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# Perton Lane, Herefordshire

[SO 596 406]

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## Introduction

The Perton Lane site consists of a very small roadside quarry immediately south of the hamlet of Perton in the southern Welsh Borderland Silurian inlier of Woolhope. The inlier is peri-clinal in structure and Perton Lane is situated in its northernmost part where late Ludlow and earliest Pridoli age rocks, some 417 million years old, are exposed.

The most recent study of the geology and faunas of the Woolhope area is that of Squirrell and Tucker (1960; see also 1967, 1982). Earlier commentators on the Silurian geology of the district include Murchison (1839), Phillips (1848), Strickland (1853), Brodie (1871), Gardiner (1927) and Pocock (1930). Correlation of the Woolhope sequence with the Silurian of other areas in the UK has been given in Cocks *et al.* (1971, 1992), and Butler *et al.* (1997) have mapped out the extent of the Woolhope Basin on the basis of subsurface analysis.

The site is important in arthropod terms for its eurypterid fauna. The first to discover eurypterids from Perton Lane was the Reverend P. B. Brodie (1869, 1871) in the late 19th century, and Henry Woodward (1871a,b) described some of this material at the same time. In the 20th century the eurypterid fauna from this site has been documented by Kjellesvig-Waering. He firstly produced a paper dealing specifically with Perton material, and then published broader taxonomic revisions of the group, one of which covered Welsh Borderland species that included material from here (1951, 1958, 1961). Plotnick (1999) included the Perton eurypterids in his assessment of Siluro-Devonian habitats of the group, and Tetlie (2006a) has recently undertaken a taxonomic revision of certain species from the site.

The Perton Lane site has also yielded an internationally important collection of early land plants in the form of both micro- and macro-floras, and thus has been selected for the GCR and described in a companion GCR volume to the present one, on Palaeozoic Palaeobotany (Cleal and Thomas, 1995). The site also forms the northernmost extent of the Perton Road and Quarry site, which takes in the best section of Ludlow and basal Pridoli series strata in the Woolhope Inlier, and so it has been included in the GCR for its Silurian stratigraphy (Aldridge *et al.*, 2000). Therefore, in addition to the fossil arthropod importance of this site, the area is also independently selected for the GCR for the Palaeozoic Palaeobotany and Ludlow selection categories.

## Description

The Ludlow of the Woolhope Inlier has been divided into eight biostratigraphical units (Squirrell and Tucker, 1960). The road from the hamlet of Copgrove north to Perton cuts through successively younger Ludlow strata (Figure 2.48), including excellent exposures in the large, disused Perton Quarry where the uppermost Upper Sleeves Oak Beds below the lower part of the Lower Bodenham Beds have been made available. The Perton Lane site, some 400 m north of Perton Quarry, exposes in total a few metres of the Upper Perton Beds (uppermost Ludlow Series) together with the overlying Rushall Beds (basal Pridoli Series).

The Upper Perton Beds consist of fairly well-bedded, calcareous and argillaceous siltstones. In the inlier as a whole they have a fauna that consists largely of brachiopods, bivalves, gastropods, and orthoconic nautiloids, together with numerically minor faunal elements such as trilobites, cornulitids and hyolithids (Squirrell and Tucker, 1960). Conodonts also occur in the uppermost Perton Beds (Squirrell and Tucker, 1960; Aldridge, 1985; Miller and Aldridge, 1993, 1997; Miller, 1995).

The Rushall Beds comprise fine-grained siltstones and mudstones together with some sandstone horizons. Compared to the underlying Ludlow Series strata, these beds have a fauna that is much reduced, and is dominated by inarticulate

brachiopods and fish remains — a bone bed having been recorded at the base of the Rushall unit. Conodonts and ostracods (Siveter, 1989; Miller, 1995) also occur. The Rushall Beds also contain early vascular land plants and their spores, most famously *Cooksonia pertoni* (see Cleal and Thomas, 1995 and references therein).

Of significance for the present volume, Kjellesvig-Waering (1951, 1961) identified the following eurypterids from the 'Downtonian' (= Pridoli) of Perton Lane: *Eurypterus cephalaspis* Salter, 1855; *Hughmilleria banksii* (Salter, 1856); *Salteropterus abbreviatus* (Salter, 1859); *Erettopterus gigas* (Salter, 1859); *Mixopterus* sp.; *Carsinosoma?* sp.; and *Tarsopterella?* sp. (Figure 2.49) and (Figure 2.50). Tetlie (2006a) has now referred *Hughmilleria banksii* to his new monotypic genus *Herefordopterus*, and confirmed the occurrence of this species and *S. abbreviatus* at Perton; both of these have Bradnor Hill near Kington as their type locality. He also commented on pterygotid and mixopterid specimens from Perton, the latter probably confirming the presence here of *Mixopterus*. In addition to the fossil arthropod importance of this site, the area is also independently selected for the GCR for the Silurian–Devonian Chordata selection category (Dineley and Metcalf, 1999).

## Interpretation

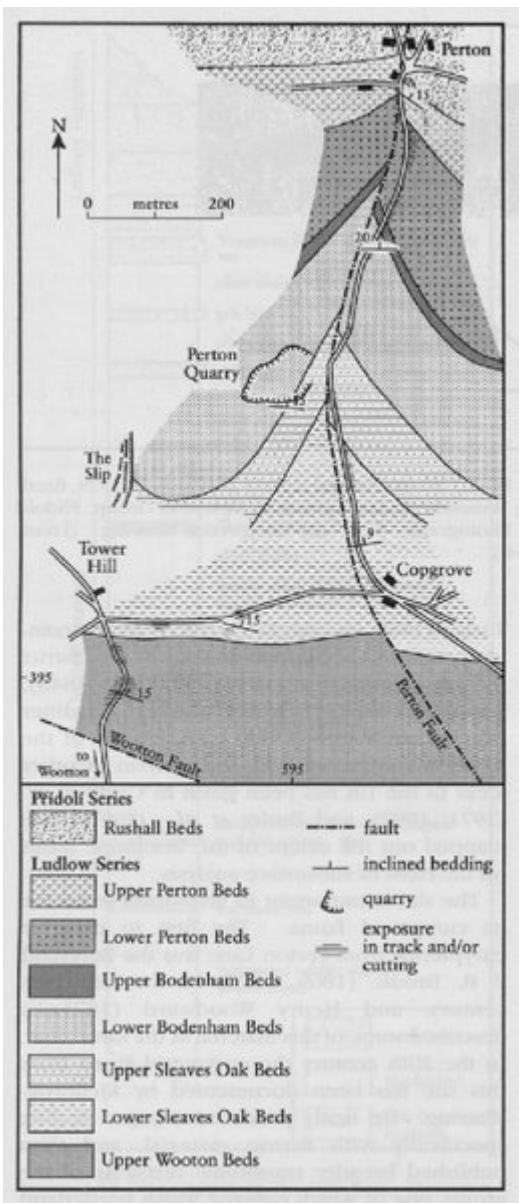
In the late Silurian this locality was sited on the western margin of the Midland Platform, which formed the eastern flank of the Welsh Basin (Siveter *et al.*, 1989; Bassett *et al.*, 1992). Overall, the sediments and biota along the road north from Perton Quarry indicate a regressive sequence, from the relatively shallow, open marine shelf deposits of the Ludlow to the more restricted and ultimately terrestrially influenced, alluvial plain environment of the Pridoli (Bassett *et al.*, 1982; Allen, 1985). The eurypterid-bearing Rushall Beds probably represent littoral deposits.

The Perton Lane site is closely linked to the other Welsh Borderland arthropod sites that are also recognized for their eurypterid faunas. These are Bradnor Hill some 35 km to the northwest near Kington, and the Church Hill, The Whitcliffe, Ludford Lane and Ludford corner, and Tin Mill Race sites the same distance to the north in the Ludlow–Leintwardine–Downton area. In terms of its eurypterid fauna, that of Perton Lane is similar to those from Ludford Corner and Ludford Lane, Tin Mill Race, and Bradnor Hill. All these Pridoli age sites share several species in common, whereas the eurypterids from the Church Hill and The Whitcliffe, both Ludlow Series sites, are distinct from the others and from each other. The composition of the eurypterids in the Scottish Siluro-Devonian sites of Gutterford Burn, Dunside, Slot Burn and Turin Hill is also different to that of Perton Lane, most notably in that they have a rich stylonuroid fauna, as opposed to the solitary specimen of *Tarsopterella?* sp. from the Woolhope Inlier site (Kjellesvig-Waering, 1961).

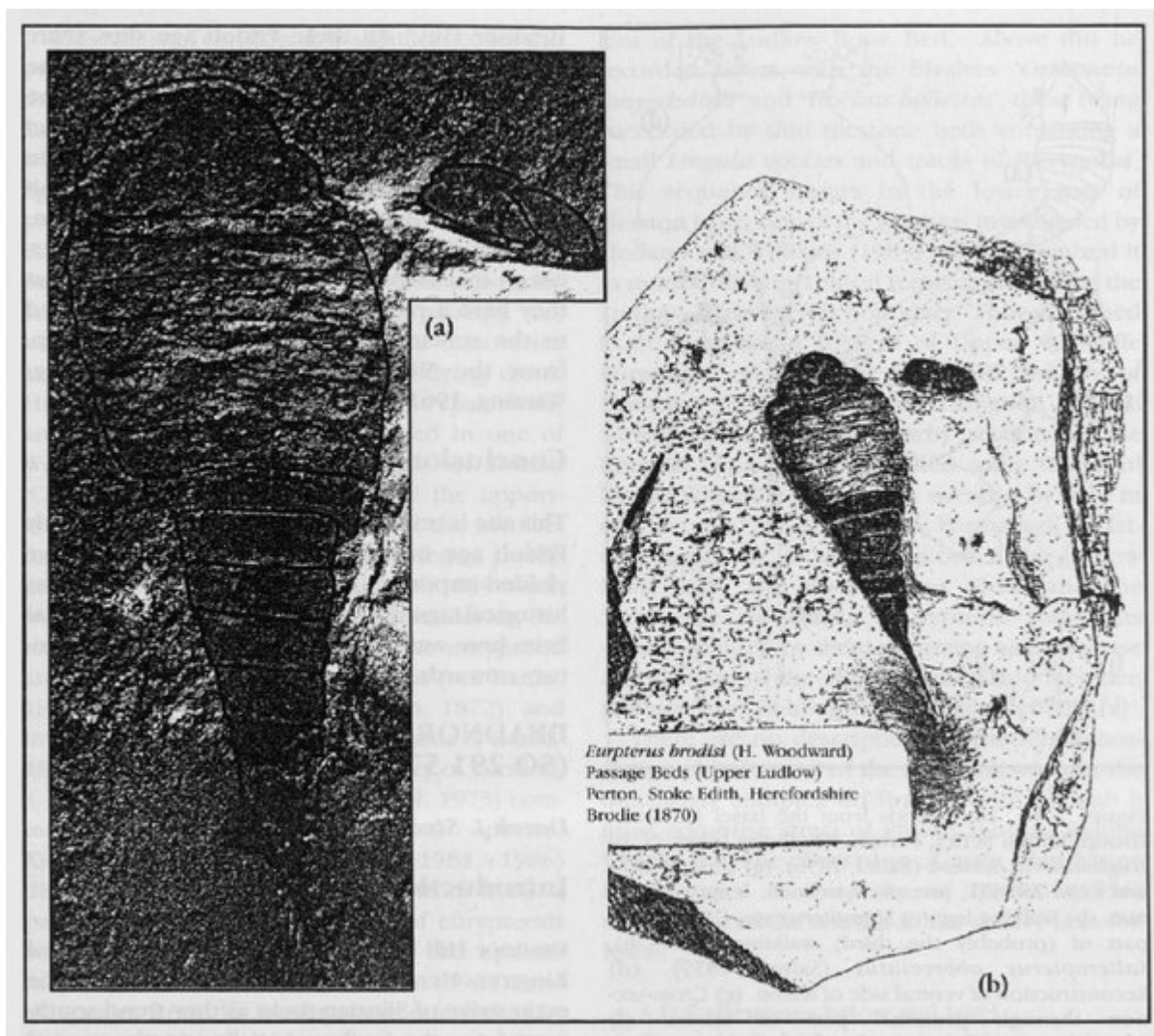
## Conclusions

This site is one of a network of Ludlow and early Pridoli age in the Welsh Borderland that have yielded important eurypterid faunas. It also has historical significance in that eurypterid material from here was described from the late 19th century onwards.

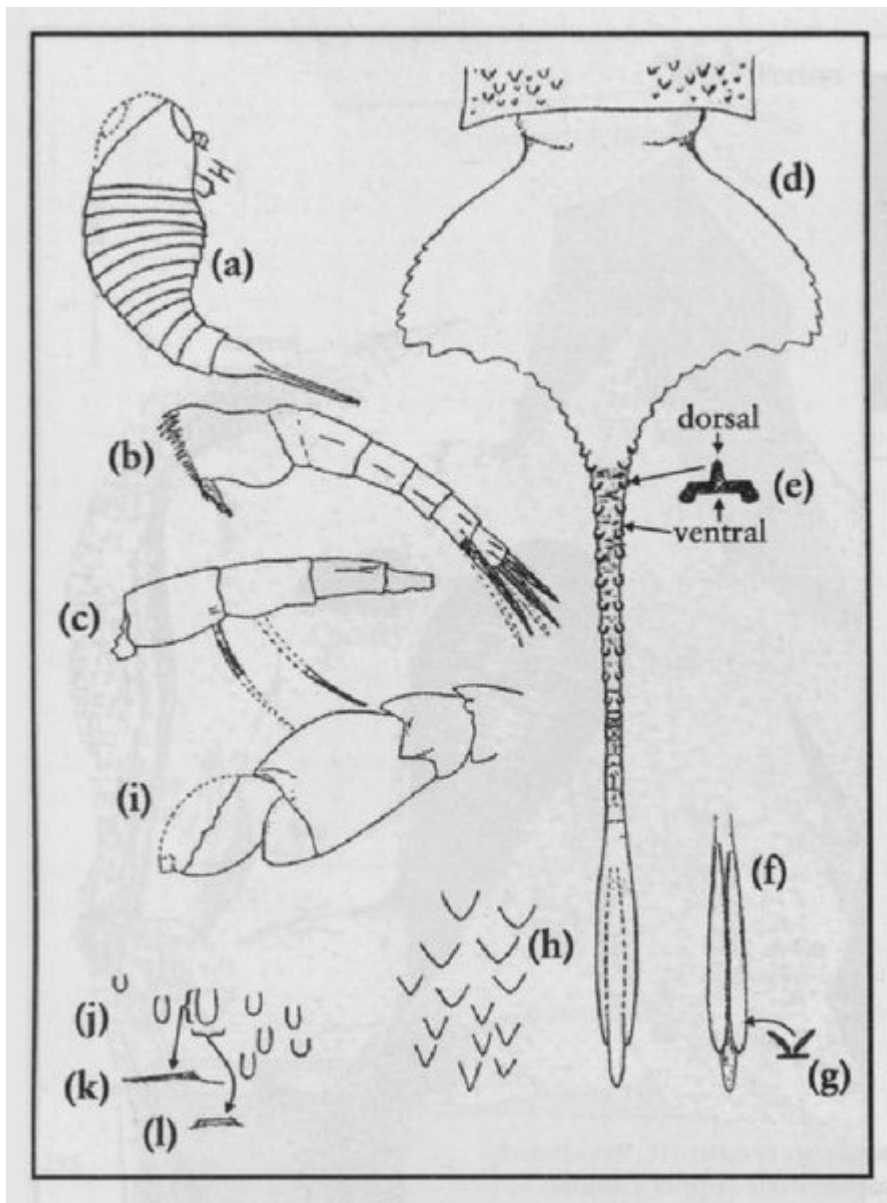
## [References](#)



(Figure 2.48) The geology of the area south of Perton, Woolhope Inlier, Herefordshire. (After Siveter, 2000e, and Squirrell and Tucker, 1960.)



(Figure 2.49) *Eurypterus cephalaspis* Salter, 1855; Natural History Museum, London, 1.3033, largely complete specimen, collected by Reverend R.B. Brodie, 1870, basal Downton Group, Perton, Piddoli Series, Woolhope Inlier. Holotype of *Eurypterus brodiei* Woodward, 1871. (a) Photograph, x 2 (from Kjellesvig-Waering, 1951, plate 3, fig. 1) (b) from Woodward (1871b).



(Figure 2.50) Eurypterids from the basal Downton Group, Páidolí Series, Perton, Woolhope Inlier. (a, b) *Hughmilleria banksii* (Salter, 1856). (a) GSM Zf-2871 and GSM Zf-2871, juvenile specimen, length is 18.5 mm. (b) Walking leg. (c) *Mixopterus* sp., GSM 88910, part of (probably the third) walking leg. (d–h), *Salteropterus abbreviatus* (Salter, 1859). (d) Reconstruction of ventral side of telson. (e) Cross-section through proximal part of telson. (f) Reconstruction of dorsal side of trilobed part of telson. (h) Sculpture of the cuticle, largest triangular scale is 4 mm wide. (i) *Eurypterus cephalaspis* Salter, 1855, reconstruction of the distal joints of the swimming leg, based on GSM Zf-2868, GSM Zf-2868a, and GSM Zi-3932. (j–l) *Carcinosoma?* sp., reconstruction of sculpture, based on GSM Zi-3955. All specimens are from the British Geological Survey. (From Kjellesvig-Waering, 1951, text-fig. 2 and 1961.)