
Cresswell and Newbiggin Shore

Highlights

Cresswell and Newbiggin Shore is the best exposure of upper Duckmantian strata in Northern England.

Introduction

The coast near Newbiggin-by-the-Sea [NZ 304 855]–[NZ 301 872], [NZ 315 879]–[NZ 311 897], [NZ 302 916]–[NZ 292 942], Northumberland, provides extensive exposure of the upper part of the Coal Measures in the Northumberland–Durham Coalfield. The only published account of the geology visible here is by Fowler (1936),

Description

Lithostratigraphy

As pointed out by Fowler (1936), the strata are much faulted here, and so far there has been no attempt to assemble the individual fault blocks into a coherent succession. The stratigraphically lowest beds, which are exposed at Snab Point, consist of about 5 m of hard, sandy shales with ironstone nodules, overlain by 2.5 m of sandstone. In the upper part of the shaley interval are two coals, each about 0.3 m thick, and below the lowest of the coals, the shales are lacustrine with shells (see below). This part of the succession is thought to be some 60 m above the High Main Coal.

South of this, towards Lyne Sands, a buff coloured sandstone is faulted against the shales of Snab Point. The sandstone is strongly cross-bedded, and presumably represents a fluvial channel complex. From evidence in nearby boreholes, Fowler (1936) calculates that the sandstone is 91.5 m (300 ft) above the High Main Coal.

The southern part of the site, near Newbiggin, shows a sequence some 30 m thick. Its relation to the sandstone mentioned in the previous paragraph cannot be seen, exposure being hidden by the Lyne Sands, but it is likely that there is an intervening fault. According to Fowler (1936) they lie 146 m (480 ft) above the High Main Coal. These strata can be seen in terms of three incomplete coarsening-upwards cycles. Each is marked by a seat earth and thin coal at the base (the thickest coal recorded here is 55 cm thick), overlain by carbonaceous or lacustrine shales. These then pass up through sandy shales into a thick sandstone, which is then overlain by the seat earth and coal of the next cycle. The sandstones vary from 3.5 to 9.1 m thick. The lowest sandstone is coarse-grained and shows marked cross-bedding with many pebbly bands, while the uppermost one seen (known as the North Seaton or Woodhorn Sandstone) is more of a medium-grained and quartzitic. The succession is probably the result of a series of small-scale deltas or crevasse-splays infilling a subsiding lake.

Biostratigraphy

There is relatively little published biostratigraphical evidence from this site. The Geological Survey map for the area marks the presence of a number of marine bands, including the Aegiranum Marine Band, but there is no published account of the evidence on which this is based. If correct, however, it indicates that the succession is of upper Duckmantian to early Bolsovian age.

Fowler (1936) records '*Carbonicola*' shells from above the lowest coal in the sequence near Newbiggin. No species are mentioned, but it may be assumed that they would belong to the *Anthracosia atra* Subzone.

From the shales below the coals at Snab Point, Fowler (1936) reports another assemblage of bivalves. This time he does provide a list of species, including *Carbonicola* cf. *acuta* (Sowerby), *C. aff. oslancis* Wright, *Anthracosia* aff. *aquilina* (Sowerby) and *A. aff. concinna* (Wright). Such an assemblage would seem to indicate a position somewhere in the *A. modiolaris* Zone, contradicting the field evidence. However, Trueman and Weir (1946–1968) have revised many of these

species, such as *C. acuta* and *A. aquilina*, and have shown that many of the earlier records of them have been in error. The Snab Point assemblage is in clear need of review.

Interpretation

The geological interest of this site has still to be developed. However, it contains considerable potential for investigating the sedimentology of the upper part of the Coal Measures of North England. It lies a short distance above the strata exposed at Tynemouth to Seaton Sluice (discussed above), for which it provides a contrasting view of the Westphalian sedimentology of this area. In particular, there is little evidence of the thick, down-cutting sandstones that characterize the lower strata. Also there is the presence of marine bands. Together, this suggests that these higher beds represent a time when basin subsidence did not significantly outpace sediment infill, and sometimes outstripped it.

Amroth Coast in Pembrokeshire exposes strata of similar age (see Chapter 4). However, until these Northumberland strata have been more thoroughly investigated it is impossible to make any sort of coherent comparison.

Conclusions

Cresswell and Newbiggin Shore is the best exposure of rocks of late Duckmantian age (about 312 million years old) in Northern England.

References