TWO *MONOGRAPTUS* SPECIES FROM THE PŘÍDOLÍ OF WESTERN TASMANIA

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(with one text-figure and one plate)

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Monograptus parultimus Jaeger and *M.* cf. *fragmentalis* Bouček in siltstone with sparse shelly fossils in the Eldon Group near Bubs Hill, western Tasmania, indicate a basal Přídolí age.

Key Words: *Monograptus*, **Silurian, western Tasmania.**

INTRODUCTION

Thomas (1960: pl. xiv) figured as *Monograptus* spp. specimens collected by one of the authors (MRB) prior to December 1956 from fawn to red siltstone in road cuts near the Q15 milepost on the Lyell Highway, about 1.75 km WNW of Bubs Hill, western Tasmania (*Franklin* 1:100 000 sheet 8013-971373, Department of Lands, Hobart). He identified them in the text (Thomas 1960: 15) as *M. colonus et var.*, indicative of a Lower Ludlow age. These fossils came from a talus slope about 75 m on the Hobart side of the milepost, in a siltstone with ripple marks, brachiopods, bivalves, ostracodes, trilobites and crinoid fragments; from a cut about 33 m on the Hobart side of the milepost and from a small quarry 8 m on the Queenstown side of the milepost. The beds containing these fossils were ascribed to the Bell Shale (uppermost formation of the Eldon Group of Gill & Banks, 1950) by Thomas (1960: 15), whereas Banks (1962: 181) correlated them with the Austral Creek Siltstone. This formation, which had been recently recognised by Blissett (1962) at Zeehan, lies under the Florence Quartzite, the formation beneath the Bell Shale. The Lyell Highway locality is shown as a correlate of the Amber Slate on the Department of Mines 1:50 000 geological map *Lyell* (Calver *et al.* 1987). The Amber Slate is separated from the Austral Creek Siltstone by the Keel Quartzite.

Reid (1964: 38, 39) reported monograptids in light-brown, fissile, fossiliferous siltstone at 780 m (approx.) a.s.l. on a timber track northwest of Bubs Hill, at a locality with coordinates *Franklin* 8013–98403875. The fossiliferous unit is overlain by a thin, fine-grained quartzite, a black unfossiliferous siltstone and then a correlate of the Florence Quartzite, the base of which is 32 m topographically above the graptolitic unit. With the graptolites in the siltstone are rugose corals, brachiopods, ophiuroids, asteroids, crinoids and hyolithids. Reid ascribed the fossiliferous siltstone to the Austral Creek Formation. Banks (in Talent & Banks 1967: 158–159), following Reid, reported *Maoristrophia* sp., *Notoleptaena* sp., *Dalmanites* cf. *wandongensis* and *Monograptus vulgaris curtus*, the *Dalmanites* from the Lyell Highway locality. As with the unit on the Lyell Highway, this siltstone was shown on the Lyell geological sheet as an Amber Slate correlate. The Amber Slate is regarded as late Llandovery or Wenlock (Baillie 1989: 225, 232). Baillie (*ibid.*: 232) commented that the Ludlow age ascribed earlier to the graptolites should be treated with caution.

The graptolites collected by Reid were sent away soon after collection for expert identification but were mislaid until they were recovered through the good offices of Dr Barry Webby in mid-1989, after which they were drawn to the attention of the senior author (RBR). A few identifiable fragments have since been found in the road cut.

PALAEONTOLOGY

Monograptus cf. *fragmentalis* Bouček, 1936
(fig. 1A and pl. 1A)

1936 *Monograptus fragmentalis* n. sp.; Bouček, 7, text figs. 11–n.
1943 *Pristiograptus fragmentalis* (Bouček, 1936); Přibyl 27–28; text fig. II, R.S.
1967 *Monograptus vulgaris curtus* Elles & Wood; Banks in Talent & Banks: 158.
1976 *Pristiograptus fragmentalis* (Bouček); Bouček, Mihajlovic and Veselinovic, 88–91; pl. 2, figs 1–7; pl. 3, fig. 1; text figs 2a–e.
1986 *Monograptus fragmentalis* Bouček, 1936; Jaeger, 1986, 316; pl. 2, figs 14–15, 18, 20–21.

Material
About twenty specimens, including fragments possibly referable to this form, ocur on slabs, Department of Geology, University of Tasmania catalogue numbers 80821, 80838 and 80856. Possible fragments also occur on 80869 and 80872. All specimens are from one locality, a timber track near Bubs Hill, western Tasmania (coordinates of locality: *Franklin* 8013–98403875, approximately 42° 06' S, 145° 46' E).

Associates
Occurs with *M.* cf. *parultimus.*

Horizon
Eldon Group.

Remarks
The material seems to be quite close to that recently described by Jaeger (1986) from the type Prídolí region. There are proximal and distal fragments, which do not occur on the same specimen, but which have similar thecal type and are

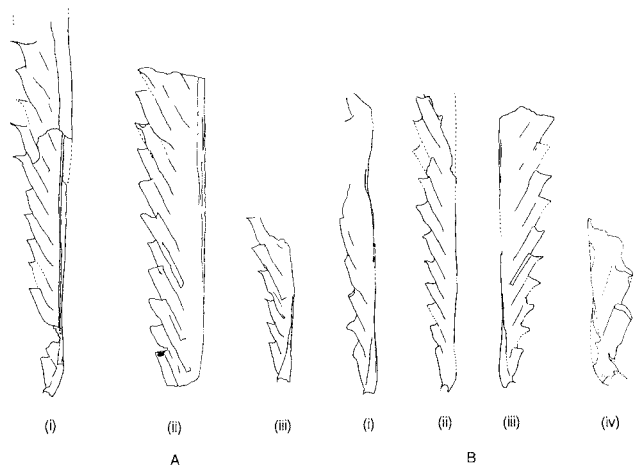

FIG. 1 — (A) M. *cf.* fragmentalis *Bouček: (i) UTGD 80856, × 4; (ii) UTGD 80855, × 4; (iii) UTGD 80881, × 4; all from timber track. (B)* M. parultimus *Jaeger: (i) UTGD 80872, × 4; (ii) UTGD 80850, × 4; (iii) UTGD 80848, × 4; (iv) UTGD 124100, × 4; (i), (ii) and (iii) from the timber track, (iv) from cutting on the Lyell Highway.*

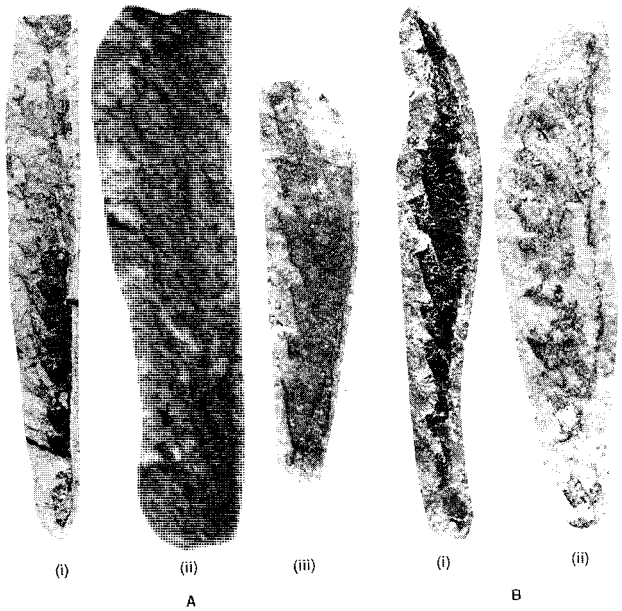

PLATE 1

(A) M. *cf.* fragmentalis *Bouček: (i) UTGD 80856, × 8; shows rhabdosomal form, thecal overlap and strongly "denticulate" thecal margin; this specimen is unusual in having a curved sicula; mostly they are almost straight; (ii) UTGD 80855, × 12; mesial and distal thecae showing considerable thecal overlap and slightly "denticulate" thecal apertures; (iii) UTGD 80821, × 10; shows well-preserved proximal end with typically straight, long sicula and considerable thecal overlap. (B)* M. parultimus *Jaeger: (i) UTGD 80850, × 8; ventral part of stipe well-preserved, with sicular aperture visible and curvature of sicula traceable; undulating thecal apertures also visible, especially of th1, th2 and th6; (ii) UTGD 80850, × 12; indifferently preserved specimen, but showing undulating thecal apertures quite well, at least up to th6.*

probably the same form. The proximal thecal overlap begins at about the level of the aperture of the preceding theca; in the distal, fragments reach just below the aperture of the preceding theca. (Thus, a secrion just above the thecal apertures will traverse three thecal tubes before the dorsal margin/nema is reached.) This is a slightly greater thecal overlap than indicated by Jaeger, but the thecal spacing, at 12 in 10 mm, is well within the range quoted. The proximal end is rather *dubius*-like and varies from almost straight to (usually) gently ventrally curved. The sicula itself is almost 2 mm long and its apex is just below the aperture of the second theca. In subdorsal view (fig. 1), some specimens show what appear to be apertural denticles, but this is certainly a feature of the particular view and a degree of diagenetic flattening: in the true profile, none of the thecae show denticles, though there is a suggestion of very gently undulating apertural rims. The dorsoventral width exceeds 2.5 mm even in fragments preserved in three dimensions. As far as we are aware, these are the first recordings from Australia of forms related to this species. In Europe (Jaeger 1986), *M. fragmentalis* usually occurs in the latest Ludlow, immediately below the *parultimus* Zone at the base of the Přídolí, but the species is known to overlap with *M. parultimus* in one location (Serbia).

Monograptus parultimus Jaeger, 1975 (fig.1B and pl. 1B)

1899 *Monograptus ultimus* n. sp; Perner, 13–14, pl. 16, figs 4, 5?, 11a, b (non text-figs 14a, b = *M. ultimus)*
1940 *Monograptus (Pristiograptus) ultimus* Perner; Přibyl, pl. 1, figs 9, 10, ?11.
?1974 *Pristiograptus (?) ultimus* (Perner); Paskevicius, fig. 1, plate 14, figs 3–8.
1975 *Monograptus parultimus* n. sp.; Jaeger, 119–125; text-fig. 4, p. 2, fig. 4, 8.
1976 *Pseudomonoclimacis ultimus* (Perner); Tsegelnjuk, 106, p. 30, figs 10–12.
1976 *Pseudomonoclimacis podolicus* sp. nov.; Tsegelnjuk, 106–107, p. 31, figs 1–3.
1979 *Monoclimacis parultimus* (Jaeger); Paskevicius, 160–2, pl. 10, figs 1–5; pl. 24, figs 16–19; pl. 25, figs 1–5.
1983 *Ludensograptus parultimus* (Jaeger); Tsegelnjuk, 94, 145.
1986 *Monograptus parultimus* Jaeger, 1975; Jaeger, 318–321, text-figs 29–34; pl. 1, figs 1–2, 8–9; pl. 2, figs 3–6, 23–24; pl. 4, fig. 12.

Material
There are five fairly well-preserved specimens, in three dimensions with fine mud infills, and a further fifteen or so fragments may be referable to this form, on Department of Geology, University of Tasmania, slabs 80848, 80850, 80854, 80855, 80872. All these specimens are from the locality given for *M.* cf. *fragmentalis* above. There are also two fragments from the road cutting on the Lyell Highway, 50022 and 124100.

Associates
It occurs with *M.* cf. *fragmentalis* Bouček.

Horizon
Eldon Group.

Remarks

M. parultimus is distinguished from *M.* cf. *fragmentalis* at the same locality by the presence of rounded thecal apertures or undulating thecal margins. The sicula, although of similar dimensions and position, is almost always strongly curved in a ventral sense, with a strong dorsal tongue. Only a few specimens are almost straight, though the rhabdosome itself is proximally straighter than in *M.* cf. *fragmentalis*. The thecal dimensions, spacing, and overall appearance of the colony, preserved in moderate three dimensions, are close to the figures given by Jaeger (1986). The only difference we can detect is that the gentle sigmoidal curvature of the thecae is even less conspicuous than in Jaeger's material. Nevertheless, it is present. The early growth of the first theca is typically upwards at a low angle, but perhaps the sicular apertural region is less isolated (i.e. the th 1 bud is lower down) than in Prídolí material. The preservation, in fact, may obscure both these differences, which may be more apparent than real. *M. parultimus* has not previously been recorded from Australia, and its association in some numbers with *M.* cf. *fragmentalis* does suggest an horizon at the base of the Přídolí, near the base of the *parultimus* Zone.

SIGNIFICANCE

The fossils are significant in two respects — biogeographical and stratigraphical.

The recognition of these two species extends their geographical range to Australia. *M. fragmentalis* was recorded by Jaeger (1986) from Bohemia and Yugoslavia (eastern Serbia, Ruj Mountains and Potok Zajednmica), the last being the Dubsky Potok of Bouček(1936). *M. parultimus* has been recorded by Jaeger (1986) from the eastern European platform in the Soviet Union, the Carnic Alps in Austria, and the Raj Mountains (eastern Serbia). It is at Potok Zajednica that the two species occur together, enabling us to suggest a horizon near the base of the Prídolí. Jaeger (1986) notes that *M. ultimus* occurs in four continents, but *M. parultimus*, as yet, is less widely recorded, perhaps because of its relatively more recent definition and the fact that in badly preserved material its definitive features might be missed: it would probably be then identified as *Pristiograptus dubius* (Suess), or as *M. ultimus* (e.g. Paskevicius 1974; see synonymy).

Stratigraphically, the age determination based on these two monograptid species removes the only evidence of Ludlow age for fossils in western Tasmania and provides support for Baillie's suggestion for a depositional hiatus in western Tasmania in the Ludlow (Baillie 1989: 232). However, it does raise the possibility (*contra* Baillie 1989: 233) that there is only a single major fining upward cycle in western Tasmania in the Llandovery and Wenlock, and two such major cycles in the Prídolí to Pragian or Emsian. A stratigraphic discontinuity at the base of the Keel Quartzite becomes a possibility.

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