June Field Trip 2013, Bowlees, Low Force and Holwick Scar, led by Brian Young.

Despite a rather doubtful weather forecast, nine people prepared themselves for another trip to look at the Carboniferous rocks and one of the best exposures of the Whin Sill. We started by following Bow Lee Beck upstream to the nearby limestone quarry where the Scar Limestone was exposed. Brian pointed out the numerous small faults to be seen in on the quarry face and the associated natural cavities containing episodes of recrystallisation. We then proceeded further upstream, noting that we had now passed into sandstone which had been laid down in shallow water and energetic conditions. Fossilised ripples and an ichnofossils were preserved on the surface of the rocks in the stream bed. This section of the river clearly demonstrates the cyclothemic progression, where limestone- shales/coal -sandstones- reflect a marine transgression to terrestrially derived sediments as a shallow marine gulf infilled with prograding deltaic sediments.

We encountered a waterfall formed by a small fault (with a displacement of less than a metre) cutting across the stream exposing a block of the limestone at the side of the stream. Then continuing to Gibson's Cave, an overhang of sandstone beside a waterfall. The limestone beds were observed to be lenticular in form, and the overlying Slatey Hazle sandstone was thinly bedded, interspersed with shales. We completed our traverse upstream at Summerhill Force, a waterfall which has cut back through the Five Yard

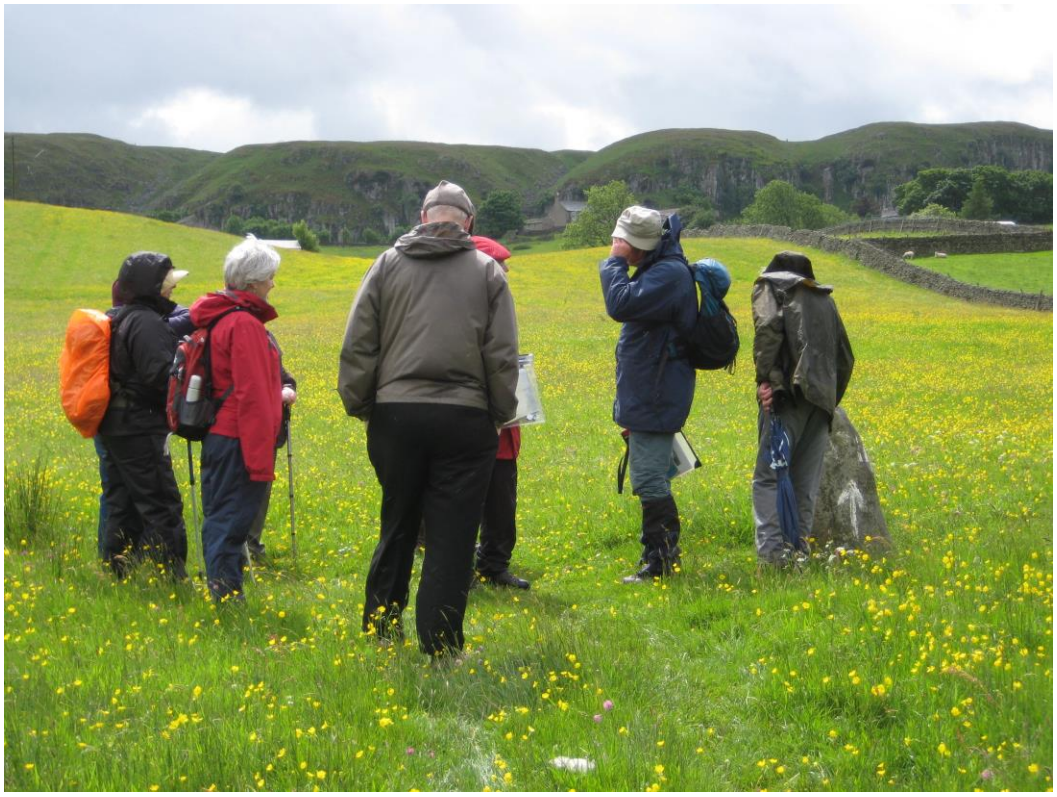
Limestone, forming its lip. Underneath were sandstones and shales with thin coal layers, though they could not be seen easily in current conditions. Brian gave us an interesting description of the names of the sandstones and limestones adopted by the miners who worked in the North Pennines.

SUMMERHILL FORCE with GIBSONS CAVE,

We walked down to Low Force, the River Tees being in full spate after the recent rain, as it roared over rocks of the Whin Sill, a late Carboniferous dolerite intrusion. Brian drew our attention to the columnar structure within the Whin Sill as a result of cooling stresses in the molten magma as it intruded the Carboniferous beds. We hurried over the Wynch Bridge and sought shelter among the trees as we encountered a fairly heavy shower. Lunch was taken by the well-known sandstone and shales raft, a remnant of the fallen 'roof' as the sill intruded. We had time to observe the glassy surface at the base of the Whin Sill due to the rapid cooling as it came into contact with the sandstone, and noted that the sandstone, in turn, had been baked to a hornfels.

We proceeded further down stream along the Tees, the Whin Sill now dipping out of sight into the stream bed. Adits and spoil heaps in the fields to the south west were evidence of previous mining activity, a search for zinc during the second world war, and Brian showed us examples of sphalerite and siderite which he had found on the heaps. Mineralisation had taken place when hot fluids circulated in the Carboniferous beds.

Our return route took us southwest over some very pretty meadows to Holwick Village, towards the spectacular Holwick Scar, here we saw almost the full thickness of the Whin Sill, with its striking columnar appearance. But we thought that we had left the Whin Sill behind in the bed of the River Tees below.



Brian explaining the formation of Holwick Scar

However, a tell-tale north-west south-east escarpment, which extended as a prominent feature along the valley, gave us a clue. Brian explained that this was a one of two faults, with the down throw towards the north, thus exposing the Whin Sill in front of us. We enjoyed a very pleasant walk back along the road, and then through meadows back to Bowlees car park, observing the drumlins and other glacial features along the way.

Our thanks go to Brian for a most interesting and informative trip, undertaken at one of the most rewarding times of the year in these glorious Teeside meadows.