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## Buildwas River Section

[SJ 638 045]–[SJ 641 045]

### Introduction

In the northernmost part of the type Wenlock area, about 1 km to the south of where Silurian strata disappear under Carboniferous sediments, the River Severn flows towards Ironbridge Gorge and cuts obliquely through almost the whole Wenlock succession. At Buildwas the Llandovery–Wenlock boundary occurs in the river bed, with the Wenlock Buildwas Formation overlying the Llandovery Purple Shales Formation (Figure 4.27).

Murchison (1833) initially considered the lower part of the Wenlock sequence of the Wenlock Edge area to consist of what he termed 'Lower Ludlow Rock' or 'Die Earth', but he later (1834, 1835, 1839, 1854) used the term 'Wenlock Shale' for these strata (Bassett, 1974a). Murchison's 'Caradoc Sandstone', which underlies the Wenlock Shale, was recognized by Salter and Aveline (1854) to consist in Shropshire of younger Llandovery age rocks resting unconformably on true Caradoc strata and they regarded the highest unit of these younger rocks to be the Purple Shales, thus for the first time effectively defining a lower limit to the Wenlock Shale. Davidson and Maw (1881) then subdivided the latter into Basement Beds, Buildwas Beds, Coalbrookdale Beds and Tickwood Beds. Certain later authors (Lapworth and Watts, 1894, 1910; Watts, 1925) also included the Basement Beds as part of the Wenlock until Whittard (1928) noted that they in fact form part of the Purple Shales. In consequence, the Llandovery–Wenlock boundary was taken at the base of the Buildwas Beds (= Formation) (e.g. Pocock *et al.*, 1938; Cocks and Rickards, 1969; Bassett *et al.*, 1975).

Following the work of Pocock *et al.* (1938) and up until the revision by Bassett *et al.* (1975) of the type Wenlock area, the unofficial type section for the Llandovery–Wenlock boundary came to be generally accepted as that afforded by the River Severn at Buildwas. Additionally, the Buildwas Formation of this site has yielded since at least the late 19th century very abundant and well-preserved macro- and microfossils.

### Description

On the north bank of the river, for 100 m upstream from a point about 200 m west of the minor road running north to Little Wenlock, some 25 m of the Buildwas Formation are discontinuously exposed (Pocock *et al.*, 1938; Bassett, 1989a). They comprise grey and olive-green shelly siltstones and shales with more nodular, calcareous horizons which sometimes form continuous limestone ribs; there are also many thin, cream-coloured horizons of bentonitic clay. The Purple Shales consist of maroon mudstones with thin beds of shelly limestone and fine-grained sandstone. The passage from Purple Shales formation to the Buildwas Formation is apparently conformable, gradational over 0.5–1 m, and involves a colour change from purple to grey-green; it can be observed at times of low water.

The Buildwas Formation regionally is very fossiliferous, though specimens are in general rather small in size; corals, trilobites, ostracods, orthoconic nautiloids, graptolites and especially brachiopods (including *Dicoelosia biloba*, *Eoplectodonta duvalii*, *Isorthis elegantulina* and *Resserella sabrinae*) all occur.

Most notable of the collections made specifically from the river bank at Buildwas is that of George Maw, the 19th century entrepreneur (his company at nearby Jackfield was one of the world's largest producers of decorative tiles). Maw had the Buildwas Formation extracted by the ton, then washed, sorted and picked for fossils by paid retainers. This retrieval process (Davidson and Maw, 1881) yielded countless specimens for study by specialists of the day. Brachiopods were recovered in great numbers: 'from one cartload of Buildwas Beds... no less than 4,300 specimens of *Orthis biloba* were obtained besides a much greater bulk of other brachiopods amounting together to 10,000 specimens' (Davidson and Maw, 1881). Thomas Davidson, the doyen of brachiopod workers, used Maw's collections in his monographic studies (e.g. Davidson, 1881b). The Rev. Norman Glass, who in Britain pioneered investigation into the internal structure of brachiopods, also benefited from the Buildwas washings of Maw, without which he might not have made his morphological discoveries (Davidson, 1881a).

The Buildwas collections of Maw were picked for ostracods by George Vine (1887, 1888) of Sheffield and much of this material was also studied by H.B. Holl and R.T. Jones, both early notable workers on these microfossils who were beginning to realize the biostratigraphical potential of the group (see Jones, 1887a, 1887b; Jones and Holl, 1886a, 1886b; Siveter, 1978). Maw's samples provided thousands of well-preserved ostracods, including new species, for example *Craspedobolbina (Mitrobeyrichia) interrupta* Jones (1887b), and the locality still yields superb material (see Siveter, 1978, 1980; Lundin *et al.*, 1991). Other work utilizing material from Buildwas includes that of Vine (1882) on bryozoans, Andrew (1925b) on *Pachytheca* (plant material), Bassett (1970a) on brachiopods and Thomas (1978) on trilobites.

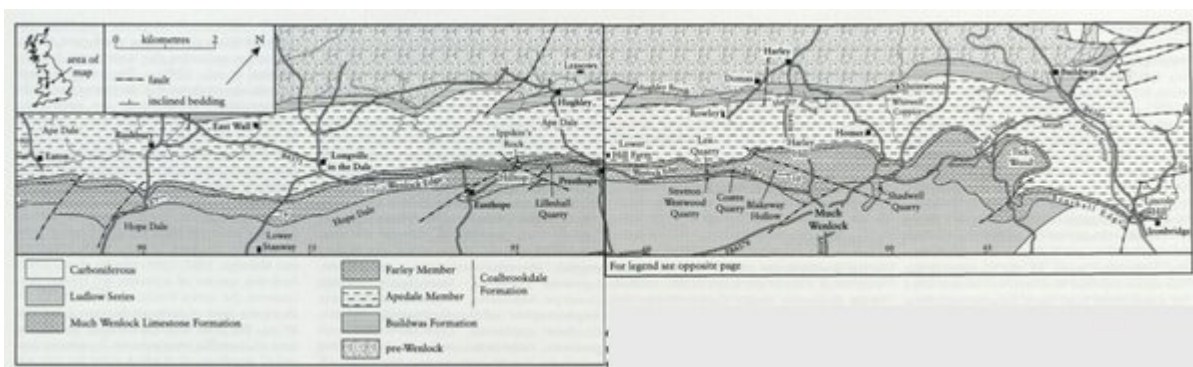
## Interpretation

Pocock *et al.* (1938) highlighted the fact that this Buildwas locality provides an important section across the Llandovery–Wenlock boundary. However, both in regional terms and also concerning this section in particular, the relationship of the upper Llandovery and overlying Wenlock strata to the graptolite succession was uncertain. Whittard (1928, 1932, 1952) believed that there was a sizeable stratigraphical break at this point in the Shropshire Silurian, possibly including the top two Llandovery and bottom four Wenlock biozones (*griestoniensis* to *rigidus* inclusive). Cocks and Walton (1968) and Cocks and Rickards (1969) partly removed this uncertainty by recognizing the *griestoniensis* and *rigidus* biozones in the Wrekin (Buildwas) area, the *crenulata* to *riccartonensis* timespan being represented by about 60 m of rock without diagnostic graptolites. However Cocks and Rickards (1969) further suggested that the Llandovery–Wenlock boundary here probably approximates to the base of the *centrifugus* Biozone. The subsequent presentation by Bassett *et al.* (1975) of a revised stratigraphy for the type Wenlock area identified the *centrifugus* Biozone in the Buildwas Formation low in the Wenlock Series, but this was based on collections made to the south-west in Ape Dale. Thus stratigraphically this site overlaps with and has been superseded in importance by the sections in the Hughley Brook site.

## Conclusions

This River Severn locality at Buildwas is important mainly for historical reasons, both in terms of stratigraphy and palaeontology. Following the 19th century works of Murchison, Salter and Aveline, and Davidson and Maw, and those in the 1920s and 1930s of Whittard and Pocock and coworkers, all of these concerning or touching on the scope and composition of the Wenlock Series, the locality was generally recognized as the stratotype for the Llandovery–Wenlock boundary. This status, however, has now lapsed in favour of Leasows, Ape Dale (see Hughley Brook site report). The locality, also, has been a rich source of fossils from the Buildwas Formation for over a century, many of them featuring in various publications during this time.

## References



(Figure 4.27) Geology of the Wenlock Edge–Benthall Edge area between Eaton and Ironbridge, Shropshire (after Bassett *et al.*, 1975).