

A new ichnogenus (*Compaginatichnus*) from the Late Ordovician Matapédia Group of northern New Brunswick

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The Matapédia Group of northern New Brunswick is essentially Late Ordovician in age and consists of a sequence of thinly interbedded (1 to 5 cm) calcareous argillites and argillaceous calcitic and ankeritic limestones interpreted to have been deposited in a deep-water slope environment. Although poorly fossiliferous, the sequence does contain a relatively abundant but low diversity ichnoassemblage dominated by *Chondrites* von Sternberg, 1833, *Planolites* Nicholson, 1873 and *Helminthopsis* Heer, 1877. Opposite the village of Runnymede, 500 m north of the confluence of the Upsalquitch and Restigouche rivers, 7 km south of Matapédia on the northwestern New Brunswick-eastern Quebec border, the Matapédia Group contains abundant examples of a distinctive trace fossil which cannot be accommodated within any existing ichnogenus. *Compaginatichnus forbesi* n. ichnogen. and ichnosp. is the name proposed for this new trace fossil.

The traces consist of horizontal, unlined, unbranched, straight to curved to meandering burrows, which are deeper than wide and possess an upper-segmented fill articulated by meniscus-shaped partings and a lower unsegmented fill with densely

packed fecal pellets. Simple meniscate burrows are now commonly referred to *Taenidium* Heer, 1877 though a number of alternatives are still in common usage. Simple pellet-filled burrows are referred to *Syncoprulus* Richter and Richter, 1937 or *Alcyniodiopsis* Massalongo, 1856. Pellet-lined burrows are included within *Granularia* Pomel, 1849 or *Ophiomorpha* Lundgren, 1891. *Compaginatichnus* clearly differs from all these ichnogenera as it combines both a meniscate - and a fecal-fill but does not possess pellet-linings. The consistent superposition of a meniscate backfill over the fecal pellets is obligate and such a combination is regarded as a significant and integral portion of the burrow systems.

Electron microprobe (JEOL 733) energy dispersive spectra of the miniscate and intermeniscate portions of the burrows suggest that the menisci resulted from physical sorting of carbonate-rich and aluminosilicate-rich sediment as the producing organism (?annelid) progressed through the sediment. This contrasts to recent suggestions that most menisci in morphologically similar burrows result from active packing of material that is entirely fecal.