
Walk 3: Cademan Wood and Grace Dieu

rocks formed close to a volcano, and a Carboniferous Limestone exposure

Ascent: about 40m

Distance: 6km

Difficulty: fairly easy on good path

Start: grid reference [SK 4431 1687]

This walk visits spectacular rocks that formed very close (proximal) to a Charnian volcano. It mostly takes place within dense, mature woodland so take a compass or GPS — if lost, stay within the wood and keep crossing it from side to side until you regain the main footpath. From the left corner of the small car park off Swannymote Road enter the wood and bear gradually right, ascending towards the summit of High Cademan (1) [SK 44152 16909]. Along the way, many rocks are smooth-surfaced and rather featureless; they may be part of a series of intrusions, called the Grimley Andesite. The trig point affords fine views northwards, to Breedon Hill with its church and Carboniferous Limestone rocks. At the trig point,

the rocks become rough-surfaced and are made up of volcanic fragments; they are composed of tuffs belonging to the Charnwood Lodge Volcanic Formation. Descend westwards to the base of High Cademan; this part of the walk is a steep scramble and care is needed. Bear right to join the main path westwards through the wood. After a few minutes this path forks at a small exposure of andesite. Keep straight on (i.e. bear right) and follow the main path, eventually crossing a clearing before re-entering the wood just south of Broad Hill.

Now look for a smaller path bearing immediately right (northwards) up the small knoll of Broad Hill. If you examine the rocks closely, you can see exposures of very coarse (lapilli) tuff, andesite and volcanic breccia (2) [SK 43593 17005]. Carry on along the path over the knoll and to gain Grimley Rock, cross northwards over Broad Hill then, turning left, walk southwards to the edge of the wood; you will need to explore a bit here, looking for a narrow wooded ridge projecting westwards, with open fields on either side (i.e. to the north and south). Walk along this bouldery ridge, which climbs gradually upwards to Grimley Rock and quarry (3) [SK 43428 16931]. This is the type locality for the Grimley Andesite, a very homogeneous rock that may have originated as a mass of viscous magma that rose into the crater as a volcanic dome. Periodic collapses of this dome may have generated avalanches of volcanic blocks, forming the surrounding breccias of the Charnwood Lodge volcanic Formation. you can test this theory by comparing Grimley Andesite with blocks in the spectacular volcanic breccias seen farther north, around Calvary Rock (4) [SK 43324 17197].

Return to the main path to continue northwards to Calvary Rock. Look closely at the moss and lichen-covered crags there; volcanic breccias are seen in abundance, and may be ancient examples of pyroclastic block flows, formed when andesitic domes explode or collapse to form 'hot avalanches' of volcanic material that descend the volcano flanks (see also, page 4 and Walk 4).

Limited vergeside parking on Warren Lane (5) [SK 43272 17236] gives the option of splitting this walk into two parts. Enter Grace Dieu Wood via the path through the stone wall off Warren Lane, a little way to the west, and just before this road curves round to the left. About 100m into the wood, a small knoll on the right exposes more volcanic breccias; here, andesite blocks up to 40cm across are set in a very coarse matrix.

Keep going north-north-west along the main path (many other volcanic breccia exposures can be explored in the wood to the east), to the Grace Dieu Brook (6) [SK 43199 17732]. Do not cross this stream, but walk a few metres to the right before bearing left round the foot of the slope and then heading north- eastwards through a rhododendron thicket. At (7) [SK 43445 17909], a boarded walkway crosses a marshy area with the Grace Dieu Brook on the left. Proceed along this path, past the track on the right leading to Grace Dieu School, and then cross a small stone bridge. Note the rocks to

your left, of Grimley Andesite, exposed in the stream (8) [SK 43448 17985]. Bear left on the other side of the bridge and pass through a fence, then walk across a man-made embanked area, past a display of large Grimley Andesite slabs to the right and then down the slope to meet (9) [SK 43246 17982] a surfaced path, the 'Grace Dieu Trail'. you can visit this area separately, via the footpath to the Priory from the Bull's Head car park, off the A512.

At (9) the path passes under a disused railway embankment. Do not go through, but instead scramble up to the left (west) of the brick-built bridge and turn right. Walk along the embankment, counting 110 paces, to find on the left a well-defined track descending the embankment into the disused Grace Dieu limestone quarry [SK 43222 18079]. Be very careful on this descent, as it is very steep and slippery when wet. Wear a hard hat here, and move left along the base of the quarry face, through undergrowth and marshy ground to see exposures of Carboniferous Limestone. This is a well-bedded, *dolomitised* limestone that contains common shells and shell fragments (bioclastic); it belongs to the Ticknall Limestone Formation.

These strata are from an early part of the Carboniferous Period. you can find shells of the large brachiopod *Gigantoproductus* together with crinoids.

Former exposures here showed limestones with Charnian pebbles, suggesting that Charnwood Forest was land that was being eroded at the start of the carboniferous Period. Returning to the Grace Dieu Trail, you can walk north-eastwards, passing beneath a disused viaduct, to visit Grace Dieu Priory. This is an Augustinian nunnery dating from about AD 1235. There are Charnian rocks in the walls (Page 42), some of which are of Peldar Dacite Breccia (see Walk 9), probably from medieval workings in the area now occupied by Whitwick Quarry, 2.5km to the south.

Figures

(Figure 94) Walk 3: Cademan Wood and Grace Dieu. Map.

(Figure 38) A polished slab showing andesite fragments in breccia of the Charnwood Lodge Formation.

(Figure 39) A large andesite fragment in volcanic breccia at Calvary Rock.

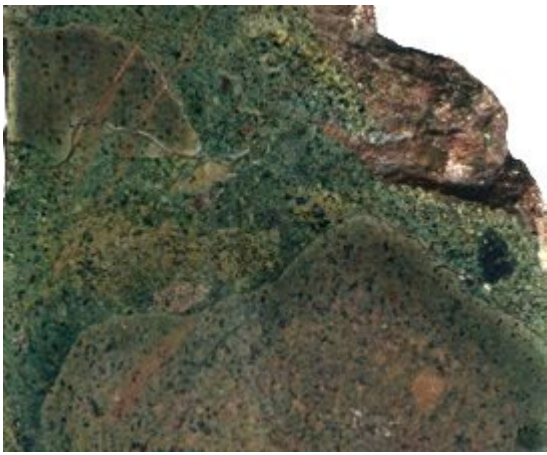
(Figure 40) Volcanic breccia in Grace Dieu Wood.

(Figure 41) Carboniferous Limestone in Grace Dieu Quarry.

(Figure 42) *Gigantoproductus*



National Forest — Forest walks.



A polished slab showing andesite frag- ments in breccia of the Charnwood Lodge Formation.



A large andesite fragment in volcanic breccia at Calvary Rock.



Volcanic breccia in Grace Dieu Wood.



Carboniferous Limestone in Grace Dieu Quarry.



Gigantoproductus