
Walk 4: Charnwood Lodge Nature Reserve

traversing a complete volcanic sequence

Ascent: about 10m

Distance: 7km (max.)

Difficulty: fairly easy on paths & heathland

Start: grid reference [SK 4738 1486]

On this walk you will see more rocks that were deposited close to the ancient Charnian volcanoes during particularly violent eruptions. Charnwood Lodge is also interesting scenically, as it preserves one of the last remaining original heathland habitats in Charnwood Forest. Two separated areas of open access land will be visited here, but to explore other parts of the nature reserve you must obtain a permit from the Leicestershire and Rutland Wildlife Trust.

For the first part of the walk, across Flat Hill to the 'Bomb Rocks', enter the reserve by the footpath off Abbey Road. you cannot park here, but with care, you can make use of wide verges at the crossroads 250m to the north-east. Follow the path through bracken across Flat Hill to a metalled track (1) [SK 46491 15955]. From here you can head north-eastwards, along animal tracks through heather and bracken, to the Hanging Stone (2) [SK 46700 16006] at the very base of the Charnwood Lodge volcanic Formation, which is about 1000m thick in total. The crags around and south of here are in volcanic breccia containing about 40 per cent andesite fragments; however, there are local variations where the rock 'fines down' to coarse tuff. Such variations indicate bedding, and from this can be deduced the dip (inclination) of the sequence, which is about 40° to the north-east.

Return to (1) [SK 46491 15955] and navigate through the heathland to another metalled track leading to the Bomb Rocks locality (3) [SK 46328 15686]. This famous geological landmark consists of volcanic breccia with andesite fragments ranging from a few centimetres (lapilli) up to 1.7m across; in other words, it shows poor sorting. The fragments have rectangular, diamond or tabular shapes, and while some have highly angular corners, others show signs of rounding and abrasion (they are subrounded). Geologists now believe that these fragments are volcanic blocks. True volcanic bombs are composed of molten lava and therefore have contorted, rounded or spindle shaped aerodynamic outlines — hence the term 'Bomb Rocks' is inaccurate! When these crags are viewed in south-east or north-west directions, the blocks are much more elongated. This is not a primary feature, but one caused by the stretching out of these rocks during later (Acadian) deformation, which is also seen as a cleavage fabric that 'flows' around individual blocks (see also page 7).

The volcanic origin of these fragmental rocks is indicated by the fact that the blocks are all of the same type of andesite (they are from a single source). They may have been erupted as pyroclastic block flows (see also Walk 3) now seen as the volcanic breccias in the Charnwood Lodge Formation. From the Bomb Rocks, if you do not have a permit, retrace your steps to Abbey Road, and then either drive or walk 1.2km south- westwards to commence the Warren Hills part of the walk.

At Warren Hills you can see the change from vigorous volcanic activity, in the Charnwood Lodge Formation, to a younger stage when the volcanoes were dying down and finer-grained volcanic material was being deposited as sedimentary rocks and tuffs of the Bradgate Formation. Warren Hills is a separate open-access area, which is best entered either from the narrow verge along Abbey Road (4), or off Warren Hills Road. If you enter from Abbey Road, take the path to the left (by the fence) first; if coming from Warren Hills Road, go through the wall and take the upper, right hand, path first.

Viewed from (4) [SK 45674 15305], the dominating ridge of Warren Hills is crowned by three knolls. Walk along the path by the fence to the north knoll (5) [SK 45869 15221], which exposes the top of the Charnwood Lodge Formation. Although this knoll is unfortunately on the other side of the fence, the rough surface texture of these rocks can be appreciated. They are pyroclastic in origin, consisting of coarse-grained tuff and lapilli tuff. These tuffs are rich in rock

fragments rather than ash — hence they are called ‘lithic tuffs’; you can also make out several small andesite blocks, scattered throughout the rock.

On the middle of the three knolls, to the south-west (6) [SK 45818 15178], there is a marked change and the rocks are now in coarse-grained volcanoclastic sandstone. Look closely and you will see bedding, dipping steeply westwards. you can also see a layer of sedimentary breccia, containing contorted rafts and smaller fragments of laminated siltstone. These rocks have been correlated with the Sliding Stone and Outwoods breccias of Walks 1 and 5. Between localities (5) [SK 45869 15221] and (6) [SK 45818 15178] we have passed across a transition, from pyroclastic rocks of the Charnwood Lodge Formation into volcanoclastic sedimentary rocks of the overlying Bradgate Formation — in other words we have crossed over an ‘event boundary’, representing a time-change from very active volcanism to younger, less active volcanism.

The south knoll (7) [SK 45745 15152] is in still younger strata of the Bradgate Formation (because you are going westwards and ‘up’ the dip), consisting of white- weathering volcanoclastic sandstones, best seen on the western edge of the knoll. There are good views from here; Bardon Hill is to the south, with the mast on the top, while to the north-east you can see Mount St Bernard Abbey and the surrounding countryside. South-eastwards along Warren Hills ridge there are further exposures of the Bradgate Formation and sedimentary breccia. Towards the end of the ridge, and close to the Warren Hills Road entrance there is an interpretation board (8) [SK 46322 14611] that summarises the geological history of the area.

Figures

(Figure 95) Walk 4: Charnwood Lodge Nature Reserve. Map

(Figure 43) Large and small andesite fragments in volcanic breccia at the ‘Bomb Rocks’.

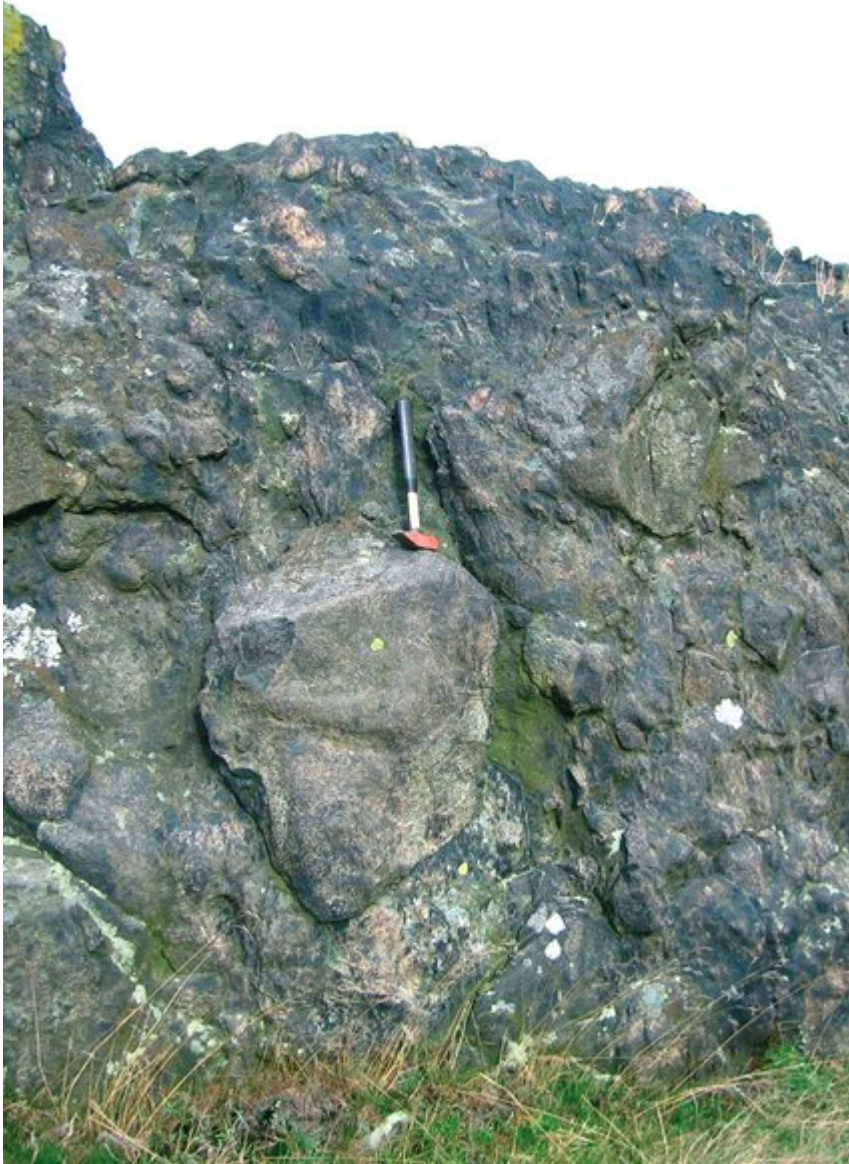
(Figure 44) Warren Hills, looking south-east showing the rocky knolls to be visited.

(Figure 45) Pyroclastic rock forming the north knoll.

(Figure 46) Bedded volcanoclastic rocks of the Bradgate Formation on the middle knoll.



National Forest — Forest walks.



Large and small andesite fragments in volcanic breccia at the 'Bomb Rocks'.



Warren Hills, looking south-east showing the rocky knolls to be visited.



Pyroclastic rock forming the north knoll.



Bedded volcaniclastic rocks of the Bradgate Formation on the middle knoll.