# Meezy Hurst

## Highlights

Meezy Hurst is the best exposure of Forest of Dean Pennant Formation in the Forest of Dean, and clearly demonstrates its unconformable contact with the underlying Lower Carboniferous limestones (Figure 5.4).

## Introduction

A number of disused quarries and an abandoned railway-line lie on the north side of the Blakeney to Parkend Road (B4431), Gloucestershire [SN 638 089]–[SN 647 091]. From the resulting exposures, it is possible to reconstruct much of the Forest of Dean Pennant Formation, as it is developed in the southern part of the Forest of Dean. The most instructive accounts of the field geology are provided by Trotter (1942) and Gayer and Stead (1971).

## Description

### Lithostratigraphy

The sequence seen here is some 300 m of the Forest of Dean Pennant Formation, and lies with angular unconformity on Viséan limestones. The unconformable contact is particularly well shown in the easternmost two exposures of this composite site.

The basal Upper Carboniferous beds here are grey and green mudstones with ironstone concretions, but they rapidly grade up into sub-greywacke sandstones. These basal sandstones show a mixture of trough cross-bedding and parallel bedding, and palaeocurrent evidence suggests that the sediment originated from the south-east, which contrasts with the northerly derivation of more of the rest of the Forest of Dean Pennant Formation.

About 30 m above the unconformity is a coal known as the Coleford High Delf (Figure 5.5). In the past, this coal and its associated seat earth were well exposed in the railway cutting, but the coal has been dug-out by local residents, causing the roof to collapse. Consequently, the coal is no longer visible, although its position in the sequence can still be readily identified.

The overlying strata reflect somewhat higher energy conditions, with more abundant scour-horizons and mélange. They are otherwise virtually indistinguishable from those below the Coleford High Delf, however, and the sediment appears to have had a similar provenance. Poor exposure now prevents full details of the sequence from being seen, but Gayer and Stead (1971) state that the Yorkley Seam is present, and that the succession ranges up to near the top of the Forest of Dean Pennant Formation.

### Biostratigraphy

No biostratigraphical data have been specifically reported from this site. The following discussion will therefore refer to the results obtained from the same strata exposed in neighbouring collieries.

#### Non-marine bivalves and estberiids

From the roof of the Coleford High Delf near Parkend, Calver *in* Welch and Trotter (1961) reports the bivalves *Anthraconauta tenuis* (Davies and Trueman), *A. phillipsi* (Williamson) and *Anthraconaia* aff. *pruvosti* (Tchernyshev). Such an assemblage clearly belongs to the *A. tenuis* Zone, indicating a position anywhere between the upper Bolsovian and lower Cantabrian. Calver also reports the estheriid *Leaia bristolensis* Raymond. In South Wales, this occurs mainly in the Suprapennant Formation, but its distribution is probably influenced strongly by environmental parameters.

**Plant macrofossils**

The lowest stratigraphical horizon in the Forest of Dean Coalfield to yield plant macrofossils is the roof of the Coleford High Delf. The roof of this coal is usually a sandstone, unsuitable for the preservation of fossils. Occasionally, however, a thin shale occurs, yielding palaeobotanical material (Arber, 1912; Crookall, 1930a; Wagner and Spinner, 1972). Crookall claimed that it indicated what would now be called the late Bolsovian. Wagner and Spinner, however, showed that it must be Westphalian D, and the presence of *Lobatopteris vestita* (Lesquereux) Wagner points to it belonging to the *D. plueckenetii* Subzone *sensu* Cleal (1991), i.e. upper Westphalian D in age (see also Cleal, 1986a, 1992).

Arber (1912) reported a more diverse assemblage from the Yorkley Seam at Bream. This is clearly Westphalian D or higher, with abundant *Neuropteris ovata* Hoffmann and *Cyathocarpus arborescens* (Brongniart) Weiss. He also reports abundant'*Pecopteris miltoni*' (almost certainly *L. vestita*) and some *Polymorphopteris polymorpha* (Brongniart) Wagner, which tends to suggest a position no lower than the *D. plueckenetii* Subzone.

**Palynology**

Smith and Butterworth (1967) and Wagner and Spinner (1972) summarized the spore/pollen assemblages obtained from the Trenchard, Coleford High Delf and Yorkley seams, which all belong to the *Thymospora obscura* Zone. According to Smith and Butterworth, *T. obscura* (Kosanke) Wilson and Venkatachala is rare and *Thymospora pseudothiessenii* (Kosanke) Wilson and Venkatachala absent, which together suggests these coals are lower Westphalian D. This view seems to be supported by the megaspores (Spinner, 1965). However, Wagner and Spinner (1972) have subsequently reported *T. pseudothiessenii* from the Coleford High Delf and Yorkley seams, which tends to support the plant macrofossil evidence that these strata are upper Westphalian D.

## Interpretation

This is the best site for showing the Forest of Dean Pennant Formation. It clearly demonstrates its unconformable contact with the underlying Lower Carboniferous limestones, which attests to this having been a positive area (part of the Usk Axis) from the late Viséan to the late Westphalian D.

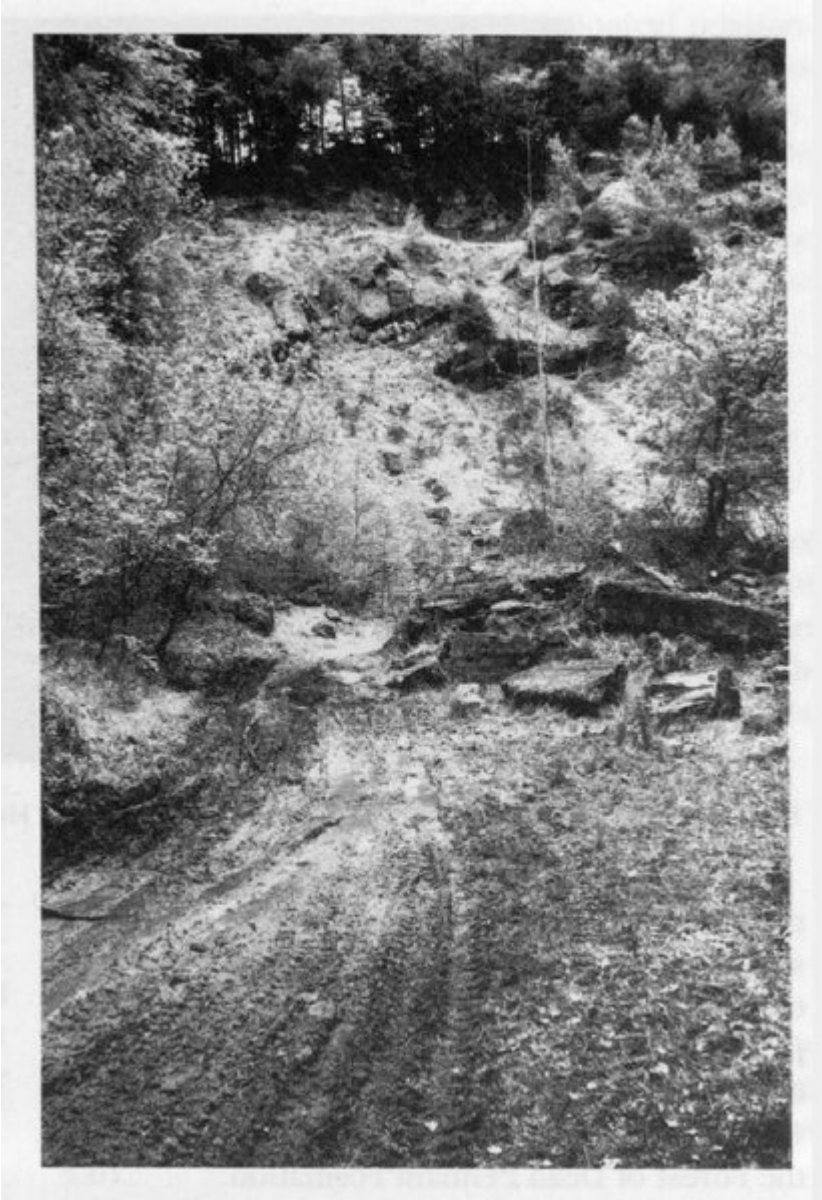
The strata are very similar to the South Wales Pennant Formation. Kelling (1974) pointed out that the eastern provenance of the sediment is the same as that of the Rhondda Member in the eastern part of the South Wales Coalfield, and that they probably represent similar depositional environments. However, this ignores the significant chronostratigraphical discrepancy between these two sets of strata, of about a stage (Cleal, 1992). The upper Westphalian D Forest of Dean Pennant Formation instead correlates with the upper Swansea Member (as redefined in this volume), for which there is little detailed sedimentological information.

Following Trotter (1942), it has been usual to assign any Upper Carboniferous strata in the Forest of Dean below the Coleford High Delf to the Trenchard Formation or Group. Meezy Hurst shows that, in the southern part of the coalfield, this does not reflect the real lithological relationships between the strata. The relationship is reflected better by assigning all of the strata here, from the unconformity up to the Brazilly Seam, to the Forest of Dean Pennant Formation. The Trenchard Formation should be restricted to the higher energy deposits found in the north of the coalfield, such as at Puddlebrook Quarry.

## Conclusions

Meezy Hurst is the best exposure in the Forest of Dean of sandstones known as the Pennant Formation. These rocks are about 306 million years old and are the remains of rivers that flowed southwards from an area that was being uplifted to the north (known as the Usk Axis).

**References**



*(Figure 5.4) Forest of Dean Pennant Formation lying unconformably on Carboniferous Limestone, seen at Howbeach Slade Quarry, Meezy Hurst GCR site. (Photo: C.J. Cleal.)*

*(Figure 5.5) Position of Coleford High Delf coal, Meezy Hurst GCR site. (Photo: C.J. Cleal).*