
Park Clough

Highlights

Park Clough is the proposed international stratotype for the base of the Marsdenian Stage (Figure 2.6).

Introduction

This site, in the middle of the Pennine Basin, is a stream section 250 m NNW of Hey Green, near Marsden, West Yorkshire [SE 030 125]. Its geology was briefly mentioned by Bromehead *et al.* (1933), but otherwise received little attention in the literature until it was proposed as the international stratotype for the base of the Marsdenian Stage (Ramsbottom, 1981).

Description

Lithostratigraphy

The exposed sequence here is about 35 m thick (Figure 2.7). The lower 15 m consists of flaggy or cross-bedded sandstones, belonging to the Kinderscout Grit Subgroup. These are succeeded by 20 m of mudstones, which represent the basal part of the Middle Grit Subgroup.

Biostratigraphy

Marine bands

In the detailed log provided by Ramsbottom (1981, p. 10.3), two mudstone intervals are shown to contain marine fossils. The lowest, c.1 m above the Kinderscout Grit, yielded *Bilinguites gracilis* Bisat and *Anthracoceratites* sp. This clearly belongs to the *B. gracilis* Zone.

Some 12 m higher, a second mudstone interval yielded crushed examples of the goniatites *Bilinguites bilinguis* (Salter) and *Bashkirites* sp. This is taken to mark the base of the *B. bilinguis* Zone. A second mudstone containing the same assemblage occurs 2 m higher, but details of this were not given.

Palynology

Ramsbottom (1981) records that 10 palynology samples were taken from this section. However, no details of the pollen and spores were given. According to Owens (1982, 1984), the Kinderscoutian–Marsdenian boundary is poorly demarcated on palynological criteria.

Chronostratigraphy

The base of the Marsdenian Stage is defined at 'the base of the marine horizon containing *Reticuloceras gracile*' (Ramsbottom, 1981).

Interpretation

The Marsdenian Stage was proposed by Bisat (1928), for the interval of strata containing the R₂ goniatite zone in his classification. He took exposures in the region between Manchester and Leeds, in particular that near Marsden, as typical. According to Ramsbottom (1981), however, the sequences there do not show the marine band containing *B. gracilis* Bisat in its fullest development. It was therefore proposed that Park Clough should be taken as the formal stratotype. However, according to Riley (pers. comm.), this is because Ramsbottom erroneously followed Bisat in

thinking that the evolute, strongly plicate variety of *B. gracilis* was a late mutation and that the involute, more feebly ornamented form was an early form. The section at Sabden Brook, (Cockwood) is much better and has both forms in the marine band, with the supposed early form commonest in the upper part.

According to Ramsbottom (1981), the Gracilis Marine Band occurs extensively in Britain in the basinal areas, but is absent from the more stable blocks. This was interpreted as being a consequence of it being the basal marine horizon of a mesothem (in this case N₉ although Holdsworth and Collinson (1988) have challenged this view.

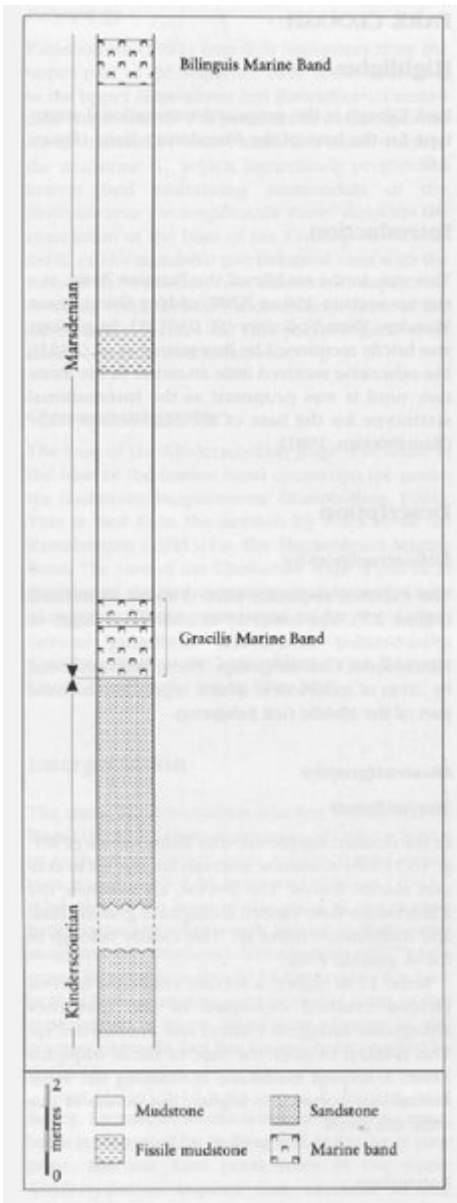
Conclusion

Park Clough is an internationally recognized standard for defining a time plane, 317 million years before the present, and marking the start of the Marsdenian Age.

References



(Figure 2.6) Park Clough GCR site. International stratotype for the Kinderscoutian–Marsdenian stage boundary. Photographed during the visit to the site by the IUGS Subcommittee on Carboniferous Stratigraphy, August 1981. (Photo: W.A. Wimbledon.)



(Figure 2.7) Log of section at Park Clough. Based on Ramsbottom (1981, p. 10.3).