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ON THE AMPHIPOD *METOPA GROENLANDICA* H. J. HANSEN FOUND IN THE MANTLE CAVITY OF THE LAMELLIBRANCHIATE *PANDORA GLACIALIS* LEACH IN EAST GREENLAND

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WITH 2 FIGURES IN THE TEXT

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As a part of an investigation on the size of the eggs and the reproduction of the arctic Lamellibranchs the East-Greenland representatives of the genera *Thracia*, *Lyonsia* and *Pandora* in particular were treated more fully, as the forms of these genera in the southern seas had all proved to be hermaphrodite; it was thus of interest to have confirmed if a similar condition persisted in the arctic species of the genera. Through this investigation it turned out that the mantle cavity of the high-arctic Lamellibranch, *Pandora glacialis* LEACH, fairly regularly contained specimens of a certain Amphipod species, which on a closer inspection proved to be identical with *Metopa groenlandica* H. J. HANSEN[1]). It was then resolved to investigate this condition more closely, and the entire spirit collection of *Pandora glacialis* at hand was revised.

Pandora (*Kennerlia*) *glacialis* LEACH is a high-arctic circumpolar species[2]),[3]), the southern limits of which are East Canada and the Murman Coast, but it is lacking already at West Greenland and Iceland. Systematically it belongs to the most highly specialized Lamellibranchs. This is indicated besides by the above mentioned hermaphroditism (which was also stated in *P. glacialis*) also by the strongly united mantle lobes, which are free only at the anterior end of the animal so as to allow the foot to pass through the orifice thus formed. Owing to this union the mantle cavity is almost cut off from the surrounding medium, so that it cannot be accidental that *Metopa groenlandica* is found inside, as *M. groenlandica* must necessarily have forced its way into the mantle cavity through the small orifice for the foot. In East Greenland (from where all the spirit specimens of the Zoological Museum originate) *Pandora glacialis* is fairly common on the shallow sand bottom areas at the outer coast; in the outher district of Scoresby Sound it has been taken in a number of 6 specimens per sq. m. bottom[4]). The species is particularly

[1]) On the synonymy and description of this species, see K. STEPHENSEN, in Medd. om Grønl., Bd. 118, Nr. 4, 1936, Copenhagen.

[2]) HÄGG, R., Arkiv för Zoologi, uttg. av Kungl. Sv. Vetensk. Akad. Vol. 2, No. 2, 1904, Stockholm.

[3]) JENSEN, AD. S., On the *Mollusca* of Greenland. 1: *Lamellibranchiata*. Medd. om Grønl., Bd. XXIX, 1909, Copenhagen.

[4]) THORSON, G. & USSING, H., Contributions to the Animal Ecology of the Scoresby Sound Fjord Complex (East Greenland). Medd. om Grønl., Bd. 100, Nr. 3, 1934, Copenhagen.

characteristic in that its right shell is quite flattened, and as its left shell is only slightly convex, the lumen between the shells thus is very inconsiderable, which makes it still more surprising that *Metopa* selects just this species for a habitat.

Altogether 23 specimens of *Pandora* from 5 different East Greenland localities have been examined, and the occurrence of *Metopa groenlandica* in these is shown in the subjoined table.

Metopa groenlandica thus was found in 8 of 23 specimens examined of *Pandora* (i. e. in about 35 per cent. of the population), and in these 8 specimens there were in all 19 specimens of *Metopa*. Fig. 2 shows a spec-

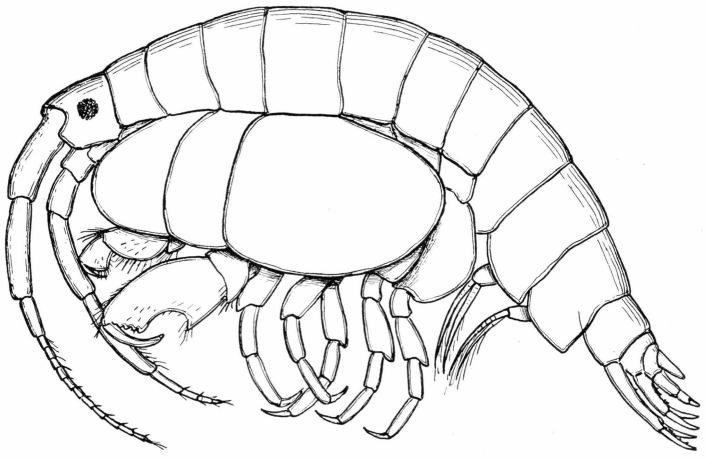

Fig. 1. *Metopa groenlandica* ♂.

imen of *Pandora glacialis*, in which the left shell has been removed. On the outer side of the left gill 2 young *Metopa groenlandica* are seen, which seem to adhere to the gill by sticking their antennae in between the gill lamellae. Between the gills an adult *Metopa groenlandica* is also seen lying freely with its back downwards and its head pointing towards the caudal end of the *Pandora*. This position of the *Metopa* individuals in *Pandora* was characteristic of almost all the specimens examined. The fact that the same individual of *Pandora* often contained both adult *Metopas* and quite a number of young ones, which judging from their size had only recently left the incubatory chamber, probably indicates that *M. groenlandica* is capable of propagation inside the mantle cavity of *Pandora* without leaving it. But nothing definite can be said about this condition at present.

In this place it should be pointed out that the forms closely related with *Pandora: Lyonsia arenosa* and *Thracia truncata* (both of which have their mantle borders fused) were examined very carefully, and not a single specimen of *Metopa* was found in these species. The present material of

Sabine Island (74°30′ N. 19°30′ W.), depth unknown, July, 12, 1900. (Søren Jensen leg.).		Off Cape Stosch (74°10′ N. 21°40′ W.), depth 15 m, August, 4, 1930, Sand. (B. Løppenthin leg.).		Off Cape Hooker (70°30′ N. 22°30′ W.), depth 13 m, July, 15, 1933, Sandy clay, (G. Thorson leg).		Hurry Inlet near the mouth (70°30′ N., 22°00′ W.), depth 6—9 m. July, 4, 1933, Sand. (G. Thorson leg.).		Hurry Inlet off the Fame Isles (71°30′ N., 22°00′ W.), depth 12 m, July, 8, 1933, Clay. (G. Thorson leg.).	
Pandora glacialis	*Metopa groenlandica*	*Pandora glacialis*	*Metopa groenlandica*	*Pandora glacialis*	*Metopa groenlandica*	*Pandora glacialis*	*Metopa groenlandica*	*Pandora glacialis*	*Metopa groenlandica*
1 ad. sp.	1 ad. sp. (5 mm) 3 young sp.	1 ad. sp.	1 young sp. (♀?).	1 ad. sp.	none sp.	1 ad. sp.	1 ad. sp. (♀, 5 mm), 5 young sp. (ca. 1 mm)	3 ad. sp. 1 young sp.	none sp.
3 ad. sp.	none sp.	1 ad. sp.	1 half-grown sp. 2 young sp.			1 ad. sp.	1 ad. sp. (♂), 1 young sp.		
		1 ad. sp.	1 young sp.			1 half-grown sp.	1 half-grown sp.		
		1 ad. sp. 2 half-grown sp.	none sp.			1 half-grown sp.	1 young sp.		
						2 ad. sp. 2 half-grown sp.	none sp.		

Thracia (which like *P. glacialis* lives on sand bottoms) was however very small, so that nothing can be evidenced by this, whereas the material of *Lyonsia* was rather considerable. *Lyonsia arenosa* is however a pronounced clay bottom form, and much favours the opinion that *M. groenlandica* is highly attached to sand bottoms. In the present material of *Pandora*, *M. groenlandica* was by far most common at pure sand bottom localities, while it was lacking at the 2 localities (Cape Hooker and Fame Isles), where the *Pandoras* were taken on clay bottom. The material however

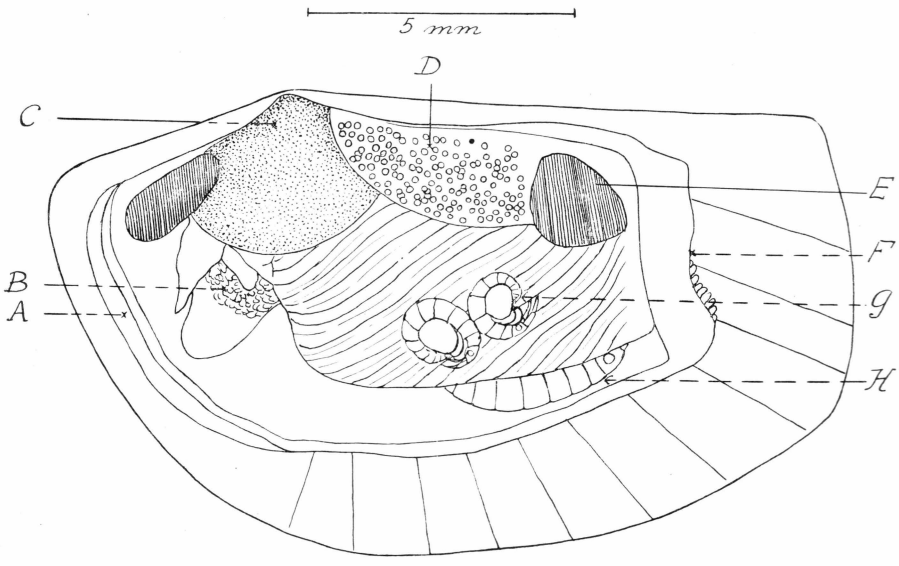

Fig. 2. *Pandora glacialis* LEACH. Left shell removed; with 3 specimens of *Metopa groenlandica* H. J. HANSEN in the mantle-cavity. *A*. slit for the foot, *B*. Testis, *C*. Liver, *D*. Ovary, *E*. Adductor posterior, *F*. Siphon, *G*. Young specimens of *Metopa* attatched to the gills, *H*. Adult *Metopa* lying free between the gills. Off Cape Stosch, depth 15 m, August, 4, 1930 (B. Löppenthin leg.).

is not sufficiently large to decide this, but as *Metopa groenlandica* is known to select Ascidians for their habitat occasionally (see below), its absence in *Lyonsia* can hardly be explained in any other way.

On previous records of associations(?) between *Stenothoidæ* and *Coelenterates* etc. The majority of the species of the fam. *Stenothoidæ* (incl. fam. *Metopidæ*) would seem to live on Hydroids (see i. e. G. O. Sars: Crust. of Norway, vol. 1, Amphipoda 1895, p. 234 seq., under the individual species), but there are in the literature a few records of specimens found in the body of Coelenterates or Ascidiæ. We have, too, gone through the whole collection of Stenothoidæ in the Zool. Museum, Copenhagen; the few cases of specimens found in Ascidiæ (— none was found in Coelenterates —) are listed below.

Metopa groenlandica H. J. H. is found in Ascidiæ, viz., in *Ascidia prunum* (from Thule, N. Greenl.), in *Boltenia bolteni* L. (from ?W. Greenland) (K. Stephensen, Amphip. pt. 3, "Ingolf"-Exped. vol. 3, pt. 11, 1931, p. 194; "*Proboloides clypeatus*"), in *Molgula groenlandica* (from Egedesminde, W. Greenl.; specimens in the Zool. Mus., Copenhagen) and (*M. hirsutimana* Blake (= *M. groenlandica* H. J. H.)) in the branchial chamber of the Ascidian *Pyura ovifera* (from the Mount Desert Region, Maine, U. S. A.; Chas. H. Blake: Crustacea, in Will. Procter: Survey of the Mount Desert Region. pt. 3, Philadelphia 1929, p. 20).

Metopa sólsbergi Sp. Schneider is found in association with *Actinoloba dianthus* (at Keppel Pier, Scotland; R. Elmhirst: Associations between the Amphipod genus Metopa and Coelenterates; in: Scottish Naturalist, Sept.-Oct. 1925, pp. 149—150). Elmhirst writes: "the slime of the Actinoloba seems to be its natural food", but when placed on other Anemones, the Metopa generally emerged again.

Metopa borealis G. O. Sars, in association with the medusoid *Phialidium* in plankton (Scotland), from Oct. to March (R. Elmhirst, loc. cit. above, p. 150).

Stenothoë valida Dana in loggerhead sponges *Speciospongia vespara* (Lamarck) Marshall (near Dry Tortugas, Florida; A. S. Pearse, in: Carnegie Inst. of Washington, Publ., no. 435, 1931, p. 119), and in *Ascidiæ* from Rio Janeiro (specimens in Zool. Mus., Copenhagen).

Stenothoë cavimana Chevreux, in sponges (off St. Jean-de-Luze, south of Bayonne; Chevreux & Fage, in: Faune de France, vol. 9, p. 139).

Færdig fra Trykkeriet den 1. Juli 1936.