

Protoperidinium arcticum (Grøntved et Seidenfaden) Okolodkov 1997
 Botanical Journal, Russian Academy of Sciences 82(5): 101-103; Fig. 2.

Basionym: *Peridinium ovatum* forma *arcticum* Grøntved et Seidenfaden 1938, Meddelelser om Grønland 82(5): 194-195, Fig. 67.

Grøntved et Seidenfaden 1938

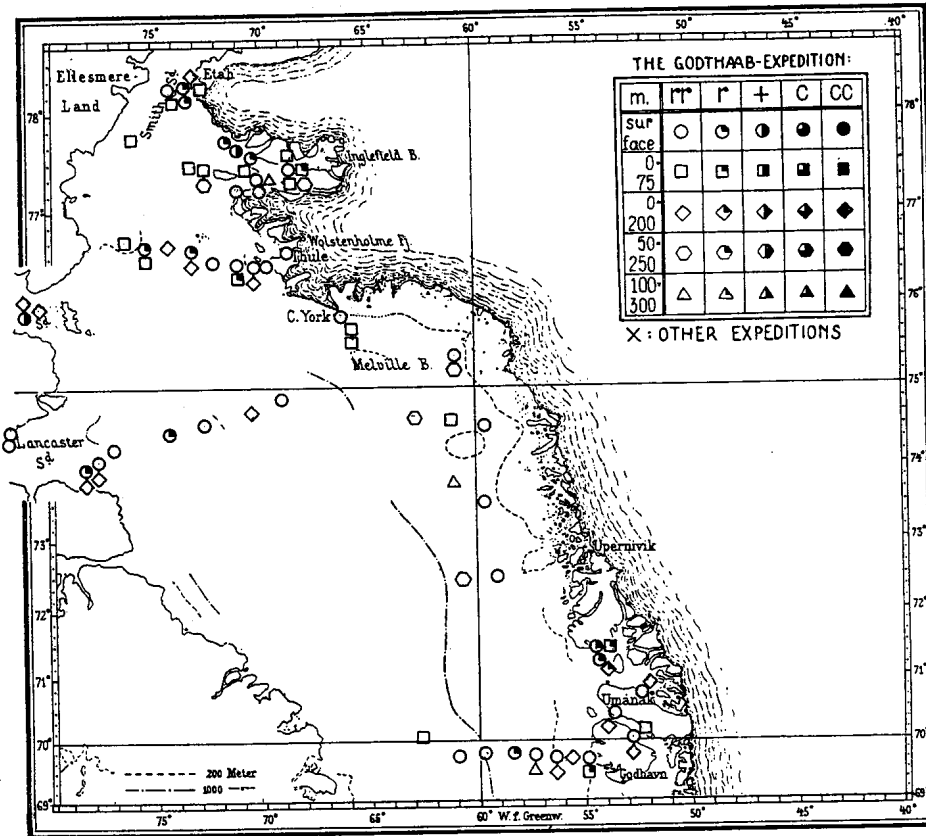


Fig. 66. Distribution of *Peridinium ovatum* f. *arctica*.

forma arctica nov. forma.

From Disko Island and northward a form was found which differs from the type by having a less rounded hypotheca and a more elongated epitheca with convexo-concave sides; thus the cell has an appearance differing from that of *P. ovatum*, and we therefore referred it to a new form, *forma arctica*, characterised by the shape of the cell, as stated above and shown in fig. 67.

In *f. arctica* the girdle is displaced about one girdle's width, the spines are rather long, without wings, the specimens studied more closely had a symmetrical arrangement of the dorsal epithecal plates.

The new form was observed in 84 samples distributed over 68 stations, as will appear from the map of distribution in fig. 66. It may be said to replace the main form to some extent, not being found till north of the Holsteinsborg Ridge, where the main form became rarer. It attained its greatest frequency in Smith Sound and Inglefield Gulf, where it was present at most of the stations both to the east and west. Furthermore it was found in the majority of the September-samples

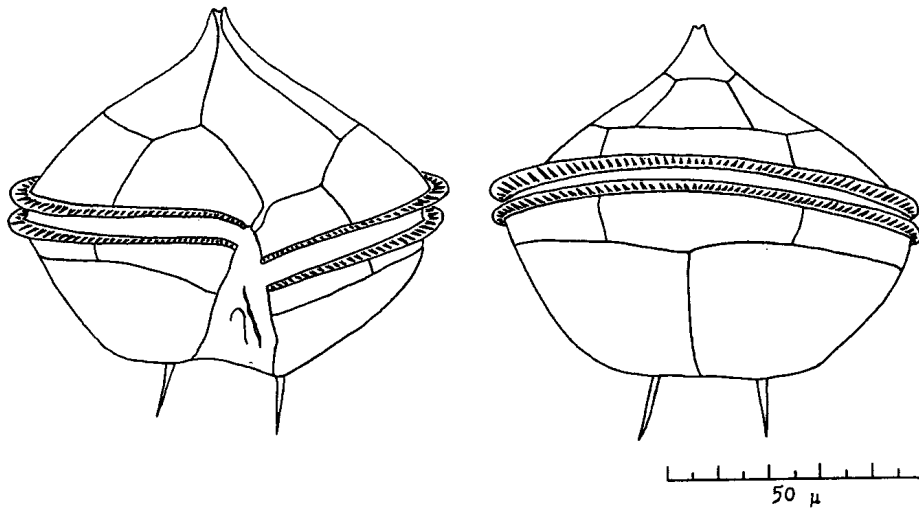


Fig. 67. *Peridinium ovatum* f. *arctica* nov. f. From Station 107, surface.

from the fjords of West Greenland. Its rare occurrence in Melville Bay is remarkable; presumably it will develop there after the end of the diatom maximum.

Genus *Protoperidinium* Bergh

Subgenus *Protoperidinium* (Gran) Balech
Group *Metaperidinium*
Section *Humilia*

***Protoperidinium arcticum* (Grøntved et Seidenfaden) Okolodkov comb. nov.** — *Peridinium ovatum* f. *arctica* Grøntved et Seidenfaden, 1938, Meddel. Grøn. Komm. Vidensk. Unders. Grøn. 82, 5 : 194—195, fig. 67. — *P. granii* auct. non Ostenfeld: Schiller, 1937 : 189, 192, fig. 188a—d; Киселев, 1950 : 182, fig. 307a—b, non fig. 301a—r, nec fig. 307 r—e. — *Protoperidinium granii* auct. non Balech; Wiktor, Okolodkov, 1995 : 84, fig. 34a—d.

Description. Cells 72 μm long including spines (length of spines 10 μm), 60 μm wide, 56 μm deep, slightly flattened dorsoventrally, in ventral view almost pentagonal (fig. 2, 1), in apical view almost circular, more depressed ventrally (fig. 2, 2). Epitheca and hypotheca almost equal in size. Epitheca almost straight-sided, with a short apex. Hypotheca has slightly convex or straight sides and a flattened antapical end with two slender winged spines. The first apical plate (1') meta, bordering plates 1'', 2'', 7'', 2' and 4'. The second intercalary plate (2a) quadra, trapezoid, bordering four plates and situated in front of the middle of the fourth precingular plate (4'') or slightly shifted to the left side of the cell. Girdle not excavated (planozone), median, ascending (right-handed), displaced 0.5—1.3 girdle width and bordered by lists supported by spines. Sulcus widens to the antapex and reaches it. Left margin of the sulcus is bordered by

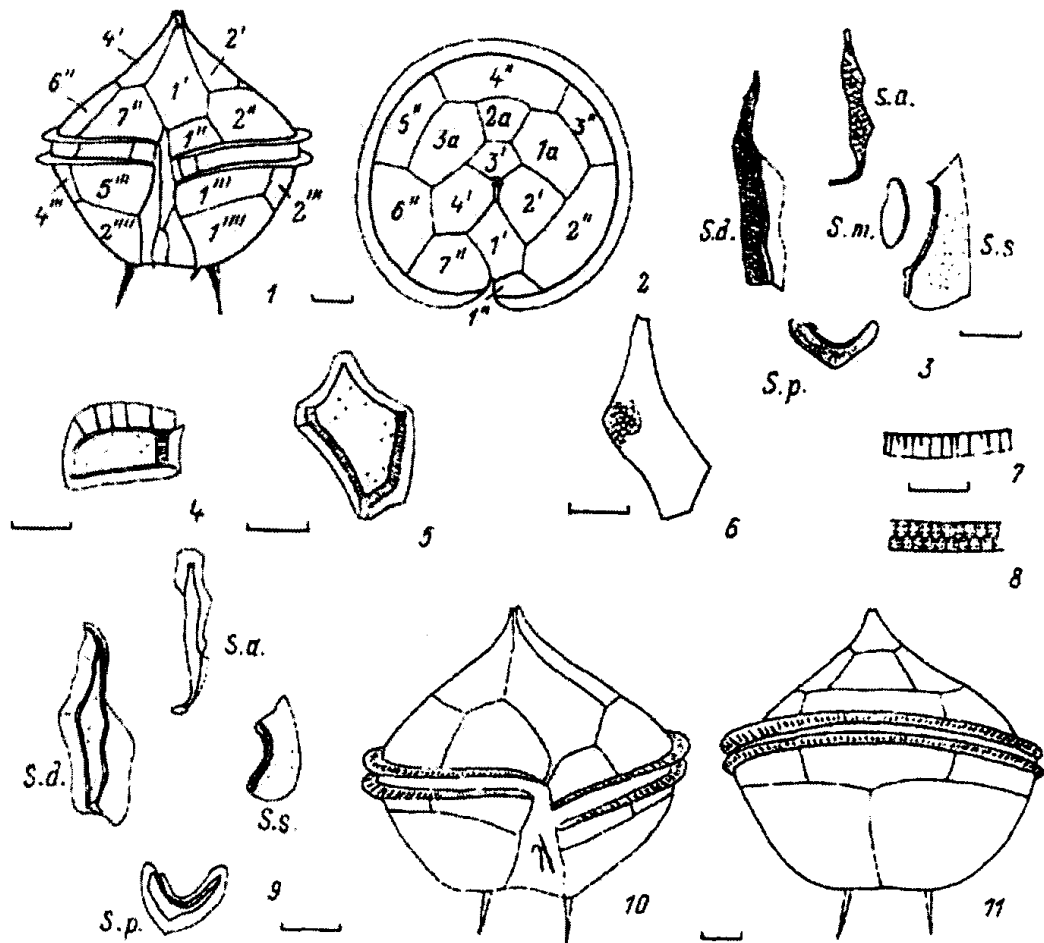


Fig. 2. Morphology of *Protoperidinium arcticum*.

1 — a cell in ventral view; 2 — the epitheca in apical view; 3 — the sulcal plates (S. a. — anterior, S. s. — left, S. m. — median, S. p. — posterior, S. d. — right); 4 — the first postcingular plate; 5, 6 — the first apical plate in two different cells; 7 — a fragment of cingular list; 8 — a fragment of a cingular plate; 9 — the sulcal plates of another cell (S. a. — anterior, S. s. — left, S. p. — posterior, S. d. — right); 10 — a cell in ventral view; 11 — a cell in dorsal view. (Figures 10, 11 — after: Grøntved, Seidenfaden, 1938). Scale bar — 10 μ m.

conspicuous list. Surface often finely reticulated, with sparse pores irregularly arranged. Structure of cingular plates (fig. 2, 8) is close to that in *Protoperidinium pyrum* (Balech) Balech, 1974, a species with meta 1' plate and penta 2a plate (Balech, 1974). Plate formula: 4', 3a, 7'', 3c, 5s(?), 5'', 2''''.

Remarks. A new form *Peridinium ovatum* f. *arctica* differs from the type form «by having a less rounded hypotheca and a more elongated epitheca with convex-concave sides» (Grøntved, Seidenfaden, 1938 : 194; fig. 2, 10, 11 in this paper). On the basis of the present study, *P. arcticum* is close to *P. ovatum* var. *ovatum*, but differs from the latter in the shape of the cell, almost pentagonal in *P. arcticum* and globular in *P. ovatum* var. *ovatum* (see Balech (1988) for the latter), and in the shape of the posterior sulcal plate (S. p.), sharp-cornered and V-shaped in the former (fig. 2, 3, 9) and crescent-shaped in the latter. Unlike the cells studied in the present article, J. Grøntved and G. Seidenfaden (1938) did not observe the wings bordering antapical spines. However, narrow wings can be easily overlooked under a bright field microscopy. In contrast to the cell pictured by Grøntved and Seidenfaden, our cells are characterized by not excavated (planozone) cingulum (fig. 2, 1), rather than excavated, cavozone (fig. 2, 10). Besides, *P. arcticum* bears some resemblance to *P. mite* (Pavillard) Balech, 1974. (Balech, 1976), and *P. granii* in appearance, but the latter has the second intercalary plate (2a) of penta type (Dodge,

1985; Balech, 1988). The shape of the left sulcal plate (*S. s.*) in *P. arcticum* shows closer similarity to *P. ovatum*, rather than *P. mite*.

Distribution. The species has been so far recorded only from the Chukchi Sea (the present study), Baffin Bay and Davis Strait (Grøntved, Seidenfaden, 1938). In addition, it was found in the sample collected by C. Hellum von Quillfeldt from Davis Strait, near Maniitsoq, West Greenland, on 29 July 1995. The species is most likely Arctic-boreal.

References:

Grøntved J. Et G. Seidenfaden (1938) The Phytoplankton of the waters west of Greenland. – Meddelselser om Grønland 82(5): 1-380. [Oct. 1938]

Okolodkov Y. (1997) A new combination and new species of *Gymnodinium*, *Gyrodinium* and *Protoperidinium* (Dinophyceae) from the Arctic and N.E. Atlantic. – Botanical Journal, Russian Academy of Science 82(5): 96-105.