

## SEPTEMBER 20<sup>th</sup> Wednesday - The Wolds with leader Richard Myerscough

**Meet at the village of Warter at 10.30, (located 4 miles east of Pocklington and 18 miles from York and park in the village car park, opposite the Wolds Heritage Centre.**

On a fine morning 13 members assembled in Warter car park. Warter is a privately owned estate village in a valley cutting the western scarp of the Yorkshire Wolds, about 5 miles east of Pocklington and roughly the same distance north of Market Weighton. Its church has become the Wolds Heritage Centre and the village also seems to have lost its bus service, as our leader found when his bus unexpectedly by-passed Warter and deposited him in Pocklington, whence one of our members eventually collected him. Our leader explained that here, north of the Market Weighton axis where Jurassic-Cretaceous deposition was much reduced, the Chalk rested unconformably on the Jurassic Redcar Mudstone [formerly, Lower Lias], higher Jurassic beds having been eroded or never laid down here. The Geological Survey of the area dated from the 1800's and the map was wrong in places, partly due to concealed faults and poor exposure. As we walked towards Nunburnholme the leader pointed out a ploughed field on Rhaetian [formerly Rhaetic] Penarth Group, Westbury Fm., a black shale but not rich in bones as in some other areas. Above it, the Lower Jurassic gave "wet soggy cold" rough pasture. Neo-Roman remains had been found up on the chalk. We stopped to examine St James's Church, Nunburnholme, which had been largely built with stones gathered from the fields, with good stone used only for the corners. Stones used included chalk [Lr Chalk, Ferriby Fm, flint free], mainly inside, Redcar Mudstone, an oolitic limestone, probably Whitwell oolite [equivalent of Cave Oolite south on the MW Axis] which outcrops near Pocklington, Birdsall Calcareous Grit [quarried mainly at Filey Brigg]. Magnesian Limestone had only been used for repairs. The interior contained chalk carving. A cross base of Magnesian Limestone had been found when building the tower.

In view of the delayed start, lunch was taken at the church, then we went by a very muddy track to Burnby [Partridge Hall] quarry. Before entering the quarry, we looked at the view to the west and the leader drew attention to the Wold Scarp, actually two scarps offset by a fault [missed by the 1800's mapping.]



He also pointed out a farm with a powerful spring, where a bed in the Redcar Mudstone had been mistakenly mapped as Cleveland Ironstone. Entering the edge of the quarry [one of few remaining in the Wolds], the leader stated that movement of the MW axis had ceased at the end of the Jurassic. The Chalk Sea had covered it but the fauna on top differed from those on the N and S flanks so had been shallower there. There had been major global warming, the Cretaceous temperatures were very high so no land-based ice. Chalk was not forming anywhere at present. Dead coccoliths were not easy to sink and the latest theory was that coccoliths had been part of the food chain of small crustaceans.

The Welton and Burnham chalks were hard to distinguish in the quarry. Brown marks were solution pipes formed during the Tertiary. Pools on the quarry floor showed the junction of the Ferriby and Welton chalks, formed by the Black Band, a 1m thick clay, marking an anoxic event, or perhaps a volcanic event leading to an anoxic event. Marl bands in the Chalk were all formed from volcanic ash, from volcanos active as the ocean opened. Flint had been amorphous silica gel, originally from fumarole activity at continental rifts. Our next stop was at the east end of Warter, at the mill pond, with Ferriby chalk [no sign of Red Chalk, on which the church stood, further west and up the hill] on its N side. Across the road on the S side of the pond, the lowest Redcar Mudstone outcropped in a cottage garden, showing that there must be a fault running down the valley past Nunburnholme. We then drove back towards Pocklington, stopping by a bank on the N side of the road exposing red chalk. Further on, by the Kilnwick Percy junction, the Coca Beck runs under a road bridge. On the S side we saw the stream cutting through Mercia Mudstone, though in the E bank there was a large block of white chalk. On the N side of the road the ground was wooded and extremely irregular. Our leader suggested that Rhaetic beds had been excavated for roadstone and we spent about 15 minutes searching unsuccessfully for any fragments. Here the field trip ended; we thanked Richard Myerscough for an interesting and somewhat unusual day and the party dispersed



