Buckland's Windypit, North Yorkshire

[SE 588 828]

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Introduction

Buckland's Windypit is located on the slope of Far Moor Park, on the right bank of the River Rye in the Duncombe Park Estate, just to the south of Castle Gill, 1 km north of Helmsley, North Yorkshire (see (Figure 6.54)). The slope at this point is crossed by a complex pattern of hillside trenches up to 2 m deep, leaving an irregular pattern of hummocks clearly visible on stereo-pairs of aerial photographs taken before the present plantation of conifers was begun in the late 1970s. Within this area, and doubtless related to the pattern of trenches, is a fissure in the bedrock, 5 m long and up to 1 m wide, divided into two parts by a large fallen tree trunk. This is the entrance to Buckland's Windypit. The bedrock is Lower Calcareous Grit (Corallian, Upper Jurassic), a fine-grained spicular sandstone conformably overlying Oxford Clay with a slight southerly and easterly dip. The major directions of jointing in this rock are 0°–5° and 95°–100° (Cooper, 1979).

The first recorded descent of the open widened joint was by the Rev. William Buckland, the Professor of Geology at Oxford, in 1822 (Buckland, 1823; Cooper, 1978). However, he penetrated no further than the chambers immediately below the entrance. At present, 366 m of passages have been explored and mapped, forming a labyrinth leading off the entrance chambers. The passages form a complex network on different levels, penetrating 40 m below the level of the entrance (Cooper *et al.,* 1982). Archaeological finds indicating occupation by Bronze Age man have been found in some of the passages (Hayes, 1962, 1987).

Description

The entrances to this underground labyrinth lie within a wire fence, in a plantation of conifers, a few metres upslope from a forestry track crossing Far Moor Park. Buckland (1823) described the entrance as a 'great irregular crack or chasm...about twenty feet long and three or four feet broad'. The tree trunk has fallen across this fissure, covering it in the middle section and leaving two entrances, one at either end. The labyrinth is large and complex. In the survey (Figure 6.62) and this description, the names given to passages and features are largely those of Fitton and Mitchell (1950) and Hayes (1962). The larger entrance, A, is distinguished by a holly bush growing above it. It requires a climb down of 7.6 m, which needs climbing equipment. However, using the other entrance, B, the entire labyrinth can be explored without climbing equipment. A drop of 2 m lands on a boulder wedged in the top of the fissure. A fixed chain on the right-hand wall can be used to traverse along a ledge leading past a boulder bridge before dropping into a large, light chamber at the foot of entrance A. To the south from this chamber, a short climb and squeeze emerges at the top of Fissure 'S'. Any descent here would involve using climbing equipment in a vertical descent of 22 m among very loose and potentially hazardous boulders wedged in the fissure. This route has been negotiated (Hayes, 1962) but is dangerous.

At the other end of the entrance fissure a descent through boulders leads after 7 m to a vertical drop of 2 m, with an overhang. A climb down to the right-hand side of this gains a ledge skirting under the overhang and following the left wall of the fissure to the head of a steep scree-slope. At this point a small fissure branches off north-west to Chamber 'R', a small chamber at the intersection of several fissures.

To the left in Chamber there is a low passage that can only be negotiated by crawling, which leads into Fissure 'S'. This is a lower level of the same fissure as that which forms the entrance. Fissure 'S' lies below the entrance fissure's floor of wedged boulders. It is about 20 m long, 13.7 m high and 1.2–2.1 m wide, and is blocked at the far end by boulders. It was the main location at which archaeological material was found in the labyrinth (Hayes, 1987). Two fissures are encountered part of the way along Fissure 'S'. Fissure 'T', on the left, becomes impenetrable after 12.8 m, with a narrow branch fissure on the right which is 6.6 m long. Fissure 'U', running to the right from Fissure 'S', is blocked by boulders after 10.2 m. A drop of 3.5 m near its end leads to a narrow fissure 6.9 m long. At the foot of the 3.5 m drop, a former

water level can be seen on the calcite-covered north wall. It is 27.7 m below the level of the entrance. From Chamber 'R' it is possible to climb up into the roof among very loose boulders, to a passage running north-west. Overhanging boulders make this dangerous to enter. At floor level a further passage runs NNE from Chamber 'R'. This would be difficult to explore as it is only 0.4 m wide. It is about 10 m high.

At the point where the small branch fissure runs from the main entrance route to Chamber 'R' (Point 'E'), a steep scree-slope, the Stony Corridor, descends for 9 m to the head of a 4.6 m drop, which is easy to climb down without climbing equipment. At its foot, Fissure 'y runs off to the right. This is a descending fissure leading to a blockage of boulders. Six metres before this blockage a traverse leads above it into the farther reaches of the fissure, ending too narrow for further progress, but with a voice connection possible to the end of Fissure 'T'.

Returning to the main fissure, a climb behind an overhanging boulder leads into Oxtail Chamber (see (Figure 6.63)), an impressive chamber formed by the junction of five high fissures. These are:

1. The main fissure, by which Oxtail Chamber has been entered.
2. Fissure 'F1', or 'Dead Man's Gulch'. This is reached by a scramble between boulders. A traverse over a hole in the floor, followed by a series of climbable descents from false floors formed from boulders wedged in the fissure, reaches the floor (which could also be founded on wedged boulders). To the south the fissure is choked with boulders below Oxtail Chamber, while to the north a scramble down leads to the deepest point in the labyrinth, 40 m below the entrance.
3. Fissure 'F2'. This is very narrow, but may be descended to a depth of about 9 m with the aid of a ladder, before becoming too narrow.
4. Fissure 'F3'. This involves a scramble up among boulders and ends after 10 m in a loose pile of boulders.
5. Fissure 'F4'. This is a twisting fissure, about 13 m long. It connects with Fissure 'F3' in the roof of Oxtail Chamber.

In Fissure 'F4' a 3 m descent leads to a floor in the fissure, which at this level ends after 7.5 m. However, by continuing over the 3 m drop and following an ascending traverse and sections of false floor along the fissure, Hayes Hall is reached. This is a large collapse at the junction of several fissures. In this respect it resembles Oxtail Chamber, but it is not as large. To the south all ways but one are blocked by boulder piles. The exception is 9 m long, but low and narrow. The main fissure runs north-east into the New Series, and is 1.2 m wide and 12 m high. It continues for 17.5 m to a junction. Ahead is a 3.7 m descent into a roomy fissure, which, after 10 m, terminates in a boulder pile. At the junction, a crawl under, or climb over, a large boulder on the right leads into a parallel fissure, 2 m wide and 12 m high. To the northeast this fissure ends in a very large pile of boulders after 23 m — the Great Stone Slide. Here the floor is of shattered angular debris noticeably smaller than the usual boulders that floor the fissures. To the south-east the passage continues narrower for 11 m, ending too narrow for further progress (Cooper *et al.,* 1982).

Interpretation

This type of feature, consisting of roofed passages between blocks of hard rock that have slipped valley-ward as part of a deep-seated translational slide, has been termed a 'mass-movement cave' (Cooper, 1983a,b). Such caves have certain characteristic features, well illustrated by Buckland's Windypit. These include the absence of any sign of ever having contained a stream, and the possession of high, parallel-sided passage shapes, with large blocks of rock wedged between the walls at irregular intervals and at various heights. Ledges on one wall are mirrored by overhangs on the opposite wall, offsetting the joint to one side and dividing it by means of this 'step' into passages on different levels. Protrusions on one wall can be matched to corresponding hollows on the opposite wall. The roofs are often formed of relatively undisturbed near-surface layers of the bedrock (Hawkins and Privett, 1981).

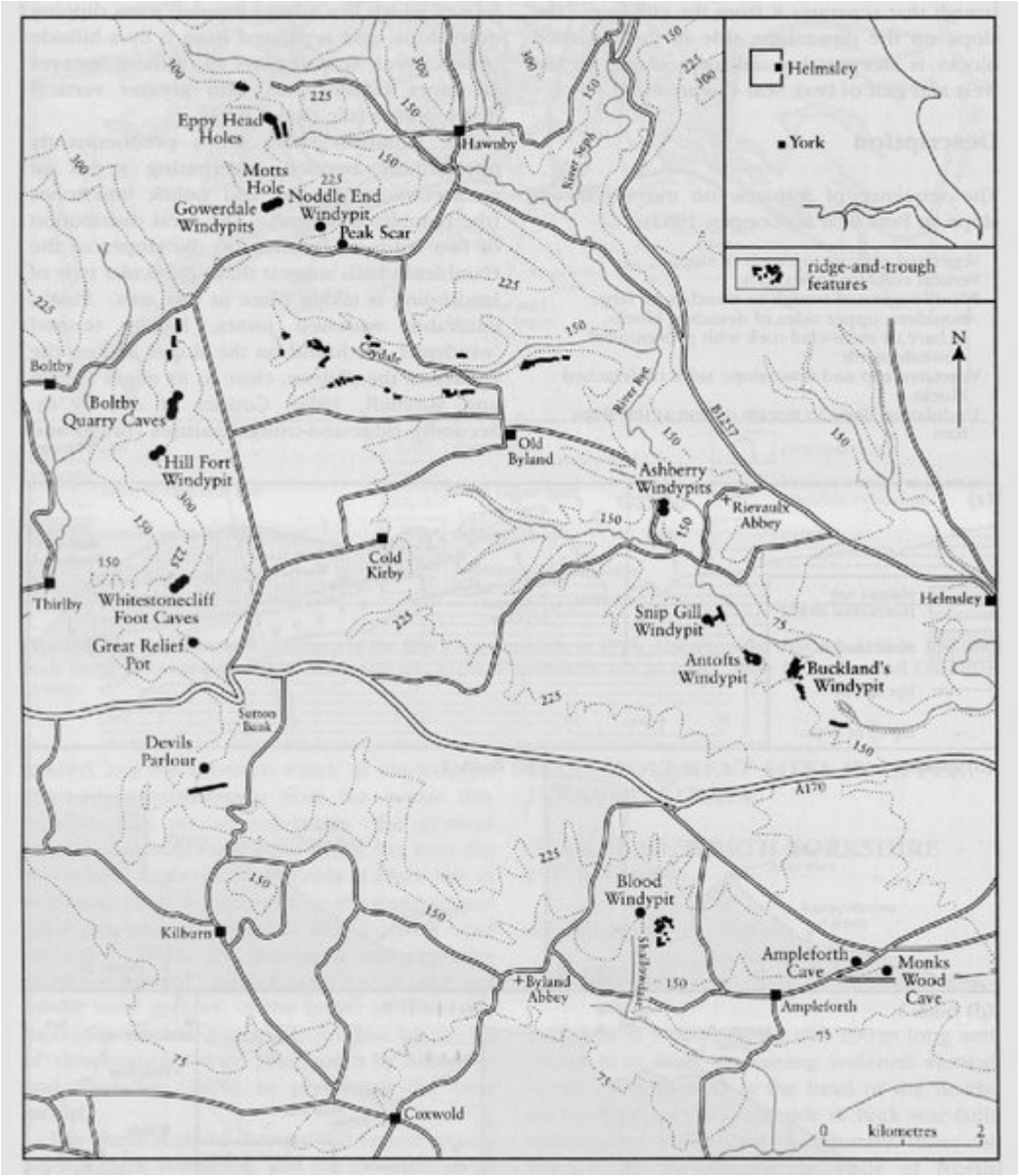
Mass-movement caves tend to be clustered in areas where the geological and physiographical conditions necessary for their formation are well developed. Buckland's Windypit is in such an area, the Hambleton Hills on the western border of the North York Moors, which contain 30 mass-movement caves, locally known as Vindypits (Fitton and Mitchell, 1950; Cooper *et al.,* 1976; Cooper, 1981).

Conclusions

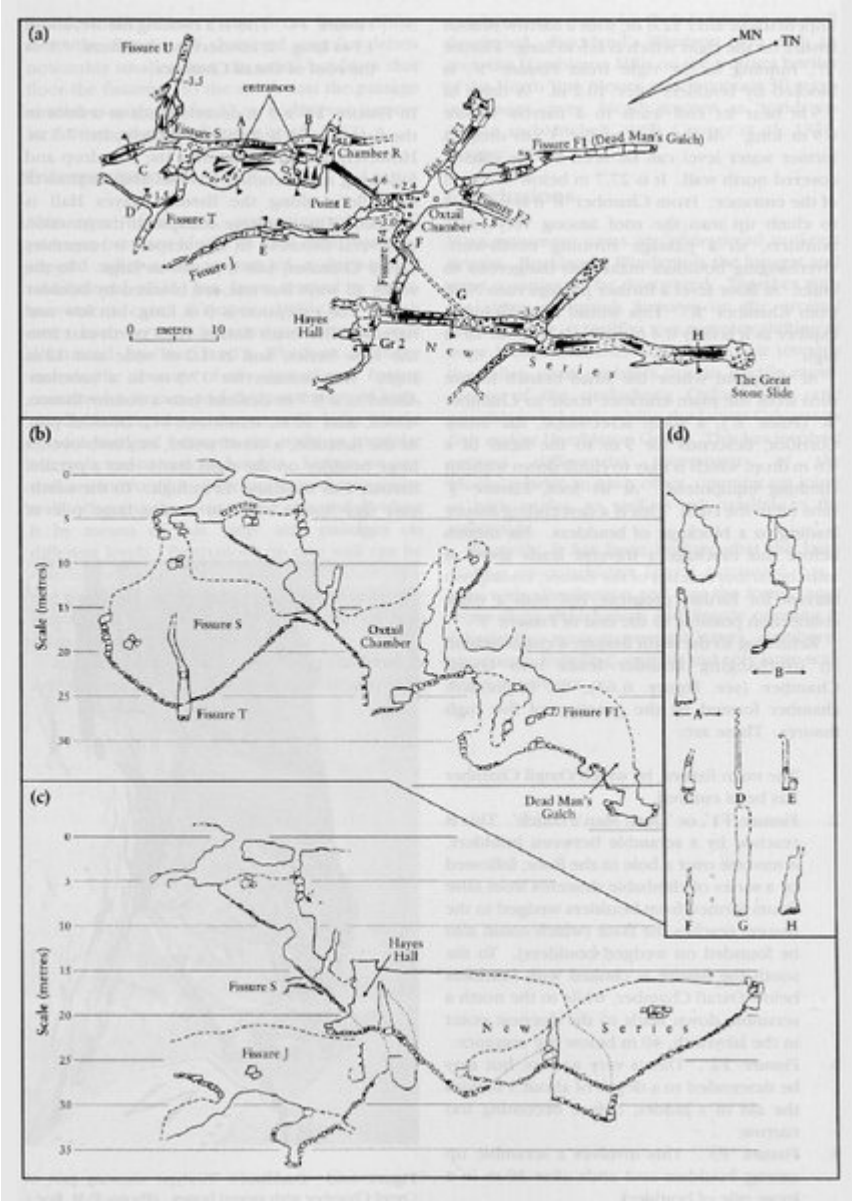
Mass-movement caves are widespread in Great Britain. Buckland's Windypit is the longest and most complex so far discovered. Together with the ridge-and-trough features on the ground surface above, it testifies to a complex shifting of huge blocks of Lower Calcareous Grit towards the valley, most probably due to ductile movements of the underlying Oxford Clay, and possibly over bands within the Lower Calcareous Grit and/or Hambleton Oolite. This has involved various differential movements of the blocks relative to each other, opening up joints at high angles, as well as sub-parallel, to the valley-side.

Recently, it has been realized that the landsliding resulting from lateral expansion has a very wide distribution and that the forms range from slight detachment and fissure opening to labyrinths, mass-movement caves, cambered structures, toppling, sagging and very large-scale mass movement.

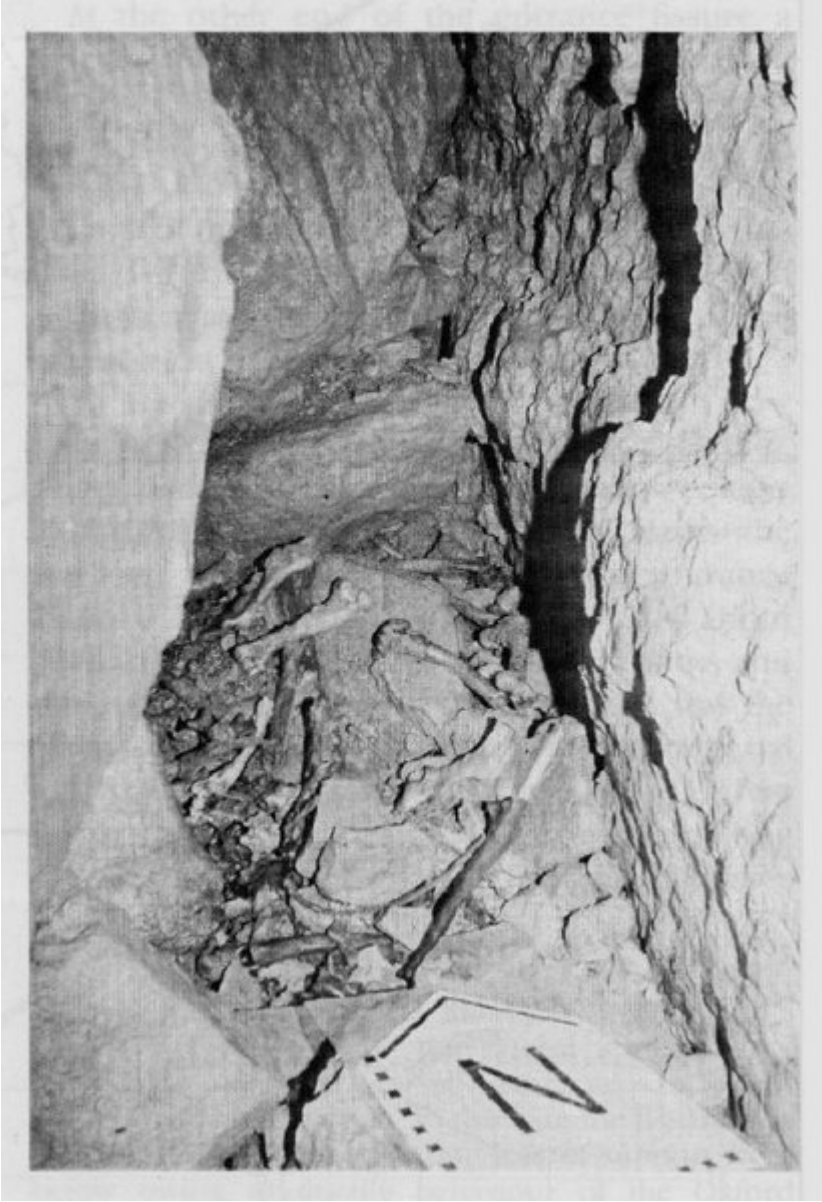
References



(Figure 6.54) The distribution of widened joints ('windypits') and ridge-and-trough features on the Hambleton Hills between Hawnby and Ampleforth, including the locations of Peak Scar and Buckland's Windypit (described later in the present chapter). After Cooper (1980).



(Figure 6.62) Detailed surveys of Buckland's Windypit showing how the lateral spreading of the hillside opens up joint or fissure caves to form a typical labyrinth network. In this case the fissures are beneath the surface suggesting loss of support from below owing to ductile behaviour of the Oxford Clay.



(Figure 6.63) Buckland's Windypit showing part of Oxtail Chamber with animal bones. (Photo: © M. Roe.)