
Woodlands Quarry

[SP 3245 9473]

Introduction

Woodlands Quarry is the type locality for the Home Farm Member of the Hartshill Sandstone Formation, a regionally significant division for correlation of the Cambrian. The strata contain a rich fauna of 30+ species of small shelly fossils and microfossils of correlative value, with algal stromatolites. It is the type locality for at least eight species. The quarry also exposes the base of the overlying Purley Shales.

Lapworth (1898) recorded a calcareous unit, the '*Hyolithes* Limestone' or 'Hyalite Limestone', in the upper or Camp Hill Quartzite division of the Hartshill Quartzite. He listed a fauna from the 'Hyalite Limestone' that he referred to the Lower Cambrian, and correlated it with a fauna from Comley, Shropshire. Lapworth's (1898) stratigraphical nomenclature was adopted by tiling (1913), Eastwood *et al.* (1923), Allen (1968) and Rushton (1974). Cobbold (1919) described the fauna and inferred that it was older than any from the Comley Limestones.

Brasier *et al.* (1978) revised the succession and named three members, together equivalent to the Camp Hill Quartzite, in ascending order the Jee's, Home Farm and Woodlands members. The Home Farm Member is equivalent to Lapworth's '*Hyolithes* Limestone' and from it Brasier (1984, 1986) described many further taxa.

The Home Farm Member is principally exposed in quarries, and much detailed information has been derived from working quarries (Bridge *et al.*, 1998, pl. 6); but as these are subject to change, the type section was taken at the permanent exposure in the disused Woodlands Quarry. General accounts of the geology are given in Bridge *et al.* (1998), Baldock (1991) and Brasier *et al.* (1978).

Description

The quarry is now landscaped and rather overgrown, but (Figure 5.6) shows it at a time when it was much clearer. The lowest beds now visible are the uppermost few metres of the Jee's Member, consisting of alternations of maroon, buff or green sandstones with shales dipping south-west at about 40°. The sandstones are planar bedded or cross-bedded, extensively bioturbated, and the tops may show pebbly winnowed lags (Bridge *et al.*, 1998, p.27). Foresets seen at the north end of the quarry contain the trace fossils *Arenicolites*, *Didymaulichnus*, *Isopodichnus*, *Planolites* and *Rusophycus*?

Overlying the Jee's Member with disconformity and a sharp erosive base is the Home Farm Member, about 2 m thick. The succession is as follows:

3. '*Hyolithes* Limestone', about 1 m thick. Maroon to grey sandy limestones, sometimes nodular, with subordinate siltstones, shaly mudstones, within which Brasier (1986) has recognized 12 beds, many of them separated by hardground discontinuities. The fauna of over 30 taxa includes Brachiopoda, Hyolitha, Mollusca, protoconodonts, tomotiids and problematical tubular fossils such as *Coleoloides* and *Hyolithellus*; the fauna of Bed 10iii is particularly diverse. Many of the hardgrounds are encrusted with algal stromatolites. The base of Bed 2 is an eroded hardground resting on a phosphatized limestone conglomerate (Beds 1i–1v) with a fauna that includes species of *Paterina*, *Coleoloides*, *Hyolithellus*, *Torellella*, *Sunnaginia*, *Camenella* and a few Hyolitha.

2. Calcareous micaceous sandstone, glauconitic and bioturbated, up to 0.5 m thick.

1. Basal quartzose conglomerate, less than 0.5 m thick. The fauna includes *Paterina phillipsii* (Holl), *Coleoloides typicalis* Walcott, and species of *Hyolithellus*, *Sunnaginia* and *Turcutheca*?

The succeeding Woodlands Member consists of dark-grey, glauconitic, subarkosic sandstones with subordinate mudstone, up to 14 m thick. Some beds show cross-bedding and some have thin mudstone drapes and rippled tops. Brasier (1989) recorded scarce *Coleoloides* and *Torellella*.

The Purley Shale Formation, consisting of red to maroon blocky mudstones with a few calcareous concretions, is seen to a thickness of about 10 m. At Woodlands Quarry the base rests sharply on the Woodlands Member, but at Hartshill Quarry to the south-east there is mixing of the sediment of the two divisions at their contact (Bridge *et al.*, 1998). Rushton (1966) described trilobite fragments, possibly *Callavia*, from 0.3–1 m above the base of the Purley Shale at Woodlands Quarry and from the same horizon elsewhere along strike, and Brasier (1989) reported *Coleoloides*, tubes of *Platysolenites antiquissimus* Eichwald and *Teichichnus* burrows.

Interpretation

The Hartshill Sandstone Formation was deposited during a marine transgression on to eroded Precambrian rocks on the margins of the Midlands Platform (see site report for Boon's Quarry, above). The lowest unit at Woodlands Quarry, the Jee's Member, represents deposition in a wave-agitated environment, signifying shallower water than was associated with the underlying parts of the Hartshill Formation (Bridge *et al.*, 1998). The upper part of the Jee's Member may have been eroded before deposition of the Home Farm Member.

The Home Farm Member represents deposition during a relative rise in sea level. The sources of sandy detritus were flooded, allowing a condensed carbonate sequence to form slowly and intermittently, interpolated by episodes of submarine scouring. Brasier *et al.* (1992a) compared records of stable isotopes from the Home Farm Member with those from correlative beds in Newfoundland and suggest that during the period of their formation the shelf sea was shallowing from subtidal to peritidal depths.

The Woodlands Member is interpreted as a wedge of shallow-water sediment deposited during a lower stand of sea level. Subsequently, deepening caused the arenaceous source to move landwards, and minor condensed bioturbated sequences formed at the top of the unit, upon which the Purley Shales formed in an outer-shelf environment.

Brasier (1986, 1989) correlated the Hartshill Sandstone Formation with the Tommotian and basal Atdabanian of the Siberian succession. The fauna of small shelly fossils in the Home Farm Member, in particular the first appearances of such taxa as *Allatheca degeeri* (Holm) and *Rhombocorniculum insolutum* Missarzhevsky and Mambetov, indicates a correlation with the upper Tommotian and with the *Camenella baltica* Zone developed in the Fosters Point Formation (formerly part of the Smith Point Limestone) of south-east Newfoundland. The presence of trilobite fragments at the base of the Purley Shale Formation is suggestive of an Atdabanian age, whilst the occurrence about 70 m higher of a fauna with the trilobite *Serrodiscus bellimarginatus* (Shaler and Foerste) suggests correlation with a level near the Atdabanian–Botomian boundary and with the *S. bellimarginatus* fauna in the Brigus Formation of south-east Newfoundland (Rushton, 1966).

Conclusions

Woodlands Quarry is nationally important because it is the only permanently exposed site where the fossil communities of the Home Farm Member are preserved. They represent the oldest diverse shelly assemblages known at outcrop in Britain and enable correlation with similar faunas known elsewhere from Siberia and Newfoundland.

[References](#)



(Figure 5.6) Woodlands Quarry Hartshill, Nuneaton area. Photograph taken in 1913, looking north. The calcareous Home Farm Member of the Hartshill Formation forms a bedding plane on the right, above the right-hand skip. The massive sandstones overlying are the Woodlands Member, succeeded by the basal beds of the Purley Shale Formation, which extend to the quarry floor behind the white-shirted quarryman. The massive rocks forming the left-hand quarry face are a lamprophyre intrusion. (Photo: British Geological Survey photographic collection, A1635.)