



The cystoid *Pleurocystites* (Echinodermata) from the Ordovician of North Greenland

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A single specimen of *Pleurocystites* (Echinodermata; Pleurocystitidae), most probably closely related to *P. squamosus* Billings, is recorded from the Cape Calhoun Formation of Troedsson (1928) at Wright Bugt, Washington Land, western North Greenland.

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Apart from a single specimen found in a glacial erratic near Westerhaar, Netherlands (Breimer, 1963), the cystoid genus *Pleurocystites* is only known from the Ordovician of the British Isles and continental North America. The discovery of a specimen of *Pleurocystites* from the Cape Calhoun Formation at Wright Bugt, Washington Land, western North Greenland (see Jobson & Paul, this report, fig. 1), seems worth reporting and strengthens the general correlation between the Cape Calhoun Formation and the Trenton Limestone of Canada (see Paul, 1976, p. 33). Cape Calhoun Formation is used in the *sense* of Koch (1929) and Troedsson (1928). Peel & Hurst (in press) redefine late Middle Ordovician – Early Silurian units in Washington Land. In their more restricted usage, the specimen of *Pleurocystites* was derived from the Troedsson Cliff Formation (equivalent to parts of the Troedsson Cliff Formation and Cape Calhoun Formations *sensu* Koch, 1929). Unfortunately, only the anal face of the specimen is exposed which precludes definite identification, but there is no doubt that it is a *Pleurocystites*, probably most closely related to *P. squamosus* Billings from the Trenton Limestone.

Pleurocystites sp.

Figs 1, 2

Description

Stem: two or three proximal columnals remain attached to the theca, but otherwise the stem is unknown. At the junction with the theca the stem is nearly 5 mm in diameter. The outer flanges of the preserved proximal columnals appear to be smooth.

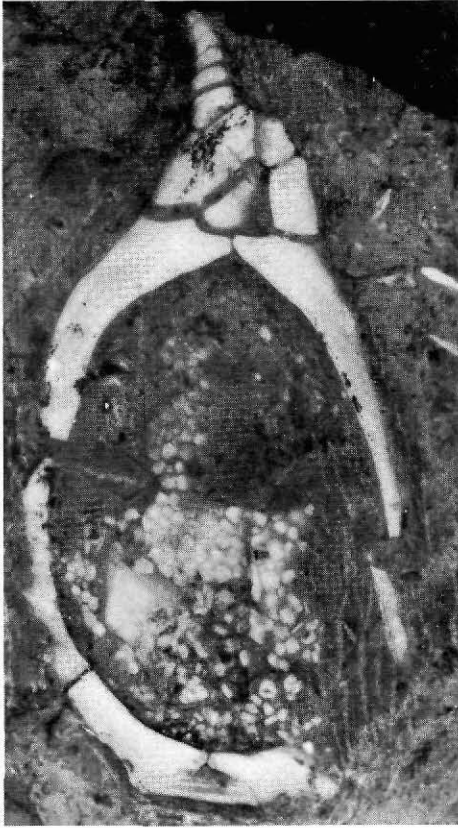


Fig. 1. *Pleurocystites* sp., MGUH 14255 from GGU sample 206406. Photographed under water to enhance contrast, $\times 3$.

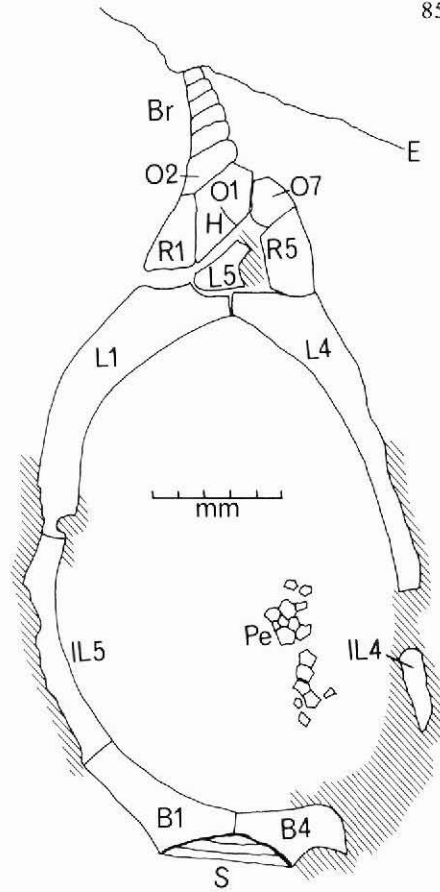
Theca: oval, approximately 27 mm long from the stem to the base of the brachioles, by 17 mm maximum width. Only the periproctal rim is visible and even this is partly incomplete. The periproct forms a high proportion of the anal face, perhaps 80 per cent. The periproct border is 2 mm wide at most. The periproct itself was covered with small periproctal plates, a few of which remain. The largest periproctal is almost 1 mm in major dimension, but most of those preserved are slightly smaller. A rectal lobe was apparently present, but unfortunately this area of the theca is damaged. The periproct border is formed by the usual six plates, B1, B4, IL4, IL5, L1 and L4 (fig. 2), all of which are smooth. In the oral area plates L5, R1, R5, O1, O2 and O7 are present (fig. 2) with traces of the hydropore visible on plate O1.

Subvective system: the proximal 3 mm of the right brachiole are preserved with five brachiolar plates visible, tapering from 2 mm wide adjacent to the theca to 1 mm at the broken edge. No cover plates are visible.

Remarks

Pleurocystites cystoids are the most distinctive and unmistakable of all cystoid genera because the theca is flattened and the periproct expanded to fill a large proportion of one surface (the

Fig. 2. *Pleurocystites* sp., MGUH 14255 from GGU sample 206406. Camera lucida drawing to show interpretation of thecal plates. B1, B4, basal plates; Br, brachiole; E, edge of slab; H, hydropore; IL4, IL5, infra-lateral plates; L1, L4, L5, lateral plates; O1, O2, O7, oral plates; Pe, periproctal plates; R1, R5, radial plates; S, stem. Matrix obscuring parts of the theca indicated by shading.



anal face) in all genera but *Deltacystis*. *Pleurocystites* is characterized by the presence of two or three conjunct pectinirhombs on the other, or dorsal, face. Thus, to be absolutely certain of the genus, let alone the species, it is necessary to have both faces of the theca visible. The present specimen can be assigned to *Pleurocystites* with a fair degree of certainty from the available information on the periproctal face. In *Amecystis* the periproct border is much narrower, while in *Praepleurocystis* and Ordovician species of *Regulaecystis*, the thecal outline is different and the periproct border much wider (see for example Parsley, 1970, pl. 26, fig. 5; pl. 28, figs 1-8).

The general outline and small periproctal plates suggest affinities with *P. squamosus* Billings. The curvature of the inner margin of plate B4 indicates the presence of a rectal lobe even though this is not preserved, again suggesting affinities with *P. squamosus*. However, there are slight differences in the arrangement of the plates in the oral area and those forming the periproct border are smooth, not granular as in *P. squamosus*.

References

- Beimer, A. 1963: On a specimen of *Pleurocystites* (Cystoidea) from an erratic boulder near Westerhaar (Netherlands). *Proc. K. ned. Akad. Wet.* **B**, **66**, 296-302.
 Koch, L. 1929: The geology of the south coast of Washington Land. *Meddr Grønland* **73**(1), 39 pp.

- Parsley, R.L. 1970: Revision of the North American Pleurocystitidae (Rhombifera-Cystoidea). *Bull. Am. Paleont.* **58**, 135-213.
- Paul, C.R.C. 1976: Ordovician echinoderms from Greenland. *Geol. Mag.* **113**, 29-38.
- Peel, J.S. & Hurst, J.M. (in press): Late Ordovician and early Silurian stratigraphy of Washington Land, western North Greenland. *Rapp. Grønlands geol. Unders.*
- Troedsson, G.T. 1928: On the Middle and Upper Ordovician faunas of northern Greenland. II. *Meddr Grønland* **72**(1), 1, 197 pp.