The timeline of the coalfield at Hetton-le-Hole

Learning Objective(s)

1. To understand how the geological succession is built up in Hetton
2. Steps to success
3. Learn simple geological terms
4. Show how in simple forms rock strata is built up around coal measures.
5. To look at the quarries around hetton

When the men started to look for coal in Hetton in 1822 they had to dig a hole through the earth beneath the land near to the where the houses stood. This hole was called a MINE SHAFT and it went for tens of metres into the ground. The hole was dug in the part of Hetton called LYONS named after the family who owned the land. The men had to dig through different types of rock before they found the coal they were looking for.

In order to understand what was found during the digging of the shaft we are going to construct a time line through the rocks as if we were inside the shaft itself with the men who were sinking the shaft.

The men were not sure whether there was coal under the ground and, if it was there, whether there was enough to start bringing it to the surface. First we must understand that the land on which Hetton is built was not always here at this place on the earth’s surface. Indeed the British Isles didn’t exist at that time as we are talking of at least 400 million years ago.

At the start of the digging the men dug through a layer of soil, clays and sand about 15 metres in depth. This was easy digging as there was very little hard rock to cut through. The clays and sand had been put there about 18,000 years ago when ice carried it down from Scotland and Norway. Soon the men were faced with a yellow stone, not particularly hard which could be broken with picks and shovels. This stone was called MAGNESIAN LIMESTONE.

This rock was first laid down in a shallow sea about 300 million years ago. In this shallow sea lived millions of small animals which today we call coral. The sea was warm as Hetton in those far off days was close to the equator. Soon the bodies of these sea creatures collected in the sea and formed a layer of LIMESTONE and the remains kept piling on top of those below for about 50 million years. Eventually the limestone was about 100metres thick.

When the limestone was first formed in the shallow sea the sea had covered over a desert with thick layers of sand, yellow in colour. The sea had travelled over the sand dunes and buried them. Many fish lived in the sea and near the surface of the yellow sand is a type of mud stone called MARL SHALE which contains the fossils of many fish.

So the men continued digging down below the yellow sand into harder rock called CARBONIFEROUS LIMESTONE, so named because it is a different type of limestone which also contains bands of coal in it, hence the name CARBONiferous. The last of this rock had been laid down about 310 million years ago and the first carboniferous rocks about 440 million years ago.

During this time the Hetton area was a great big tropical swamp which lay across the EQUATOR. Dense forests of ancient trees and ferns lived in this swamp which when they died fell into the swamp and formed layers of PEAT. These layers of PEAT became buried with layers of sand and mud and eventually the PEAT turned into COAL. This laying down of PEAT, SAND and MUD repeated itself many times over the 130 million years. Sometimes the layers of peat were metres thick other times just a few centimetres in depth.

The types of rock laid down with the coal had a number of names according to the colour and feel (texture). The miners gave them unusual names such as grey shale, black shale, seggar, dant, grey post, grey metal and leafy post. As the rocks built up they pressed on the peat and the pressure and heat turned the peat into hard rock, black in colour, which today we call COAL.

This series of rocks is over 200 metres thick and lies on top of much harder rock which formed when the earth itself was cooled down.

Boulder Clay & Soil

100 metres thick

300 million years Ago

250 Million Years Ago

18000 Years Ago 15 m thick

Magnesian

Limestone