
River Noe

Highlights

This is the type and best known locality for the Edale Shales Formation, an interval of highly fossiliferous shales of Chokierian to Kinderscoutian age (Figure 9.8).

Introduction

The bed of the River Noe [SK 091 858]–[SK 110 847], near Edale, Derbyshire, is one of the classic exposures of Millstone Grit basinal shales in the central Pennines Basin. The first detailed description was given by Jackson (1923), and was further studied by Hudson and Cotton (1943, 1945). More recent descriptions are given by Ramsbottom *et al.*, (1967) and Stevenson and Gaunt (1971).

Description

Lithostratigraphy

The sequence represented here is 180 m thick, of which the upper 60 m are Upper Carboniferous (Chokierian to Kinderscoutian). It consists mainly of shales and mudstones of the Edale Shales Formation, for which this is the type section. Two main facies can be recognized: (1) dark grey to black shales, with thin impure limestones or bands of calcareous nodules (bunions) near the base; and (2) soft, medium to light grey shales and mudstones, showing iron staining. This is the basinal mudstone facies described by Collinson (1988), and represents sediments deposited in quiet, relatively deep-water conditions. The alternating facies are thought to reflect variations in water salinity, which in turn was controlled by eustatic changes (Ramsbottom, 1977; Holdsworth and Collinson, 1988).

At the top of the section are sandstones of the Mam Tor Formation. This formation is better seen at Mam Tor and will be discussed further in the next site report.

Biostratigraphy

Ammonoids

Although Chokierian strata are exposed here, and marine bands of this age are seen in the nearby Crowden Brook, no assemblages representing the *H. subglobosum* or *H. beyrichianum* zones have been reported from the River Noe section. In contrast, three bands have been identified here, each yielding ammonoids of the three Alportian zones: the *H. proteus*, *H. undulatum* and *H. prereticulatus* zones.

The Kinderscoutian is also represented here by three bands yielding ammonoids. However, only the uppermost of the three has yielded an index species for one of the zones, namely *Reticuloceras reticulatum* (Phillips), indicating the upper Kinderscoutian.

Conodonts

These have been described by Higgins (1975) from a horizon in the lower Chokierian here, and referred to as sample ED3. A second sample (ED4) from higher in the stage yielded no specimens. Important components were hindeodellids, comprising about half the reported assemblage. Stratigraphically more significant, however, is the presence of declinognathodids, especially *D. inaequails* (Higgins), *D. lateralis* (Higgins and Bouckaert) and *D. noduliferus* (Ellison and Graves), since these species do not occur below the mid-Carboniferous boundary (Higgins, 1982).

Interpretation

This is the type and by far the best exposure of the Edale Shales Formation. They are fine-grained, basinal deposits, characteristic of the lower Namurian (Pendleian to lower Kinderscoutian) of the Edale Basin. They can be compared with the Sabden Shales Formation of the Craven Basin, as for instance at the River Darwen site (see Chapter 2). However, the Sabden Shales are replaced by northerly derived deltaic sediments rather earlier than the Edale Shales; the former also tend to be more fossiliferous. In the Staffordshire Basin, although some basinal mudstone successions can be seen (e.g. Blake Brook), the same interval has significantly more deltaic sandstones, this time derived from a southerly source (presumably the Wales–Brabant Barrier).

Conclusions

This is the most important locality for rocks known as the Edale Shales Formation. The shales, which are about 315 million years, are the remains of marine muds deposited in front of a large river delta that was progressively spreading southwards at this time. The shales contain abundant fossils of marine organisms, including shells of ammonite-like animals called ammonoids, which allow the rocks to be dated with considerable accuracy.

References



(Figure 9.8) Section on the east bank of the River Noe, 320 m NNE of Fuiwood Holmes, exposing Edale Shales (Millstone Grit) with bullions containing the ammonoid *H. subglobosum*. Reproduced by permission of the Director, British Geological Survey: NERC copyright reserved (L210).