

EXCURSION REPORT: STANTON SYNCLINE, DERBYSHIRE

Leader: J.I. Chisholm

Sunday, 5th July, 1981

The purpose of the excursion was to examine an example of growth faulting in the Millstone Grit. Growth faulting is a process in which deltaic sediments are affected by slumping during deposition. The resulting body of sandstone is tilted by rotational movement along a curved fault plane, just as in a landslip, and the slump-scar is filled by an extra thickness of sand not present outside the faulted mass.

The party assembled about 10.15 and walked first to a point above Winster (SK 242.602), from where there is an excellent view of the landscape features formed by the normal Millstone Grit sequence, just outside the area affected by faulting. The skyline plateau is Ashover Grit in river-channel facies; below are strong ridges of turbidite sandstone, and beneath these a broad vale formed by basinal mudstones. The dolomitised top of the underlying Carboniferous Limestone was examined close to the viewpoint, at Wyn's Tor.

The next stop was at a quarry (SK 2435.6282) on the top of the plateau of Stanton Moor, where we were able to examine the coarse cross-bedded river channel facies of the Ashover Grit, a typical Millstone Grit lithology formed in this locality after growth faulting had ceased. To the south-west, and at a lower level, lies a marked ridge of sandstone involved in the growth fault structure. The extra thickness of rock deposited in the slump scar is exposed in a quarry (SK 242.624) by the road but blocks of sandstone were being moved about by machinery, so no close inspection could be made. The leader was at pains to point out the unusual thickly bedded nature of the sandstone here, with its depositional dip to the south-east that has resulted from the rotational fault movement.

After lunch the party walked down the length of the ridge, looking at details of the faulted mass. At Rowtor Rocks (SK 235.621) a picturesque spot with steps and seats carved out of the massive grit, the thickly bedded 'extra' rock lies with strongly erosive contact on a cross-bedded sandstone like the one at the top of the plateau. The relationship is well exposed and was looked at in detail. This point lies about 100 metres below the level of the sandstones first examined, so that the sandstone in the faulted mass and above it is at least that thick, whereas the cross-bedded leaf of the Ashover Grit outside the area of faulting is normally less than 60 metres thick.

For a view of the whole structure we walked up a nearby hillside from where the position of the fault can be clearly seen. To the left the downfaulted and thickened sandstone forms the ridge the party had just walked down, and to the right the turbidite sandstones make a gentle dip-slope until cut off by the fault. We then returned by a route as near as possible along the outcrop of the fault plane, and were met by the bus in Birchover.

In what little time remained the leader tried to put the growth faulted area into its context within the Ashover Grit delta. A brief stop was made north of Bakewell (SK 217.701) where the cross-bedded river channel facies of the Ashover Grit has died out, and only turbidites remain. The last stop of the day was above Calver (SK 238.744) from where it is possible to see a small ridge dying out northwards into a featureless slope below Froggatt Edge - the last feather-edge of the Ashover Grit turbidites. From here the party returned to Nottingham.

References

- MAYHEW, R.W. 1967. The Ashover and Chatsworth Grits in north-east Derbyshire. Neves, R. & Downie, C. (eds.), *Geological Excursions in the Sheffield region*. University of Sheffield.
- CHISHOLM, J.I. 1977. Growth faulting and sandstone deposition in the Namurian of the Stanton Syncline, Derbyshire. *Proc. Yorks. Geol. Soc.*, vol.41, pp.305-23.

J.I. Chisholm, Inst. of Geological Sciences
Ring Road Halton, Leeds LS15 8TQ