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## Brook House

[ST 3538 9590]–[ST 3550 9570]

### Introduction

This locality consists of small, stream and lane-side outcrops near Brook House, at the bridge over Cwm Ffrwd Brook, 2 km south-west of Llanybi, Gwent (Figure 5.56). The section lies at the southern margin of the Silurian inlier of the Usk region (Gardiner, 1916; Walmsley, 1959; see also Butler *et al.*, 1997) and ranges from the Lower Leintwardine Formation (Ludfordian, Ludlow Series) to the basal part of the overlying Downton Castle Sandstone Formation (Pticioli Series). It includes the local equivalent of the Ludlow Bone Bed Member.

The geology and palaeontology of the Brook House site has been recorded primarily by Walmsley (1959; see also 1967 and 1982), who established the standard stratigraphical scheme for the Usk Inlier, and by the British Geological Survey (e.g. Squirrell and Downing, 1969). Ostracod and conodont microfossils have also been reported from the locality (Miller and Aldridge, 1993, 1997; Miller, 1995).

Correlation of the Usk sequence with the type Ludlow Series and Downton Castle Sandstone Formation of the central Welsh Borderland presents little problem (see Walmsley, 1959; Holland *et al.*, 1963; Cocks *et al.*, 1971, 1992). All authors subsequent to Walmsley (1959) have endorsed his stratigraphical units. However, while Cocks *et al.* (1971) and Barclay (1989; for the northern part of the inlier) also used the same Silurian stratigraphical names as Walmsley (1959), later, Walmsley (1967), Squirrell and Downing (1969) and Cocks *et al.* (1992) preferred to adopt the stratigraphical nomenclature developed for the type Ludlow succession of the Ludlow Anticline (Holland *et al.*, 1963), a practice followed herein.

### Description

The sequence youngs north to south, the strata dipping at between 14° and 30° (Figure 5.56). Lower Leintwardine, Upper Leintwardine, Lower Whitcliffe, Upper Whitcliffe, Downton Castle Sandstone and Raglan Mudstone formations are represented, though not all are exposed. These units equate to the Upper Llanbadoc, Lower Llangibby, Middle Llangibby, Upper Llangibby, Speckled Grit, and Raglan Marls beds, respectively, of Walmsley (1959), which he recognized on the basis of changes in lithology and faunal composition. The Brook House section is one of the best localities to demonstrate the characteristics of the Lower and Upper Whitcliffe and Downton Castle Sandstone formations of the Usk Inlier (Walmsley, 1959).

The Leintwardine and Whitcliffe groups consist essentially of light olive-grey calcareous siltstones with a brachiopod-dominated, often very rich shelly fauna. The Whitcliffe beds were exposed some 20 m upstream from the bridge (Walmsley, 1967). The Lower Whitcliffe fauna at Usk consists essentially of bivalves (e.g. *Fuchsella amygdalina*, *Goniophora cymbaeformis*, *Pteronitella retroflexa*), cephalopods (e.g. *Kionoceras angulatum*, *Michelinoceras bullatum*) and especially brachiopods (such as *Microsphaeridiorhynchus nucula*, *Protochonetes ludloviensis* and *Salopina lunata*) rare gastropods and trace fossils also occur.

The Upper Whitcliffe beds of Usk have a reduced version of the Lower Whitcliffe fauna. They consist of an alternation of unfossiliferous olive-grey siltstones, unfossiliferous and in part irregularly laminated and rippled siltstones, and lenses of highly fossiliferous calcareous siltstone that are partly decalcified to rusty-brown 'rottenstone' full of moulds of *Loxonema*. Bands of this gastropod occur in the Upper Whitcliffe in the stream section near the bridge at Brook House (Walmsley, 1967), as do the ostracods *Hemsiella* cf. *H. maccoyiana* and *Calcaribeyrichia torosa* and a fragmentary conodont fauna characterized by *Ozarkodina excavata*, *Ozarkodina confluens*, *Ozarkodina snajdri*, *Ozarkodina remscheidensis baccata* and *Coryssognathus dubius* (Miller and Aldridge, 1993, 1997; Miller, 1995). Squirrell and Downing (1969, p. 25) report the occurrence of a thin bone bed containing thelodont denticles in the upper 3 m of the Whitcliffe strata at Brook House.

The low bank approximately 12 m west of the bridge, on the south side of the lane [ST 3456 9570], has yielded fish and other faunal fragments that indicate the presence of the local equivalent of the Ludlow Bone Bed Member of the base of the Downton Castle Sandstone Formation (Walmsley, 1959, 1967, 1982; Squirrell and Downing, 1969). The overlying, sandy beds of that formation contain a sparse conodont fauna (Miller, 1995) and can be traced in tiny exposures in the lane-side and also downstream from the bridge, where they are succeeded by the Raglan Mudstone Formation (Red Marls of Walmsley, 1959, 1967).

## Interpretation

This sequence accumulated close to the southern margin of the Welsh Basin (see Siveter *et al.*, 1989, fig. 11; Bassett *et al.*, 1992, fig. S5b). The facies present infer a gradual change from relatively shallow, open sea shelf environments of Leintwardine and Lower Whitcliffe times to restricted marine and then marine and river influenced, perhaps coastal mudflat conditions in the red beds of Pridoli times (see Bassett *et al.*, 1982; Allen, 1985). The bone bed lag deposits and associated sand shoals represent an intermediate stage in this overall regressive cycle.

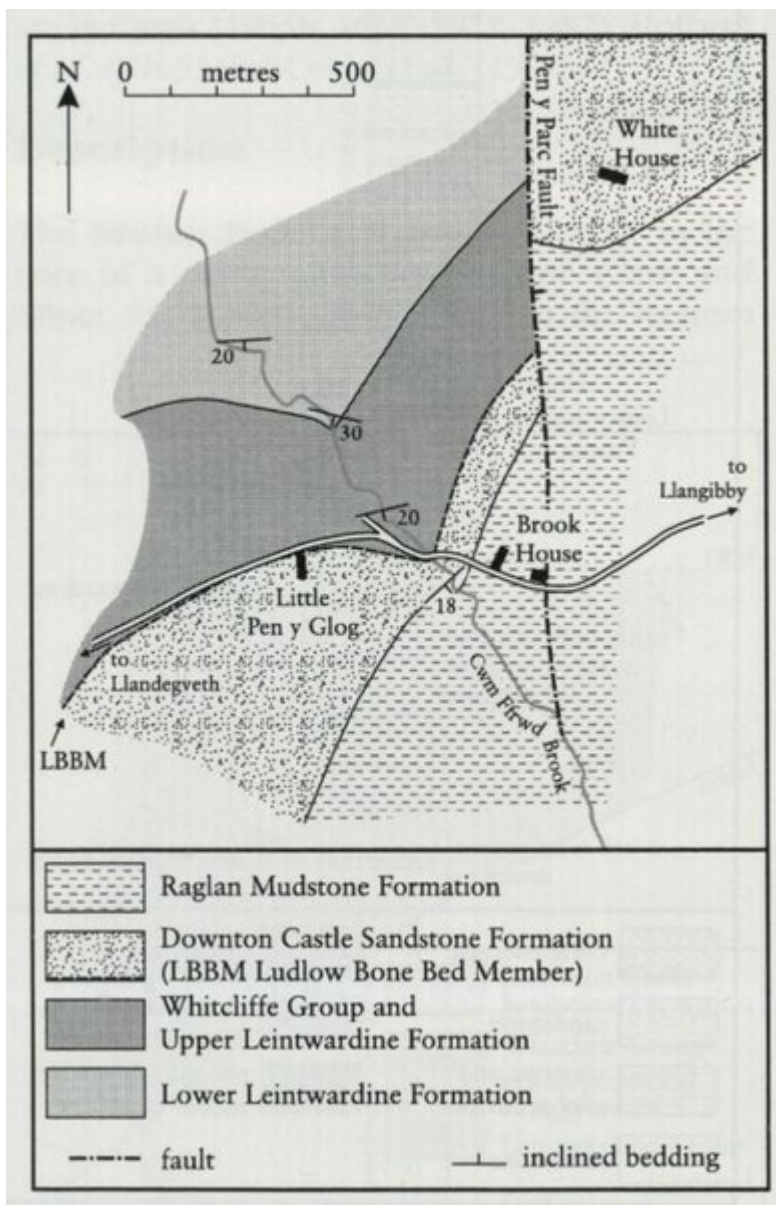
Within the Usk Inlier Brook House represents the best locality in which to examine the Ludlow Bone Bed Member and one of the few in which the late Ludlow–Pridoli series transition can be demonstrated. Other GCR sites in the Welsh Basin that display a coeval stratigraphical sequence involving the Ludlow Bone Bed Member or its local equivalent are: Turner's Hill and Brewin's Canal in central England; Woodbury Quarry and Ludford Lane and Ludford Corner in the central Welsh Borderland; Perton Road and Quarry, Linton Quarry, Longhope Hill, Wood Green and Tites Point in the southern Welsh Borderland; and Lower Wallop Quarry in Shropshire. The GCR sites at Sawdde Gorge and Capel Horeb Quarry in west-central Wales also display late Ludlow and Pridoli age strata, but there the contact between the two series is an unconformable one. Cwm-Ton and Cilwrgi, both of Wenlock age, are the other GCR sites in the Usk Inlier.

## Conclusions

The Brook House site has regional stratigraphical importance and should be conserved.

Outcrops are small, intermittent and mostly overgrown. Nevertheless, in the Welsh Basin, Brook House represents the most southerly GCR locality with a Ludlow–Pridoli series boundary sequence that also includes the basal Pridoli Ludlow Bone Bed Member. It is also one of the rare localities where this member is documented from the Usk Inlier. It is a productive locality for faunal and correlation studies of this important stratigraphical horizon.

## [References](#)



(Figure 5.56) The geology in the vicinity of Brook House, near Llangybi, in the Usk Inlier, Gwent (after Walmsley, 1959).