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## Elton Lane

[SO 4610 7030]–[SO 4678 7050]

### Introduction

This series of small, poorly exposed outcrops occurs along a minor road (called Killhorse Lane on some maps), from 0.75 km to 1.25 km southeast of Elton [SO 457 708], in north Herefordshire (Figure 5.6), (Figure 5.25). Several stratigraphical units of the Ludlow Series bear the name of the village. The locality is sited on the southern limb of the Ludlow Anticline, just to the south-west of the area that was mapped in detail by Holland *et al.* (1963) when they rehabilitated the type Ludlow succession (see also White and Lawson, 1978; Lawson and White, 1989).

The section contains rocks of the Much Wenlock Limestone Formation (Homeric Stage, Wenlock Series) overlain by the Lower, Middle and Upper Elton formations (Elton Group, Gorstian Stage, Ludlow Series). Originally the three lithostratigraphical divisions of the Elton were each styled 'Beds' and the 'Eltonian' was the term given to the oldest of the then four stages of the Ludlow Series (Holland *et al.*, 1959, 1963). The change to Elton formations and the abandonment of the 'Eltonian' as a stage occurred when the terminology of the various stratigraphical units of the Ludlow Series was formalized in accordance with modern concepts (Holland, 1980a; Holland *et al.*, 1980). The formally designated stratotypes of the Elton formations occur in the Ludlow Anticline, but not at Elton Lane (see GCR site reports for Pitch Coppice, Goggin Road and Burrington Farm Stream Section, this volume).

The stratigraphical and palaeontological value of the 'Lower Ludlow' at this site was known to Murchison (1939, p. 205). Elton Lane is important chiefly because it was one of the key sections detailed by Wood (1900) when she established her graptolite biozones for the 'Lower Ludlow Shales' of areas in Wales and the Welsh Borderland. Its graptolite faunas include several type and other figured specimens (see Elles and Wood, 1901–1918). In addition to yielding shelly macrofaunal taxa typical of the basal Ludlow Series (for which see Holland *et al.*, 1963; White and Lawson, 1978; Lawson and White, 1989), it also contains abundant acritarch floras, chitinozoans, spores and other microfossils (Richardson and Lister, 1969; Lister 1970). Williams and Prentice (1958; see also Maltman, 1987) described slump-structures from the Elton Beds of the section.

### Description

The Much Wenlock Limestone Formation is a silty, nodular carbonate containing shelly, benthic fossils such as brachiopods and crinoids. The Elton Group is olive-grey in colour. The Lower Elton Formation consists of irregularly bedded, calcareous silty mudstones, the Middle Elton Formation comprises muddy siltstones and the Upper Elton Formation is essentially calcareous siltstones with conspicuous flaggy calcareous bands up to 15 cm thick (Wood, 1900; Williams and Prentice, 1958; Holland *et al.*, 1963). All strata strike approximately NE–SW and dip at 15–18° south-east. The Upper Elton Formation shows lamination, consisting of an alternation of dark-grey fine-grained bands (up to 2 mm thick) and light-grey, coarser, calcareous and silty bands (up to 8 mm thick), together with post-depositional slumping on various scales (Williams and Prentice, 1958; see also Maltman, 1987); the lighter bands form about 80% of the thickness of the Formation. Exposure is now extremely poor in the lower and middle parts of the section but improves in the upper part, especially in the *Pristiograptus tumescens* Biozone.

Fragmentary shell debris occurs in the Lower Elton Formation (e.g. brachiopods, trilobites, corals) and throughout the Elton Group. Graptolites and nautiloids are the prevailing faunal component in the Middle and Upper Elton formations. The Lower Elton Formation of the Welsh Basin contains graptolites indicative of the *Neodiversograptus nilssoni* Biozone (Cocks *et al.*, 1992); however, Wood (1900) records that no graptolites were recovered from the basal 40 m of the Elton beds of Elton Lane section. The Middle Elton Formation of Elton Lane has species of the *N. nilssoni* and *Lobograptus scanicus* biozones and the Upper Elton Formation contains taxa of the *P. tumescens* Biozone, *P. tumescens* being especially abundant (Wood, 1900; Elles and Wood, 1901–1918). The *L. scanicus* and *N. nilssoni* biozones at Elton Lane total 108 m in thickness, including the 40 m supposedly lacking graptolites; the *P. tumescens* Biozone is 68 m thick

(Wood, 1900, p. 428).

## **Interpretation**

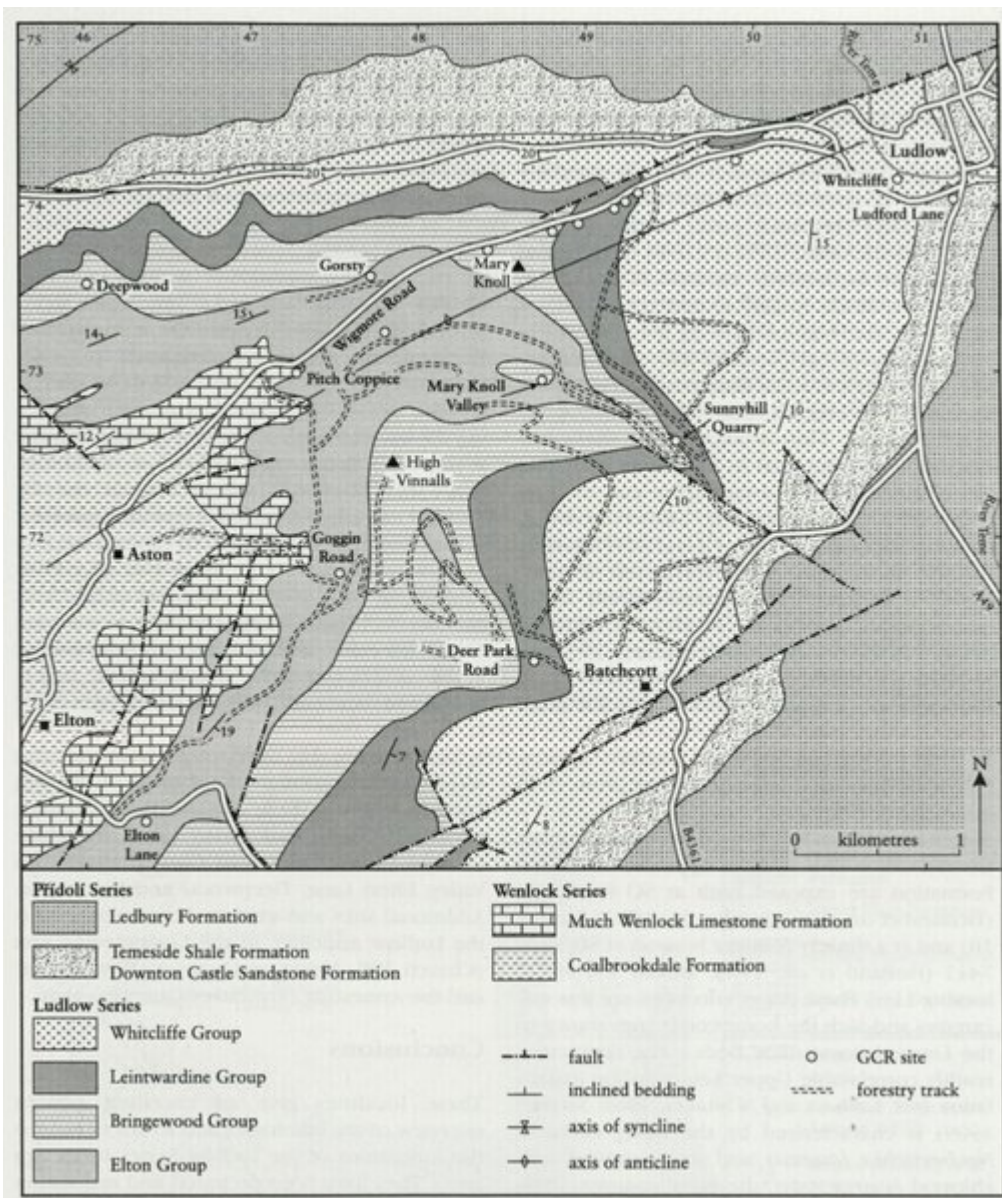
The strata at Elton Lane represent deposition on the outer shelf to shelf slope part of the eastern margin of the Welsh Basin (see Siveter *et al.*, 1989, figs 8–10; Bassett *et al.*, 1992, figs S3b, S4a). The lithofacies and faunal changes, from late Wenlock, relatively clear and shallow water shell-rich carbonates to early Gorstian graptolite-dominated fine clastic sediments, may reflect a relatively rapid but perhaps (at least initially) modest rise in sea level in the early Ludlow (e.g. see Hurst, 1975a, b; Bassett, 1976; Dorning, 1981a; Siveter *et al.*, 1989; Johnson *et al.*, 1991). Alternatively, such changes in lithology and fauna may be controlled by variations in climatic and associated oceanic conditions (Jeppson, 1990; Jeppson *et al.*, 1995). The prevalence of only pelagic species in parts of the Elton Group may indicate conditions inimical to benthic life.

Other GCR sites in the type Ludlow area that include a late Wenlock to early Ludlow stratigraphical sequence are Goggin Road, Burrington (see both Wenlock and Ludlow site reports) and Pitch Coppice.

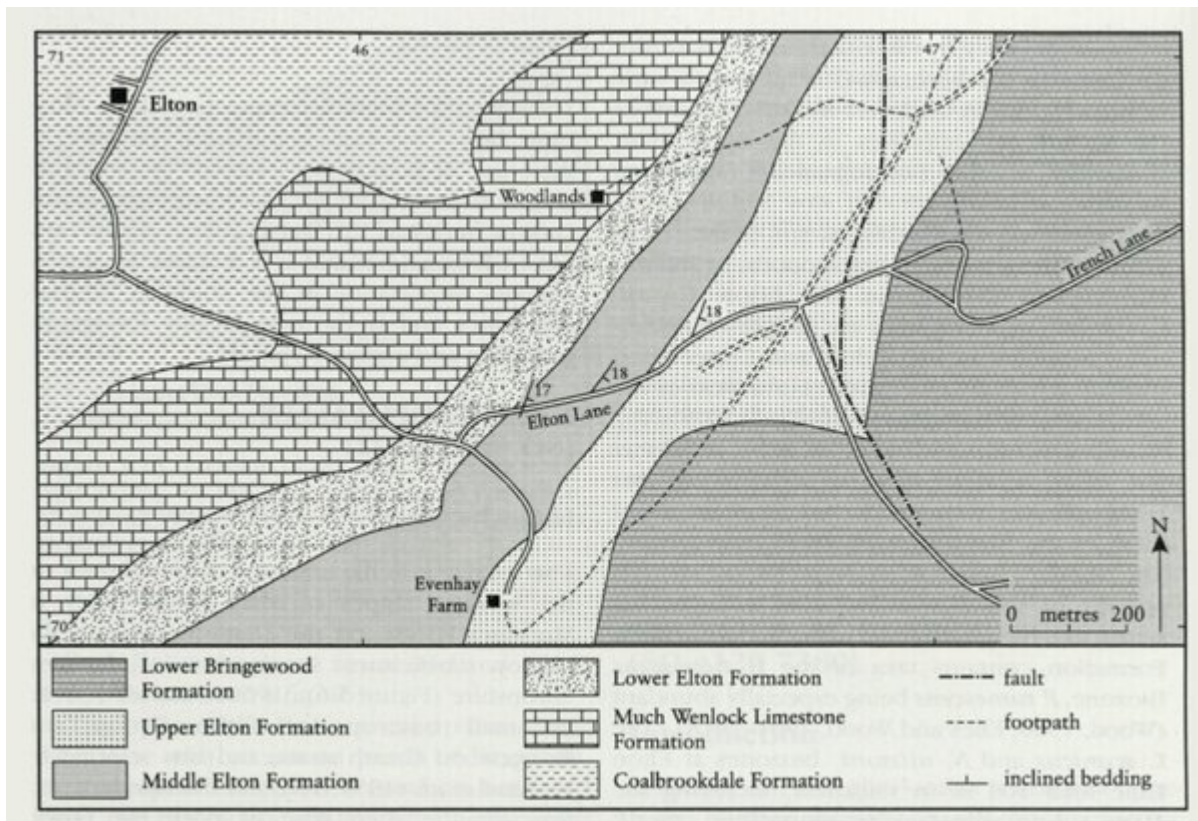
## **Conclusions**

The currently degraded exposures along Elton Lane have historical importance, because of their use in helping to establish the biostratigraphical framework for the lower part of the Ludlow Series in the Welsh Basin. Elton Lane has GCR status because it is a classic locality of national importance in the study of Silurian graptolites and is the type locality for several graptolite and acritarch species.

## **References**



(Figure 5.6) Map of the geology south-west of Ludlow, showing GCR sites along the Wigmore Road and elsewhere in the eastern part of the Ludlow Anticline (after Holland et al., 1963; Lawson, 1977; Lawson and White, 1989).



(Figure 5.25) Geology of Elton Lane, Herefordshire, in the region of the Ludlow Anticline (after Lister, 1970; see also Wood, 1900 and Williams and Prentice, 1958).