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DRUNKARD'S HOLE

by

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NGR ST 47145839
Altitude 175 m. AOD
Length 127 m.
Depth 48 m.

ABSTRACT

Major extensions were made to this cave in 1989 by the Wessex Cave Club, bringing its total length to 127 m. The cave is an abandoned swallet cave showing three consecutive water table levels. It was probably formed during the last interglacial.

INTRODUCTION

Discovery of the cave is attributed to the UBSS. Barrington and Stanton (1977) state that the cave was dug open, by the UBSS, in 1923, to a length of 15 m and 20 m depth. The Society's own records prior to 1926 are virtually nonexistant, and do not mention this. The cave was extended a further 5 m to a tight rift by the Axbridge Caving Group in 1971 (Richards, 1971), and more recently members of the Wessex Cave Club made a major breakthrough in March 1989, which more than doubled the length of the previously known cave (Williams, 1989) (Figure 1).

DESCRIPTION

The Entrance Series

The Entrance Passage is inclined at the angle of dip (50°) and contains numerous shelves and rock projections which make progress awkward. The overall impression is of a tight rift along which it is difficult to travel, although in fact, nowhere is it particularly tight and there are several points at which cavers travelling in opposite directions can pass one another.

The crux is reached after some 20 m and comprises a vertical squeeze about 3 m long. Below this the passage becomes low and steeply inclined for about 2.5 m before reaching the point of the 1989 breakthrough, where it takes a sharp turn to the right into a horizontal passage intersecting the top of two rifts, the first of which leads to the Wessex Cave Club extensions. The horizontal passage closes down after a few metres in a sand and boulder fill.

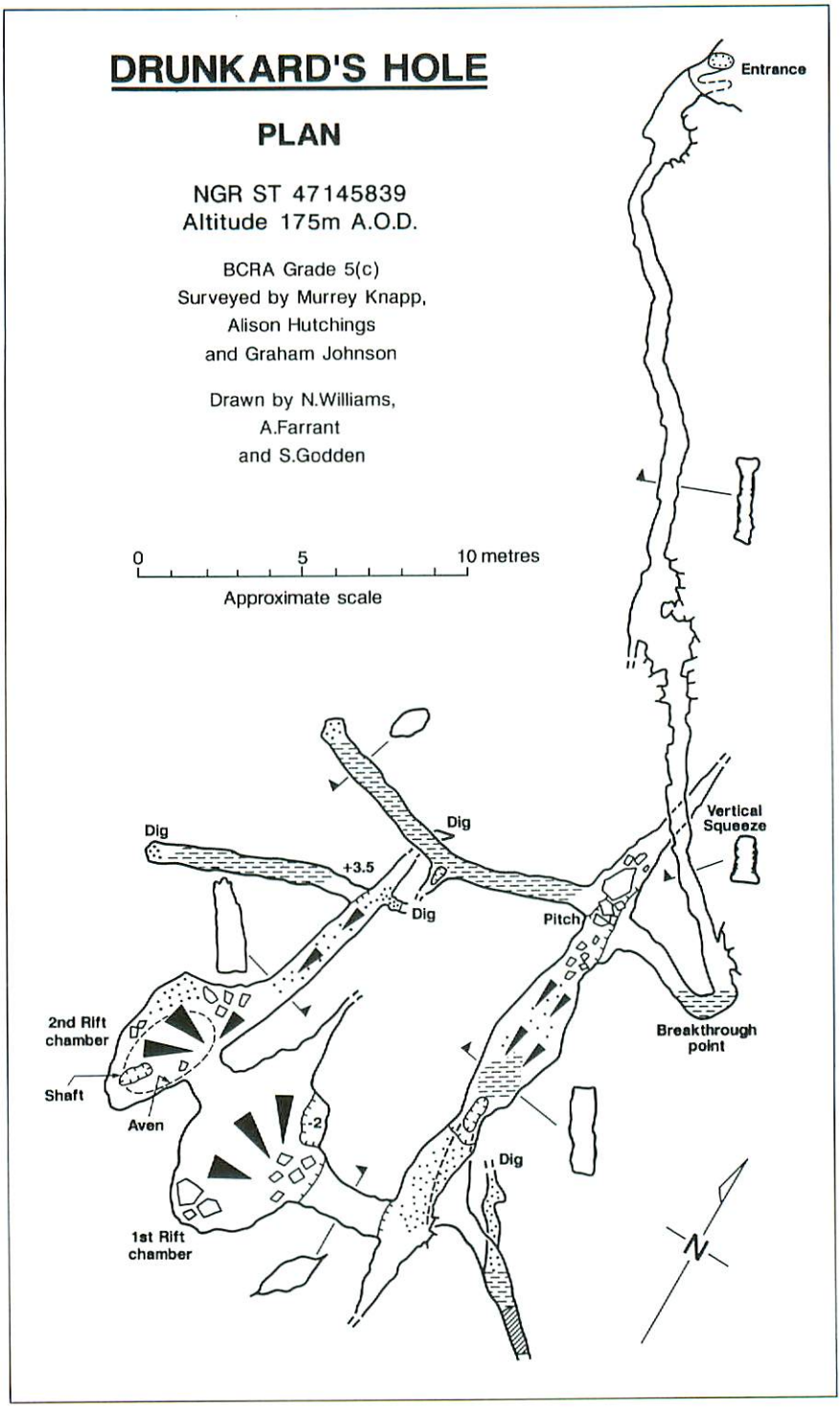


Figure 1. *Survey of Drunkard's Hole*

The Wessex Cave Club Extensions

A 10 m ladder hung from the bolts provided at the top of the first rift reaches a point half way down a wall of jammed boulders. Here, parts of the 'floor' of the passage above are only jammed boulders and gravel and although there is apparently a free climable way down, this is very loose and unstable. At the bottom of the ladder the wall has been stabilised by cementing and tackle is not required for further descent.

Digging below the wall has resulted in a further 10 m of downward progress, although at almost every stage loose boulders have had to be stabilised with cement, and the whole dig collapsed at least once during operations. The lowest point in the cave is a short crawl with a sandy floor some 48 m below the entrance.

At the bottom of the ladder, a traverse over the top of the dig for about 10 m reveals a window in the right hand wall. There are bolts here for a climb down into a second chamber which is actually a parallel rift. On the opposite side of the chamber is a second window into a third rift. This was originally filled with sand and small boulders; but, following several digs, several cubic metres of sediment were flushed into the rift during the wet winter of 1990. This revealed an aven over 10 m high and had the effect of raising the floor level some 4 m, blocking a small passage which originally led to the bottom of the second rift, accessible from above the pitch. Further digging operations since the collapse have revealed a number of choked passages which may eventually reach a fourth parallel rift.

The cave takes no regular stream, and has never been dye traced, although Bath Swallet and Read's Cavern have been traced to Langford rising (both) and Rickford rising (Read's) (Drew *et al.*, 1968, Tratman, 1963). Despite this lack of streamway, the cave can become quite wet after prolonged rain, demonstrating that there is significant percolation input. As there are several areas where large quantities of small boulders and gravel are suspended in the roof, rain probably also adds significantly to the risk of collapse. The entrance area has a noticeable draught.

GEOMORPHOLOGY

Drunkard's Hole is an abandoned swallet cave which was formed by a stream draining from the northern side of the Blackdown pericline. It is located on the boundary of the Lower Limestone Shales and the Blackrock Limestone (Figure 2).

The hypothetical evolution of the cave is shown in Figure 3. The cave shows both phreatic and vadose features, and the cave is developed along two sets of joints orientated at 330°N and 015°N. The first section of the cave down to the breakthrough point is a narrow vadose trench 0.5 m wide and up to 10 m deep, with a small phreatic tube at roof level, descending down dip at c. 50°. At the breakthrough point, at 150 m AOD, the passage turns east along strike and becomes a phreatic tube 0.75 m in diameter, and soon becomes blocked with sand and silt (Figure 3.2). A vadose trench has been incised into the floor of the phreatic

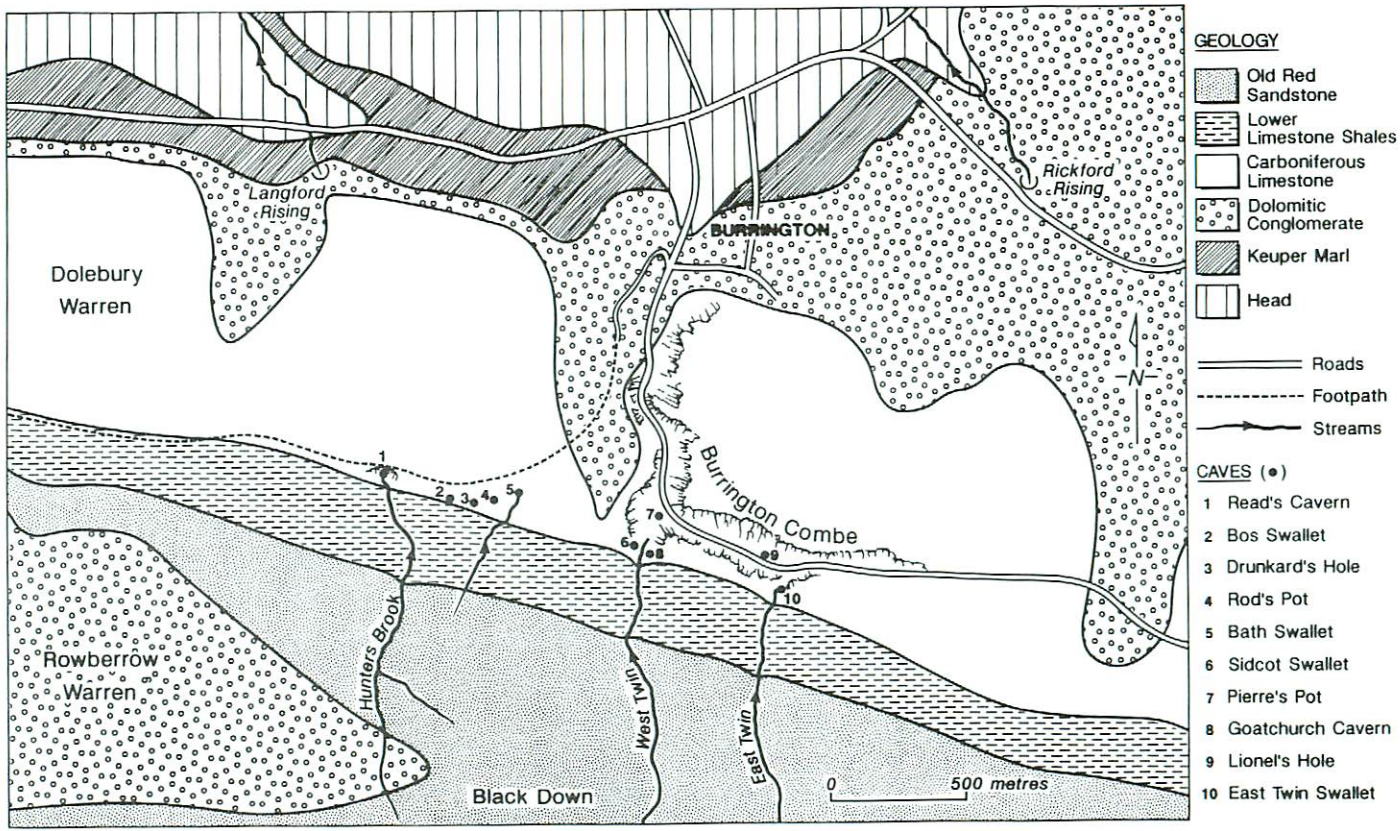
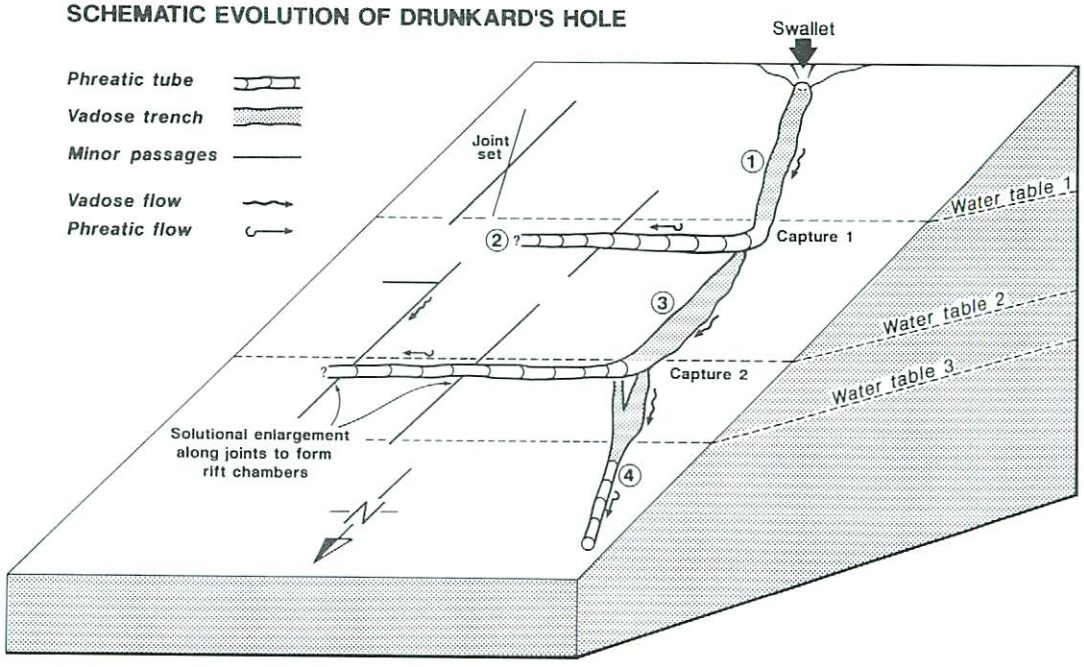


Figure 2. *Geology of the Area around Drunkard's Hole*



(1) Limited phreatic circulation, followed by vadose incision as conduit is enlarged.
(2) Phreatic strike conduit at water table, with minor down dip component.
(3) Fall in water table, vadose entrenchment of earlier phreatic tube.
(4) Fall in water table, third phase of vadose entrenchment.

Figure 3. *Schematic Evolution of Drunkard's Hole*

tube and follows a prominent joint down dip, forming the 10 m pitch. At 141 m AOD the passage again becomes phreatic and turns east along strike (Figure 3.3). Water flowing down two parallel joints also fed into this phreatic tube, forming the two rift chambers seen in the extension where they met. It is possible that a continuation of this phreatic tube exists behind the sediment infill in the second rift chamber, heading towards Rod's Pot. Several other small phreatic tubes also lead off the rift chambers towards Rod's Pot.

A third vadose trench is incised into the floor of the second, following the same joint as the entrance rift. At 127 m AOD the vadose trench intersects a phreatic tube, which follows the joint to the north (Figure 3.4). The current downstream end is a tube c. 0.7 m in diameter, choked with sand and gravel. The upstream section of this phreatic tube is also fed by another vadose trench which is infilled with a coarse stream lain Old Red Sandstone fill. At this point, some superb chert nodules can be seen projecting from the wall. The cave was at some time infilled with a coarse fluvial sandstone fill, which has since been partially washed out. There has been relatively little post-glacial modification of the cave, due to the diversion of the formative stream, with only some minor vadose fluting having occurred on the 10 m pitch.

DISCUSSION

It is suggested that there were three phases of watertable stillstand followed by base level rejuvenation and a subsequent fall in the local watertable, causing renewed vadose incision. The first occurred at 150 m AOD, where the cave first becomes phreatic (followed by vadose incision into the floor of the phreatic tube), the second at 141 m AOD where the passage again turns phreatic and follows the strike, and the third at 127 m AOD at the phreatic tube at the bottom of the cave, which is currently blocked.

A similar sequence of development can be seen in Rod's Pot 40 m to the north east, these two caves are almost certainly part of the same system and are probably linked, with Drunkard's Hole acting as a tributary to Rod's Pot. Three phreatic levels can be identified in Rod's Pot which correspond to those identified in Drunkard's Hole. The first occurs at the top of the two blind 12 m pitches, at about 150 m AOD, the second in the Main Chamber, 143 m AOD and the third in the lowest part of the cave at 127 m AOD. This proposed sequence of a progressive vertical extension of the vadose zone in response to a steadily falling water table is similar to that suggested by Smart (Smart *et al.*, 1984) for Charterhouse Cave.

Many of the phreatic tubes in Drunkard's Hole are infilled with a coarse fluvial sandy gravel fill, derived from the Old Red Sandstone to the south. The dominance of the sandstone can clearly be shown by clast analysis of a sample from the bottom dig, which comprised 89.0% Sandstone, 6.5% silicified fossils, 2.0% limestone, 1.6% chert and 0.8% vein quartz (n=240). This is in contrast to the much finer grained sediment found in the nearby Sidcot Swallet, considered to have been deposited from ponded up water (Bull and Carpenter, 1978)

Tratman (1963) suggests that the main development of the cave occured during the last interglacial between 120 and 70 ka. The degree of infill suggests the cave existed prior to the last glaciation. During the last glaciation large amounts of sediment infill would probably have been washed in during spring snow-melt floods, eventually causing the blockage of the cave system, however to confirm this would require dating of speleothems using Uranium-series dating techniques. In many other caves on Mendip, for instance G.B (Smart, pers comm.), similar fills have been dated and assigned to the last (Devensian) glaciation. Since then, much of the sediment has been partially washed out by post glacial fluvial activity.

The original stream which formed the cave has since been captured by the Bath Swallet stream and the Hunter's Brook, probably within the last 10,000 years, causing the final abandonment of the cave.

NOTES ON THE SURVEY

The survey was completed in two parts, the entrance series and the extensions, the two sets of records being over a year apart. Readings were taken using Suunto instruments. The survey data was then reduced using Sean Kelly's Surveyor 88 programme and the resulting co-ordinates entered into an Autocad file which was used to prepare the backbone survey. Eventually the wall detail will be entered on the Autocad file to provide a complete computer generated drawing of the cave, but there has not been time to complete this in time for the publication of this paper.

ACKNOWLEDGEMENTS

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