

MGA / GeoLancashire field excursion to Thurns Head Quarry and Healey Dell, near Rochdale.

Sixteen people met at Cowm Water Ski Centre carpark at Whitworth where we were greeted by Arthur Baldwin, our leader for Thurns Head. A highlight was magnificent examples of soft sediment deformation giving rise to load casts on a metre scale. Fragments of flaggy sandstone left by the quarrymen displayed examples of ripple bedding and abundant examples of *Lockeia isp.*, the trace fossil of the 'foot anchor' of a non-marine bivalve.



Load casts, Thurns Head Quarry. Width of largest example (right) approx. 1m.



Load cast, Thurns Head Quarry, width approx. 0.7m. Flame structure of mud rock to upper right of load cast.



Lockeia isp. in loose block. Hand lens body 90mm long.

Evidence of the work of man was also widespread, with examples of large thin ripple marked slabs set vertically in rows in the ground as fences and a paved stone road, probably for bringing stone down into the valley on wooden sledges.



Thin sandstone slabs used as fences. Cown Reservoir as backdrop.



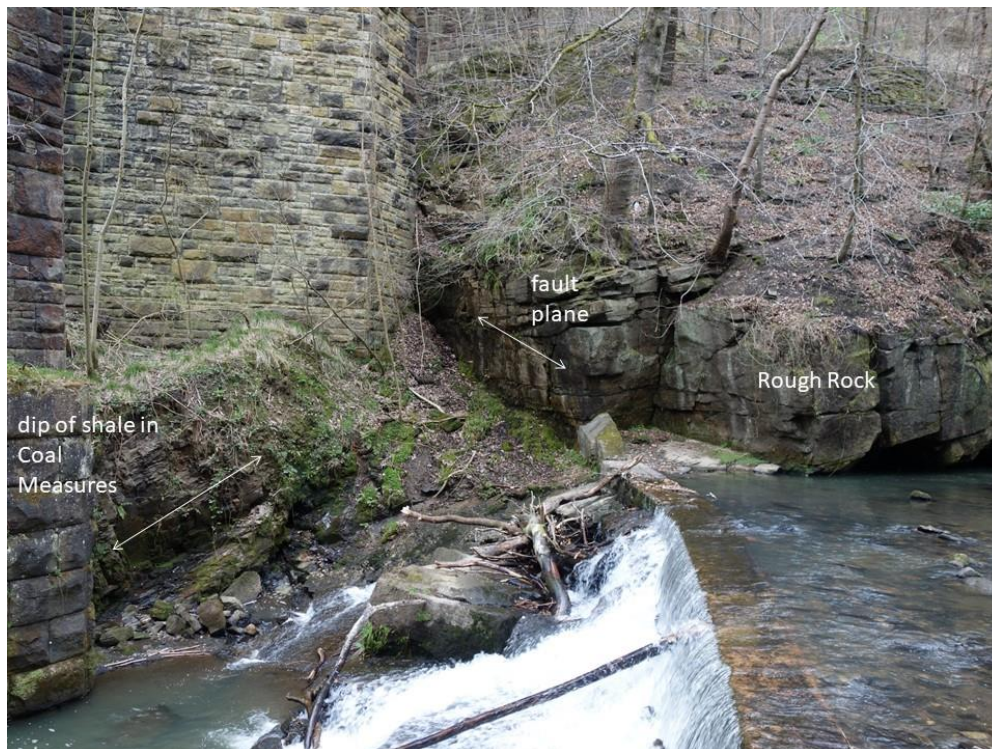
Quarry haul road with wear grooves, perhaps from sledges.

Two erratics were observed, one of coarse-grained quartz gritstone likely to be local Rough Rock, and the other a finely crystalline igneous rock with twinned potassium feldspars. Granitic erratics like this one are fairly common locally, and probably came from the Lake District.



Granitic erratic, left. Hand lens body 90mm long. Fracture surface (not created by any of us), right, approx. 100mm horizontal field of view.

In the afternoon the group, less one or two who had to leave early, assembled at the carpark at Healey Dell where we met Ron Powell, our leader for the afternoon. Ron was part of the team who had the site registered as an LGS (Local Geodiversity Site, previously known as RIGS). He is currently preparing a geological trail around the Dell and he used the same route for our excursion. Two faults, one at either end of the reserve, bring the older Upper Namurian, Rough Rock, into juxtaposition with the younger Westphalian, Lower Coal Measures. The more southerly fault is visible in the gorge where the dip of the bedding in Westphalian mudrocks has been increased adjacent to the well-exposed fault plane, having been 'dragged' in that direction by the upward movement of the Rough Rock.



Fault plane between Namurian Rough Rock and shales in Westphalian Coal Measures. The dip of the shales is increased local to the fault plane. Out of picture to the left the dip in the shales is near horizontal.

In the river bed we saw examples of potholes, formed when water born small pebbles and sediment swirl to erode flask shaped holes in the bedrock. We also saw a variety of sedimentary structures, such as foresets, in the cliffs on the side of the gorge where the Rough Rock is well exposed.



Potholes in bed of River Spodden.

We followed the River Spodden downstream through a narrow gorge, past a succession of waterfalls, to the visitor centre where some were led astray by the attractions of the café. Those remaining examined a road-cutting exposure of non-marine shales which contained a bed of siderite

nodules. A 7.5kg nodule did not effervesce with HCl and, using Archimedes principle, the SG was found to be 3.4 compared with fully cemented limestone and sandstone about 2.7 and pure siderite 4.0. It is likely that these iron-rich nodules were the ore used in a nearby 12th or 13th Century bloomery.

The leaders were thanked for the hard work they had put in to make the day such a success. The industrial archaeology in Healey Dell is very extensive and a field excursion to examine it in the context of the local geology is being planned.

Peter del Strother