Geological 'walkabouts' in Dronfield

by Michael Romano

3 – Frith Wood geological walkabout

Walkabout logistics: Distance – maximum return distance 2 km (1.25 miles). May meet muddy paths, especially in winter. Includes hill climbing, steps and stile. Not suitable for pushchairs.

Frith (or Firth) Wood is the largest ancient medieval woodland in the Dronfield area, and has survived its present shape for hundreds of years. The wood was first managed from around 1570, and contains evidence of both White Coal pits and Charcoal pits (see below). The above information was taken from David Hey's book on "**Ancient Woods of the Dronfield District**" – *Books at the Barn*, and was published by The Dronfield Heritage Trust, 2017.

In addition to the obvious attraction of Frith Wood as a recreational area with abundant and varied plant and animal life, the wood also serves as a conveniently small area in which to study the geology of the Dronfield area. Dronfield is situated on rocks belonging to the Coal Measures (the upper part of the Carboniferous System) that were deposited between approximately 315-307 million years ago. The Coal Measures include a variety of rock types including sandstone, shale and, of course, coal. These rocks have had a profound effect on the industrial development of not only Dronfied, but the UK as a whole, and although their influence has waned since the end of the last century their legacy lives on. The rocks studied in this excursion are among the youngest in the area and lie above those last described in Geological Walkabout 2.

This short walkabout offers a snapshot of some of the youngest rocks in the Dronfield district. It starts with the oldest rocks, as these are the ones laid down first. The sequence of rocks to be examined in Frith Wood lie above the **Silkstone Rock**. The **Silkstone Rock** (see also Geological Walkabout 2) is a sandstone, up to 80 ft (24 m) thick in the Dronfield area, and its hard nature is responsible for much of the high ground in Dronfield. In fact the slope down Ferndale Road and other roads from Eckington Road which lead down to the wood, is formed of the top of the **Silkstone Rock** as it slopes (dips) towards the south. Thus, the rocks that underlie Frith Wood rest on top of (i.e. are younger than) the Silkstone Rock (See **Fig. 1** and **Fig. 2** in Geological Walkabout 2), and include shales, ironstones, further sandstones and coal.

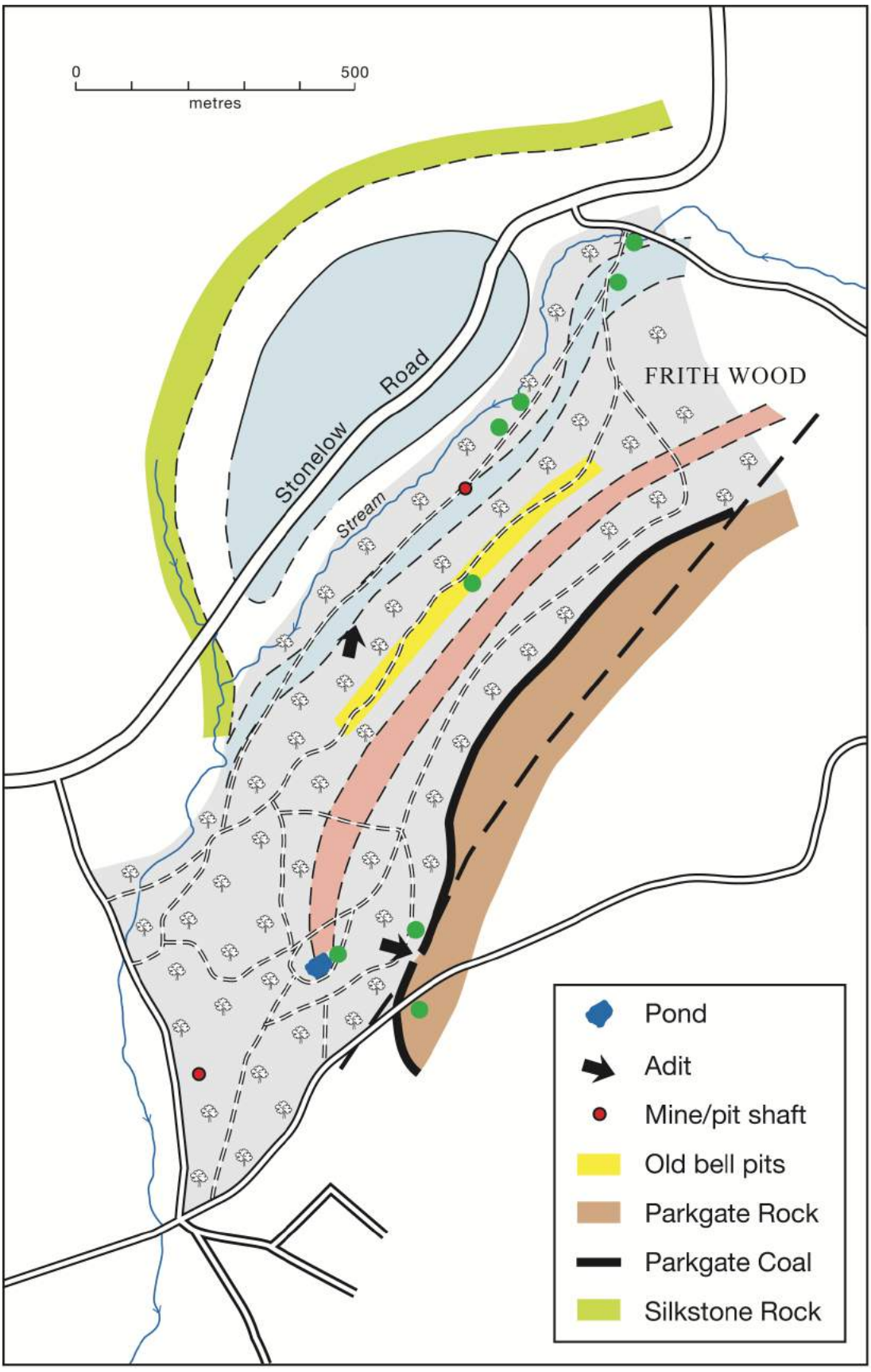
0
500
metres
Stonelow Road
Stream
FRITH WOOD
Pond
Adit
Mine/pit shaft
Old bell pits
Parkgate Rock
Parkgate Coal
Silkstone Rock

Fig. 1

The excursion starts from the northern end of Frith Wood (**Fig. 1**) where examples of the oldest rock types within the wood may be seen. To reach Locality 1, walk down the footpath from Firthwood Road (between house numbers 65a and 67a) which is the northern continuation of Stonelow Road and cross the bridge over the stream at the bottom. There are a number of exposures of sandstone in the stream and also alongside the steps leading up to the right from the bridge (**Fig. 2**).

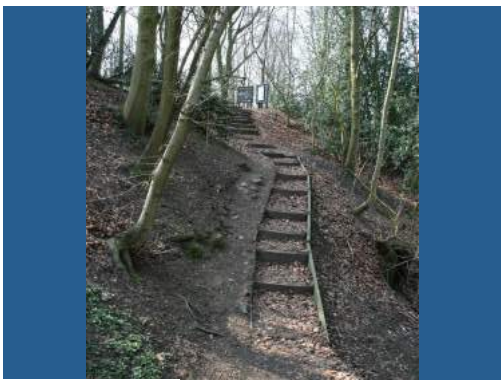

Fig. 2

Climb the steps up into the wood, noting the information board at the top (**Figs 3,4**).

Fig. 3

Fig. 4

This steep slope results from a thin bed of resistant sandstone that runs along the western edge of the wood (see pale blue band in **Fig. 1**). If you follow the footpath in a southwesterly direction from the information board keeping close to the top of the bank above the stream, you will reach a small sandstone quarry in the steep slope overlooking the stream, about 250 m from the information board. The top of the sandstone is responsible for the flattish area of the wood on which the footpath you are following is situated. Along this footpath notice the occasional rounded shallow areas up to a few metres across (**Fig. 5**), the sites of old White Coal pits, or Q pits (see below).

Fig. 5

Either retrace your footsteps to the information board and then take a more clearly marked footpath to the left which goes through the middle of the wood; or cut up from near the quarry until this central (main) path is reached (see the marked footpath on the map in **Fig. 1**). If you choose the former route be aware that the first part of this footpath may be very muddy in winter. However, the southerly part of this central footpath was resurfaced by Derbyshire County Council in 2011. Unfortunately the hard core used was not typical of the local rocks and it includes fragments of **Magnesian Limestone** (a pale limestone of younger age) as well as non-geological materials such as tiles and bricks (**Fig. 6**).

Fig. 6

In this part of the wood, look out for other large, sub-circular, leaf-filled depressions up to a few metres across which are the further examples of remains of Q pits, characterized by being surrounded by a low earth bank, and a short channel (the stem of the Q) at the lower end of the depression which was used to rake out the pits. White Coal is a fuel formed by drying wood over a fire and was used to smelt lead ore. Other shallow sub-circular shallow charcoal pits are also recorded from the wood. The Geological Survey map of the wood (1:10,560 – Sheet SK 37 NE) marks two pit/mine shafts in the western and southern parts of the wood, two adit/mine mouths near the western boundary and eastern end of the wood (see later) as well as 'old bell pits' along the central part. Bell pits were dug to recover coal at shallow depths, and consist of a vertical shaft with an expanded base at the level of the coal seam. But, there are no coal seams marked on the geological map of the wood, and the next lower mapped coal seam (**Silkstone Coal** – see Geological Walkabout 2) is approximately 75 m (250 ft) lower down (**Fig. 2**). This is probably too deep to be extracted by the bell pit method. However, it is possible that there is another undetected coal seam running through the wood, such as the **Low Tupton** which outcrops just to the south around Unstone. The question of whether there were (successful) bell pits in the wood remains unsolved.

Continue along the path in a SW direction (**Fig. 1**), keeping at the same level, until you reach the open field at the southwest end of the wood where, on the southern side, is a pond (**Fig. 1**). This was made when clay was extracted for the local brick works on Bents Lane in the 19th Century (see Information board at start and end of walk). From the pond make your way up the slope to the stile and then down to the sunken path (Holloway) that leads to Summerley. On the path, turn left (towards the NE) until in about 45m m you will see outcrops of the **Parkgate Coal** on your right, and the overlying **Parkgate Rock** on your left.(**Fig. 7**).

Fig. 7

Depending on how much soil movement has taken place, the coal may be visible in other exposures along this 45 m stretch on both sides of the path. This coal seam was frequently worked in times of strikes and hardship. In this locality the seam is approximately 70 cm (2 ft 3 inches) thick. Retrace steps to the style and then take the footpath back up the slope to the top of the wood. Here, along the steep bank are small quarries exposing sandstones of the **Parkgate Rock** which is up to 15 m/ 50 ft thick (**Fig.8**), and gives rise to the steep slope at the top of the wood and the relatively flat ground beyond to the SE.

Fig. 8

Though the rock face is overgrown, look carefully and you can see cross-bedding (see Walkabout 1) and thin layers of silty mudstone. Look out for badger sets dug in the shales below this sandstone. These sandstones are the highest beds seen in Frith Wood and is the final locality of this walkabout. Note also in this area, further evidence of possible Q pits, as well as evidence of an old adit/mine mouth (**Fig.1**) that was presumably dug to reach the **Parkgate Coal**. Opencast workings are recorded on old geology maps to areas north of Summerley Hall where the **Parkgate Coal** was recorded and presumably extracted.

Return either to your starting place through a number of other optional routes through the wood, or exit via the alternative starting place at the southern end of the wood which leads directly on to Callywhite Lane and has another Information Board.

Acknowledgements
Figures 1-3 are reproduced with permission of the British Geological Survey and Ordnance Survey. Mr John Harvey is thanked for accompanying the author on an early trip to the wood to determine sites of charcoal pits and Q pits. Mr Paul Coles is thanked for constructing Fig. 1.

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This document reflects the views of the author and in no way necessarily reflect the views of Dronfield Heritage Barn. If you have any comments about this document please email them to m.romano@sheffield.ac.uk.

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Figures

Fig. 1 - Simplified geological map of Frith Wood (after the 1:10,560 Geological Survey map of the area, Sheet SK 37 NE). Green dots are the sites of localities described in the above walkabout.

Fig. 2. – Steps leading up into the northern end of Frith Wood, with sandstone outcrops along the path.

Figs 3, 4 – Notice Board at the northern end of Frith Wood at the top of the steps.

Fig. 5 – Shallow Q pit alongside the footpath running by the stream in the west of the wood.

Fig. 6 – Part of the central footpath in the wood resurfaced by Derbyshire County Council in 2011. The bulk of the hard core used is of **Magnesian Limestone**, but also includes tiles and bricks (**Fig. 6**).

Fig. 7 – Parkgate Coal exposure in the Holloway above Frith Wood .

Fig. 8 – Small quarry in the Parkgate Sandstone at the top of Frith Wood.