*	60° N	66° N
9. — *sluiteri*	68½° N	68° N
10. — *strømi*	60° N	66° N
11. — *elegans*	60° N	66° N
13. — *serratum*	60° N	65° N
14. *Pseudopallene circularis*	60° N	66° N
15. *Cordylochele malleolata*	66½° N (600 m)	64° N (540 m)
17. *Eurycyde hispida*	67° N	66° N
18. *Colossendeis proboscidea*	65½° N	66° N
20. *Pycnogonum crassirostre*[1]	66½° N (500 m)	61° N (400—600 m)

[1]) Paranymphon spinosum belongs to the deep North Atlantic; therefore the two occurrences are the northernmost, not the southernmost ones known. The same applies to Chætonymphon spinossissimum and Pycnogonum crassirostre.

I we compare the southern (—for *Paranymphon spinosum* and two other species the northern—) limit of each of these 14 species on the two sides of Greenland (see table 3), we find that in 6 cases (nos. 1, 2, 9, 15, 17, 18) it is almost identical at West and East Greenland. 6 other species (nos. 3, 6, 10, 11, 13, and 14) are not found at East Greenland South of Angmagssalik (c. 66° N), or in a single case 63½° N; there is no reason to suppose that in future these 6 last-named species will not be found also at the southernmost part of East Greenland.

The zoogeographical position of the species. Regarding the zoogeographical position of the species I have tried to arrange the East Greenland Pycnogonida according to the terms used by HOFSTEN (1915, p. 202 seq.), APPELLÖF (1916), EKMAN (1935) and LEMCHE (1941) (see table 1, p. 30; see also tables 4—5).

Table 4.

Number of hauls arranged according to areas in East Greenland and depth	Number of hauls 0—about 400 m											
	0—25 m				> 25—200 m				> 200 m			
	I-III [1]	IV	V	I-V	I-III	IV	V	I-V	I-III	IV	V	I-V
1. *Paranymphon spinosum*	—	—	—	—	—	—	—	—	—	—	1	1
2. *Boreonymphon robustum*	3	1	—	4	26	—	1	27	14	—	1	15
3. *Chætonymphon hirtipes*	19	5	2	26	84	11	16	111	11	—	1	12
4. — *spinosissimum*	—	—	—	—	—	—	—	—	—	—	1	1
5. — *macronyx*	3	—	—	3	16	—	—	16	7	—	—	7
6. *Nymphon grossipes*	3	1	1	5	10	2	9	21	3	—	—	3
7. — *microrhynchum*	—	—	—	—	2	—	—	2	—	—	—	—
8. — *longitarse*	3	—	—	3	1	—	4	5	—	—	—	—
9. — *sluiteri*	3	2	—	5	3	—	—	3	—	—	—	—
10. — *strømi*	4	1	—	5	16	1	—	17	9	1	× [2]	10
11. — *elegans*	—	—	—	—	1	—	3	4	5	—	—	5
12. — *longimanum*	2	—	—	2	—	—	—	—	1	—	—	1
13. — *serratum*	—	—	—	—	2	—	—	2	1	—	1	2
14. *Pseudopallene circularis*	—	1	—	1	1	—	2	3	—	—	—	—
15. *Cordylochele malleolata*	—	—	—	—	1	—	—	1	—	—	2	2
16. — *brevicollis*	1	—	—	1	4	—	—	4	3	—	—	3
17. *Eurycyde hispida*	1	—	—	1	1	—	1	2	—	—	—	—
18. *Colossendeis proboscidea*	—	—	—	—	2	—	—	2	2	—	×	2
19. — *angusta*	1	—	—	1	1	—	—	1	1	—	—	1
20. *Pycnogonum crassirostre*	—	—	—	—	—	—	—	—	—	—	1	1
Number of hauls...	43	11	3	57	171	14	36	221	57	1	8	66

Hauls with depth not noted are omitted in this table.

[1]) I-V, explanation see table 1, p. 30.

[2]) × indicates that the species is found in the area in question, but the depth is not noted.

The East Greenland waters are to be divided into two different regions of depth, viz., 0—25 m, and > 25 m. The upper water layers, 0—25 m, comprise the region of water which during the summer reaches positive temperatures; the deeper layers, from 25 m and downwards, comprise the region exhibiting constant negative temperature (North of the ridge; from the Nordøstkyst to and incl. the Scoresbysund area) or temperatures slightly above zero (South of the ridge; off the Sydøstkyst); the Kangerdlugssuaq area, off the ridge between Iceland and Greenland, takes an intermediate position. According to the above the water layer 0—25 m along the whole coast is to be regarded as being from the same region as that from > 25 m off the Sydøstkyst.

Table 5.

The Pygnogonida of East Greenland	> 400 m			0—400 m									
	Baffin Bay	Polar Basin	Deep N. Atlantic	NE. America	W. Greenland	E. Greenland	Jan Mayen	Iceland	The Faroes	N. Norway (incl. Lofoten)	Spitsbergen	Franz Joseph Land	Barents Sea, White Sea
1. *Paranymphon spinosum*	—	—	×	—	(×)[1]	5[2]	—	—	—	—	—	—	—
2. *Boreonymphon robustum* ...	×	×	—	×	×	1-5	—	×	—	×	×	×	×
3. *Chætonymphon hirtipes*	—	×	×	×	×	1-5	×	×	—	×	×	×	×
4. — *spinosissimum*	×	—	×	×	×	(5)	—	×	×	×	×	—	—
— *hirtum*	—	—	—	—	—	[?]	—	×	×	×	—	—	×
5. — *macronyx*	—	×	—	×	×	1-3	×	—	—	×	×	×	×
6. *Nymphon grossipes*	—	—	—	×	×	1-5	×	×	×	×	×	×	×
— *brevitarse*	—	—	—	×	×	?	—	—	—	—	—	×	×
7. — *microrhynchum*	—	—	—	?	—	2	—	—	—	—	—	—	×
8. — *longitarse*	—	—	—	×	×	3	—	×	—	×	×	×	×
9. — *sluiteri*	×	×	—	×	(×)	1-4	×	—	—	×	×	×	×
10. — *strømi*	×	—	—	×	×	1-5	×	×	×	×	×	×	×
11. — *elegans*	×	×	×	×	×	1-3, 5	—	—	—	×	×	×	×
12. — *longimanum*	—	—	—	—	—	2, 3	×	—	—	—	—	—	—
13. — *serratum*	×	×	×	—	×	1, 3, 5	×	×	—	×	×	—	×
14. *Pseudopallene circularis*	—	—	—	×	×	3-5	—	×	×	×	—	—	×
15. *Cordylochele malleolata*	—	—	×	—	(×)	5	—	—	—	×	×	—	—
16. — *brevicollis*	×	—	—	—	×	1-3	—	×	—	×	×	—	—
17. *Eurycyde hispida*	—	—	—	×	×	1-3, 5	—	—	—	×	×	—	×
18. *Colossendeis proboscidea*	×	×	—	—	×	2, 3, 5	×	×	—	×	×	×	×
19. — *angusta*	×	×	×	—	(×)	1, 2	—	—	—	—	—	—	×
20. *Pycnogonum crassirostre* ...	—	—	—	×	×	(5)	—	×	—	—	—	—	—

[1]) (×) indicates that the species is found in the area in question, but only in depths > 400 m.
[2]) 1: Nordøstkyst; 2: Franz Joseph Fjord area; 3: Scoresbysund area; 4: Kangerdlugssuaq area; 5: Sydøstkyst.

I. High-arctic species (stenotherm cold-water species, temperatures below 0° to 4°). At East Greenland they are generally found in the water of the polar current, depth > 25 m, especially in the northernmost areas (N. of c. 69° N).

To this group belong probably

Nymphon microrhynchum (E. Greenland 2 occurrences, 180—200 m; Kara Sea, 53—119 m), and

N. longimanum (E. Greenland 2 occurrences 1—10 m, 1 occurr. 385 m; further Jan Mayen 140 m, Kara Sea 110 m etc., Sibirian Polar Sea 13—46 m).

II. Arctic eurybathic species. Under this head EKMAN (1935, p. 382) lists 5 species of Pycnogonids; all belong to the East Greenland fauna, viz.,

Boreonymphon robustum (E. Greenl. (0) 10—>400 m; map, see K. STEPHENSEN 1933a, p. 5).

Chætonymphon hirtipes (E. Greenl. 0—400 m; map, see p. 9).

— *macronyx* (E. Greenl. 1—300 m; map see p. 17).

Nymphon sluiteri (E. Greenl. 1—100 m; map, see K. STEPHENSEN 1933a, p. 15)

(and *Nymphon grossipes;* but when (as in the present paper) the last-named species is considered synonymous with *N. mixtum*, it can not belong to this group, as it (*N. grossipes* + *N. mixtum*) extends to the Danish and British waters; see map fig. 6 p. 20).

These 4 species are found at East Greenland mainly N. of 70° N; they are widely distributed in the deep Polar Basin (and in the basin N. of the ridge W. of Greenland), Barents Sea, Kara Sea, etc., and one of them, *Chætonymphon hirtipes*, has besides some occurrences off the southern half of Greenland.

But two other species belong probably to the same group, as they may be considered character forms of the Polar Basin, but are found besides in rather small depths in adjacent arctic waters (e. g. at East Greenland). They are:

Nymphon elegans (E. Greenl. 40—300 m), and

Colossendeis proboscidea (E. Greenl. 37—245 m) (map, see K. STEPHENSEN 1933a, p. 29).

III. Low-arctic (= sub-arctic) species. Distribution at East Greenland about as the high-arctic species, but in more shallow water, 0—25 m; temperature 0°—7°.

Eurycyde hispida (E. Greenl. 20—60 m) belongs possibly to this group.

IV. Pan-arctic species. Widely distributed in arctic areas, but also found S. of the ridge in deep water.

Nymphon serratum (E. Greenl. 150 (—385 m S. of the ridge)).

Cordylochele malleolata (E. Greenl. 150 (—560 m S. of the ridge)).

Colossendeis angusta (E. Greenl. 12—350 m (map, K. STEPHENSEN 1933a, p. 29).

V. Low-arctic-boreal species. Arctis; but extend to Great Britain, France, or even to the Mediterranean.

Nymphon grossipes (incl. *N. mixtum*) (E. Greenl. 10—275 m) (map p. 20).

— *longitarse* (E. Greenl. (0) 7—40 m) (map, K. STEPHENSEN 1933a, p. 13).

Nymphon strømi (E. Greenl. 10—300 (450) m).
Pseudopallene circularis (E. Greenl. 10—60 m).

VI. Sublittoral boreo-atlantic species. The deep North Atlantic, S. of the ridge (c. 66° N).

Paranymphon spinosum (SE. Greenl. 375 m).

Tho this group belong possibly:

Chætonymphon spinosissimum (SE. Greenland 400—600 m; see map fig. 4, p. 15).
Pycnogonum crassirostre (SE. Greenland 400—600 m, see map, K. STEPHENSEN 1933a, p. 31).

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