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DE DANSKE PEARY LAND EKSPEDITIONER

LEADER: EIGIL KNUTH

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ECHINODERMATA  
FROM JØRGEN BRØNLUND FJORD,  
NORTH GREENLAND

BY

MAX ANDERSEN

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WITH 4 FIGURES IN THE TEXT

KØBENHAVN

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BIANCO LUNOS BOGTRYKKERI A/S

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### Abstract

From Jørgen Brønlund Fjord, North Greenland (82°40'N, 30°30'W) 11 species of echinoderms are listed as the result of investigations during the Fourth Peary Land Expedition in the summer of 1966.

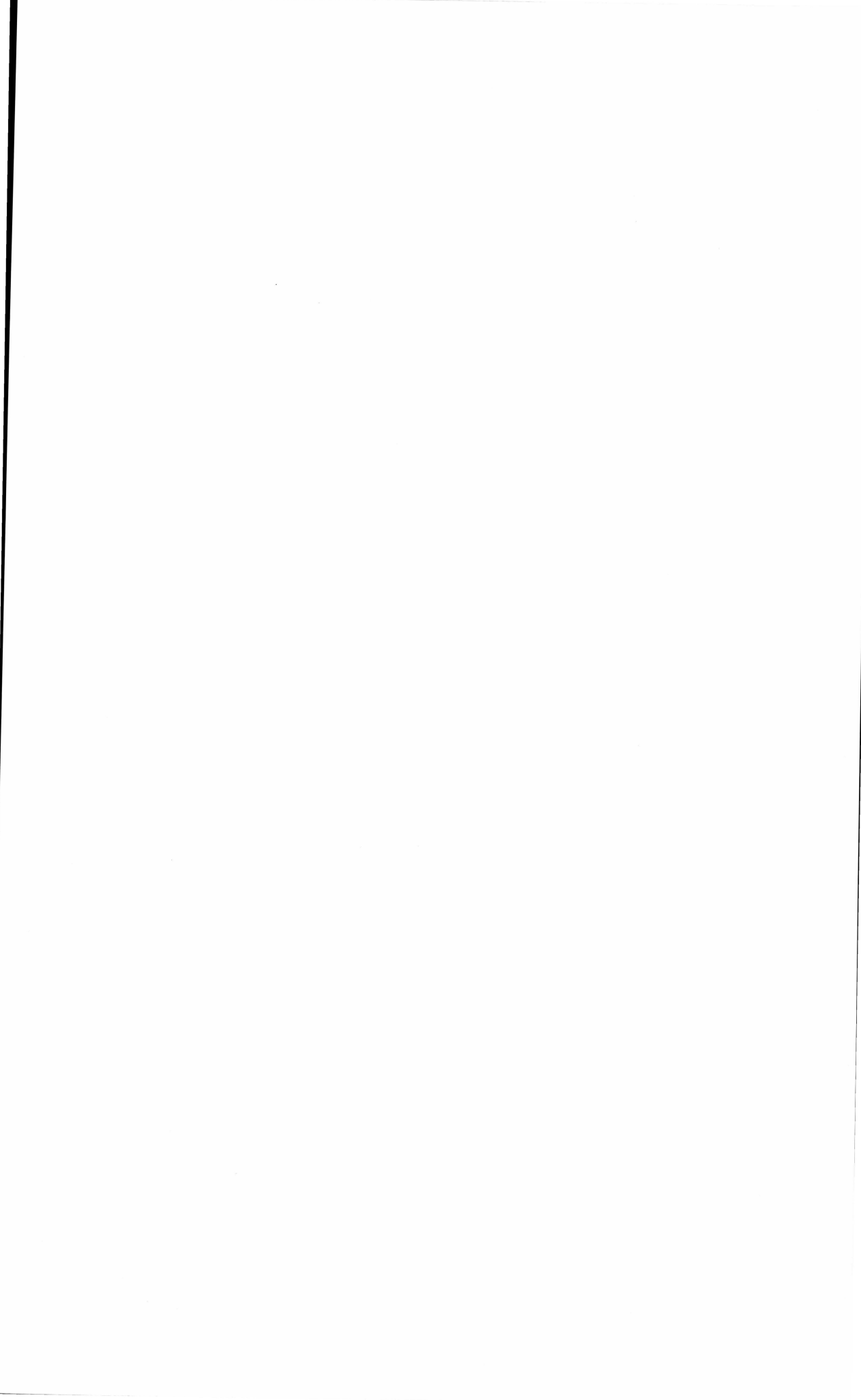
One species is new to Greenland, viz. *Myriotrochus eurycyclus* HEDING.

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## INTRODUCTION

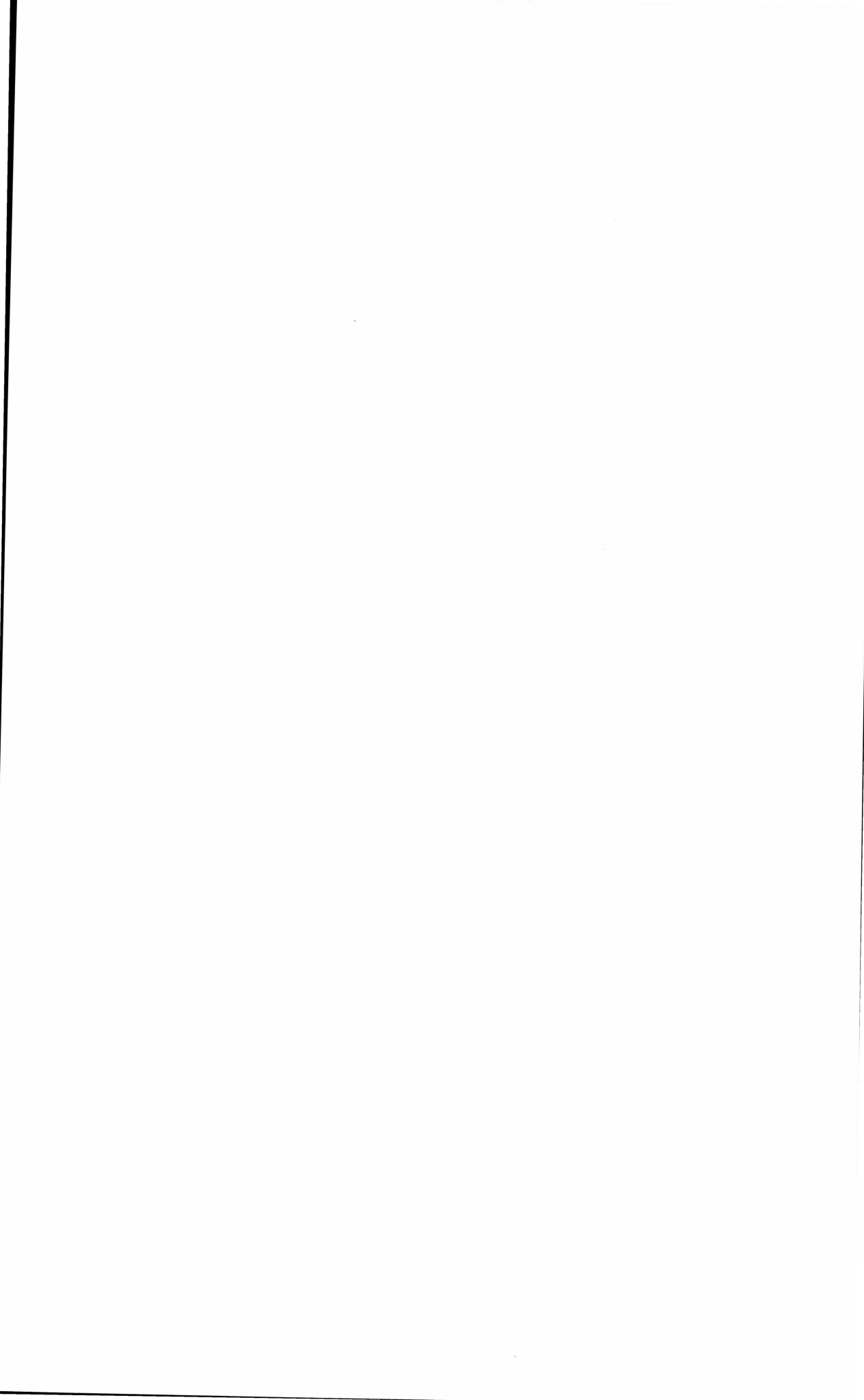
On the First Peary Land Expedition in the years 1947-50, some collections were made by P. JOHNSEN, Ph. D. The material has been at my disposal and the results are included in the present paper.

During the Fourth Peary Land Expedition in the summer of 1966 marine investigations of Jørgen Brønlund Fjord (82°10'N, 30°30'W) were carried out for the first time, (by J. JUST and the present author).

Eleven species of echinoderms were found, one of which is new to Greenland, viz. *Myriotrochus eurycyclus* HEDING.

A survey of the physiography of Jørgen Brønlund Fjord, including notes on hydrography, bottom-types, vegetation of algae, etc., and lists of stations have been given by JUST (1970).

I am deeply indebted to Professor K. G. WINGSTRAND, Fil. dr., U. RØEN, D. Sc. and J. LÜTZEN, M. Sc. for their great help during my work.



## SYNOPSIS OF THE SPECIES

### Crinoidea

#### *Heliometra glacialis* (LEACH)

*Heliometra glacialis* MORTENSEN 1913, p. 371.

- - - 1932, p. 5.

#### Material:

St. 55	80-90 m	Clay	Dredge haul	1 juv.
St. 57	8-10 m	Sandy clay	-	1 spec.
St. 69	40-45 m	Clay	-	1 juv.
St. 70	40-45 m	Clay	-	1 spec.

#### Remarks:

Many of the dredge hauls taken in the area contained fragments of *H. glacialis*, but only the specimens mentioned above are complete.

The fragments, as well as the complete specimens, were found in the outer basin exclusively.

The specimen from St. 55 which measured about 1 mm was found on the bryozoan *Entalophora clavata* (BUSK).

The specimen from St. 69 which had recently finished its metamorphosis was found on a leg of the pycnogonid *Nymphon (Chaetonymphon) hirtipes* (BELL.).

### Asteroidea

#### *Ctenodiscus crispatus* (BRUZ.)

*Ctenodiscus crispatus* MORTENSEN 1913, p. 330.

- - - 1932, p. 6.

#### Material:

Collected by P. JOHNSEN during the First Peary Land Expedition in the summer of 1949.

12.8.1949	21-46 m	7 spec.
No. 1630	30 m	4 spec.

Collected by the Fourth Peary Land Expedition in the summer of 1966.

St. 4	47.5 m	Clay	1/10 v. Veen	1 spec.
St. 5-6	27.5 m	Clay	-	3 spec.
St. 14	22 m	Clay	-	1 spec.
St. 15	22 m	Clay	-	1 spec.
St. 40	30 m	Sandy clay	Dredge haul	2 spec.
St. 41	50 m	Clay	-	1 spec.
St. 43	20 m	Clay	-	2 spec.
St. 51	18 m	Clay	-	1 spec.
St. 74	10 m	Sandy clay	-	1 spec.

Remarks:

In samples taken with v. Veen 1/10 m<sup>2</sup> bottom grab in the inner basin below 20 m. *C. crispatus* is present in 5 out of 6 samples; in dredge hauls taken in the same area the species is present in 3 out of 5. Apart from a single specimen on the threshold the species was found in the inner basin only.

The species is not present in the single dredge haul taken in the deepest part of the inner basin (St. 42, 85-90 m.).

*Solaster papposus* (L.)

*Solaster papposus* MORTENSEN 1913, p. 333.

- - - 1932, p. 17.

Material:

St. 69	40-45 m	Clay	Dredge haul	1 spec.
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Remarks:

The present specimen is very small, only 8 mm, and has 10 arms.

*Urasterias lincki* (MÜLLER & TROSCHER)

*Asterias Linckii* MORTENSEN 1913, p. 345.

*Urasterias Linckii* MORTENSEN 1932, p. 20.

Material:

Collected by P. JOHNSEN during the First Peary Land Expedition in the summer of 1949.

8.8.49	25 m	Clay	2 spec.
12.8.49	13 m		1 spec.
12.8.49	21-46 m		2 spec.
Aug. 1949	30 m		2 spec.

Collected by the Fourth Peary Land Expedition in the summer of 1966.

St. 31	8- 9 m	Clay	Dredge haul	1 spec.
St. 32	10 m	Clay w. algae	-	1 spec.
St. 39	5 m	Clay w. algae	-	1 spec.
St. 43	20 m	Clay	-	1 spec.
St. 44	17-18 m	Clay w. algae	-	1 spec.
St. 49*	5- 6 m	Clay w. algae	-	2 spec.
St. 51*	18 m	Clay	-	1 spec.
St. 55	12-13 m	Clay w. algae	-	3 spec.

Remarks:

The specimen from St. 44 has only four arms.

\* Material not brought home.

### Ophiuroidea

#### *Ophiacantha bidentata* (BRUZ.)

*Ophiacantha bidentata* MORTENSEN 1910, p. 274.

- - - 1913, p. 359.

- - - 1932, p. 26.

Material:

St. 52	160-180 m	Clay	Dredge haul	3 spec.
St. 56	190-200 m	Clay	-	2 spec.

#### *Ophiocten sericeum* (FORBES)

*Ophiocten sericeum* MORTENSEN 1913, p. 351.

- - - 1932, p. 34.

- - - THORSON 1933.

- - - 1934.

Material:

Collected by P. JOHNSEN during the First Peary Land Expedition 1947, 48 and 49.

1.6.47	28.5 m	Bottom grab	3 spec.
7.8.47	10 m	-	1 spec.
8.8.48	25 m	Dredge haul	12 spec.
28.5.49	13 m	Bottom grab	3 spec.
1.6.49	11 m	-	1 spec.
12.8.49	13 m	Dredge haul	4 spec.
12.8.49	21-46 m	-	2 spec.

Collected during the Fourth Peary Land Expedition in the summer of 1966.

St. 1	10.5 m	Sandy clay	1/10 v. Veen	3 spec.
St. 5	27.5 m	Clay	—	1 spec.
St. 10	25 m	Clay w. stones	—	3 spec.
St. 11	105 m	Clay	—	1 spec.
St. 15	22 m	Clay	—	1 spec.
St. 17	16 m	Sandy clay	—	1 spec.
St. 28	19 m	Clay	—	1 spec.
St. 30	8–10 m	Clay	Dredge haul	45 spec.
St. 31	8–10 m	Clay	—	20 spec.
St. 32	10 m	Clay w. algae	—	3 spec.
St. 35	12–13 m	Clay	—	Several
St. 40	30 m	Sandy clay	—	5 spec.
St. 41	50 m	Clay	—	11 spec.
St. 43*	20 m	Clay	—	Many
St. 44*	17–18 m	Clay	—	Many
St. 45	10 m	Clay	—	25 spec.
St. 49	5–6 m	Clay	—	4 spec.
St. 50	10 m	Clay	—	2 spec.
St. 51	18 m	Clay	—	29 spec.
St. 52	160–180 m	Clay	—	5 spec.
St. 53	8 m	Clay w. stones	—	225 spec.
St. 54*	15–20 m	Clay w. gravel	—	50 spec.
St. 55	80 m	Clay	—	2 spec.
St. 56	190–200 m	Clay	—	1 spec.
St. 57*	8–10 m	Sandy clay	—	30 spec.
St. 58*	20 m	Clay w. gravel	—	50 spec.
St. 59*	9–10 m	Stones	—	c. 150 spec.
St. 60*	20 m	Clay w. stones	—	c. 200 spec.
St. 61*	25–30 m	Sandy clay	—	c. 300 spec.
St. 62*	10 m	Stones & clay	—	c. 450 spec.
St. 63*	5 m	Clay w. gravel	—	65 spec.
St. 65*	30 m	Clay w. gravel	—	Many small
St. 67*	40–50 m	Clay	—	Many small
St. 68*	14–15 m	Clay w. gravel	—	c. 400 spec.
St. 69*	40–45 m	Clay	—	Many small
St. 71*	30 m	Clay	—	c. 100 spec.
St. 72*	10 m	Clay	—	c. 50 spec.
St. 73	30 m	Sandy clay	—	15 spec.

In addition a specimen that had recently finished its metamorphosis was taken in plankton haul Nr. 40 at a depth of c. 20 m.

Material marked with \* not brought home.

## Remarks:

Numerically *O. sericeum* is the dominant echinoderm in Jørgen Brønlund Fjord at depth below 5 m.

The reason why the species is not found at depths less than 5 m is most probably the very brackish fiord water layer, which with a thickness of about 5 m covers the fiord for about 2<sup>1</sup>/<sub>2</sub> months, (compare THORSON *op. cit.*).

The gonads of some females were examined, but because of poor preservation it was only possible to recognize the so-called stage of maturity 2 (THORSON *op. cit.*, p. 8).

In the present material this stage was 0.40–0.46 mm with an average of 0.44 mm. This is only a little more than half the size reached in the Solitærbugt area (0.75 mm).

*Ophiopleura borealis* DAN. & KOR.

*Ophiopleura borealis* MORTENSEN 1913, p. 352.

— — — 1932, p. 35.

## Material:

St. 69 40–45 m Clay Dredge haul 2 spec.

**Echinoidea***Strongylocentrotus droebachiensis* (O. FR. MÜLLER)

*Strongylocentrotus droebachiensis* MORTENSEN 1913, p. 365.

— — — 1932, p. 37.

## Material:

Collected by P. JOHNSEN during the First Peary Land Expedition in the summer of 1949.

8.8.49	25 m	Clay	2 spec.
12.8.49	13 m		2 spec.
Aug. 49	30 m		1 spec.

Collected by the Fourth Peary Land Expedition in the summer of 1966:

St. 13	7.5 m	Sandy clay	1/10 v. Veen	2 spec.
St. 30	9–10 m	Clay	Dredge haul	1 spec.
St. 31	9–10 m	Clay	—	1 spec.
St. 32	10 m	Clay w. algae	—	1 spec.
St. 35	12–13 m	Clay w. algae	—	2 spec.
St. 43	20 m	Clay	—	3 spec.
St. 44*	17–18 m	Clay	—	15 spec.

St. 45	10 m	Clay	Dredge haul	1 spec.
St. 49*	5-6 m	Clay	-	2 spec.
St. 50*	10 m	Clay	-	1 spec.
St. 51*	18 m	Clay	-	10 spec.
St. 53*	8 m	Clay w. stones	-	19 spec.
St. 54*	15-20 m	Clay w. gravel	-	1 spec.
St. 57*	8-10 m	Sand, clay, gravel	-	8 spec.
St. 58*	20 m	Clay w. gravel	-	14 spec.
St. 59*	9-10 m	Stones, clay, gravel	-	194 spec.
St. 60*	20 m	Clay	-	8 spec.
St. 61*	25-30 m	Sandy clay	-	76 spec.
St. 62*	10 m	Clay w. stones	-	156 spec.
St. 63*	5 m	Clay w. gravel	-	16 spec.
St. 64*	15-35 m	Stones	-	many
St. 65*	30 m	Clay w. gravel	-	40 spec.
St. 68*	10-15 m	Clay w. gravel	-	25 spec.
St. 72*	10 m	Clay w. gravel	-	12 spec.

Material marked with \* was not brought home.

In the summer of 1968 two specimens were taken in a salmon net in Jørgen Brønlund Fjord, (depth c. 4 m, O. NORDEN ANDERSEN leg.).

Remarks:

*Strongylocentrotus* is very common, in places absolutely dominant in regard to weight as well as to number, at depths between 5 m and 30 m.

The genus is under revision by MARGIT JENSEN, M. Sc. and it is possible that the present material represents more than one species or subspecies.

### Holothurioidea

#### Elasipoda

##### *Elpidia glacialis* THÉEL.

*Elpidia glacialis* MORTENSEN 1932, p. 41.

- - HEDING 1942, p. 18.

Material:

St. 56 190-200 m Clay Dredge haul 1 spec.

Remarks:

The single specimen is 2.5 mm in width, but since only the anterior half of the body is present, the number of dorsal papillae remains unknown. The spicules are slender with fairly long apophyses.

No wheels were found.



*E. glacialis* occurs in the deep parts of Baffin Bay (610–1880 m) and the Norwegian Sea (1412–2386 m), but is common at rather shallow water (70–230 m) in the Kara Sea.

### Apoda

#### Genus *Myriotrochus* Steenstrupp.

Unfortunately, because of a shortage of tubes and glasses, not all the material collected during the summer of 1966 was brought home. The material of *Myriotrochus* left behind was:

St. 44	17–18 m	Clay	Dredge haul	Many
St. 50	10 m	Clay	–	12 spec.
St. 51	18 m	Clay	–	13 spec.
St. 53	8 m	Clay w. stones	–	10 spec.
St. 57	8–10 m	Clay	–	4 spec.
St. 59	9–10 m	Stones, clay	–	5 spec.
St. 62	10 m	Stones, clay	–	15 spec.
St. 63	5 m	Clay	–	21 spec.
St. 72	10 m	Clay	–	8 spec.

The material brought home comprises two species:

#### *Myriotrochus rinkii* STEENSTRUP

<i>Myriotrochus rinkii</i>	MORTENSEN	1932, p. 40.
–	–	GORBUNOV 1933, p. 33.
–	–	HEDING 1935 a, p. 19.
–	–	– 1935 b, p. 63.

#### Material:

St. 1	10.5 m	Sandy clay	1/10 v. Veen	4 spec.
St. 7	11.5 m	Sandy clay	–	10 spec.
St. 8	11.5 m	Sandy clay	–	4 spec.
St. 16	16 m	Sandy clay	–	2 spec.
St. 21	11.5 m	Clay	–	2 spec.
St. 22	11.5 m	Clay	–	1 spec.
St. 23	5.5 m	Sandy clay	–	12 spec.
St. 24	5.5 m	Sandy clay	–	20 spec.
St. 28	19 m	Clay	–	1 spec.
St. 30	8–10 m	Clay	Dredge haul	21 spec.
St. 32	10 m	Clay w. algae	–	6 spec.
St. 34	15 m	Clay	–	1 spec.
St. 35	12–13 m	Clay w. red algae	–	6 spec.
St. 45	10 m	Clay	–	1 spec.

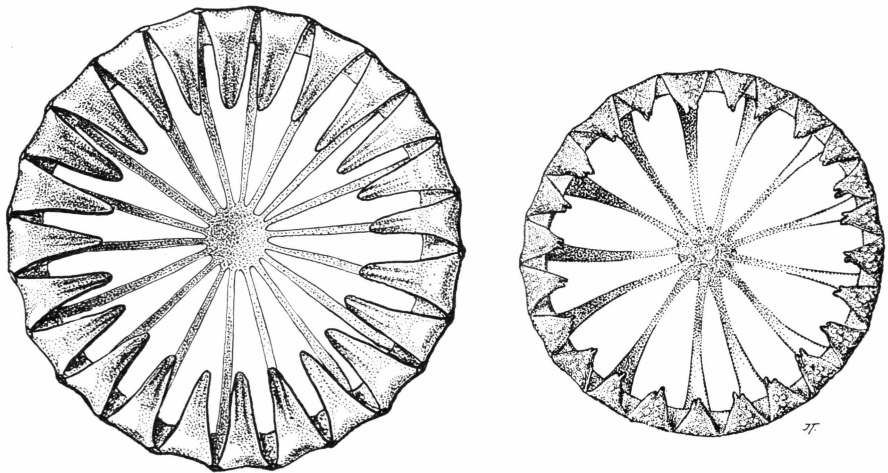


Fig. 1. Wheel of *M. rinki* (left) and *M. eurycyclus* (right). (Drawings: J. TESCH).

St. 49	5-6 m	Clay w. algae	Dredge haul	6 spec.
St. 60	30 m	Clay	—	1 spec.
St. 73	30 m	Clay	—	2 spec.

Remarks:

In Jørgen Brønlund Fjord the species is confined to very shallow water, from 5 to 30 m, with max. occurrence between 5 and 10 m. This agrees with the material collected along the east coast of Greenland, except for a few specimens taken at approx. 200 m (450 m wire) (see HEDING, 1935a).

The bifid teeth of wheels, present in some specimens from the east

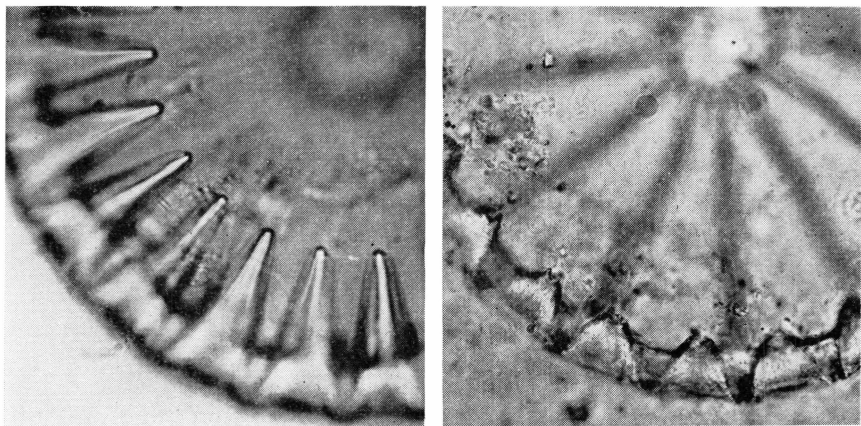


Fig. 2. Wheel of *M. rinki* (left) and *M. eurycyclus* (right).

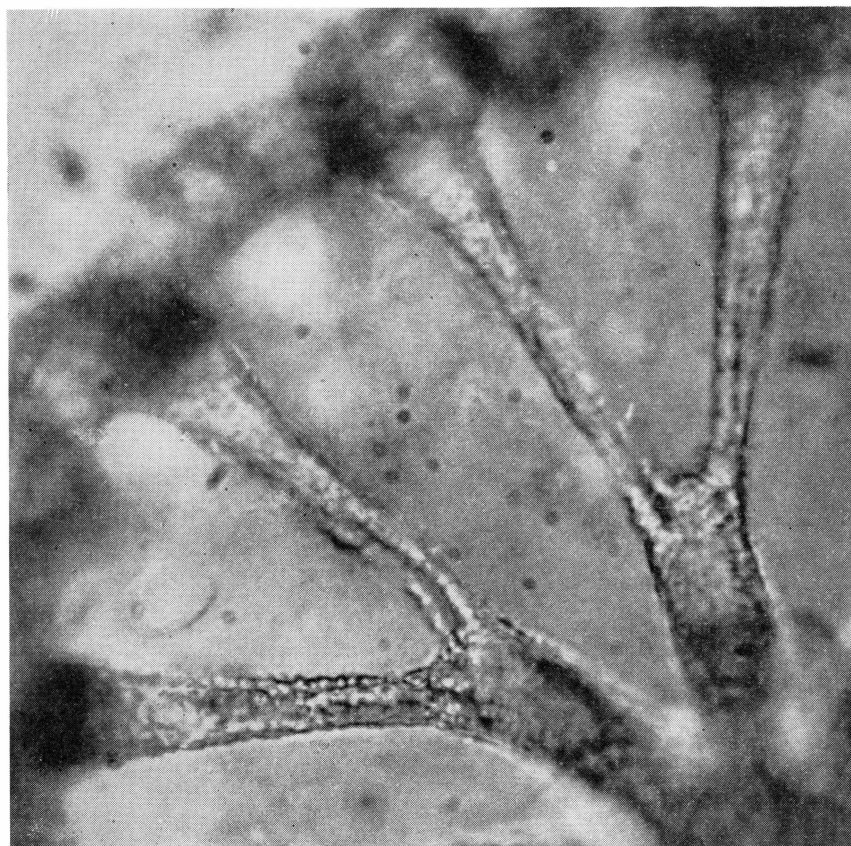


Fig. 3. Aberrant wheel of *M. eurycyclus*, found in the vicinity of tentacle-base.

coast of Greenland (HEDING, 1935b) were not found in the present material.

The parasitic gastropod *Entocolax ludvigi* VOIGT (det. LÜTZEN) was found in some specimens.

*Myriostrochus eurycyclus* HEDING.

*Myriostrochus eurycyclus* GORBUNOV 1933, p. 33. (nom. nud.)

— — HEDING 1935c.

— — GORBUNOV 1946.

Material:

St. 22	11.5 m	Clay	1/10 v. Veen	8 sp.
St. 30	8–10 m	Clay	Dredge haul	2 sp.
St. 31	8–10 m	Clay	—	10 sp.
St. 34	15 m	Clay	—	11 sp.

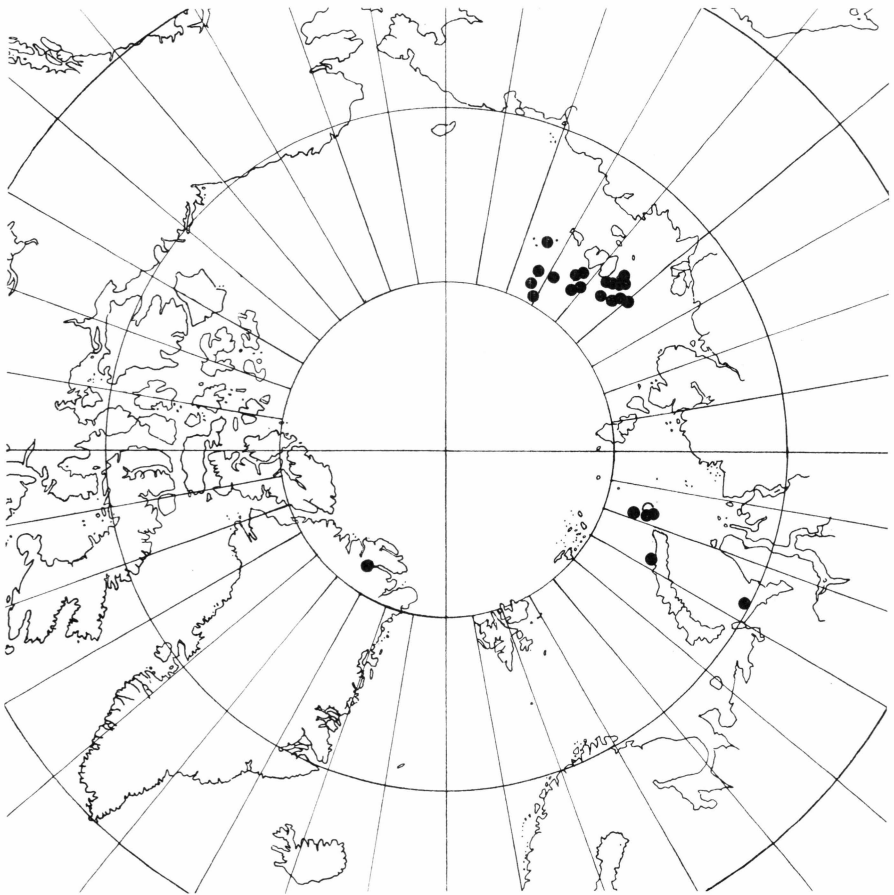


Fig. 4.: Distribution of *M. eurycyclus*.

St. 40	30 m	Sandy clay	Dredge haul	1 spec.
St. 44	17-18 m	Clay	—	5 spec.
St. 50	40 m	Clay	—	1 spec.

Remarks:

The specimens examined agree with the species described by HEDING, except for the wheels in the body-wall. HEDING writes: "The wheels are very like those of *M. rinkii* STP." This does not fit in with my observations. The average diameter of the wheels of both species is about 230 micron. The number of spokes in the wheels of *M. rinkii* range from 17 to 23 with an average of 19, while the number of spokes in the wheels of *M. eurycyclus* range from 9 to 15 with an average of 13. Overlapping was not found. The teeth on wheels of *M. rinkii* are shaped like an isosceles triangle with the base  $\frac{2}{3}$  the length of the sides, whereas in *M. eurycyclus*

the shape is like an equilateral triangle. This difference means that the length of the teeth compared with the radius is  $2/5$  in wheels of *M. rinki* but only  $1/5$  in wheels of *M. eurycyclus*.

The points of the teeth of *M. rinki* are blunt, whereas in *M. eurycyclus* they show a distinct bifidity.

The material brought home shows that *M. rinki* and *M. eurycyclus*, even where both species were found within a small area, mix with each other to but a slight degree.

Out of 21 stations the species are found together at only 3:

	<i>M. rinki</i>	<i>M. eurycyclus</i>
St. 22	1 spec.	8 spec.
St. 30	21 spec.	2 spec.
St. 34	1 spec.	11 spec.

This shows that even in the mixed stations one of the species will dominate remarkably.

The stations 30 and 31 were taken on the same day at the same depth, and within 30 m of each other; the distribution here was:

	<i>M. rinki</i>	<i>M. eurycyclus</i>
St. 30	21 spec.	2 spec.
St. 31	—	10 spec.

THÉEL (1877, p. 6) writes about specimens of *M.* which he called *rinki*: "Les rais, dont le nombre oscille entre seize et vingt-quatre — quelque fois même nous n'en avons pu compter que dix à douze —," further THÉEL writes on p. 7 "—, et une seule fois un individu nous a montré dans le voisinage des tentacules quelques roues d'une forme s'écartant en une certaine mesure de celle qui a été décrite plus haut: cette dernière paraît donc être assez constante." These observations show that THÉEL has had *M. eurycyclus* at hand.

After checking the material of *Myriotrochus* from Greenland in the Zoological Museum of Copenhagen it is ascertained that *M. eurycyclus* has not previously been found in Greenland waters.

The known distribution is shown on fig. 4.

The parasitic gastropod *Entocolax schwanwitschi* MANDAHL-BARTH (det. LÜTZEN.) was found in some specimens.

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