



A WALK AROUND GORPLEY CLOUGH, CALDERDALE, TO LOOK AT THE ROCKS, LANDSCAPES AND INDUSTRIAL HERITAGE

Grid Reference SD 914 233

Sandstones form this steep cliff

Contact details:

If you want to find out more about the West Yorkshire Geology Trust contact team@wyorksgeologytrust or look at our website www.wyorksgeologytrust.org



Waterfall where the stream crosses more resistant rock

The rocks of the Gorpley Clough area are **Upper Carboniferous** (Marsdenian) in age, so they are about 310 million years old.

These rocks were laid down in deltas on the edge of a large continent, with mountains to the north and south. Sands and muds were deposited by rivers in shallow water. Because the continent was close to the equator, the climate was warm and wet so that tropical rain forest flourished. Dead plant material became trapped in stagnant swamps between river channels. Over geological time it was buried by muds and sands as the rivers in the delta changed position and building up more deposits. The water, oxygen and hydrogen were driven out of the plant remains, leaving only the carbon in **coal seams**.

After the sediments were formed close to sea-level, they were **buried** by hundreds of metres of sediment and **compressed**. As the sea water moved upwards it carried minerals which **cemented** the sand and mud grains together to make a rock.

There are three prominent **sandstones** in Gorpley Clough, the Fletcher Bank Grit, Guiseley Grit and the Huddersfield White Rock, which alternate with **mudstones**.

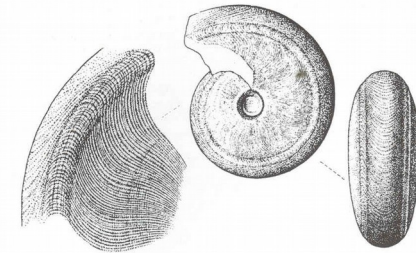
The Fletcher Bank Grit is the oldest and is about 25m thick in Gorpley Clough. It is described as a massive **grit** of varying degrees of coarseness and is overlain by a thin coal seam. Guiseley Grit is described as being a fine-grained white rock which contains a high proportion of **quartz**. At Gorpley it is about 6m thick, and contains some thin layers of sandy muds. Generally present at the top of the grit is a **fireclay** horizon with a thin **coal**.

The Holcombe Brook Coal lies some way above the Huddersfield White Rock and is reported to be up to 40cm thick in parts of Lancashire. It was mined in the mines in Dulesgate. The adits at the top of Gorpley Clough may have

been tunnels which connected with mines in Dulesgate or they may have been exploratory tunnels.

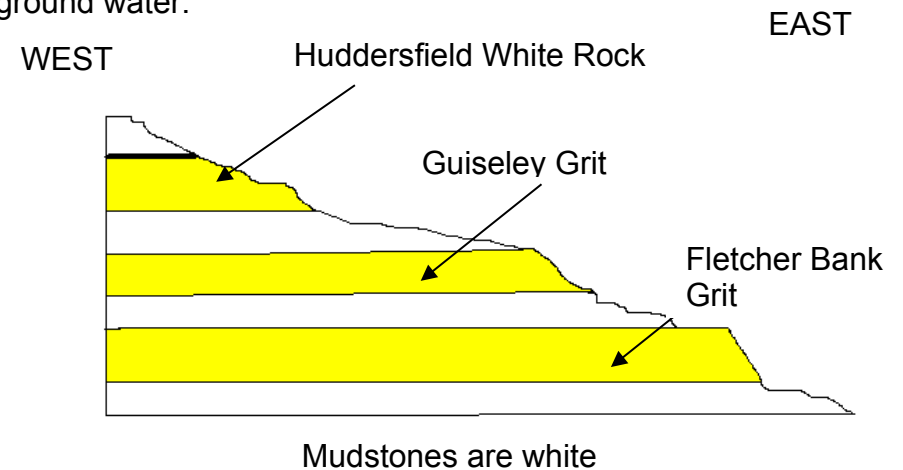
The mudstones contain fossils which indicate that they were deposited in fresh-water marshes and lakes. However, some beds contain **goniatites**, a marine animal with a coiled shell. This shows that there were occasional influxes of sea-water across the deltas.

Goniatite



Goniatite - Reticuloceras bilingue x 1 1/2

The waterfall at SD 915 235 has an extensive formation of **tufa** along the north side of the plunge pool. The tufa is thought to be precipitated from calcium carbonate in the ground water.



The three sandstones are more resistant and form the waterfalls, while the mudstones are less resistant and are weathered and eroded more easily.

Cross section to show the geology of Gorpley Clough