
Mancetter Quarries

[SP 304 963]–[SP 311 949]

Potential GCR Site

Introduction

Mancetter Quarries show by far the best exposures of the Stockingford Shale Group, which itself is the most complete representation of the Cambrian System (above its lowest parts) in England. They have the only large exposure of Upper Cambrian rocks in England.

Lapworth (1886) distinguished the middle part of the Stockingford Shales as the 'Oldbury Shales', which he referred to the Upper Cambrian. Illing (1913, 1916) recognized four subdivisions of the Oldbury Shales, in ascending order the Abbey Shales, the Outwoods Shales, the Moor Wood Flags and Shales, and the Monks Park Shales. He showed that the Abbey Shales is Middle Cambrian (see site report for Illing's Trenches) and recorded Upper Cambrian fossils from the Outwoods Shales. Taylor and Rushton (1972) described boreholes that penetrated almost the whole thickness of the Oldbury Shales and in the light of these reviewed the whole succession, which they showed to have the fullest sequence of Upper Cambrian trilobite zones in Britain. They separated a further subdivision at the base of the Outwoods Shales — the Mancetter Grits and Shales. Rushton (1978) showed that this unit is of latest Middle Cambrian age, the base of the Upper Cambrian lying close to the base of the Outwoods Shales. Rushton (1983) described the trilobite fauna of the Outwoods Shales. Bridge *et al.* (1998) reviewed the geology of the Nuneaton area and formalized the subdivisions of the Stockingford Shale Group as formations.

Description

Mancetter Quarries exploit the Oldbury Sill, the largest of the lamprophyre sills intruded into the Stockingford Shales in the Nuneaton area. Purley Quarry in the north is being worked, but jubilee Quarry, the site of the Merevale No. 3 Borehole, is now filled in and landscaped. Oldbury Quarry, to the south, having been much extended since Taylor and Rushton (1972) described it, is now (1998) worke'd out.

Besides the Oldbury Sill, which thickens from 30 m in the north to 50 m in the south and dips at about 20° to the south-west, these quarries afford strike sections through the middle parts of the Outwoods Shale Formation below and above the sill. The Outwoods Shale consists of pale-grey and dark-grey mudstones interbedded on a scale of millimetres to metres, together with thin, silty and micaceous beds and lamellae. The dark mudstones are organic-rich, pyritous and unburrowed; the pale mudstones are commonly burrowed. Taylor and Rushton (1972, p. 10) described the lithologies in detail and illustrated representative sections about 30 m thick both below and above the sill, which bakes the mudstones for about 7 m below and 5 m above it.

Fossils, although not abundant, occur at several horizons (Taylor and Rushton, 1972, p. 15). In Purley Quarry the section below the sill yielded the monotype of *Modocia anglica* Rushton 25 m below the sill and *Proceratopyge cf. nathorsti* Westergård about 3 m higher. The appearance of *Olenus gibbosus* (Wahlenberg) (Figure 5.2)d, *Glyptagnostus reticulatus* (Angelin) and *Homagnostus obesus* (Belt) 10 m below the sill marks the base of the *gibbosus* Subzone, the lowest division of the *Olenus* Zone, and these taxa range to 6 m above the sill. *Olenus austriacus* Yang (Rushton, 1983, p. 125) was found 10 m above the sill, and the occurrence of *O. truncatus* (Brünnich) and *O. transversus* Westergård about 5 m higher indicates the base of the *truncatus* subzone.

In Oldbury Quarry *Olenus truncatus* occurs 25 m below the sill and is overlain, 17 m below the sill, by *O. wahlenbergi* Westergård, which indicates the succeeding *wahlenbergi* subzone. Above the sill *O. cataractes* Salter, *Proceratopyge tullbergi* Westergård and *P cf. rectispinata* (Troedsson) were collected, and Rushton (1983) referred these to his *cataractes* subzone. Other, longer-ranging, taxa are *Homagnostus obesus*, '*Grandagnostus falanensis*' (Westergård)

(now referred to *Peratagnostus* by Robison, 1994, p. 66), phosphatocopid arthropods described by Williams and Siveter (1998), including *Cyclotron lapworthi* (Groom), and sponge spicules, hyoliths and lingulid brachiopods.

Interpretation

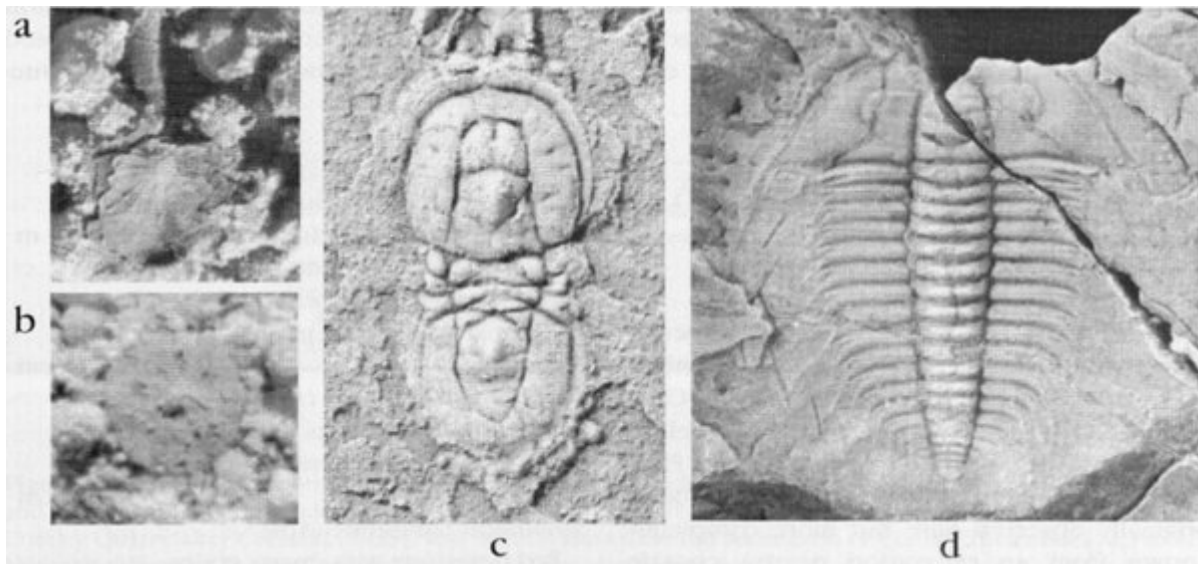
The Stockingford Shale Group is considered mainly to have been deposited in a quiet outer-shelf setting in no great depth of water. The dark and pale mudstone alternations of the Outwoods Shale Formation are taken to represent more or less poorly oxygenated conditions, and the general lack of sandstone beds suggests quieter conditions than obtained during the better-oxygenated conditions of the Mancetter and Moor Wood formations, each characterized by the presence of sandstone beds. Dysaerobic conditions became much more marked when the condensed black Monks Park Shale Formation was formed (Taylor and Rushton, 1972).

Evidence from Merevale No. 3 Borehole shows that the lowest 9 m of the Outwoods Shale Formation is referable to the *laevigata* Zone, the highest zone of the Middle Cambrian, and that the succeeding 58 m are in the lowest Upper Cambrian *pisiformis* Zone (Rushton, 1978). Only the uppermost part of the latter zone is known from outcrop at the present site. At Mancetter Quarries all four of the locally recognized subzones of the *Olenus* Zone are present in sequence in the 60–70 m of shales exposed above the *pisiformis* Zone. The full thicknesses of the *gibbosus* subzone (14 m), *truncatus* subzone (10 m) and *wahlenbergi* subzone (about 20 m) are, or were, exposed but only the lower 10–20 m of the *cataractes* subzone, whose total thickness is estimated as nearly 100 m (Rushton, 1983). At Purley Quarry the sill is in the *gibbosus* Zone, whereas in Oldbury Quarry (and Jubilee Quarry) it lies between the *wahlenbergi* and *cataractes* subzones; this shows that the sill transgresses across more than 30 m of beds between Purley and Jubilee quarries (Taylor and Rushton, 1972, p. 15).

Conclusions

Mancetter Quarries show the only large exposures of the rocks of Merioneth Series in England and are the only good fossiliferous representatives of the Stockingford Shale Group now exposed.

References



(Figure 5.2) Cambrian fossils from English sites. (a, b) *Mobergella* cf. *radiolata* Bengtson, x 12, from the basal Comley Sandstone (Comley Series, Tommotian) of Ercall Quarry. (c) *Tomagnostus fissus* (Linnarsson), x10, from the Abbey Shales (St David's Series), Illing's trenches, at Hartshill Hayes. (d) *Olenus gibbosus* (Wahlenberg), x6, from the Outwoods Shales (Merioneth Series), Purley Quarry.