

## **The geology & mineral exploitation around Roseberry Topping**

Thursday 27 June 2013

with Ian Hunter & Alan Rayner

11, including three new members, met in the car park at the top of the steep Gribdale Gate hill south of Great Ayton.

Ian gave a geological outline of the softer Liassic mudstones and shales, with the more durable Staithes and Cleveland Ironstone formations within them, and Saltwick Formation sandstones of the Middle Jurassic outcrops in the north-western escarpment of the Cleveland Hills, the prominent feature of the Roseberry Topping outlier and the impact of the Cleveland Dyke, which was intruded around 60 Ma ago, across the present landscape.

Alan then gave a resume of the quarrying and mining activities exploiting the five very different resources within a very small area beside Gribdale Gate. This included the quarrying of building stones from the Saltwick sandstones, the failed attempt to quarry and mine for Alum Shale in the Whitby Mudstone Formation, immediately below the sandstone quarry. Immediately below this were bell pit workings for the Whitby Jet within the Mulgrave Member and, fourthly, immediately below those was evidence of Cleveland Ironstone mine workings. Close by the remains of the quarrying for the dyke rock as a road stone are very evident.

The Party then moved off and walked up the stream running through the upper part of the Upper Lias searching for bivalves and finding a few ammonites.

We then progressed to an old Saltwick sandstone quarry where we saw typical meander sediments with cross bedding, thick channel deposits and small lenses of coals. Abandoned building blocks showed the traditional mason herringbone tooling seen in the local properties in the Great Ayton area.





After lunch we party split in two and half went to the top of Roseberry Topping whilst the other half went past the old ironstone mining workings to meet up again before the party progressed to view the old and vast Cleveland Dyke quarry workings.

There was a near vertical cliff face representing the heated margin, where the shale and mudstones had been metamorphosed by the dyke and solidified into a rock. The original bedding of the shales and muds could be clearly seen. There were also two vertical "stacks" on the edge of the dyke that had been left un-quarried showing the metamorphose rock was far more stable than the original crumbling muds and shales on the side of the quarry.



As the weather changed the party returned to their cars trudging up the steep slope of Gribdale Gate, whilst one of the party sat on a wall in the rain at the bottom to be eventually picked up.

Over half of the party then repaired to the Royal Oak in Great Ayton for a well earned refreshment and chat before wending their way home.