

Update on Charnian Fossils

These notes record further progress by the Charnia Research Group with documentation and conservation of the various fossils in the Precambrian rocks of Charnwood Forest.

Cliffe Hill Quarry

Numerous old photographs have recently come to light in the Leicestershire Museum Collection, in the archives of Cliffe Hill Quarry and in private collections of retired quarry workers (Figs. 1-5). Of particular interest to geologists were those taken by museum staff Mike Jones and Andy Mathieson in August 1970, when they visited the quarry and collected several ovoid discs that are now in Leicester Museum. They named the discs *Charniodiscus* sp..

Ovoid discs had previously been discovered by Bob King in 1966-67 while searching for minerals. The author's first visits, with an Adult Education group from the University of Leicester in 1976-77, discovered more discs, some quite large, one of which is the holotype of *Cyclomedusa cliffi*, now held in Leicester Museum. In 1980, Trevor Ford collected a further six discs that are now in the Leicester University Geology Department, and in 1995 the large ovoid discs were thought to be medusoids.

In 2006 several of the larger discs in the museum collection were re-examined by the author, and some were found to have large stems (one of which bifurcated) arising from the central boss. It is therefore possible that they should be recognised as *Charniodiscus*, and are not medusoids. Their planes of preservation probably accounts for the fact that a central boss is visible on some, while others have only an outer single ring.

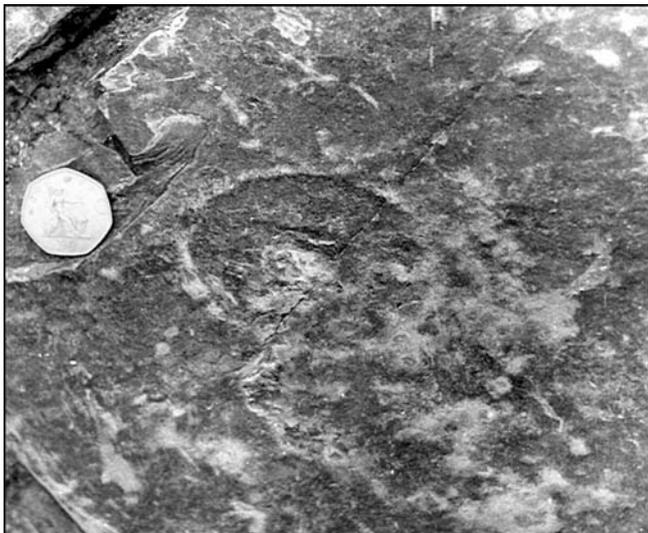


Figure 1. Large ovoid disc with central boss and faint stem emerging towards the bottom of this photograph from 1970.



Figure 2. Large ovoid disc with small convoluted central boss, and bifurcating stem emerging to the right (from 1970).

The Old Cliffe Hill Quarry (the eastern of the two in Cliffe Hill) is well known for its intrusion of the Charnwood diorite (known previously as markfieldite) into Precambrian volcanoclastic mudstones, siltstones and sandstones of the Bradgate Formation (Fig. 6). These are all overlain by Triassic mudstones and



Figure 3. The main fossiliferous bedding plane in 1970, (dipping at 55° towards the camera) and overlain by Triassic wadi sediments. A large ovoid disc is visible on the left.

breccias that crop out in a wadi at the top of the quarry. Access to the quarry is now prevented, and permission for further investigation is not forthcoming. Extraction of rock from the north face is planned to re-start in the future, so the BGS programme of conservation by moulding any accessible discs in the quarry is very important.



Figure 4. Cast of the two ovoid discs collected by Trevor Ford in 1980. The lower disc shows a distinct outer ring and central boss, while the upper disc has a wide, flatter outer ring with a more complicated boss.



Figure 5. Ovoid disc with central structure and stem emerging on the left.



Figure 6. Old Cliffe Hill Quarry looking east towards Markfield, just after the quarry had closed in 1989. The main fossil bedding plane is the most easterly of the three on the upper level, in centre of the picture.

Outwoods

Three discs were found in the Outwoods, near Loughborough, and represent more evidence to add to the suite of fossils already published (Boynton, 1978). The disc (Fig. 7) on a loose block was given to the author by Ben Bland. It is a multi-ringed disc similar to those on the main bedding plane; it contains three discs and a cast is now held by the British Geological Survey. The two smaller discs (Fig. 8) could be juveniles, as they do not show the multi-rings of the larger specimens. These discs were identified as *Cyclomedusa davidi*, which is a fairly common medusoid within the Ediacarian fauna. Later



Figure 7. The disc, 45 mm in its longer dimension, on a loose block from Outwoods.



Figure 8. Cast of two smaller discs each 18 mm across.

suggestions however indicate that they may be *Kullingia* (pers comm. Jim Gehling), or a chondrophore comparable with the modern jellyfish *Veleva*, or indeed they may be forms of unknown affinity that just lay on the sea floor. There seems to be little evidence of a stem emerging from the discs. They are often found associated with microbial matting that is being increasingly recognised in the Charnian rocks of Charnwood Forest.

Ives Head

Another fossil was discovered on the main bedding plane at Ives Head in northwest Charwood Forest, from where *Ivesheadia lobata*, *Blackbrookia oaksi* and *Shephedia palmata* were found previously (Boynton & Ford, 1995). Since the initial discovery, “pizza” discs have been found in Newfoundland, and some have been referred to as *Ivesheadia* sp.. The new Ives Head fossil is reminiscent of those described from elsewhere. It shows a roughly quadrilateral shape with a possible stem emerging at the left hand side (Fig. 9). Within the margin are numerous raised pimple-like structures which may lie on branches and may be buds from which new colonies grow. On the left side there could be a series of finer branches. This could be another rather weathered *Ivesheadia*, rather than the lobate form *Ivesheadia lobata*, or it could be a new species or a variety of microbial matting.



Figure 9. The new fossil from Ives Head

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