
Buttington Brickworks

[SJ 266 101]

Introduction

Buttington Brickworks is located about 4 km ENE of Welshpool on the north side of the Long Mountain area. Structurally, this area comprises an asymmetrical syncline that plunges gently ENE, its axis curving from NNE to ENE, and with a steep north-western limb. Silurian rocks of Llandovery, Wenlock, Ludlow and Pridoli age are successively exposed towards the axis of the syncline. The brickworks quarry site (Figure 3.16) comprises uppermost Llandovery through to lowermost Wenlock strata, the Llandovery part of which is described in detail in Chapter 3.

In the 19th century, both Murchison (1839, 1854) and Watts (1891) made observations on the geology of the Long Mountain area. The extreme north-west part of the area, encompassing that part around Buttington Brickworks, was later included by Wade (1911) in his coverage of the Ordovician and Silurian geology of the Welshpool district. In their classic biostratigraphical accounts of, respectively, the Wenlock and the Ludlow series, Elles (1900) and Wood (1900) made use of exposures in the Long Mountain for establishing the standard sequence of graptolite zones for rocks of this age. With reference to this graptolite zonal scheme, all the Wenlock and Ludlow rocks ('Salopian') of the area were then described by Das Gupta (1932), who also produced a geological map of the syncline.

In modern times, a short stratigraphical synopsis of the Silurian of the Long Mountain has been provided by Palmer (1970), who introduced new lithostratigraphical terms for these rocks. Wenlock strata there, most of which had previously (e.g. Elles, 1900) been referred to the 'Wenlock Shales', with *ludensis* (= *vulgaris*) Biozone strata having been placed (Wood, 1900) in the 'Lower Ludlow Shales' (see Holland *et al.*, 1969), were all assigned by him to the Trewern Brook Mudstone Formation. Palmer also set up the Glyn Member for the more calcareous, more consistently shelly horizon present in the upper (Homeric) part of this formation. Slightly later, he (1972) presented a detailed unpublished account of the Wenlock and other Silurian geology of the Long Mountain.

Recently, Cave and Dixon (1993) have logged in detail the Buttington Brickworks section. Loydell and Cave (1993) provided an even more comprehensive log (Figure 4.49) of the section together with further data on the biostratigraphy and systematics of the graptolites from the upper Llandovery there; they also established the Butterley Mudstone Member for silty mudstones with a dominantly shelly fauna at the bottom of the Trewern Brook Mudstone Formation, the very basal part of which they considered to be Llandovery in age.

This brick pit provides, outside the type Wenlock area, a very good, well-recorded section that straddles the Llandovery–Wenlock boundary.

Description

Palmer (1970) gave a thickness of 457–610 m for the Trewern Brook Mudstone Formation. The base of it is taken at the top of an 8 cm thick bentonite of the Llandovery (Telychian) Buttington Mudstone Formation (Cave and Dixon, 1993; Loydell and Cave, 1993). There then follow almost 9 m of tough, massive, olive- to buff-coloured calcareous and silty mudstones of the Butterley Mudstone Member. These mudstones are highly bioturbated and yield in their upper part a trilobite–brachiopod fauna, including (Cave and Dixon, 1993) *Dalmanites* sp., *Cyphoproetus binodosus*, *Sowerbyella* sp., *Glassia* sp. and *Skenidioides lewisii*. Graptolites sufficiently well preserved to allow identification are uncommon in the Butterley Mudstone Member. *Retiolites geinitzianus* was recorded from it by Cave and Dixon (1993), and a new, unnamed *Retiolites* species was noted by Loydell and Cave (1993) as the only species from the lower part of the member, which part they thought likely to be of Telychian age. Palmer (1972) has identified graptolites indicative of the basal Wenlock *centrifugus* Biozone from the Trewern Brook Mudstone Formation of the brickworks quarry, probably from an horizon in the topmost part of the Butterley Mudstone Member (Loydell and Cave, 1993). Thus the base of the Wenlock probably occurs in this section within the Butterley Mudstone Member. The recording by Mabillard (1981) of

acritarchs of Acritarch Biozone 5 (of Hill, 1974) from 3 m above the base of the member, and the biozonal conodont *Pterospathodus amorphognathoides* from slightly higher in the section, led him to conclude that the Llandovery–Wenlock boundary occurs in the lower part of the Trewern Brook Mudstone Formation.

Above the Butterley Mudstone Member, there is less than a metre available of the succeeding beds of the Trewern Brook Mudstone Formation. These are darker, grey-brown, fissile calcareous siltstones, largely hemipelagic and rich in graptolites (Loydell and Cave, 1993; (Figure 4.50)); they also include a thin (1 cm) bentonite (Cave and Dixon, 1993). From the bed immediately above the Butterley Mudstone Member, Loydell and Cave (1993) recorded the presence of low Wenlock, *murchisoni* Biozone graptolites, including the eponymous biozonal species. Palmer (1972), similarly, identified this biozone in the quarry (Cave and Dixon, 1993). Cocks and Rickards (1969) recognized three graptolite horizons, representing a low Wenlock *centrifugus-murchisoni-riccartonensis* faunal succession, in the lower part of the Trewern Brook Mudstone Formation of the quarry. The lowest horizon was characterized by *R. geinitzianus*, *Monograptus priodon*, *Monoclimacis vomerina basilica*, *Cyrtograptus centrifugus* and *Pristiograptus* sp., the middle level by *Cyrtograptus murchisoni* and *Monograptus priodon*, and the upper one by *Monograptus rickartonensis*.

Interpretation

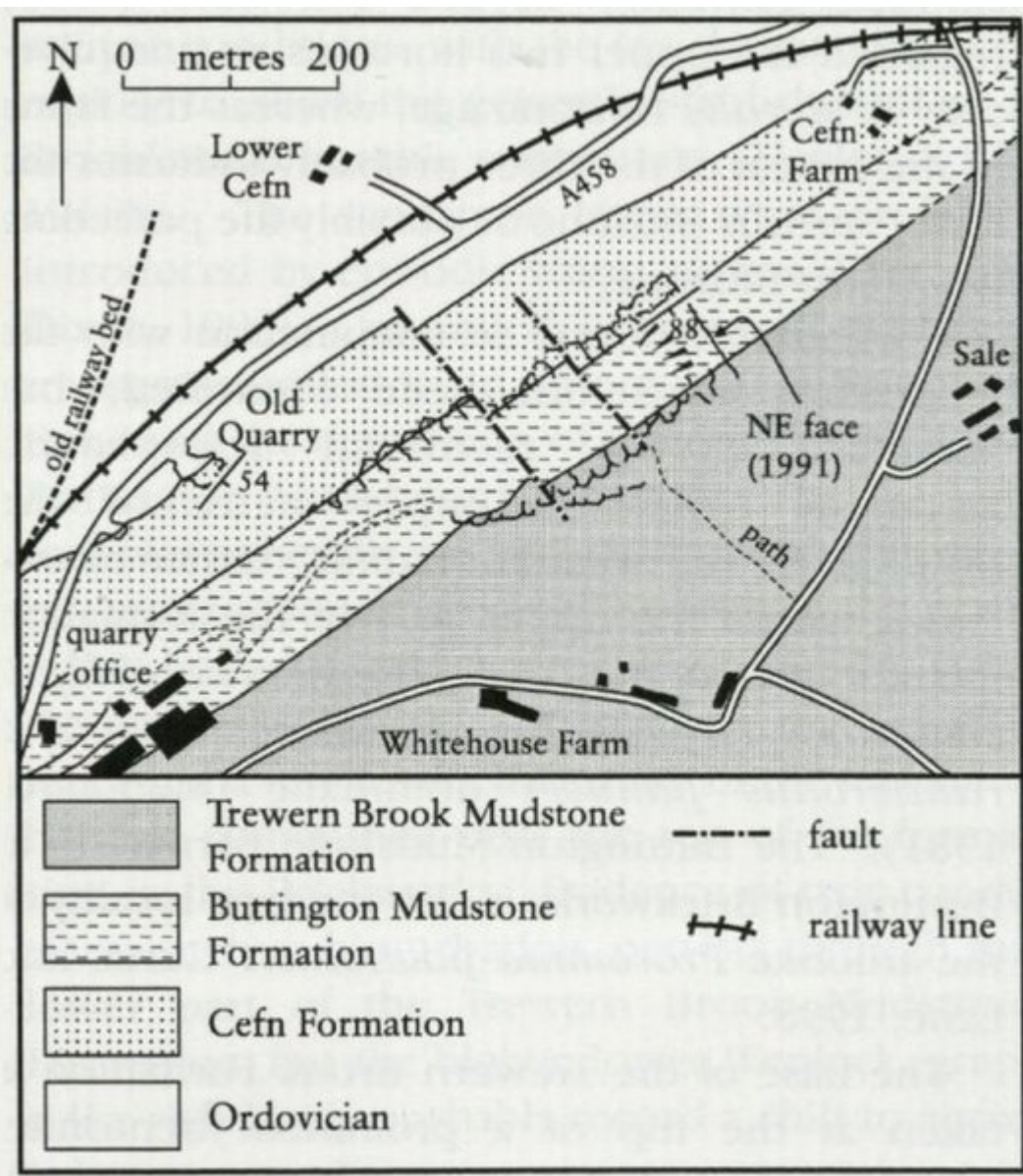
The Butterley Mudstone Formation, with its bioturbated beds and brachiopod–trilobite fauna, was deposited under oxic bottom conditions (Cave and Dixon, 1963). The overlying, darker, graptolite-rich beds probably represent a change to more anoxic bottom conditions. During Wenlock times the Long Mountain area was positioned on the palaeoslope (Bassett, 1974a; Hurst *et al.*, 1978; Holland, 1992). This intermediate palaeogeographical location is reflected in the sediments and fauna of the region: carbonate muds and shales with a dominantly graptolitic fauna, but with shelly horizons also. Hurst *et al.* (1978) recorded the *Dicoelosia* Community followed by the *Visbyella trewerna* Community from the Wenlock of the Long Mountain, both brachiopod communities being typical of deep water elastic locations. To the east of this area were the carbonates and shallow water faunas of the Midland Platform, and to the west turbidites, dominantly graptolitic, of the deeper parts of the Welsh Basin.

Buttington Brickworks links closely with the nearby, stratigraphically younger, Trewern Brook site, the two combining to provide almost complete coverage of Wenlock age strata in the Long Mountain. Within the site network it is also close to the Banwy River locality just to the west of Welshpool, which, similarly, exposes a Llandovery–Wenlock boundary sequence. Trecoed–Castle Crab in the Builth region to the south-west is again broadly comparable, providing a Llandovery to lower Wenlock section, the Wenlock part yielding graptolites plus shelly fossils and having a palaeoslope setting. The Llandovery–Wenlock boundary stratotype section at Hughley Brook in the type Wenlock area is also broadly comparable in terms of stratigraphy, though it was situated on the margin of the Midland Platform and in consequence it has a less graptolitic sequence than that of the brickworks site.

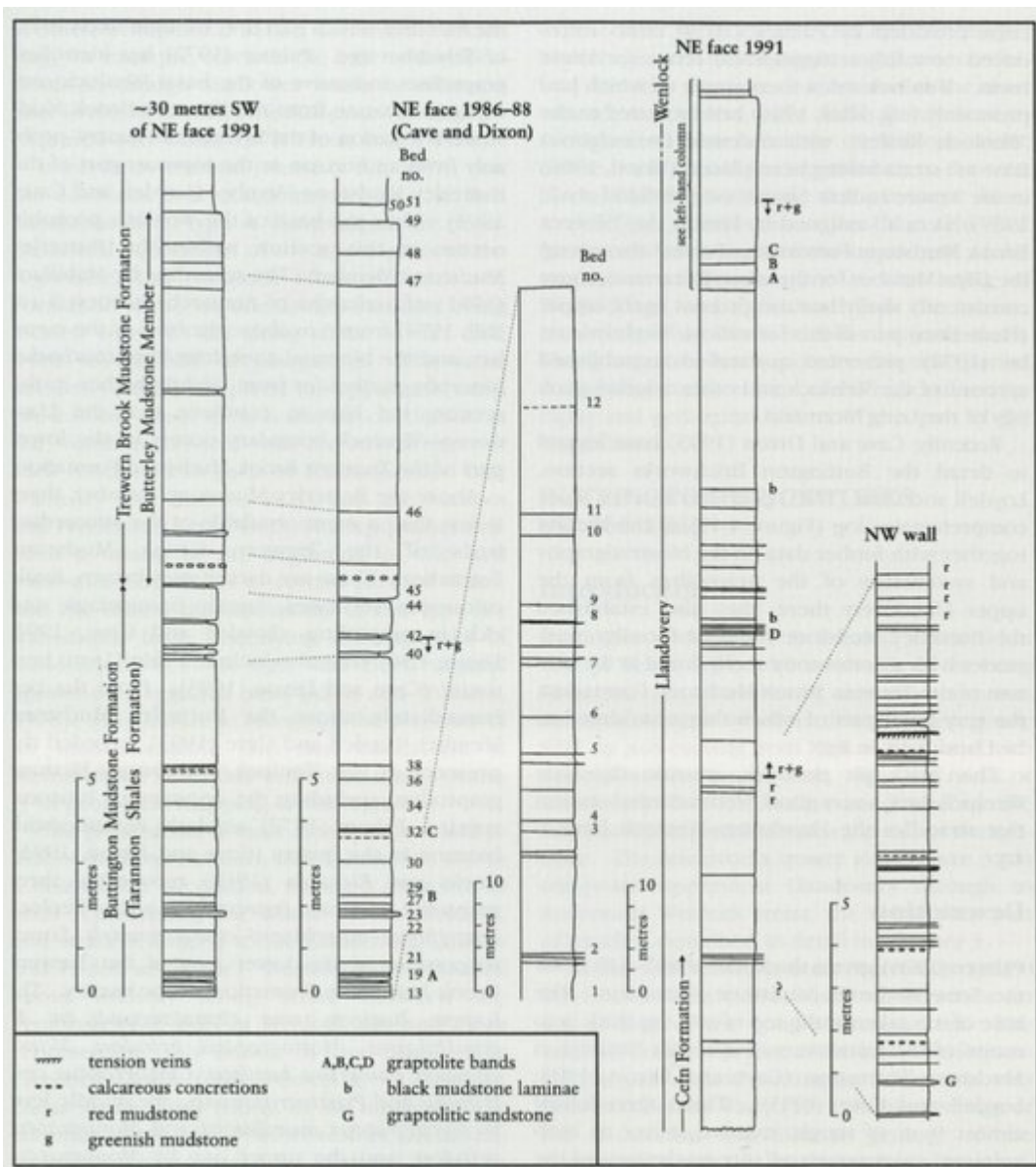
Conclusions

Buttington Brickworks exposes a stratigraphically important Llandovery–Wenlock boundary section in which, in addition to five graptolite biozones of the upper Llandovery Telychian Stage, the three lowest graptolite biozones of the lower Wenlock Sheinwoodian Stage have been recorded. The section also contains shelly fossils (trilobites and brachiopods) and microfossils (acritarchs and conodonts, at least), the latter helping to indicate the base of the Wenlock Series. It is the type locality for the basal Wenlock Butterley Mudstone Member of the Trewern Brook Mudstone Formation. The mudstones and shales of this formation were deposited offshore on the palaeoslope, between shelf and basinal areas. The quarry is actively worked outside the present GCR site boundary, and is due to work out the whole of the Buttington Brickworks Formation and the overlying Butterly Mudstone Member, but a purposely designated trench at the north-east end of the workings will show the Llandovery and Wenlock boundary sequence, with proper allowance for its longer term conservation.

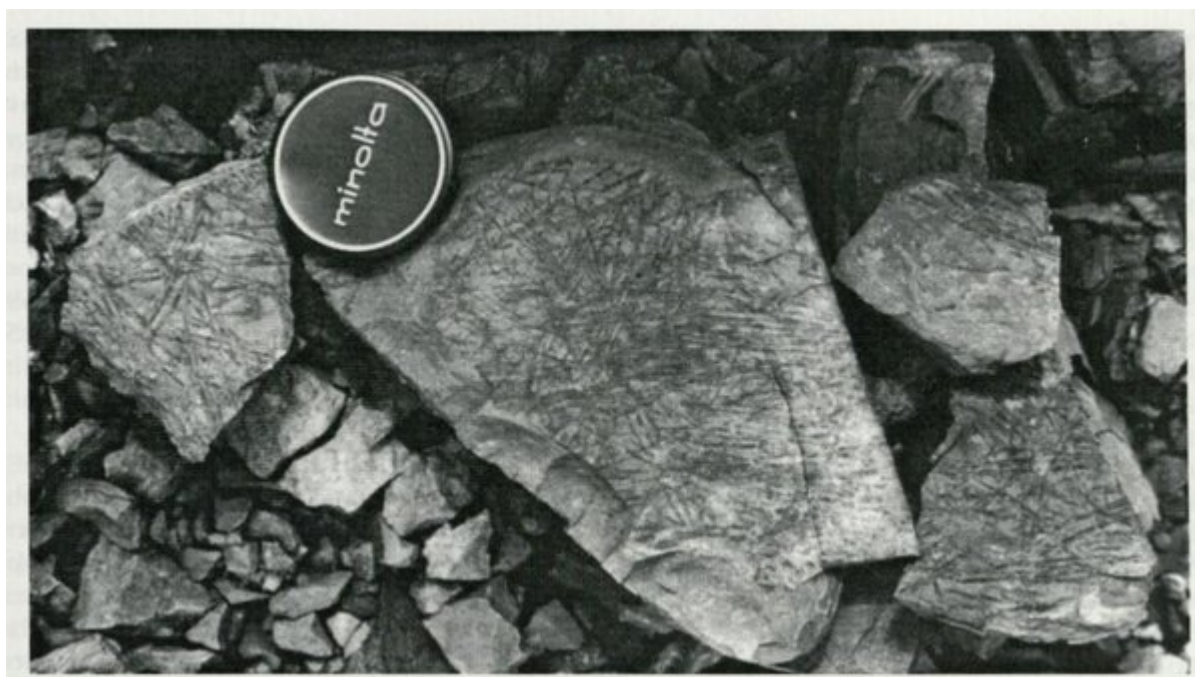
[References](#)



(Figure 3.16) Geological sketch-map and lithostratigraphy for Buttington Brickworks (modified after Loydell and Cave, 1993).



(Figure 4.49) Buttington Brickworks, Long Mountain area. Log through the upper Llandoverly (Telychian) and lower Wenlock (Sheinwooclian) strata (after Loydell and Cave, 1993).



(Figure 4.50) Buttington Brickworks, Long Mountain area. Fissile, graptolite-rich calcareous rocks of the Trewern Brook Mudstone Formation, Wenlock Series. (Photo: Derek J. Siveter.)