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THE ZOOLOGY OF EAST GREENLAND

BRACHIOPODA

BY

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WITH 2 FIGURES IN THE TEXT

KØBENHAVN

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The present paper is based on the collections of Brachiopods kept in the Zoological Museum of Copenhagen, mainly originating from the various expeditions to East Greenland during the last decennium, expeditions which, among others, had the object of exploring the animal communities of the coastal waters and of the great fjord complexes, the largest and the next largest ones in the world, between 70° and 75° N. Lat., and the Lindenowfjord area (61° N. Lat.). Notably these fjords with their numerous branches are rather thoroughly explored, whereas the open coast stretches, e.g. the Blossville coast (66°—70° N. Lat.) and the coast between Angmagssalik and the Lindenowfjord (66°—61° N. Lat.) still are deficiently known. Yet it is hardly probable that future investigations will add particularly to the summary of the distribution and occurrence of Brachiopods in East-Greenland put forth on the following pages.

The collections comprises the following 5 species:

1. *Hemithyris psittacea* (GMEL.)
2. *Liothyris arctica* (FRIELE)
3. *Terebratella spitzbergensis* DAVIDS.
4. *Terebratulina septentrionalis* (COUTH.)
5. *Macandrevia cranium* (O. F. MÜLL.)

of which *Terebratella spitzbergensis* is new to East-Greenland.

Further previous records have been considered.

Copenhagen, April 1940.

Synopsis of the Species.

1. *Hemithyris psittacea* (GMELIN) 1782.

(Fig. 1)

Rhynchonella psittacea DAVIDSON p. 163, pl. 24, figs. 1—11.

East Greenland records:

Terebratulula psittacea MÖBIUS 1874, p. 253.

Rhynchonella psittacea BECHER 1886, p. 68.

Rhynchonella psittacea POSSELT 1898, p. 2.

Rhynchonella psittacea HÄGG 1905, p. 1.

Rhynchonella psittacea LAMY 1913, p. 22, p. 599.

Rhynchonella psittacea ARNDT & GRIEG 1933, p. 482.

Hemithyris psittacea HELMCKE 1939, p. 263.

Occurrence at East Greenland (fig. 1): *Nordøstkyst*: Stormbugten, 20—35 m, the region of *Rhodophyceæ*, 6 spec.; Stormbugten, 40 m, stones, shells *Delesseria*; on *Balanus balanus* (L.); 6 spec. — *Franz Joseph Fjord area*: Jackson Ø (MÖBIUS); Forsbladfjord, 145—100 m, clay with stones, 2 spec. — *Kangerdlugssuaq area*: South of Kap Dalton, 150 m, 1 spec.; off Kangerdlugssuaq, 50 m, 1 spec. — *Sydøstkyst*: 65°40' N. 35°32' W. (POSSELT); Angmagssalik, off the harbour, 45 m, 14 spec.; Inginikertok, Angmagssalikfjord, 1 spec.; Tasiusak, 60—90 m, 2 spec.; same locality, stony bottom, some Algæ, 2 spec.; Lindenows Fjord, 60—70 m, clay and gravel, 1 spec.; Kekertakssiak (S. of Lindenows Fjord), three neighbouring stations, 60—70 m, sand, gravel, dead Polyzoa, 10, 5, 9 spec. resp.

Distribution: The species is widely distributed in the Arctic; it is circumpolar and penetrates into the Atlantic region as far southwards as to the Gulf of Maine. — Distributional Type: Panarctic.

Remarks: *Hemithyris psittacea* is the Brachiopod which is most widely distributed along the East coast of Greenland as it is found from the Danmarks Havn to Lindenow Fjord (c. 77° N. to c. 60° N.). It enters the fjords and is also found just outside the coast on the shelf. It has not been taken in the depths of the Danmark Strait or in the Norwegian Sea; it seems to be restricted to the shallow waters or to the shelf.

The collections here investigated contain living animals as well as dead shells, highly varying in size, colour and shell ornamentation.

2. *Liothyris arctica* (FRIELE) 1878.

(Fig. 2)

Liothyris arctica DAVIDSON 1885, p. 10, pl. 1, figs. 17—18.

East Greenland records:

Terebratula arctica POSSELT 1898, p. 6.

Liothyris arctica FRIELE & GRIEG 1901, p. 3.

Terebratula arctica HÄGG 1905, p. 5.

Liothyris arctica BLOCHMANN 1908, p. 613.

Gryphus arcticus DALL 1920, p. 317.

Liothyris arctica GRIEG 1933, p. 67.

Liothyris arctica ARNDT & GRIEG 1933, p. 480.

Occurrence at East Greenland: 74°17' N. 15°20' W. (POSSELT).
Franz Joseph Fjord area: Forsbladsfjord; abt. 100 m; abt. 40 spec.;
 72°25' N. 17°56' W., 300 m, 55 spec. (HÄGG). — *Off the Kangerdlugssuak area*: various Stations (GRIEG 1933).

Distribution: The species seems to be restricted to the Danmark Strait and the western area of the Norwegian Sea i.e. the area influenced by the cold Polar current. It is previously known from Jan. Mayen, North and West Iceland and the Danmark Strait. — Distributional type: Holarctic.

Remarks: In East Greenland the distribution of *Liothyris arctica* ranges from Shannon Island to off Kangerdlugssuak (abt. 75° N. to 67° N.). The present find is of special interest primarily because it is inside one of the fjords (all the former finds are outside the coast line) and secondly because it comprises no less than about 40 living as well as dead shells. Many of them are however broken, the shells being very thin and fragile.

3. *Terebratella spitzbergensis* DAVIDSON 1852.

(Fig. 2)

Terebratella spitzbergensis DAVIDSON 1885, p. 83, pl. 16, figs. 1—5.

Occurrence at East Greenland: *Sydøstkyst-area*: Lindenow Fjord, 125—150 m, clay, 2 spec.

The species was previously not known from East Greenland.

Distribution: *Terebratella spitzbergensis* is fairly common in the Davis Strait and all round Iceland; furthermore at Spitzbergen and off Finmarken, on the Wyville Thompson ridge and off the west coast of Great Britain and France. It seems to avoid the higharctic east Greenland waters and the cold western part of the Norwegian Sea. The single

East Greenland find closely agrees with the finds at the south west coast of Greenland. — Distributional type: Arctic and lusitanian.

Remarks: The two single specimens are small and brittle, of the usual yellowish white colour; the valves are empty.

[*Terebratulina retusa* (LINNÉ) 1767.

Terebratulina caput serpentis DAVIDSON 1885, p. 17, pl. 14, figs. 1—11.

East Greenland records:

Terebratulina caput serpentis POSSELT 1898, p. 5.

Terebratulina caput serpentis HÄGG 1905, p. 3.

Terebratulina caput serpentis ARNDT & GRIEG 1932, p. 481.

The present material contains no specimens of *T. retusa*, a fact which I did not find astonishing when compared with 1) the result of preceding investigations of the occurrence of the Brachiopods at West Greenland and in the Norwegian Sea etc. and with 2) a study of the literature of Brachiopods from Spitzbergen, Jan Mayen, Finmarken and Eurasia (GRIEG, KNIPOWITSCH a. o.). The result of these investigations was that *T. retusa*¹⁾ can not at all be considered an arctic form, its main distribution being in the northern part of the Atlantic ocean which is influenced by the Gulf Stream. It may, however, be found in the cold area too (East Iceland: E. WESENBERG-LUND 1938 p. 5 and Finmarken: HELMCKE 1939 p. 235), but from these records it is also evident that the finds are quite sporadic. During the last decennaries the arctic and boreoarctic regions were so thoroughly explored that we may now take it as a fact that *T. retusa* does not occur at West Greenland, East Greenland, Jan Mayen and Spitzbergen, whereas it is abundant on the ridge between Iceland, the Faroes and Scotland. The above mentioned East Greenland records seem to contradict this, but in reality they do not. Both POSSELT and HÄGG do not separate *T. retusa* (L.) from *T. septentrionalis* (COUTH.), and ARNDT & GRIEG only quote the Greenland records of these two authors; in "Fauna arctica" they distinctly write, that it is until now not possible to give a synoptic account of the distribution of these two species because the older records do not separate them.]

4. *Terebratulina septentrionalis* (COUTHOUY) 1838.

(Fig. 1)

Terebratulina septentrionalis DAVIDSON 1885, p. 28, pl. 5, figs. 1—31 and 43—52.

East Greenland record:

Terebratulina septentrionalis ARNDT & GRIEG 1932, p. 480.

Occurrence at East-Greenland: *Scoresbysund area*: Scoresbysund, off the mouth of Rosenvinge Bay; 300 m; 1 spec.

¹⁾ Which I previously called *F. caput serpentis* (L.).

Distribution: The species is widely distributed in the arctic and boreal regions. It is common in West Greenland, Spitzbergen, Finmarken and Murmansk. Distributional type: Boreoarctic.

Remarks: It is rather puzzling that the species only is represented by one single specimen in the collections here examined from East Greenland. *A priori* it was likely that the species should be common in East Greenland waters according to its further distribution in the Arctic. This seems, however, not to be the case, not even if we take into consideration that the East Greenland specimens recorded as *T. caput serpentis* in all probability really are identic with *T. septentrionalis*.

5. *Waldheimia (Macandrevia) cranium* (MÜLLER) 1776.

(Fig. 2)

Waldheimia (Macandrevia) cranium DAVIDSON 1885, p. 61, pl. 12, figs. 11—23, pl. 13 figs. 1—2.

East Greenland records:

Terebratula cranium JEFFREYS 1863, p. 13.

Terebratula cranium MÖBIUS 1874, p. 253.

Waldheimia cranium POSSELT 1898, p. 7.

Macandrevia cranium DALL 1920, p. 355.

Waldheimia cranium ARNDT & GRIEG 1932, p. 481.

Macandrevia cranium HELMCKE 1939, p. 249.

Occurrence at East Greenland: *Nordøstkyst:* 77°31' N. 18°24' W. (ARNDT & GRIEG); S.E. of Sabine Ø; 205 m; 1 spec.; Shannon Ø (MÖBIUS, POSSELT). — *Franz Joseph Fjord area:* Forsbladfjord; 35—35 m; about 100 spec. — *Scoresbysund area:* Off the outlet of Hurry Inlet, clay; stones; 88 m; 1 spec. — *Kangerdlugssuak area:* Kangerdlugssuak; 45 m; 3 spec. — *Sydøstkyst:* Off Angmagssalik; 100 m; stones; 2 spec. and 140 m; 1 spec. — Dead specimens off the east coast of Greenland at several depths of 108 and 228 fathoms (Jeffreys).

Distribution: Widely distributed in arctic and boreoarctic waters (West Greenland, Jan Mayen, Iceland, Norway, Finmarken, Spitzbergen, Barents Sea). Distributional type: boreoarctic. Of special interest is the sample from the Forsbladfjord comprising more than 100 specimens. By far the greater part of them, however, are very small and juvenile with brittle, almost transparent valves. They were mainly fastened to Bryozoans. The bottom at the Station under consideration is reported to be clay and mud. In spite of this rich find in the Forsbladfjord the species is not commonly found, although it is widely distributed, in the East Greenland waters.

Table I. Synopsis of the distribution of Brachiopoda occurring at East Greenland.

	East coast of N. America	West Greenland	N. and E. of Iceland	S.-W. of Iceland	Spitzbergen	Finmarken, N. coast of Europe
<i>Hemithyris psittacea</i> (GMEL.)	×	×	×	×	×	×
<i>Liothyris arctica</i> (FRIELE)	—	—	×	×	—	—
<i>Terebratella spitzbergensis</i> DAV.	×	×	×	×	×	×
<i>Terebratulina septentrionalis</i> (COUTH.) ...	×	×	×	×	×	×
<i>Macandrevia cranium</i> (O. F. MÜLL.)	—	×	×	×	×	×

Table II. The distribution of all species of Brachiopods of the arctic and boreo-arctic regions.

	N. America	West Greenland	East Greenland	N.-E. of Iceland	Spitzbergen	Finmarken	N. coast of Europe
<i>Pelagodiscus atlanticus</i> (KING)	—	×	—	—	—	—	—
<i>Crania anomala</i> (O. F. MÜLL.)	—	—	—	—	×	×	—
<i>Hemithyris psittacea</i> (GMEL.)	×	×	×	—	×	×	×
<i>Neatretia gnomon</i> (JEFFR.)	×	×	—	×	—	×	—
<i>Liothyris arctica</i> (FRIELE)	—	—	×	×	—	—	—
<i>Terebratella spitzbergensis</i> DAV.	×	×	×	×	×	×	—
<i>Terebratulina retusa</i> (L.)	—	—	—	×	—	×	—
<i>Terebratulina septentrionalis</i> (COUTH.) ...	×	×	×	×	×	×	—
<i>Waldheimia septigera</i> (LOV.)	—	—	—	—	—	×	—
<i>Macandrevia cranium</i> (O. F. MÜLL.)	—	×	×	×	×	×	×

General Remarks.

As might have been expected the East Greenland fauna of Brachiopoda turns out to be poorer in species than the West Greenland fauna. The species which belong to the Atlantic water and which, due to the influence of the branch of the Gulf Stream, may thrive in the Davis Strait (e.g. *Neatretia gnomon* and *Pelagodiscus atlanticus*) are totally absent in the East Greenland waters, where the temperature of the water

is considerably lower, influenced by the cold East Polar Current. Of the five species *Liothyris arctica* is the only holarctic species, fairly rare and in its further distribution evidently restricted to the cold basin of the Norwegian Sea. Of the others *Terebratulina septentrionalis* is found both in the holarctic and the boreo-arctic part of the North Atlantic (N. of 60° N. Lat.) just like *Hemithyris psittacea* and *Macandrevia cranium*, but it should be borne in mind that the two last mentioned species, in spite of their wide distribution and frequency in the area under consideration, extend widely farther southwards than *T. septentrionalis*.

Finally, as regards *Terebratella spitzbergensis* it is doubtful whether it is a true East-Greenland species, the single find being from the southernmost part of the Sydøstkyst, not far from Cape Farewell, where possibly the warm Irminger Current may be responsible for its occurrence.

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