



## *Monoceratella* (Ostracoda) from the Silurian of Washington Land, North Greenland

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*Monoceratella mazos* n. sp. is described from the Lower Silurian of Washington Land, western North Greenland. The occurrence, together with others from the Upper Ordovician and Devonian, emphasises the possibility of homeomorphy within the otherwise typically Middle Ordovician genus *Monoceratella*.

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The ostracods described in this note came to light whilst breaking the trilobite-dominated GGU sample 216855. This sample was collected from a boulder within a Silurian conglomerate towards the top of the Kap Schuchert section (Washington Land, western North Greenland) by J. M. Hurst in August 1976 (Lane, 1979, fig. 1).

The precise age of the fauna is, at present, difficult to determine with accuracy. Dr. R. J. Aldridge (personal communication, December 1979) considers that the conodont fauna assigns the conglomerate undoubtedly to the *amorphognathoides* Zone. He additionally suggests that the upper part of the zone is indicated, although not provable. A lowest Wenlock age for the fauna is therefore not precluded. The stromatoporoidal carbonate mounds from which the boulders in the conglomerate are derived are mainly of Llandovery age. Their growth was initiated in Idwian (B<sub>1</sub>) time and their formation continued to at least the Telychian (C<sub>6</sub>), or even earliest Wenlock time. J. M. Hurst informs me (personal communication, December 1979) that he considers it unlikely that the boulders, and therefore their contained fauna postdate the Telychian (C<sub>6</sub>), when the sedimentational history of the area is considered.

In spite of the lack of precision concerning the age of these latest Llandovery or earliest Wenlock ostracods, it is worthwhile to record them since the genus is considered to be typical of the Middle Ordovician (Kesling, 1961, p.Q255), although uppermost Ordovician and Upper Devonian species have been referred to it (see species discussion below).

**Systematic description**  
 Family uncertain  
 Genus *Monoceratella* Teichert, 1937

*Type species.* Original designation. *Monoceratella teres* Teichert, 1937, from the Middle Ordovician of Arctic Canada.

*Diagnosis.* Smooth ostracods with a straight hinge line, usually with slight elevation in posterior half; unisulcate, sometimes very weakly. Each valve with a lateral projecting spine ventrally. Cardinal angles pronounced, each sometimes with an acroidal process. Valves subequal in size; overlap slight. No adventral structures.

*Discussion.* The taxonomic placement of *Monoceratella* has been the subject of discussion by various authors on two counts. The presence, or not, of a sometimes weak sulcus on each valve, one of the few morphological features reported in species referred to the genus, and the possible polyphyletic nature of the family to which sulcate 'cytheraceans' having laterally projecting spines have been referred have both been contentious points.

Henningsmoen (1953, p. 234; 1954, p. 100) following Treibel (1941, p. 368), tentatively retained *Monoceratella* in the Acronotellidae Swartz, 1936, although he admitted the possibility that this 'family' was polyphyletic. Kesling (1961, p. Q259) removed *Monoceratella* from this family stating that the genus was nonsulcate. However, in his diagnosis (p. Q353), where *Monoceratella* is referred to as "Cytheracea family uncertain", it is said to have a "well-defined sulcus just in front of the midlength".

Both Swain (1962, p. 736) and Kraft (1962, p. 58) referred *Monoceratella* to the Acronotellidae, the latter author regarding the family as "very likely polyphyletic". Kraft (1962, p. 59), in dealing with material he considered conspecific with the type species *M. teres*, did not describe the valves as sulcate, although an internal dorsoventral muscle attachment ridge in a possibly homologous position is mentioned and illustrated. However, his illustrations of the external surface of the valves (for example pl. 13, figs 8, 13) clearly show a sulcus. Swain (1962, p. 737) also described a sulcus in material referred to the type species; this sulcus is better developed as a ridge on the internal surface of the valve rather than a concave feature of the external surface.

*Monoceratella* was placed by Copeland (1955, p. 43) as "Family undetermined" but without discussion.

I have left open the question of the higher taxonomic position of the genus, until phylogenetic studies reveal the status of the Acronotellidae. The possibilities for homoeomorphy between unrelated ostracods with such a small number of morphological characters as are shown by *Monoceratella* are high. For example, *Walcottella* (Ulrich & Bassler, 1931) and *Vestrogothia spinata* Müller (1964, p. 30, pl. 5, figs 7 & 9) which are both Cambrian Archaeocopida, bear no mean resemblance to *Monoceratella*, although this must be superficial. A similar valve organisation is also to be seen in the Silurian and Devonian genus *Tricornina* Bouček, 1936.

*Monoceratella mazos* n. sp.

Plate 1, figs 1–10. Fig. 1

*Derivation of name.* Greek 'mazos' – 'breast', alluding to the overall morphology.

*Material.* Holotype. MGUH 14275 (right valve). Paratypes MGUH 14276–14291 (left and right valves); from GGU sample 216855.

*Diagnosis.* *Monoceratella* species with large, short lateral projection which lies wholly in the anterior half of the valve and which faces slightly downwards. Posterior sulcus weak and narrow; dividing at its half length.

*Description.* Valves preplete, subequal in size but right possibly a little larger than left, subovate in lateral view, about one and a half times longer than high. Dorsal border almost straight but with a small elevation placed about three quarters of the way back; anterior cardinal angle a little more than 90°, posterior angle a little less. Ventral margins a continuous curve. A stoutly based tuberos projection is present on each valve somewhat below mid height and pointing downwards, with its posterior margin at valve mid length: it is round in section, its diameter about one sixth of the maximum length of the valve which lies on a line drawn through the projection. There is a distinct break in slope from the gently convex top of the projection to its steep sides. From the dorsal margin a weak narrow sulcus runs down and slightly obliquely forwards becoming more indistinct and dividing at its half length. A small almost vertically directed acroidal spine is possibly present posteriorly; a small slender anterior acroidal spine extends upwards at about 45° to the dorsal margin. Surface of valve smooth.

*Measurements.* Approximate hinge length:maximum valve height, in microns:

Holotype MGUH 14275 (RV) 900:600

Paratypes MGUH 14276 (RV) 1050:700  
 MGUH 14278 (LV) 880:640  
 MGUH 14280 (RV) 720:510  
 MGUH 14282 (RV) 1000:680  
 MGUH 14290 (LV) 800:550  
 MGUH 14291 (RV) 940:630

*Discussion.* The proximity of a right and left valve (MGUH 14290, 14291; fig. 1B, g and h) indicates that they may have belonged to the same individual. It is from this that the judgement of the relative sizes of the valves given in the description has been taken (see above).

*M. mazos* differs from all other species referred to *Monoceratella* in having a weak sulcus which divides at its half length. Additionally *M. mazos* differs from the type species in that the lateral projection is wholly in the anterior half of the valve, it is a much larger structure and it points downwards. The sulcus is also narrower and weaker. From *M. spicata* (Copeland, 1965, p. 47, pl. 8, figs 5–10) from the Lake Timiskaming region, Ontario, Canada, *M. mazos* differs in being less markedly preplete and much more convex; the differences from the type species also apply here. *M. bos* (Henningsmoen, 1954, p. 102, pl. 6, figs 3, 4) from the uppermost Ordovician of Hovedøya, Oslo-Asker region, Norway,

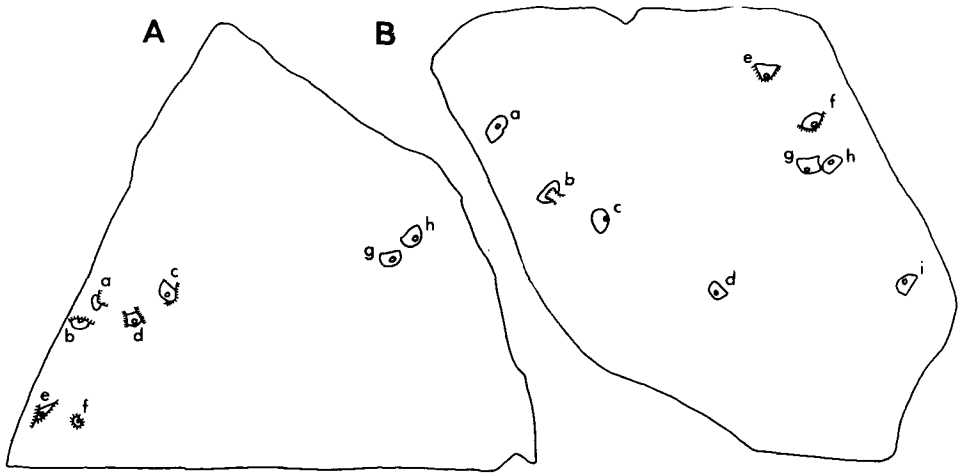


Fig. 1. The type series of *Monoceratella mazos* n. sp. The two slabs form part of GGU sample 216855 and are enlarged about three times. A. a, MGUH 14284, LV; b, MGUH 14285, RV; c, MGUH 14286, RV; d, MGUH 14287; e, MGUH 14288; f, MGUH 14289; g, MGUH 14290, LV; h, MGUH 14291, RV. B. a, MGUH 14276, RV; b, MGUH 14277, ?LV; c, MGUH 14278, LV; d, MGUH 14279, LV; e, MGUH 14280, RV; f, MGUH 14281, LV; g, MGUH 14282, RV; h, MGUH 14275, holotype, RV; i, MGUH 14283, RV.

greatly resembles *M. mazos* in overall morphology, but has strong anterior and posterior acroidal spines. However, the valves are of a similar size in the two species. The acroidal spine or spines in *M. mazos* are certainly not so well developed. *M. trispinosa* (Kraft, 1962, p. 59, pl. 12, figs 11–16; text-figs 11, 12 h–j) from the Middle Ordovician of Virginia, USA, differs from all the above species referred to *Monoceratella* in the great depth of its sulcus, the laterally and upwardly directed lateral spine and the strong reticulation of the valve surface. These characteristics indicate that *trispinosa* should be referred to the genus with some doubt.

*Monoceratina albertensa* Loranger, 1954 and *Monoceratina? levinsoni* Gibson, 1955, both from the upper Devonian of Canada, have been referred to *Monoceratella* by Loranger (1963, p. 40, 41). The former species differs from others referred to the genus in having a hinge line which is elevated at both ends, in having a ventral margin with tubercles or small spines, and in its overall outline in dorsal view which for the carapace is trapezoid. The laterally projecting spine described for this species lacks clear demarcation from the overall pyramidal morphology of the valves. *M? levinsoni* also differs from other *Monoceratella* species in having at least a partially tuberculate ventral margin and in the siting of the lateral spine, which in this case is marginal-ventral. Neither of these two taxa seems to have a sulcus and both have significant valve overlap. In view of the problems of homoeomorphy discussed above, at least some doubt must be expressed about their generic assignment.

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## References

- Bouček, B. 1936: Die Ostracoden des böhmischen Ludlows. *Neues Jb. Miner. Mh. Abh.* **76**, 31–98.
- Copeland, M. J. 1965: Ordovician Ostracoda from Lake Timiskaming, Ontario. *Bull. geol. Surv. Can.* **127**, 52 pp.
- Gibson, L. B. 1955: Upper Devonian Ostracoda from the Cerro Gordo Formation, Iowa. *Bulls Amer. Pal.* **35**, 5–36.
- Henningsmoen, G. 1953: Classification of Paleozoic straight-hinged ostracods. *Norsk geol. Tidsskr.* **31**, 185–288.
- Henningsmoen, G. 1954: Upper Ordovician ostracods from the Oslo region, Norway, *Norsk geol. Tidsskr.* **33**, 69–108.
- Kesling, R. V. 1961: ?Family Acronotellidae. In Moore, R. C. & Pitrat, C. W. (edit.) *Treatise on Invertebrate Paleontology*, **Q**, Arthropoda 3, 442 pp. Kansas U.P.
- Kraft, J. C. 1962: Morphologic and systematic relationships of some Middle Ordovician Ostracoda. *Mem. geol. Soc. Amer.* **86**, 104 pp.
- Lane, P. D. 1979: Llandovery trilobites from Washington Land, North Greenland. *Bull. Grønlands geol. Unders.* **131**, 37 pp.
- Loranger, D. M. 1954: Ireton microfossil zones of central and northeastern Alberta. In Clark, L. M. (edit.) *Western Canada Sedimentary Basin Symposium, R. L. Rutherford Memorial Volume*, 182–203. Tulsa: Amer. Assoc. Petrol. Geol.
- Loranger, D. M. 1963: *Devonian microfauna from northeastern Alberta, Part 2, Ostracoda, Order Podocopida*, 53 pp. Published by the author.
- Müller, K. J. 1964: Ostracoda (Bradorina) mit phosphatischen Gehäusen aus dem Oberkambrium von Schweden. *Neues Jb. Geol. Paläont. Abh.* **121**, 1–46.
- Swain, F. M. 1962: Early Middle Ordovician Ostracoda of the eastern United States. Part II. Leperditellacea (part), Hollinacea, Kloedenellacea, Bairdiacea and superfamily uncertain. *J. Paleont.* **36**, 719–744.
- Swartz, F. M. 1936: Revision of the Primitiidae and Beyrichiidae, with new Ostracoda from the Lower Devonian of Pennsylvania. *J. Paleont.* **10**, 541–586.
- Teichert, C. 1937: Ordovician and Silurian faunas from arctic Canada. Report of the Fifth Thule Expedition 1921–24, **1(5)**, 169 pp.
- Triebel, E. 1941: Zur Morphologie und Ökologie der fossilen Ostracoden, mit Beschreibung einiger neuer Gattungen und Arten. *Senckenberg* **20**, 294–400.
- Ulrich, E. O. & Bassler, R. S. 1931: Cambrian bivalved Crustacea of the Order Conchostraca. *Proc. U.S. Nat. Mus.* **78**, 130 pp.

**Plate 1***Monoceratella mazos* sp. nov.

All figures, except fig. 10, are stereopairs,  $\times 45$ . All specimens are from GGU sample 216855 and are deposited in the Geological Museum, Copenhagen.

Figs 1 (upper), 2, 3. MGUH 14275, holotype, right valve; lateral, posterior and dorsal views.

Figs 1 (lower), 4, 10. MGUH 14282, paratype, right valve; oblique and dorsal views, and lateral view of anterior spine  $\times 175$ .

Fig. 5. MGUH 14291, paratype, right valve; posterior view.

Figs 6–9. MGUH 14279, paratype, left valve; lateral, dorsal, anterior and posterior views.

