

New fossils in the Precambrian of Charnwood Forest, Leicestershire, England

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Abstract: New specimens of Precambrian fossils have been found in the Charnian of Leicestershire, at two fossil localities previously described by Boynton and Ford (1995).

Introduction

This short paper reports new fossil finds at two fossil localities previously described by Boynton and Ford (1995) from the Charnian Supergroup (Moseley and Ford, 1985) of Leicestershire, namely Ives Head and Charnwood Golf Club North Quarry. The specimens are preserved as very faint traces on bedding planes and are only visible when illuminated by the sun at certain times of the day and at certain times of the year. At Charnwood Golf Course North Quarry, favourable illumination occurs only around midday in midsummer, and the bedding plane is only accessible by experienced climbers. The bedding plane at Ives Head is usually covered by grass or moss and often needs washing to see the fossils.

The fossils at Ives Head, Shepshed

The finds occur within the Lubcloud Greywacke Member of the Ives Head Formation (Blackbrook Group) and are preserved on the lowest bedding plane, the lowest fossiliferous horizon ever recorded in the Charnian of Charnwood Forest. The fossils are preserved as greyish-white traces with no relief. One specimen is a drooping frond resembling *Shepshedia palmata*. It has a long stem attached to the palmate fingers with an indistinct area of coiled and ring-like structures at the base of the stem; another faint stem appears to arise from these coiled structures (Fig. 1).

About 10cm to the left, also shown in Figure 1, is another new frond. This is similar to *Charnia masoni* but much smaller in size. It does not show the same segmentation and appears to arise from two, slightly coiled disc-like structures at its base (Fig. 2).

The holotype *Shepshedia palmata*, described by Boynton and Ford (1995) from a bedding plane 10m higher at the same locality, does not display comparable coiled or ring structures. The drooping head on the long stem is here placed in the species *Shepshedia* aff. *palmata*, but the small frond to the left is as yet unnamed.

From these two new specimens it is conjectured that *S. palmata* arose as a small frond from a disc-like base with vesicles (Fig. 2), and grew into a long stem with finger-like fronds. While some of the other branching structures and groups of vesicles shown in Figures 1 and 2 resemble *Charnia* and *Shepshedia palmata*, they are too ill-defined to be assigned to taxa with confidence.

The fossils at Charnwood Golf Club

The finds at Charnwood Golf Club North Quarry

(near Loughborough, Leicestershire) occur within the Hallgate Member of the Bradgate Formation (Maplewell Group). Several new 'fronds' have been found on the highest accessible bedding plane, approximately 3m above the horizon where the first *Charnia masoni* was found by Ford (1958). The new 'fronds' consist of worm burrow-like marks (compare Boynton and Ford, 1995, p.178, fig. 18) preserved in positive relief. They represent sinuous coils from which, in places, finer 'branches' bifurcate and bear knob-like structures on their ends (Fig. 3). These resemble frondose structures with bulbous ends rather than worm burrows.

These specimens lie approximately 15 metres higher up the same steeply dipping bedding plane from the specimens described previously at this locality by Boynton and Ford (1995, fig. 18); they are accessible only by climbers with ropes. On the same bedding plane there is a very large specimen which may extend to over one metre in length, although the exact dimensions are difficult to measure because the extremities are very faint. It consists of a central two-ringed disc from which originates large fronds, similar to *Bradgatia linfordensis* on the Memorial Crags in Bradgate Park (Boynton and Ford, 1995). The specimen described here differs in having a pronounced disc near the centre from which the large masses of fronds arise. It could be a variant of *B. linfordensis*, and is assigned to *Bradgatia* aff. *linfordensis*. The disc may have been a float supporting the large frondose masses, which would sway in the sea as the organism floated.

Summary and Conclusions

The new specimens described here do not appear to have parallels at any other Precambrian fossil localities, for example Ediacara in South Australia or Mistaken Point in Newfoundland. They may throw further light on the probable planktonic nature of these organisms.

As more bedding planes are cleaned and examined more fossils are appearing, albeit often faintly defined. This research is ongoing, and with continued further examination in Charnwood Forest, particularly in the Charnwood Golf Club North Quarry, it is certain that other new specimens will be discovered.

Acknowledgements

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5 cm

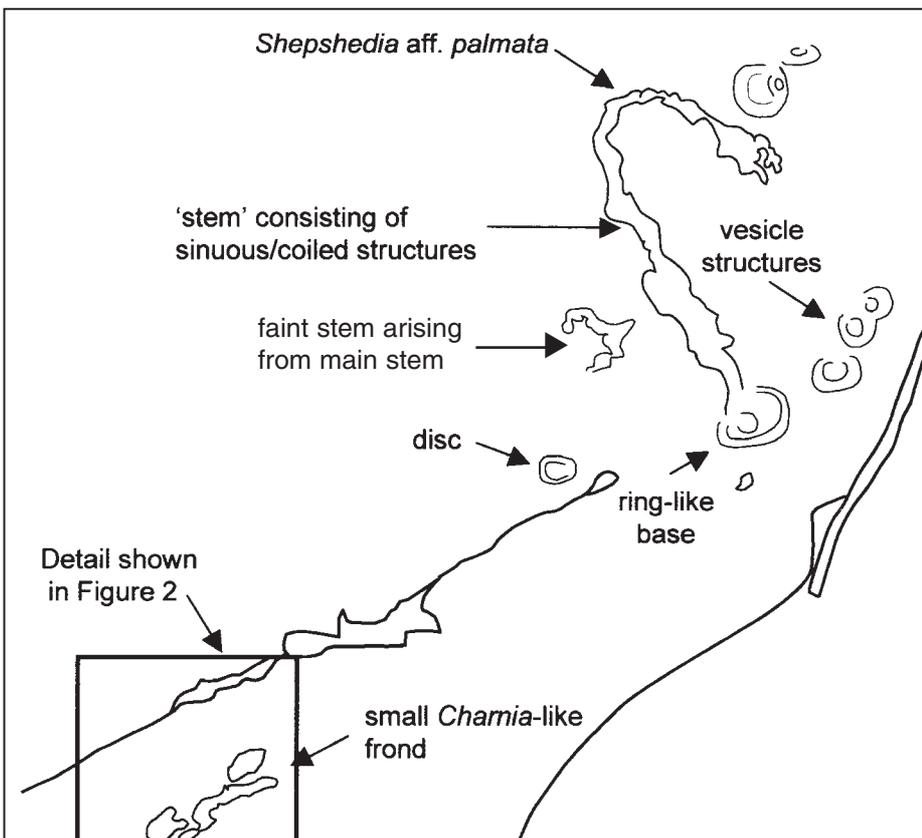


Fig. 1. Bedding plane at Ives Head, displaying *Shepshedia* aff. *palmata* and a small *Charnia*-like frond.



2 cm

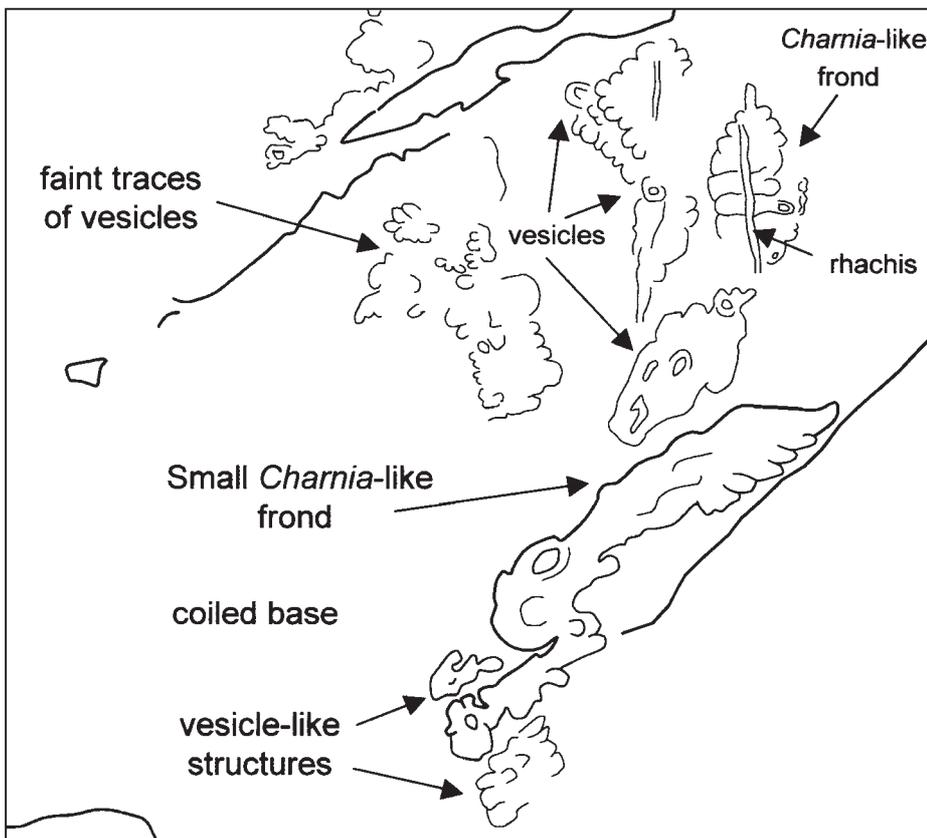


Fig. 2. Close up of small *Charnia*-like frond illustrated in Figure 1, also showing vesicle-like structures.

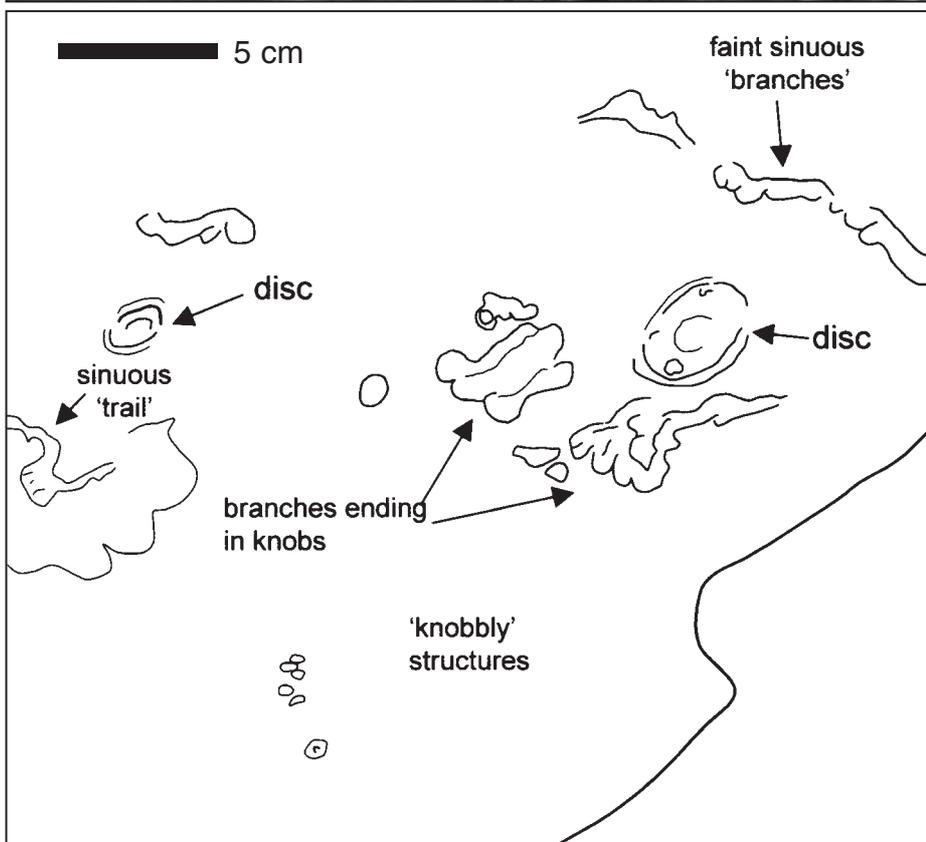
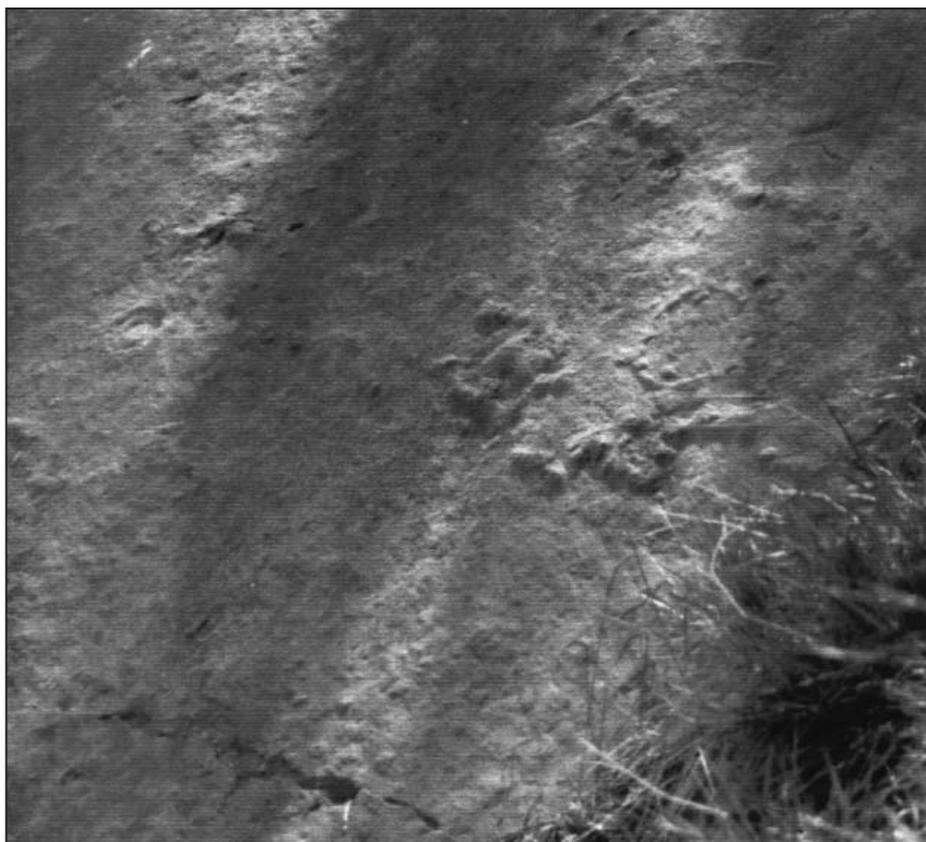


Fig. 3. Coiled fronds and discs, Charnwood Golf Club North Quarry.

References

Boynton, H. E. and Ford, T. D., 1995. Ediacaran Fossils from the Precambrian (Charnian Supergroup) of Charnwood Forest, Leicestershire, England. *Mercian Geologist*, **13**, 165-182.
Ford, T. D., 1958. Precambrian Fossils from Charnwood Forest. *Proceedings of the Yorkshire Geological Society*, **31**, 211-217.

Moseley, J. and Ford, T. D., 1985. A stratigraphic revision of the Precambrian rocks of Charnwood Forest, Leicestershire. *Mercian Geologist*, **10**, 1-18.

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