
Strans Gill Pot

[SD 916 788]

Highlights

Within Strans Gill Pot a series of fault-guided vadose shafts descends to a large, well developed, old phreatic tube. This tunnel has thick mud banks, a spectacular display of calcite straws, and a deep, vadose, floor trench incised in response to rejuvenation. In only a short length of passage, Strans Gill has all the classic features of a multiphase Dales cave.

Introduction

Strans Gill is a shallow ravine cut into the northern side of Langstrothdale, north-west of Buckden (Figure 2.1). Below the slopes of Yoredale shale, the stream sinks on a narrow stratimorphic bench at the top of the limestone, and under normal flow conditions the gill is dry down its steeper, lower course. A single rift in the streambed gives access to Strans Gill Pot, which underlies the surface gill. The entrance to the pothole lies in the Hardraw Scar Limestone, which is contiguous with the underlying Great Scar Limestone where most of the cave passages are formed. The cave has been described by Long (1969), and more briefly by Brook *et al.* (1988) and Long (1974).

Description

Beneath the entrance fissure of Strans Gill Pot a series of short and very constricted rifts lead to a large shaft 50 m deep developed on a north-south tear fault (Figure 2.45). The stream pours down to the boulder floor of a chamber aligned on the fault, and drains into a vadose canyon developed along the intersection of a horizontal shale bed and the vertical fault. This ends at a cascade into a chamber modified by collapse at the intersection of two faults, and lower rifts descend to a sump 105 m below the entrance. Three relict phreatic passages, formed at the levels of shale beds within the limestone, radiate from the collapse chamber. To the south, a narrow, vadose, floor slot descends the fault for 23 m to standing water, but a bedding cave above it enlarges into the Passage of Time — an elliptical phreatic tube, 10 m wide and 2–3 m high over broad mudbanks. This phreatic tunnel is notable for its magnificent array of calcite speleothems, including stalactites, stalagmites, gour pools and straws up to 3 m long; some large individual calcite crystals are stained green. The ancient passage was truncated by glacial deepening of Langstrothdale, but the cave is choked to the roof with inwashed mud and sand, and surface sediments now bury the exit.

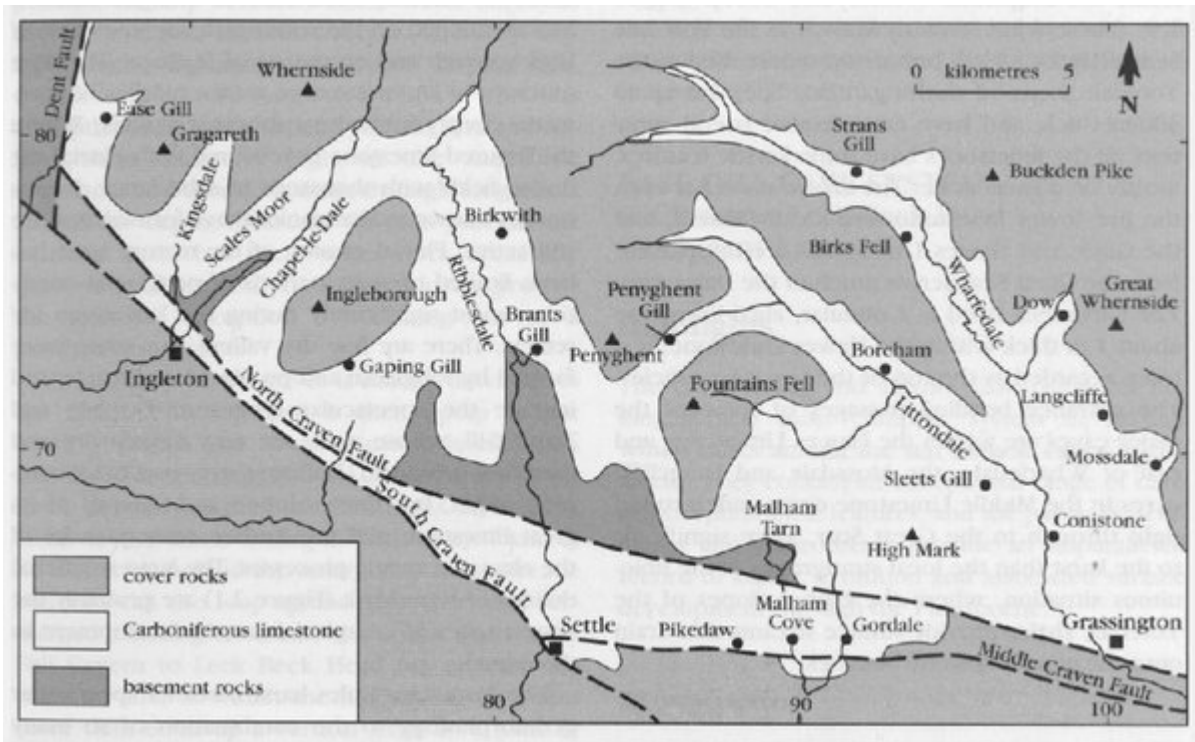
Interpretation

The vadose shafts of the Strans Gill Pot entrance series are in a fault zone, while the relict phreatic tubes are at the levels of shale beds, demonstrating the importance of these beds to cave inception within the limestone. It is notable that the vadose rifts and shafts, both above and below the Passage of Time, are all formed on the tectonic weaknesses in the limestone; in contrast, the large phreatic tunnel curves away from the fault line, while maintaining the stratigraphical level which was favourable to cave inception. Drainage of the lower levels of phreatic cave passages, and deposition of the abundant clastic sediments and calcite speleothems, were the consequences of rejuvenation in response to the adjacent deepening of Langstrothdale by Pleistocene glaciations. Sediments in the cave and around the partly inactive surface gill record the erosion and modification of the karst through past climatic changes, whose chronology has not yet been determined.

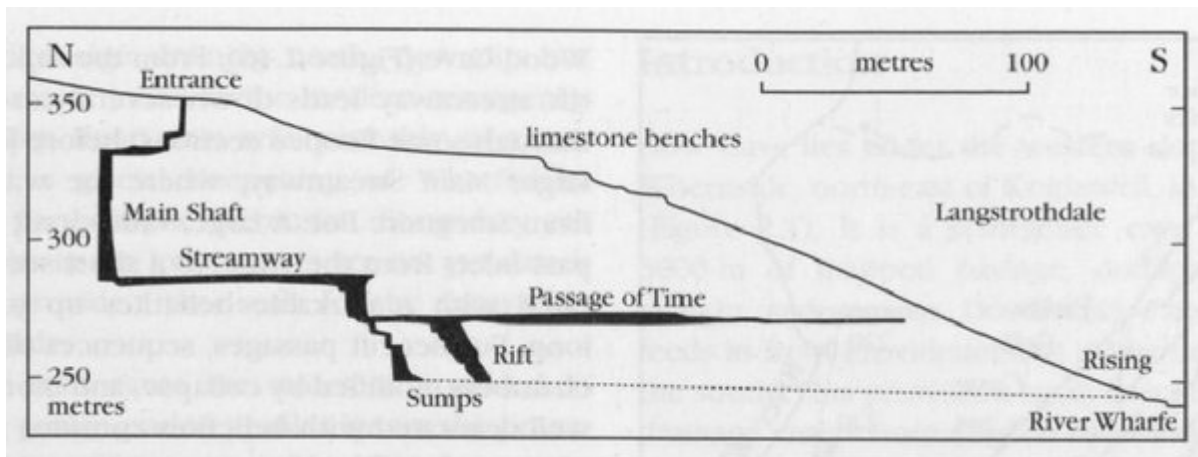
Conclusion

Strans Gill Pot is a textbook example of a cave system, with fault-controlled vadose rifts and shafts descending into abandoned phreatic passages. The Passage of Time contains an exceptional and very beautiful display of calcite decorations in a dramatic location.

References



(Figure 2.1) Outline map of the Yorkshire Dales karst, with locations referred to in the text. The Carboniferous limestone shown includes all the Great Scar Limestone (Kilnsey, Cove and Gordale Formations) and also the lower Yoredale limestones (of the Wensleydale Group) where they are hydrologically linked to the Great Scar and are therefore part of the same karst unit. Higher limestones within the Yoredale Series are not marked. Basement rocks are Palaeozoic slates and greywackes. Cover rocks are the Yoredale facies of the middle and late Brigantian Wensleydale Formation and various Upper Carboniferous and Permian clastic formations.



(Figure 2.45) Long section through Strans Gill Pot (from survey by British Speleological Association).