Ordovician chitinous hydroids from Peary Land, eastern North Greenland

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Three specimens of chitinous hydroids recovered from the Børglum River Formation (Middle-Late Ordovician) of central Peary Land, eastern North Greenland, are briefly described and illustrated by scanning electron microscopy. In two specimens the entrance to the theca is greatly reduced by a well developed diaphragm which is absent in the third specimen.

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During investigation of acid resistant residues from several Lower Palaeozoic limestones from North Greenland, a small number of fragmentary remains of chitinous hydroids were revealed in a single sample. The sample (GGU 184155) is a grey, fine grained, sparsely fossiliferous limestone from the top of the Børglum River Formation of Middle-Late Ordovician age. It was collected in 1974 by J.S. Peel (GGU) and R.L. Christie (Geological Survey of Canada) in the Børglum Elv region of central Peary Land, eastern North Greenland, (Christie & Peel, 1977, section G, unit 12). In addition to hydroids the acid residue contained a fauna including chitinozoa and scolecodonts.

Description of hydroids

Three specimens of chitinous hydroids were investigated using scanning electron microscopy (fig. 1). All show the well preserved hydrosome forming a cylindrical, hollow, straight, tube, approximately 40-60 μ in diameter. The hydrosome shows no sign of branching. On two specimens the preserved parts of the thecae are rather similar (fig. 1C,A,H). They are connected to the hydrosome through short hollow peduncles (fig. 1C,H) and, on the basis of two specimens, appear to be oriented differently. A notable feature of the thecae is a slightly raised diaphragm which narrows the entrance to the peduncle to a diameter of 10-12 μ (fig. 1A,B). This feature supports interpretation of the fossils as thecate hydroids, many forms of which possess a diaphragm of this type in their hydrothecae (Hyman, 1940, p.402).

The third specimen (fig. 1D-F) exhibits a pair of thecae which are both smaller and with a somewhat different shape. The lowermost theca (fig. 1F) is more or less tulip shaped, whereas the uppermost is more round and bulb shaped, with only a small opening (fig. 1E). Whether these thecae are polymorphs or possibly hydrothecal buds is uncertain.

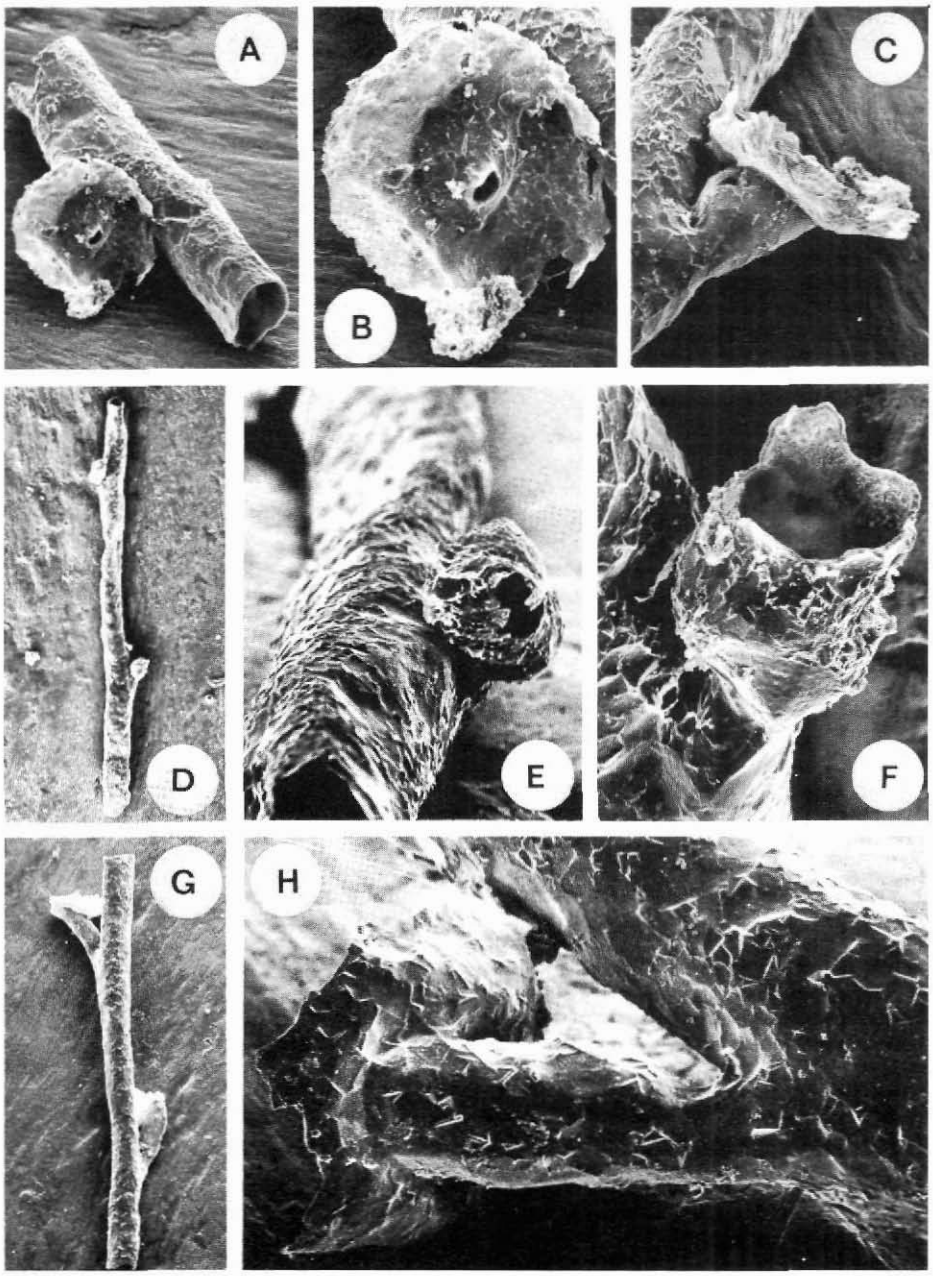

Fig. 1. Ordovician chitinous hydroids. Scanning electron micrographs of specimens from GGU sample 184155. A-C, MGUH 14249; A, × 190; B, × 360, note the diaphragm with central, elevated perforation; C, × 320. D-F, MGUH 14250; D, × 60; E, × 880, uppermost theca; F, × 730, lowermost theca. G, H, MGUH 14251; G, × 38; H, × 500, uppermost theca.

All specimens show a secondary surface texture consisting of imprints from carbonate grains and crystals (fig. 1C,H), leaving no trace of original ornamentation.

Discussion

Taxonomic assignment of the described specimens is difficult. It has already been stressed by Kozlowski (1959, p. 212) that it is too early to refer fossil species to specific families defined on the basis of recent species, because of insufficient knowledge about fossil hydroids through time. He reached the conclusion that it is necessary to operate only with the taxonomic units genera and species within the Order Hydroida, and that it is too early to erect new families to accomodate fossil hydroids. This statement is no less valid today.

In comparing species of fossil hydroids, consideration of the form of the thecae is essential. Two of the specimens illustrated here (fig. 1A-C; G,H) have very similar thecae, both having a basal diaphragm and a rather abrupt junction to the peduncle. Since only the basal part is preserved in these two specimens, nothing can be said about the size or original form of the thecae; but the diaphragm and junction resemble features shown by Kozlowski (1959 p. 320) in *Trimerohydra annulata* Kozlowski. However, the overall morphology of the colony is very different.

All three specimens have some features in common. For example, the short peduncle connected to the straight hydrosome. In this feature they resemble *Desmohydra? recta* Skevington described by Skevington (1965). The two similar specimens additionally show the same kind of distribution of the thecae on the hydrosome as in *D.? recta*. However, all three Greenland specimens differ from *D.? recta* in their shorter peduncles and the mode of junction between the theca and peduncle.

Assignment of the specimens from Peary Land to previously described species does not seem possible. In view of this, and the fragmentary nature of the material, no attempt at more precise determination is made.

References

Christie, R.L. & Peel, J.S. 1977: Cambrian-Silurian stratigraphy of Børglum Elv, Peary Land, eastern North Greenland. *Rapp. Grønlands geol. Unders.* **82**, 48 pp.

Hyman, L.H. 1940: The Invertebrates: *Protozoa through Ctenophora* (**1**). New York: McGraw-Hill. 726 pp.

Kozlowski, R. 1959: Les Hydroides ordoviciens à squelette chitineux. *Acta Palaeont. Polonica* **4**, 209-271.

Skevington, D. 1965: Chitinous Hydroids from the Ontikan limestones (Ordovician) of Öland, Sweden. *Geol. Fören. Stockholm Förh.* **87**, 152-162.