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## Beacon Hill

[SO 1808 7672]

Potential GCR Site

### Introduction

These old quarries occur between two paths, about 450 m WNW of Fron Rocks on the southeast flank of Beacon Hill, approximately 4.5 km south of Felindre and 12 km north-west of Knighton, Powys (Figure 5.58), (Figure 5.64).

Beacon Hill is in the south-western part of the Clun Forest, an area studied by Earp (1938; 1940). His 1938 paper centred on the Kerry district, but it also included an additional geological map (pl. 13) which focused on the distribution of the so-called 'Contorted Beds' (i.e. slumped beds) of an adjoining southerly region that contains Beacon Hill. In a subsequent paper he mapped the latter ground in greater detail and he included brief notes of the geology of the vicinity of Beacon Hill (Earp, 1940).

Holland *et al.* (1963) and Cocks *et al.* (1971, 1992) correlate the local basinal sequences with the standard Ludlow stratigraphy of Shropshire. The sedimentology of much of the Ludlow of Clun Forest and the contiguous Radnor Forest area to the south has recently been reassessed (Tyler, 1987; Tyler and Woodcock, 1987; Woodcock and Tyler, 1993). The research of Holland and Palmer (1974) demonstrated the palaeontological significance of the late Ludlow rocks exposed at Beacon Hill. The locality also featured in the field guide of Siveter *et al.* (1989).

### Description

To the south of where an unnamed stream, which drains from the old quarries into Lawn Brook, is crossed by the track from Fron there are exposures of the Main Contorted Group of Earp (1940). These siltstones are part of slumped beds that here belong to the upper part of the Bailey Hill Formation (see Tyler and Woodcock, 1987).

Immediately below the track there is a change to the succeeding stratigraphical unit that Earp (1940) called the *Dayia navicula* Beds and which recently has been referred to as the Knucklas Castle Formation (see Woodcock and Tyler, 1993) after beds of that name in the Knighton area (Holland, 1959). Above the track the siltstones of this formation crop out sporadically in the gully of the unnamed stream and comprise the shallow quarried exposures of the site itself (Holland and Palmer, 1974). The formation contains the brachiopods *Dayia navicula* and *Aegiria grayi*, the ostracod *Neobeyrichia lauensis*, the bivalve *Cardiola interrupta* and, for some 65 m (= about 30 m of strata) in the gully north of the track, the graptolite *Saetograptus leintwardinensis* (Earp, 1940; Holland and Palmer, 1974). Throughout its distribution elsewhere in the Welsh Borderland the *A. grayi*-*N. lauensis* association is characteristic essentially of the Upper Leintwardine Formation (*Saetograptus leintwardinensis* Biozone).

The old quarries have a small thickness of thin, flaggy, calcareous siltstones that have yielded *A. grayi*, *C. interrupta* and several hundred, generally fragmentary specimens of the graptolite *Bohemograptus bohemicus tenuis* (Holland and Palmer, 1974; (Figure 5.65)). There is about 60 m thickness of strata between the last occurrence of the other graptolites (*S. leintwardinensis*) and the hand containing *Bohemograptus*. These data, together with finds of *Bohemograptus* at six localities in the Long Mountain area, enabled Holland and Palmer (1974, p. 235) to recognize that the, 'concentration of *Bohemograptus* above and clearly separated from the *S. leintwardinensis* Zone justify correlation with the '*Bohemograptus* proliferation zone'... and thus reasonably indicate that much of the *Dayia navicula* Beds... are... post-Leintwardinian i.e. Whitcliffian in age'. Most importantly, the data proved that the *S. leintwardinensis* Biozone could no longer claim to be the youngest graptolite biozone in the British sequence.

### Interpretation

Palaeogeographically this locality lies within the approximately NE–SW trending Montgomery Trough of the Welsh Basin (Cummins, 1959a, 1959b and Bailey, 1969; see also Dimberline and Woodcock, 1987, fig. 4; Siveter *et al.*, 1989, fig. 10; Dimberline *et al.*, 1990, fig. 1). The Bailey Hill sediments and their associated slumped sequences (see (Figure 5.58)) accumulated mostly on a north-west dipping palaeoslope of the south-east margin of this depocentre. By the Ludlow, this margin essentially lay along the trend of the Church Stretton Fault Complex (Tyler and Woodcock, 1987). Beacon Hill, near Felindre, is sited between the two more outboard (Pontesford and Tow) lineaments of the Welsh Borderland Fault System (Woodcock and Gibbons, 1988), in the outer part of a broad transitional zone between platform and basin proper (Tyler and Woodcock 1987; Woodcock and Tyler, 1993).

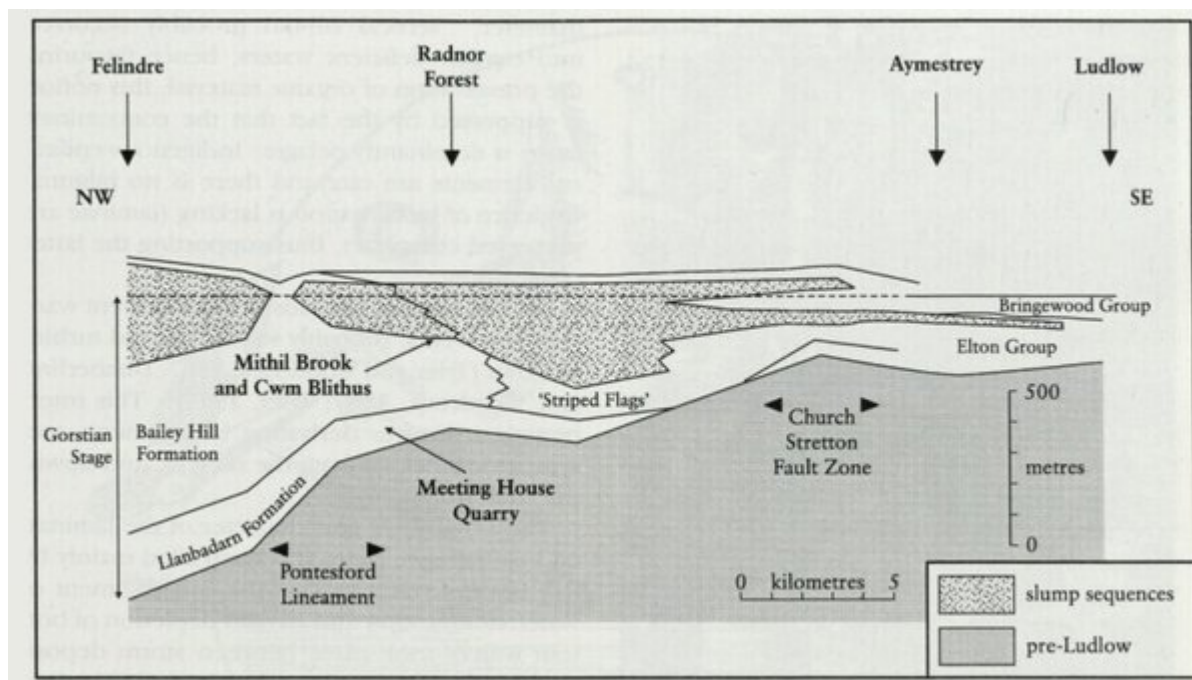
The calcareous siltstones that comprise most of the Baily Hill Formation are now thought to have a shelf storm-influenced rather than turbiditic origin (Tyler and Woodcock, 1987; cf. Cummins, 1959a; Holland and Lawson, 1963; Bailey, 1964, 1969). The Knucklas Castle Formation consists of alternations of calcareous siltstone and bioturbated siltstone (Woodcock and Tyler, 1987, fig. 4) and was possibly deposited in shallower water as the basin finally began to silt up.

Other Welsh Borderland sites that contain Ludlow age sediments of basin margin–slope aspect described in this volume are Meeting House Quarry and Mithil Brook in the Radnor Forest area to the south.

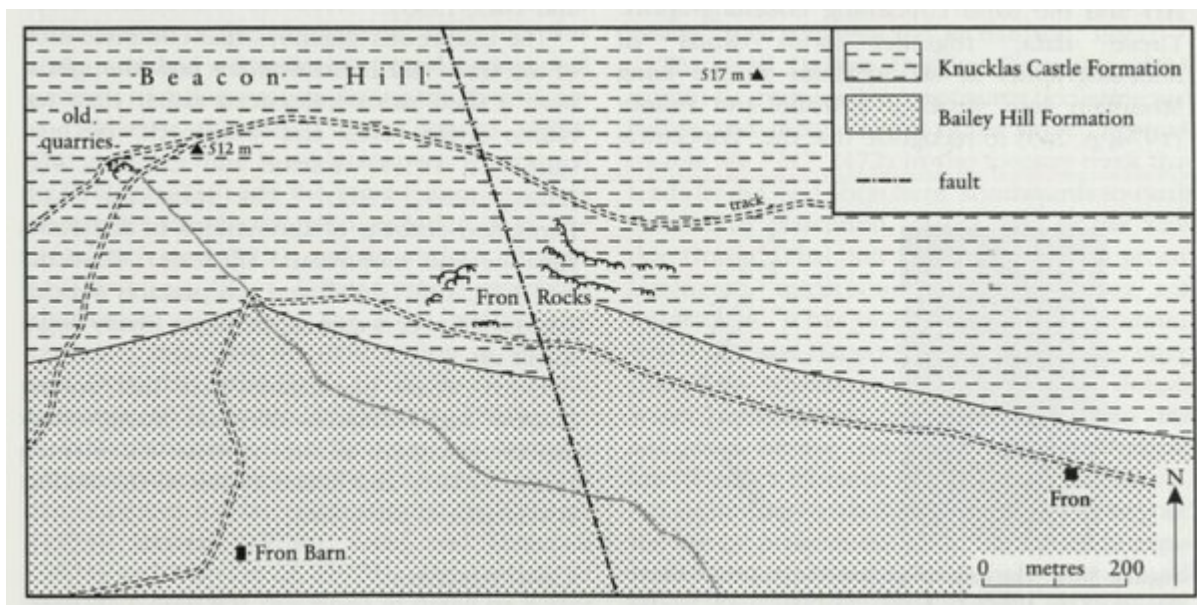
## Conclusions

This site is of prime palaeontological importance. It has yielded most of the material of the last-known graptoloid species in the British succession. This find permits refinement of late Ludlow stratigraphical correlation both nationally and internationally. Beacon Hill also represents a relatively rare, off-shelf locality within the Ludlow sites of the GCR network.

## References



(Figure 5.58) Position of Meeting House Quarry and Mithil Brook and Cwm Blithus, Powys, on a platform-basin transect showing lithostratigraphical formations of Gorstian age (after Woodcock and Tyler, 1993).



(Figure 5.64) The geology of part of the south-east flanks of Beacon Hill, Powys (after Holland and Palmer, 1974).

### The Ludlow Series

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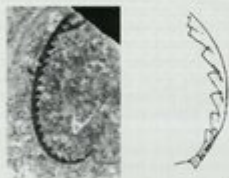


Figure 5.65 The graptolite *Bohemograptus bohemicus* (Bouček) (from Holland and Palmer, 1974): left, from the Long Mountain Siltstone Formation, Long Mountain, Powys (approximately  $\times 2$ ); right, from the Knucklas Castle Formation, Beacon Hill, Powys ( $\times 6$ ).

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