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# Ambergate Quarry

## Highlights

Ambergate Quarry is the best exposure of the Belperlawn Coal (Figure 10.7), which is the stratigraphically lowest widespread coal seam to occur in the Pennine Basin.

## Introduction

This disused and partly infilled quarry [SK 359 518] between Bullbridge and Ridgeway, 4 km north of Belper, Derbyshire, shows part of the basal Langsettian in the southern part of the Pennine Basin. The site is described by Neves (1967) and mentioned briefly in the memoir by Frost and Smart (1979).

## Description

The site has been partly filled by tipping, but there remain approximately 3 m of section still visible (the original sequence as seen by Neves, 1967 is summarized in (Figure 10.8)). Mostly, it shows unfossiliferous, dark-grey mudstone. However, there is also a 0.85 m thick coal, underlain by 0.2 m of seat earth. This is the Belperlawn Coal, and is nearly at its thickest here; further east it thins and becomes poorer quality. Consequently, the seam has only been exploited commercially to any extent in a narrow belt extending some 10 km south from Bullbridge.

No fossils can be found here, other than possible palynomorphs from the coal. However, elsewhere in the area, Frost and Smart (1979) record fish fragments from the mudstones overlying the coal. This is thought to represent the Holbrook Marine Band.

## Interpretation

This is the only site where the Belperlawn Coal can still be seen. It is one of the oldest seams in the Pennines coalfields, and is only marginally predated by the thin Pot Clay Coal of the upper Yeadonian (see discussion on the Little Don in Chapter 2). Coals also occur in this stratigraphical position elsewhere in the Pennine coalfields, where it is known variously as the Soft Bed (Yorkshire Coalfield) and Bassy Seam (Lancashire Coalfield); it is also probably the same as the Goyt Seam at Goyt's Moss. However, the Belperlawn Coal at Ambergate Quarry is by far the best exposure of this seam to be seen anywhere in the Pennine Basin.

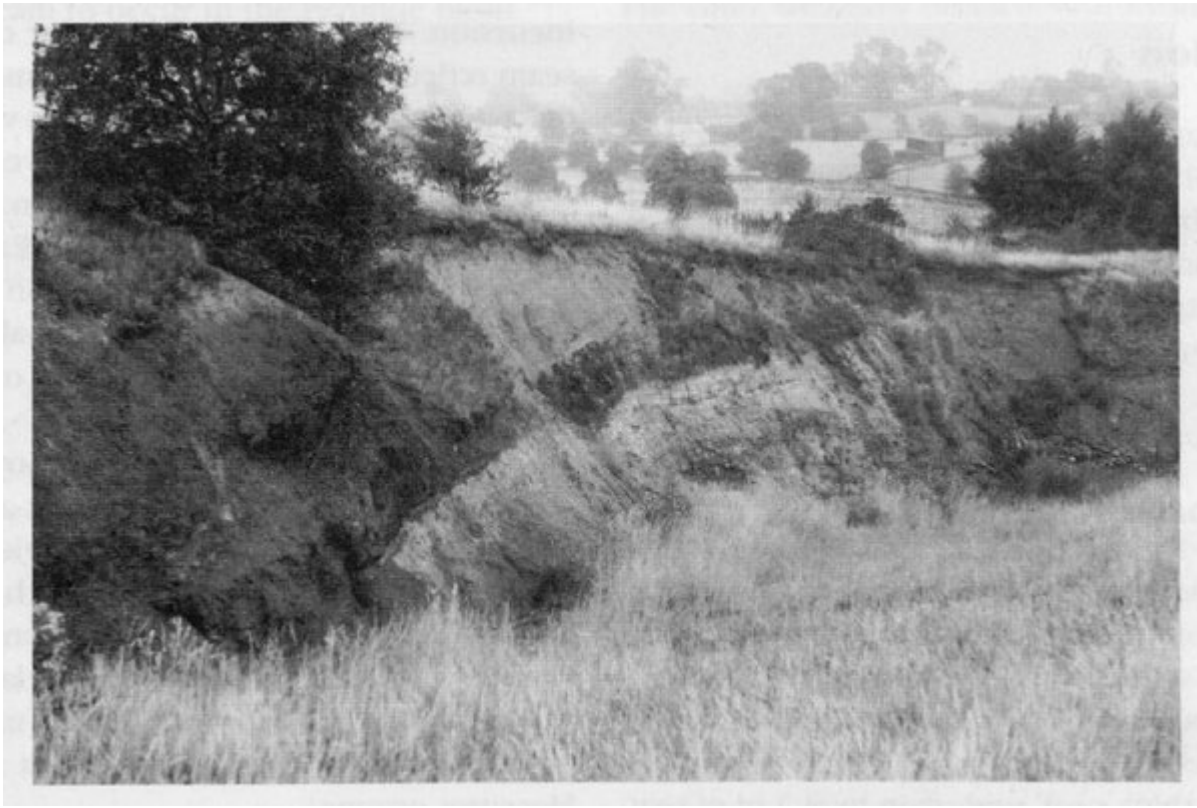
It represents a relatively short period of peat development (perhaps no more than 6000 years, if the time-estimates of Broadhurst and France, 1986 are correct), that developed on the Pennine delta before it was flooded by the Holbrook marine incursion. The thin, relatively poor quality of the seam reflects the fact that it was formed in a lower delta-plain setting, where conditions were less conducive to the growth of the swamp vegetation than were present later in the Westphalian. The coal is a little thicker in this part of the East Midlands Coalfield because they developed on sands of the Crawshaw delta-lobe, that presumably provided a more stable basis for the growth of the swamp forest.

The Belperlawn/Bassy/Soft Bed/Goyt coal represents the first development of peat-accumulating swamp vegetation to occur over a wide geographical area in the Pennine Basin. It thus marks an important step in the gradual environmental change that occurred between the late Namurian and early Westphalian, and which is marked by the junction between the Millstone Grit and the Coal Measures groups.

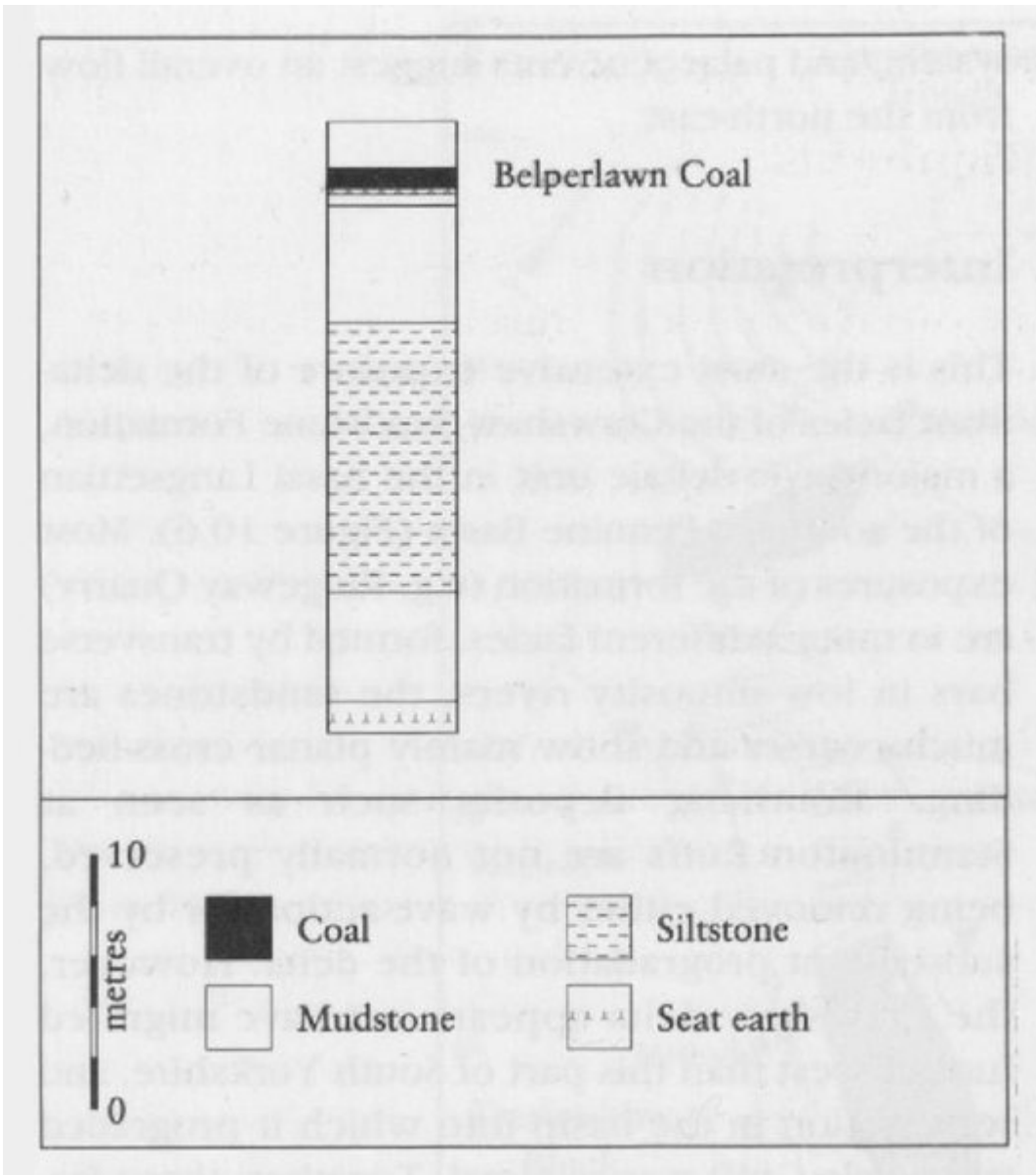
## Conclusions

Ambergate Quarry is the best exposure of a coal seam known as the Belperlawn Coal. It was formed about 315 million years ago, and is the oldest widespread coal seam to occur in the Pennine Basin.

## References



*(Figure 10.7) Belperlawn Coal (lower Langsettian) exposed at Ambergate Quarry. (Photo: C.J. Cleal.)*



(Figure 10.8) Section as originally exposed at Ambergate Quarry, drawn from a log given by Neves (1967, p. 46).