

## UBSS TOTES GEBIRGE EXPEDITIONS 1989 & 1990

by

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### ABSTRACT

An account is given of the discoveries made by the University of Bristol Spelaeological Society expeditions to the Totes Gebirge, Austria, in 1989 and 1990. The most significant find, Organhöhle, is described. This is an extensive, precipitous, cave which at the end of 1990 had reached a depth of 303 m, with a plan length of 235 m.

### INTRODUCTION

The Totes Gebirge is an area of limestone Alps approximately 50 km east of Salzburg (Figure 1). The name Totes Gebirge (Dead Mountains) is derived from the barren landscape, common to much European High Karst. Peaks in the area rise to around 2200 m and with the valley base at around 700 m, there is potential for deep cave systems to have developed. The area has been visited many times in recent years by British cavers, most notably by Cambridge University Caving Club (CUCC), Lancaster University Speleological Society (LUSS) and University of Bristol Spelaeological Society (UBSS), often with considerable results.

British teams first visited the Totes Gebirge in 1976 when a joint UBSS/CUCC expedition began exploration of the area around the Loser Hutte (Figure 1) with some success, exploring Brauninghöhle (-260 m), Schneewindschachlhöhle (-263 m) and Eisfluthöhle (-150 m). In 1980, UBSS members again combined with a CUCC expedition, discovering and exploring Schnellzughöhle to a depth of 100 m and extending the previously known Stellaweghöhle. A similar team returned the next year and continued the exploration of both caves before finding a connection between the two at around -400 m, giving the system an approximate length of 3 km and a depth of 640 m. In 1982, Stellaweghöhle was pushed to a sump at around -900 m. In later CUCC expeditions, Stellaweghöhle was extended to over 1000 m depth and 4 km length by the discovery of higher entrances.

CUCC teams continued the exploration of the area centred on the Loser plateau, primarily due to its convenient road access, then in 1987, a LUSS team began exploration in an area further to the north, just west of Wildensee (Figure 1), and explored Sternloch to a depth of 250 m. In the same year, CUCC discovered the appallingly named Donnerundblitzenhöhle (-130 m) and more significantly, Kaninchenhöhle, so named because of its warren-like complexity. Subsequent years saw both teams back in their respective areas with further good results. LUSS extended Sternloch to a choke at -331 m whilst two more LUSS finds, Lungehöhle and Ratzelhöhle were explored to sumps at -400 m and -450 m respectively. Poor weather and an apparent lack of deep caves caused LUSS to

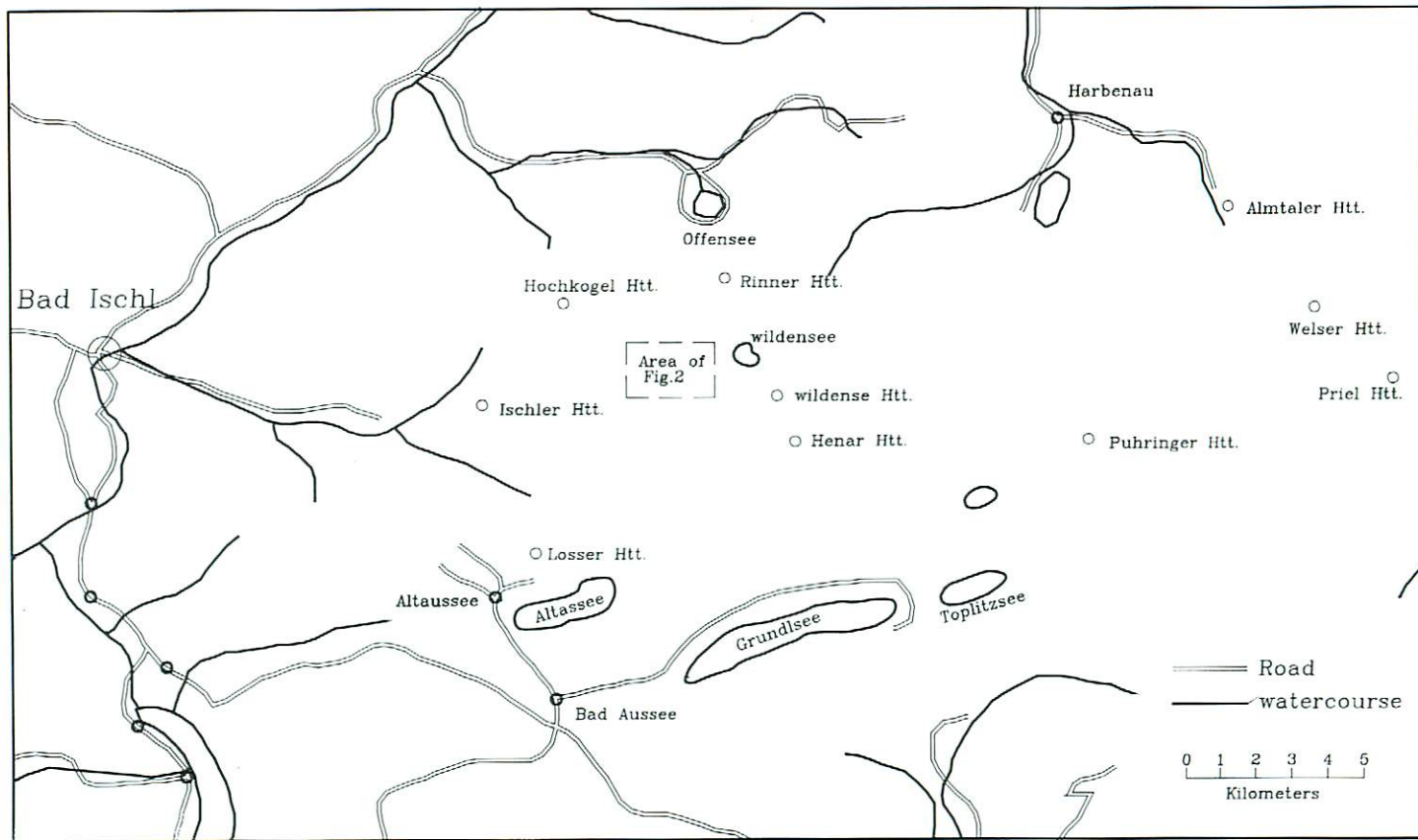


Figure 1. Map of the Totes Gebirge.

abandon exploration of the area after three years, in 1989. CUCC continued exploring Kaninchenhöhle and by 1990 this was at a depth of 409 m.

The attention of the UBSS team was drawn to the area by the earlier joint UBSS/CUCC expeditions and by the LUSS expeditions. 1989 was a reconnaissance expedition for only 2 weeks, with the original aim of examining an area on the north edge of the plateau about 3 km east of Wildensee, however, having encountered the LUSS expedition, it was suggested that a different area be investigated near where they were working. One benefit of this was the use of the 'Bivi Cave,' a shallow cave with sufficient sleeping room for about 10 people out of the rain. The 1989 expedition explored a total of twelve entrances, none of which showed significant development, however two caves, BS7 and BS8, were not completely explored.

A return visit was planned to the same area in 1990. The work carried out the previous year meant that the expedition was more aware of what to expect. A larger team of nine members was brought together to spend a total of four weeks in the area. With LUSS having abandoned the area, the 'Bivi Cave' could again be used as a base and a decision was made to concentrate on the ridge running east from Hohes Augst-Eck. This area had not been examined thoroughly by LUSS and it was hoped that it would be sufficiently far away from their previous finds to avoid the problem of the 1500 m A.S.L. sump level. The major find of 1990, Organhöhle, was discovered in the first week and the remaining three weeks allowed it to be explored to a depth of 305 m with some unexplored leads remaining.

## DESCRIPTION OF THE EXPEDITION AREA

The Totes Gebirge plateau (Figure 1) is approximately 10 km wide north-south and runs for about 35 km east to west. On the north side a scarp slope rises from a valley base of 650 m up to the plateau at about 1600 m. To the south, the plateau dips more gently to the valley at approximately 700 m. From the plateau, peaks rise to just over 2000 m. The tree line is at 1450 m and above this the vegetation is limited to sparse patches of Bunde, a dwarf pine, grass and alpine flowers, with about 80% of the ground bare rock or snow. The snow cover has been reducing during the four years that British teams have visited the area, the first LUSS expedition in 1987 reported nearly 50% snow cover, but by 1990 the snow cover was almost non-existent.

Drainage above 1500 m A.S.L. is entirely subterranean, at around 1500 m there is a spring line and the most obvious feature at this level is the sizeable lake, Wilden See with a stream running north from it past the Rinner Hutte mountain refuge, indicating an impervious layer at this altitude. This seems to be supported by the findings of LUSS, all of whose caves reached sumps at about this altitude. The 1500 m spring level can only account for a fraction of the surface drainage. The next resurgence level is at about 650 m with the major resurgence of the river Gimbach some 7 km to the north west. Other resurgences for the area are the lakes of Offen See to the north and Altausseer See and Grundl See to the

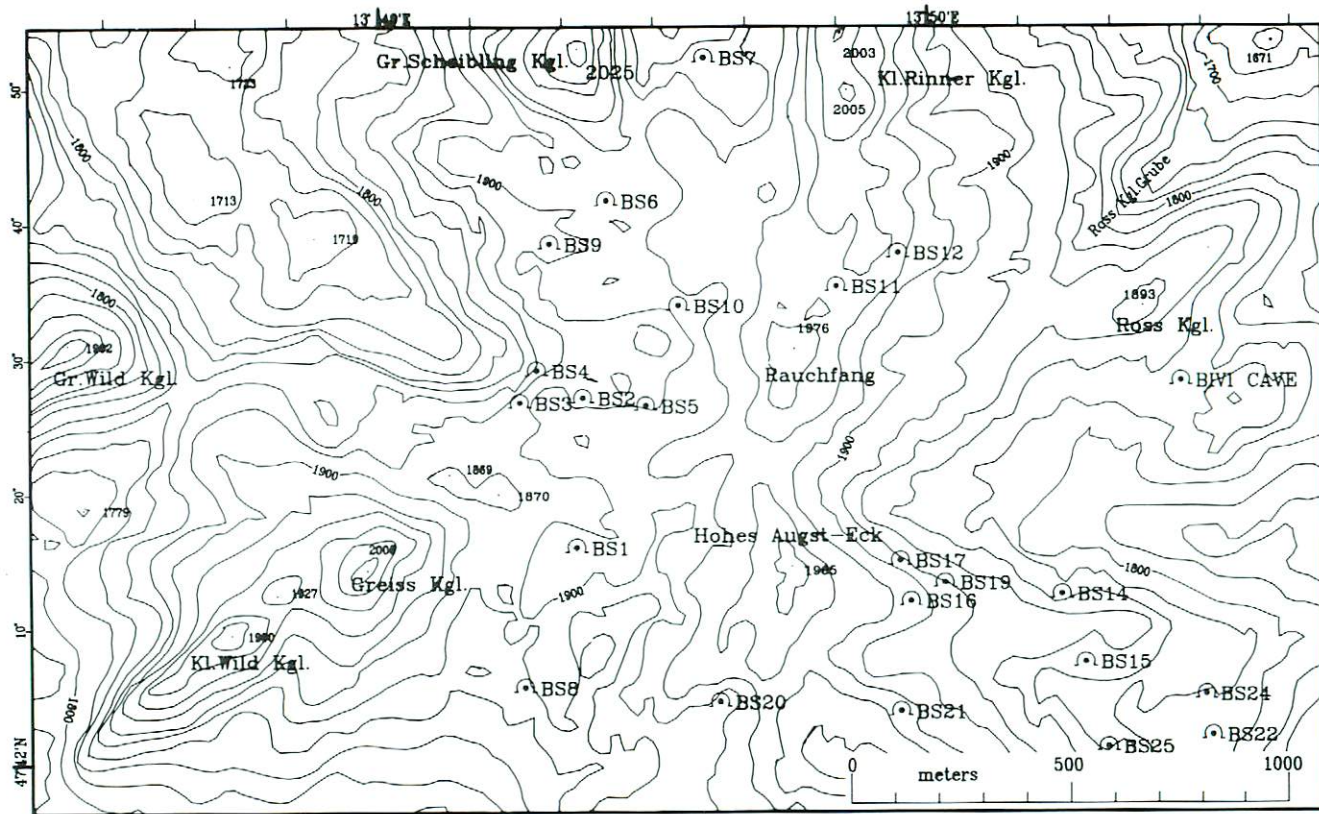
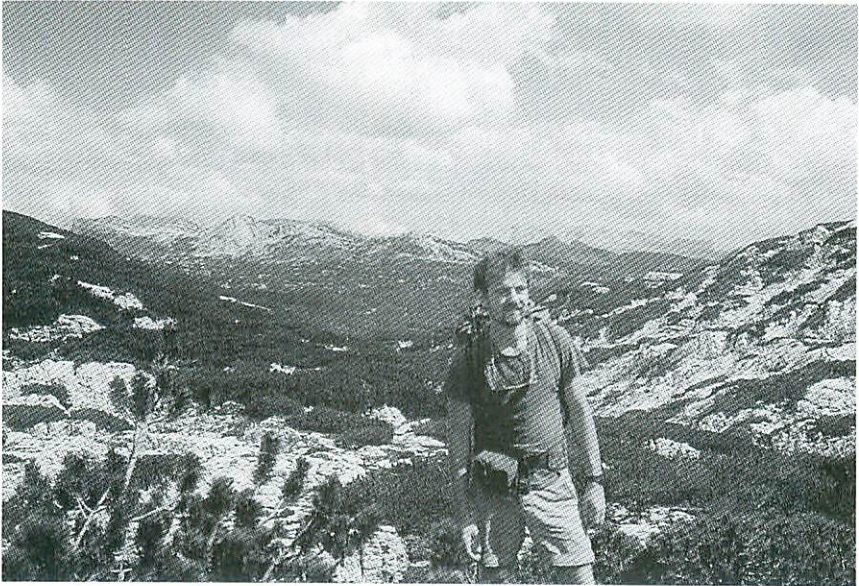


Figure 2. Map of the Expedition Area, showing cave entrances.

south. This would tend to indicate that the sumps found by the LUSS cavers are perched sumps, not much use to dry cavers. There is also evidence of the same sump level in the south of the plateau where the 'German Route' in Stellerweghöhle reaches a dried up sump at about 1500 m A.S.L. Dye testing was not carried out during either expedition as no underground streams were found. However dye testing by other expeditions in the area shows two distinct drainage patterns, drainage from the centre of the plateau shows a radial pattern, associated with later vadose development from post-glacial melt water, whilst drainage from the southern edge of the plateau was shown to travel some 30 km through to the northern side, associated with an earlier phase of phreatic development.



**Figure 3.** *View of the Totes Gebirge looking east from Hohes Augst-Eck.*

The two UBSS expeditions examined an area west of Wilden See (Figures 2 and 3), to the north of that explored by CUCC and overlapping the area covered by LUSS. The expedition area is roughly defined by Gross Scheibling Kogel, Greiss Kogel, Hohes Augst-Eck and Ross Kogel with the 1989 expedition concentrating on the west of the area and the 1990 expedition spending more time in the south east. The bedding in the area dips in a south westerly direction at about 25°. The expedition area is dominated by two glaciated valleys running east and west from Rauchfang. These are more recent than much of the cave development in the area as demonstrated by BS8 and BS17 whose entrances are truncated phreatic systems. More recent cave development consists of large open surface shafts, probably dating from the end of the last ice age. Where these are open to the surface they are almost invariably blocked with scree and snow, however these shafts can, be as deep as 90 m and significant amounts of time can be wasted simply to confirm that they are choked. Developed caves generally occur where horizontal passage is found close to the surface. Smaller glacial

features include Plattenlandschaft, terraces in the plane of the bedding with escarpments between them and 'Gassenlandschaft', narrow gorges formed along the joint lines. Post glacial karst features are associated with an erosion depth of about 15 to 20 cm. This has left very fine, sharp rocks which tend to cause unwanted erosion to unwary cavers.

## DESCRIPTION OF ORGANHÖHLE

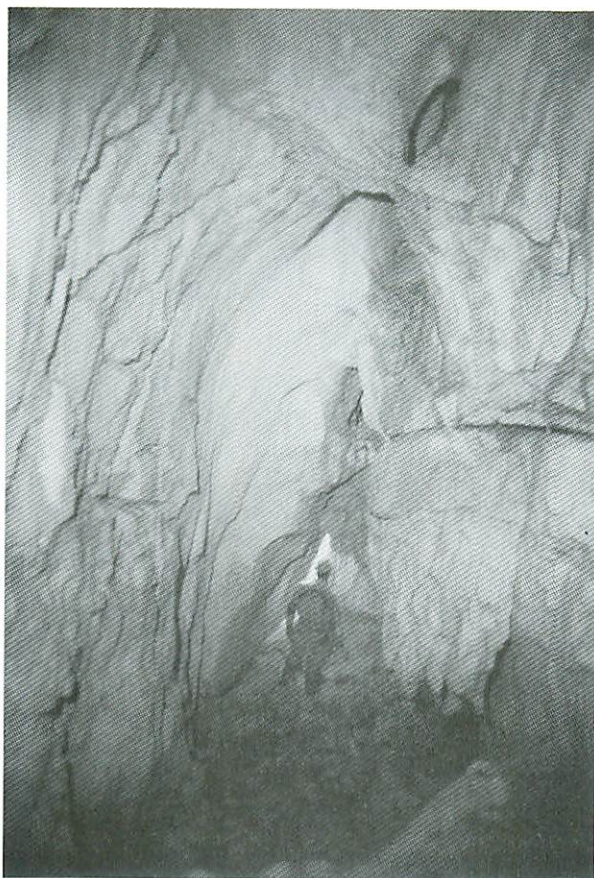
The 1 m diameter entrance to Organhöhle is located at the foot of a 5 m escarpment, about 300 m along the north side of the ridge which runs east from the Hones Augst Eke and about 50 m from the summit of the ridge. The entrance is marked 'BS 17'.

The entrance leads to a walking sized joint controlled phreatic passage (Figure 5) with further entrances coming in from the terrace above. This continues to a four way junction: straight is soon choked with boulders; up and to the left, the passage winds back to a further entrance, slightly to the east of the main entrance and at the same level, whilst the main way on is down and to the right. The passage, now 5 m high, continues passing low passages on the left and right to a point where the roof lowers and the passage is split horizontally. The lower one leads to an extensive series of crawls which though not exhaustively explored, do not seem likely to be important. The upper passage continues to a squeeze past a debris cone with a distinct draught. After this the passage splits again, the right hand one chokes soon after a 8 m pitch but the smaller one on the left carries on, 1 m high with a mud floor, crosses a 4 m blind pit and soon reaches the first pitch. The passage enters close to the top of the first pitch but, with few signs of back-cutting in evidence at the pitch head, it is thought not to have carried the water that formed the shaft.

A fine descent in a large, 10 m square shaft lands on a large boulder ledge with the second pitch following on immediately. A climb up to a window near the head of the second pitch gains the boulder strewn foot of an aven at the same level as the first pitch, and of a similar size. An exposed traverse over the second pitch leads to a horizontal tube which has not been explored. The second pitch is a continuation of the first and from its foot, the only exit is a 150 mm wide rift with a possible continuation beyond. 13 m down the second pitch, Fledermaus Ledge, so called because of the bat skeletons found here, is reached. From here a vadose trench (Figure 6) cuts down to the top of Fledermaus Pitch. This is parallel to the second pitch and descends to about the same level but again, is blind except for a small slot in one wall.

A traverse over the top of Fledermaus Pitch reaches a small chamber, from which two draughting tubes lead off, both tight and contorted. The one to the left becomes too tight, but there is a possibility of a pitch beyond this section. The tube to the right forms the continuation to the cave and is named the Organ Grinder. This awkward section of passage is best approached feet first until a flat out crawl is reached, just before the crux, which became known as the Monkey as it is small, somewhat hairy and every Organ Grinder should have one. This squeeze is better passed head first on the way in, but feet first coming out, and it often caused problems for tired cavers. The Organ Grinder is a small phreatic tube, with an average diameter of 0.75 m, until just after the crux where vadose downcutting has produced a classic keyhole shaped passage, roomy enough to allow SRT kit to be replaced, leading to the head of the third pitch.

The 42 m third pitch is about 9 m × 4 m and slightly waisted. After an awkward hanging rebelay, it passes two side passages to a floor with no way on. From the foot of the pitch, a 3 m climb up to a ledge reveals two further climbs down, one of which is blind, the other leads to an undescended pitch of about 20 m. The bottom of this pitch shows evidence of ponding with silt about 5 m up the walls. Both side passages from the third pitch connect with Topher's Pitch. This is 86 m deep with a large ledge near the foot. From this ledge to the bottom, the walls contain many fossils which protrude from the rock where the



**Figure 5.** *Passage near entrance of Organhöhle*

limestone has been dissolved around them. From a window part of the way down, a stream can be heard; the water does not seem to join the pitch and no attempt was made to reach it. At the bottom, the aven of a similar sized parallel shaft can be reached whilst a slippery climb up gains a window overlooking the fifth pitch, *Toccata and Fugue*.

*Toccata and Fugue* is best descended from a small ledge above the large ledge in *Topher's Pitch*. From here, a short drop reaches a small chamber from where the pitch continues. From the foot of the 39 m pitch, a small hole in the floor drops into a chamber with no passable way on. Again this pitch has many fine and delicate fossils. 10 m above the floor of the pitch, a ledge is gained, this is the start of the 40 m self-lined climb, *The Rift Climb*, which if followed straight down leads to the top of *The Pitch of the Flying Boulders*. The rift continues for some distance horizontally, but was not pushed. Great care should be exercised in the *Rift Climb* and in *The Pitch of the Flying Boulders* as there are many loose rocks and dislodged rocks inevitably fall the length of both pitches.

*The Pitch of the Flying Boulders* lands in *The Hall of the Flying Boulders* which again contains much loose rock. The chamber is about 15 m by 5 m and over 20 m high. From one end, a 2 m climb up a mud bank leads to an impressive phreatic passage 2 m  $\times$  3 m. A pit in the floor of this passage drops to a chamber with a deep well. The passage is soon cut by *Another Bloody Pitch* which has a strong draught at the pitch head. A side passage also joins this pitch. *Another Bloody Pitch* comes from out of sight and descends



**Figure 6.** *Traverse above Fledermaus pitch, Organhöhle.*

to a floor with only a too tight passage leading off. There is no draught here. From part of the way down, another parallel pitch can be gained but again, the exit from the foot is too tight. This was the limit of the 1990 exploration of the cave.

## DISCUSSION

A total of 24 entrances were explored during the two expeditions. The majority of the caves were little more than blocked surface shafts, the one significant find being Organhöhle. This is a complex cave system which demonstrates the development of a high alpine cave, old phreatic levels intersected by a more recent vadose system. The vadose part of the cave is almost entirely vertical and appears to have formed as several independent caves. The lack of horizontal vadose development suggests that the cave was formed very rapidly by large quantities of water, conditions that would have occurred during periods of glacial melting. The main argument for this independent development is that there is almost no



evidence of vadose development where the phreatic levels intersect with the pitches, therefore they could not have carried the water which formed the pitches. Further, the pitches come from far above the phreatic intersections.

The phreatic levels must be the key to further expansion of the system. All of the pitches ended with no passable exit and exploration to the present level was only possible by avoiding these sections using the phreatic layers. The main lead must be the continuation of the lower phreatic level visible across Another Bloody Pitch. The draught at the top of the pitch is very strong though it is possible that this is blowing from above. Further leads are the horizontal continuation of Rift Climb and a large ledge visible in the bottom pitch at the same level as the pitch is entered. Whether any of the lower pitches were continuations of earlier pitches is not clear. The most likely candidates would be the pitch after the Organ Grinder and the very last pitch. The two are almost directly above each other with a vertical interval of about 100 m. If a connection could be found, possibly from the undescended pitch at the bottom of the fourth pitch, this may give access to any horizontal passage between the two.

When considering the future potential of this cave the 1500 m sump level must not be ignored. This thwarted all attempts by LUSS in the area. Organhöhle is about 1 km from the major LUSS finds, it is also somewhat more complex than the caves explored by them. Both of these facts may mean that the cave avoids the sump level or provides a bypass to any sumps. The potential for caves in the area is about 1300 m. The next 150 m will be critical.

The skulls and partial skeletons of five individual bats were recovered from Organhöhle and were later identified as *Myotis Mystacinus* (Whiskered Bat). This might indicate that the bats use the cave as a hibernation site during the winter months, perhaps living closer to the surface or moving down the mountain to the forested zone in the summer. The remains were all found in the smaller horizontal tubes of the cave, also found in the tubes were loamy deposits which may have formed from degraded bat guano. This may indicate that the tubes are actively selected as roost sites in preference to the larger shafts where the bats would be prone to disturbance by spring floods. However, since bat remains or guano falling to the base of these shafts would probably be dispersed by flood water, the above cannot be regarded as conclusive evidence of the distribution of roosting bats.

Formations are very sparse throughout the cave and what there is tend to be fossil and often partially decayed. In the tubes leading from the top of Fledermaus Pitch, however, there are some stalactites up to 30 cm long with well developed anemolite encrustations along one side. This would indicate that the draught in the tubes has been flowing for some time.

Between -180 m and -240 m there are several bands of fossiliferous limestone, the fossils (Figure 7) consist mainly of casts of small globose gastropods, small burrowing bivalves and some brachiopods. They have been dissolved out of the background rock in various locations and seem to be well preserved but are delicate and difficult to collect. In the same area there were fossilised structures which consisted of interconnecting networks of small, solid tubes. These do not appear to have any easily discernible organised structure. They may be formed from

fossilised calcareous marine algae or from infilled burrow tubes in soft sediment. It is hoped to retrieve a sample of this material and some fossils for more accurate identification during a future expedition.



**Figure 7.** Fossils in passage wall at head of Pitch of the Flying Boulders, Organhöhle.

Although the LUSS expeditions had covered a large area of the plateau, the bulk of their effort was directed at the numerous caves in the area of the Bivi Cave. Due to this and because of the reduced snow cover, we did not consider any area of the plateau away from the Bivi Cave to be completely “worked out”. Prospecting areas were largely selected on the basis of previous information on the area. Scree and boulder-filled gullies were avoided as were large open shafts as these were invariably blocked by debris or snow. Most of the entrances are blocked after a short distance, therefore only oversuits, head torches and a couple of ladders were needed for prospecting. Any notable finds were numbered with paint and the location details recorded. Caves intended for further visits were marked by a cairn which was removed after it had been investigated.

Due to the very sharp rock and to the use of 9 mm SRT rope, great care has to be taken with rigging. Pitons were taken on the 1990 expedition but were little used because of a lack of suitable placements. Wire tethers and rope and tape slings were used widely for rigging from natural belays and were often in short supply on pushing trips. 8 mm rock anchors were used when no natural alternative was available though in exploring Organhöhle to its 1990 limit only 12 anchors were used.

The abrasive nature of the rock meant that it was important to have patching material and sewing kit on the surface for the repair of oversuits. The main problem encountered underground was the cold (a constant  $0.5^{\circ}\text{C}$  during the 1990

expedition), this was particularly apparent during the delays caused by rigging, photography and surveying. Most people wore one or even two sets of thermal underwear beneath their furry suits. Balaclavas were found useful during delays, as were woollen socks in addition to wet-suit socks and woollen gloves worn inside rubber gloves. Chemical heat packs were also used on occasion and would be important in the case of an accident. Although there were enough pools of water to re-fill carbide generators, there were few areas of the cave with collectable running water for drinking. This was only a problem on the longer trips and in the later parts of the expedition water was carried in from the surface for drinking and re-filling lamps.

The expeditions have shown that it is possible to successfully explore a remote area, a significant distance from a road-head with a small team. Organhöhle at its 1990 limit, has several leads still to be pushed and is worthy of further exploration.

### 1989 & 1990 EXPEDITION CAVE NOTES

BS1. 13°49'21"E. 47°42'16"N. Alt. 1920 m Depth 35 m

A vertical entrance on top of the ridge running west south west from Rauchfang. The entrance is 3 m long by 1 m wide with a subsidiary entrance a little to the east. A descent of 7 m in the entrance rift lands on a ledge. The continuation is a broken descent of approximately 22 m in a high rift passage. The way on is blocked by large boulders. There is no draught.

BS2. 13°49'22"E. 47°42'27"N. Alt. 1890 m Depth 70 m

The entrance is in the south side of a corrie at the head of the valley running west north west from Rauchfang. A 2 m scramble down into a passage soon leads to the top of the pitch. A descent in a 10 m diameter shaft lands on the top of a snow plug after 35 m. A number of vertical tubes can be followed through the snow plug for up to 50 m rope length but all choke.

BS3. 13°49'15"E. 47°42'26"N. Alt. 1890 m Depth 7 m

A deep grike 100 m west of BS2 becomes too tight after 7 m.

BS4. 13°49'17"E. 47°42'29"N. Alt. 1870 m Depth 20 m

A 2 m square entrance 50 m north of BS3. A 10 m climb down a 45° boulder slope is followed by further 10 m pitch, choked at the bottom.

BS5. 13°49'29"E. 47°42'26"N. Alt. 1890 m Depth 10 m

A circular shaft 1.5 m diameter lands in small chamber after 8 m. Three phreatic passages lead off but all choke within a few metres.

BS6. 13°49'25"E. 47°42'42"N. Alt. 1900 m Depth 18 m

An unusually deep grike in the limestone pavement south of Gr. Scheibling Kogel becomes too tight after 18 m. There is no draught.

BS7. 13°49'36"E. 47°42'42"N. Alt. 1910 m Depth 60 m

A deep grike in the pavement to the north of BS6. The shaft opens out and lands in a small chamber at -25 m. The continuation is a tight slot in one wall. This was opened

out by hammering and leads to an 8 m pitch followed by a further small chamber. Again the continuation is through a small slot which required enlargement. A larger shaft, 5 m in diameter, drops for 27 m and the way on is too tight but could be enlarged by hammering. Stones dropped through the last slot fall for about 3 seconds with bounces. There is no draught and the prospects are thought to be poor.

BS8. 13°49'16"E. 47°42'05"N. Alt. 1870 m Depth C20 m

A large phreatic entrance in the south side of the ridge running west south west from Rauchfang. A 3 m diameter phreatic tube descends at 30° for about 20 m to a flatter, boulder floored area. The tube contains some quite large decaying stalactites. The obvious continuation closes down after a further 10 m but three smaller side passages lead off. The tube on the left descends over a loose boulder slope to a passage similar in size to the entrance passage. This tube has a loose boulder floor but soon chokes. The middle of the three tubes is a narrow rift which is too tight. The right hand tube has a slight draught and is about 0.3 m wide by 1 m high. This meanders to a 2.5 m climb down to the floor of an aven. From the aven, a 2 m drop enters a rift passage leading to a small chamber which contains animal bones. A small passage beyond soon leads to a climb to a choke. From the aven two tubes ascend to a draughting, horizontal, passage about 10 m above the aven floor. This is too tight to follow.

BS9. 13°49'18"E. 47°42'42"N. Alt. 1890 m Depth 40 m

The entrance is in a loose slope at the foot of a low east facing cliff at the west end of the pavement south of Gross Scheibling Kogel. The slope drops to the head of a 10 m pitch which lands in a chamber. This is immediately followed by a 28 m pitch to a snow plug. There is no way on.

BS10. 13°49'33"E. 47°42'34"N. Alt. 1910 m Depth 70 m

A canyon passage from the surface drops to the head of an airy 60 m pitch. This splits about 5 m from the bottom and both parts are blocked by snow and rock.

BS11. 13°49'50"E. 47°42'35"N. Alt. 1950 m Depth 11 m

A large shake hole just west of the summit of Rauchfang gained this hole the name "Alum Pot". Unfortunately this provided less passage than its namesake. Three entrances drop into the same open chamber at about -14 m. The chamber is about 20 m by 10 m but is choked with snow.

BS12. 13°49'56"E. 47°42'38"N. Alt. 1960 m

An undescended shaft 100 m east of BS11

BS13 - Not Used

BS14. 13°50'14"E. 47°42'12"N. Alt. 1830 m Depth 55 m

The entrance is a slot mostly blocked by jammed boulders. A thread belay directly inside the entrance allows access to a small ledge 3 m down. At a depth of about 10 m there is a larger ledge with two impassable tubes leading off, opposite is a window giving access to a similar parallel shaft. The first pitch lands on a rocky ledge at -30 m and from this, the second pitch descends in a rift for a further 25 m to a boulder strewn floor. From 10 m above the bottom of the second pitch a horizontal phreatic passage leads to an aven, which is the afore mentioned parallel shaft, and closes down in a series of impassable tubes. A squeeze between the boulders at the foot of the second pitch gains an impassable draughting rift.

BS15. 13°50'17"E. 47°42'07"N. Alt. 1830 m Depth 18 m

An entrance beneath a large boulder leads to a tight, wet shaft 8 m deep. At the base of the shaft is a small chamber, with a tight rift dropping 10 m to a chamber floored with cobbles. There is no way on.

BS16. 13°49'58"E. 47°42'12"N. Alt. 1900 m Depth 20 m

A rift passage, in the back wall of the terrace above BS17, descends for 10 m to a point where the rift is split. On one side the rift continues but soon becomes too narrow, and on the other the rift continues for a further 10 m to a small chamber with no way on.

BS17. 13°49'57"E. 47°42'14"N. Alt. 1890 m Depth 305 m

See Main Text.

BS18. 13°49'53"E. 47°42'06"N. Alt. 1890 m Depth 15 m

A 3 m climb down a rift leads to a low descending passage with a floor of small boulders leading to a draughting squeeze. This is immediately followed by a second squeeze which opens out into an elongated chamber. From the floor of this chamber two tight tubes drop for a short distance to cobble floors.

BS19. 13°50'02"E. 47°42'13"N. Alt. 1880 m Depth 23 m

The entrance is located 100 m east of BS17 at the same altitude. The cave lies under a scree filled gorge running up the side of the ridge in a north-south direction. The lower end of the cave begins as a short horizontal tube before climbing up below the floor of the gorge and opening into the base of a short shaft about 50 m further up the hill. The cave is tight and the walls are loose and unstable in many places.

BS20. 13°49'38"E. 47°42'04"N. Alt. 1900 m Depth C20 m

A large open shaft 14 m × 30 m was plugged with snow about 20 m down. Possible continuations were visible around the snow plug. This was undescended.

BS21. 13°49'57"E. 47°42'04"N. Alt. 1930 m Depth 15 m

A series of wide interconnecting shallow shafts and rifts.

BS22. 13°49'33"E. 47°42'01"N. Alt. 1890 m Depth 23 m

A tight entrance shaft leads to a large two level chamber, the roof of which is open to the surface. At the base of the chamber a 3 m long, tight rift leads to a 5 m shaft with a cobble floor.

BS23. 13°50'16"E. 47°42'03"N. Alt. 1850 m Depth 25 m

An entrance shaft about 1 m diameter gives a broken descent for about 25 m to a cobble floor. 8 m from the foot of the pitch, a window allows access to a draughting vertical tube. The tube closes down and is impassable in both directions.

BS24. 13°49'42"E. 47°41'59"N. Alt. 1930 m

A large open rift descends for 3 m to a clean walled shaft, Stones bounce down this for about 5 seconds. This was undescended.

BS25. 13°49'34"E. 47°41'58"N. Alt. 1890 m

A narrow, open rift can be climbed for 5 m to a boulder floor. A large space is visible through a small gap and stones rattle down for several seconds. This was not descended.

## ACKNOWLEDGMENTS

The expedition members would like to thank the Tratman Fund of the University of Bristol, and also the Sports Council, for generous grants towards the cost of the work. They are also grateful to members of LUSS for their advice on the choice of area.

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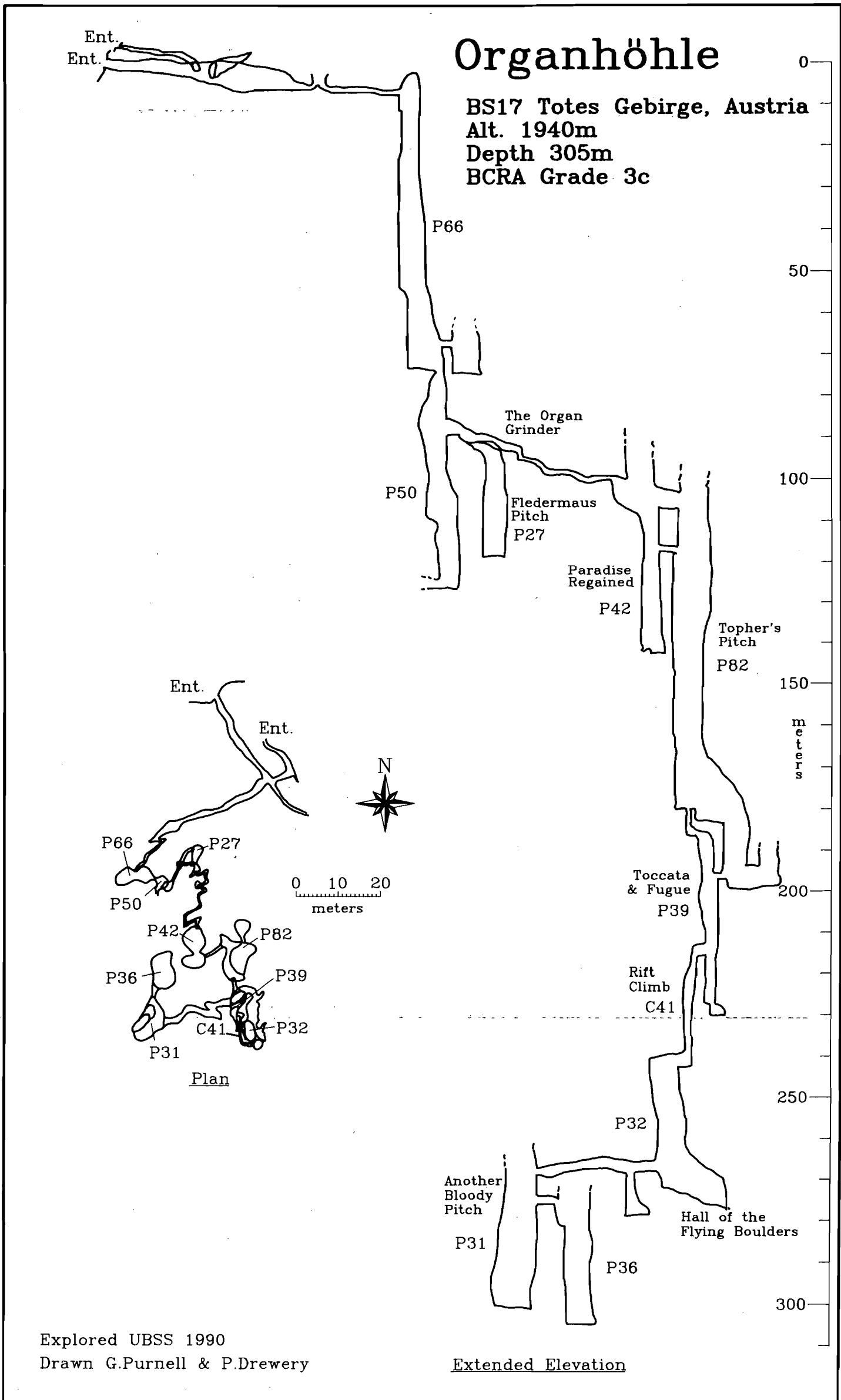


Figure 4 Survey of Organhöhle.