

Full Circle

by Duncan Price

In 1991 Michael 'Trebor' McDonald produced the third edition of the *Somerset Sump Index*. Building on the text written by Phil Davies (1957) and Ray Mansfield (1964) 'Trebor' wrote in his introduction to the entry for Wookey Hole:

If the Cave Diving Group was considered to have been conceived in Swildon's Hole, then it was most certainly nurtured and cradled in Wookey Hole, where many great diving scenes have been enacted, from light-hearted water romping to toil and triumphant discovery – but also to grim tragedy. The present extent of exploration represents the greatest achievement of the CDG in Somerset, although Gough's Cave in Cheddar is running second. The Wookey explorations which started in 1935, are still progressing, albeit at a slow and intermittent pace. The sharp end of the cave deep beyond Wookey 25 represents the very forefront of diving techniques and human endeavour. It is felt that the equipment side of the equation has to catch up with the human side. Divers are perfectly capable of diving and operating at such depths and remoteness, but the use of cylinders is, or has become, awkward and impractical. New equipment such as rebreathers will have to be perfected. It is poignant to note that Wookey explorations commenced with rebreathers and we have come full circle to start considering their use again for deep, remote cave diving.

...in retrospect, these words were somewhat prophetic!

By the turn of the 21st century most people had written off the upstream end of Wookey Hole as impassable. Several divers had put in concerted attempts to dig their way through the blockage that had first defeated Rob Parker in 1985 and no one had ever got as far as him. Gavin Newman had made a film of the cave up to the limit of exploration and most cave divers were content to see the 'end' from the comfort of their sofas. It was, however, the ability to inspect the limit of the cave at leisure which led Rick Stanton to comment to John Volanthen that 'something wasn't right' about the shape of the gravel deposits on the passage floor and that there might be a way around the gravel blockage on the opposite side from the line. A plan was hatched to go and have a look...

Rick Stanton hails from Epping Forest in Essex and wanted to be a cave diver ever since he saw *Underground Eiger* (the film by Sid Perou of Oliver Statham and Geoff Yeadon's traverse from Kingsdale Master Cave to Keld Head) on TV in 1979. Rick recalls that it was his mother who suggested that he might be interested in the programme. Shortly afterwards, Rick went to Aston University where he simultaneously joined the caving club and sub-aqua club so as to fulfil his ambition.

It was almost on the other side of the world, in Peru, that Rick met up with Ian Rolland on an Army Caving Association expedition in 1987. Ian was also a cave diver and had supported Rob Parker on his 1985 dive. Ian was very active in South Wales where he was busy pushing cave passages beyond sumps in Ogof Daren Cilau. Rick was invited to join Ian on his explorations and they were very successful in discovering the Inca Trail (named after their Peru trip) extensions in the cave.

I knew Ian as well, since we were both members of the Chelsea Speleological Society. Although I was born and brought up in Somerset, in the village of Chilcompton – only 12 miles from Wookey Hole – I had taken up scuba diving in my teens before being introduced to caving by a school friend during the summer vacation after my first year at Exeter University in 1983. During my postgraduate studies at Birmingham University I had spent far too much time digging in Agen Allwedd where Ian had helped out on occasion. One thing led to another, and I started cave diving as a means of getting to promising dig sites beyond sumps under the watchful tutelage of Ian Rolland and Martyn Farr.

By 1990, I had moved to Coventry where I had a job with a major chemical company. Rick also worked in Coventry as a fire-fighter (he frequently turned up at my employers whenever the alarm went off). Ian suggested that Rick and I should do some caving together, and we subsequently undertook the excavation of the Pwll-y-Cwm resurgence to the Llangattock caves in the Clydach Gorge in order to establish a convenient 'backdoor'. This facilitated further cave diving discoveries in Daren Cilau.

John Volanthen and I first met in October 1998 when we went for an evening trip in Ogof Capel. My diving watch was still set to British Summer Time and we ended up rushing out of the cave only to find that we had an extra hour of drinking time. John comes from Brighton and first started caving with the Scouts in 1982. The surname 'Volanthen' is unusual, being an anglicised form of the family name of 'Von Lanthen' which was held by John's Swiss grandfather. As a consequence John is frequently known by the affectionate nickname of 'Volleyball.' My dive logs show that whilst I did a fair amount of cave diving with Rick or John, it was not until the Wookey Hole dives described here, that the three of us got to work together.

In 2002, Rick and John combined forces in order to push on from Rob Palmer's upstream limit in Gough's Cave. This required the use of a rebreather to ease the logistics and Rick was well-placed to be an expert in such technology, having been part of the 1998 explorations to Wakulla Springs in Florida led by Bill Stone. The diving there had used sophisticated computer-controlled mixed-gas rebreathers, sonar underwater mapping devices mounted to long range diver propulsion vehicles and submersible decompression chambers borrowed from the marine oil exploration industry. It will not surprise readers to learn that Bill Stone is currently developing autonomous robotic underwater cave mappers for use in the sub-glacial lakes of Antarctica and beneath the ice-covered oceans of Europa, one of Jupiter's moons. Wookey Hole Cave Divers get everywhere!

Rick's rebreather, dubbed the RS2000, was less sophisticated, but nevertheless, most effective. He had put this together from various second-hand components during 2000. The RS2000 did the job in Gough's Cave and Rick was able to surface in a blind airbell in the middle of the boulder choke at the end of Sump 3 first reached by Palmer in 1990.

The proposed dive at the end of Wookey would require a more streamlined rebreather than the one used at Cheddar. Rick devised a novel side-mounted rebreather which could be worn like conventional cave diving cylinders rather than more traditional rebreathers which are commonly worn on the back (or chest). Interestingly, the concept of mounting a rebreather under one's arm

pit was not new to cave diving as Steve Wynne-Roberts had used his innovative ATEA/SEBA side-mounted oxygen rebreather in Swildon's Hole, Stoke Lane Slocker and other caves during the 1960s (Chapter 10). Rick's unit was capable of operating at depths approaching 200 m. Two galvanic cells were used to monitor the breathing loop for oxygen content and a constant mass-flow orifice matched the addition of this gas closely to the diver's metabolic rate so that only small corrections were required. With the appropriate choice of make-up gas (air or Trimix) the wearer could stay underwater at almost any depth for several hours.

The genesis of this device, however, was far more interesting. In order to test the layout of the carbon dioxide scrubber and counterlung, Rick constructed a prototype which used a plastic sweet jar (of the sort that you see on the shelves of traditional corner shops) as a proxy for the scrubber. Despite not having any medium for the removal of CO₂, this device was successfully tested in Coventry swimming baths. Both John and I were building similar rebreathers and there was a bit of a competition between us as to who would dive theirs underground first. In the end we declared it a three-way draw.

Meanwhile, back at Wookey Hole Caves, Vic Cooper and David Haselden donated some cylinders containing suitable gas mixtures for a dive and cached these in 22 during the autumn of 2003 awaiting the push dive. Unfortunately diving access to Wookey Hole Caves was then suspended while public liability insurance cover for caving activities in the UK was resolved.

With the cave reopened for exploration six months later, we were ready to go. John and I planned to do a set-up dive at Wookey on 31st May 2004, but were informed en route that permission to dive had been refused on the grounds that it was a Bank Holiday and the show cave did not want divers in the way of the crowds of tourists. John and I went to Stoke Lane Slocker instead and were defeated by a broken line in Sump 6. The next day, Tuesday 1st June, Nick Lewis, Ian Pinkstone, Laura Trowbridge, John Volanthen and I assisted Rick and a modest pile of gear into the cave. Collecting the gear cached in 22, good progress was made to 24 where Ian and I also had plans to go as far as 25 in support. Unfortunately the guide line was broken at the elbow of the sump from 24 to 25, and only Rick and I had sufficient gas supplies to reach Chamber 25. Here I did a quick bounce dive to a depth of 50 m to see the 'end' for myself before Rick overtook to explore further. I retired to the dismal gloom of the airspace above to wait alone for Rick's return and assist him as required. An hour later, Rick surfaced to say that he'd passed a low arch off to the right of the line, down a gravel slope and through a squeeze to reach the elbow of the sump into an ongoing phreatic tube with an ascending rift in the roof. The arch passage had bypassed the squeeze encountered by Rob Parker in 1985. Rick had reached a new depth of 70 m but had not taken a line reel as he had not expected to pass the old terminus so quickly and easily. Luckily water conditions had been very clear.

With the way on apparently open, plans were made to put Rick and John in the sump simultaneously. This was because they hoped to ascend to further dry passage and explore yet another of Wookey's dry chambers: No. 26! However, during a set-up trip made by John and Ian



*Fig. 28.1
Rick Stanton with
prototype rebreather,
Coventry swimming pool,
February 2004.
Photo by Duncan Price*

Pinkstone on 6th June they found that the guideline between Chambers 22 and 23 had been removed and several of the cylinders left in 24 had been emptied! Mike Barnes also had his sights on the end of the cave and was planning to employ an airlift (driven by over a kilometre of pneumatic hose) to excavate the gravel squeeze at a depth of over 60 m (Chapter 24). Feeling that his project was being 'poached' by Rick after he had put in a lot of preparatory work, Mike had carried out a deliberate act of sabotage. Over the next two weeks the damage was put right and sufficient equipment was carried to Wookey 24 to allow both two divers to pass the squeeze and explore the passage beyond. On 18th June, Rick and John were efficiently escorted to Chamber 24 by Nick, Ian and I (Laura having dropped out in Chamber 9 due to ear clearing problems). Rick led off followed by John – the latter using a small chest-mounted rebreather, which although less streamlined than Rick's was easily manoeuvred in small spaces. The roof-rift was examined, but appeared to close down at -48 m. Line was laid down a 2 m diameter tube in a north-easterly direction but after a couple of turns the route ended in what appeared to be a pot of about 3 m in diameter. The floor of this pot was at a depth of just over 70 m, but was full of large angular boulders through which the current seemed to rise. This was 70 m beyond Parker's 1985 limit. Ian had to leave the cave early, meaning that Nick and I had to do most of the work of getting the gear out.



*Fig. 28.2
Rick Stanton modelling the latest
in thermal protection,
19 July 2004.
Photo by Duncan Price*

The next trip took place on 3rd July. Again, Rick and John were put in the water, supported by Andy Chell, Jon Beal, Gary Jones, Nick and myself. Although the aim of the dive was to take another look at the terminal choke with a view to calling it a day the divers surfaced optimistic that with the right gear (lump hammer, crowbar and lifting bag) the blockage could be shifted. Rick's shift pattern as a fire-fighter now dictated that the next trip took place on a Monday so that only Andy, Jon and I were available. Even so, on July 19th a cut-down team sent Rick and John off and sat down at the campsite for a series of hot drinks to wait. An hour later, Rick returned to say that the electronic oxygen display on his rebreather was malfunctioning and he'd been unable to get to the end. The problem was traced to a new battery which was packing up below exactly 50 m depth. John came back after two hours away, having managed to pull the key boulder out only for it to slip back into place. With John and Rick off to the France for a cave diving expedition, the sherpas took a much needed summer break.

It was business as usual on September 5th, with the regulars – Andy, Jon and I – joined by Pete Mulholland and Jo Wisely in support of Rick and John. Rick was delayed in Chamber 9 because he had to fix the oxygen supply regulator for his rebreather, but the divers set off from 24 in good time. The boulder at the end of the sump was moved aside enough to enable John to back through with Rick waiting on the downstream side. Mindful of the awkward return, John confirmed that the way on was open beyond and, with some difficulty, squeezed back to join Rick.

Just over two weeks later the team from 3rd July escorted the divers to Chamber 24 once more. Gavin Newman was also in attendance with a video camera to record the proceedings. Rick and John were interviewed before they set off and the sherpas sat down for a hot meal at camp. Rick

and John came back after a couple of hours, very cold but happy to have explored another 70 m of passage which ascended to the lip of another pot at -59 m where it was deemed prudent to return. Significantly, Rick and John had reached -75 m and -76 m, surpassing the previous record of -72 m achieved in Speedwell Cavern, Derbyshire. Worryingly though, Rick was low on the Trimix required to run his rebreather. When he looked at his contents gauge, he was heard to remark 'I've got some gas left.' When asked to elaborate on this, he explained that it was 'enough but not plenty!' Gavin had him repeat this for the benefit of the video camera and more interviews followed before the team made a speedy exit to the usual drinks (at Rick and John's expense) in the Wookey Hole Inn where they chatted to the owner's son, Gerry Cottle Jr., about their escapades.

Another visit to Wookey Hole took place on 29th September 2004. Ever mindful of the need for good public relations, the team was met by the press at the cave. Radio and TV interviews were given and celebratory champagne was drunk (with the divers in their gear) in Chamber Three. After the toast of 'Chamber 26 – and beyond!', and with Rick and John still being fêted by the media, the support divers slipped into the water for a slightly inebriated swim...(I do admit to being more inebriated than the others as I had downed Andy, John and Jon's bubbly since they don't drink).

The last push of 2004 had to be aborted owing to high water conditions. A set-up trip had taken place on Saturday 23rd October in preparation for the push on the following day. I had cached some cylinders of Trimix for a tourist dive through the gravel squeeze at -65 m earlier in the year and carried a large cylinder of Nitrox-40 and a smaller tank of pure oxygen to get me from Chamber 24 to Chamber 25 and back (including decompression). High water levels made the planned dive impossible and further activities would have to wait until the following spring.

In comparison to the drama of 2004, the continuing underwater exploration of Wookey Hole in 2005 was of a different character. Trips in 2004 had been on a somewhat impromptu basis and of an alpine style whereby the team turned up (often midweek) and took all the gear (save some of the cylinders which seemed to live in the cave) in and out on every push. At the start of the 2005 'Wookey Season' a well-planned list of dates for trips was agreed between the lead divers (Rick and John) and the 'National Union of Rebreather Porters' (as I dubbed the support team). By request, the 2005 season's dives were to take place at weekends and thus had to fit in around Rick's shift pattern as a fire-fighter. This meant that unlike 2004 there was often an audience of people who could be persuaded to help carry equipment up to the dive base in Chamber 9.

It was not until 14th May 2005 that my deep dive beyond Chamber 25 eventually took place. Supported only by John Volanthen from Chamber 9, we made good time to Chamber 24. Wearing a thick wetsuit, I wore two sidemounted 7 litre cylinders of Trimix plus another 7 litre cylinder of Nitrox-40 and a further 7 litre cylinder of oxygen. The intention was to dive from Chamber 24 though to Chamber 25 and drop off the oxygen at -6 m beyond this, then carry on down to -25 m on the Nitrox before staging this tank and continuing on the helium mix to pass the squeeze.

Fig. 28.3
Duncan Price, post diving
to -70 m, 14 May 2005.
Photo by Antoinette Bennett



Fig. 28.4
John Volanthen after helping
Duncan (above), 14 May 2005.
Photo by Antoinette Bennett



Rather than a pure tourist trip, the dive was being undertaken to ensure that the route through the gravel-filled arch was still passable for future dives by John and Rick. Ear-clearing problems delayed my exit from 24, but by the time I had dropped off the cylinder of Nitrox, I was on a mission to get as far as I could. Viewers of the film by Gavin Newman of the old end of Wookey will have seen Rob Parker's line disappearing into the sand. Actually being there (with a clear head) is like being part of cave diving history.

Just before Parker's limit a newer, thin line led off to the right through a low arch and then descended down a mobile gravel slope. Even in a very streamlined rig, I was aware of the gravel running down behind me when suddenly I popped out in a little chamber at the base of the slope with the bank of gravel behind me. Above my head was a blind ascending rift that had been probed by Rick in 2004, whereas ahead and to the right, the cave passage continued as a narrow rift to the next restriction. I had no intention of seeing this as I was already at nearly 70 m depth – in a wetsuit! Turning around, I had to clear the gravel that had slumped in behind me in order to get out but the rest of the dive was uneventful, if a little chilly. Chamber 24 was reached after only an hour's absence and we managed to exit with all the spent cylinders from the day's dive after a 5 hour trip.



Fig. 28.5
Charlie Reid-Henry,
12 June 2005.
Photo by Antoinette Bennett



Fig. 28.6
Jon Beal, 12 June 2005.
Photo by Antoinette Bennett

Another major push took place just over a month later on 16th June. Rick and John were supported by a strong team of Jon Beal, Andy Chell, Tim Morgan, Gavin Newman, Charlie Reid-Henry, Laura Trowbridge and myself. I was roped into transporting a cylinder of oxygen to Chamber 25 for decompression purposes. Gavin had also come along with an underwater video camera to shoot John and Rick as they set off. Tim took the opportunity to visit Chamber 25 using my gear. Although the gravel squeeze was open, there was some concern that the boulder choke beyond might have moved. In the event, the way on was still passable allowing Rick and John to progress beyond the lip of the pot at -59 m. They dropped down a steeply inclined shaft to -63 m, then again to -75 m where the passage turned into a meandering rift as the floor fell away. John stopped at -78 m but Rick continued alone and followed the bottom of the rift at a depth of 90 m for a short distance before prudently returning to base. Back in Chamber 24 the sherpas were having a miserable time of it. The air quality was poor and none of the lighters would work. Eventually, Tim soaked the cloth from my camera gear in methylated spirits and managed to spark it alight after drying the lighter on Gavin's film light. It is questionable whether Tim really needed to have used all of the rag, but at least everyone could have a brew. By the time that John and Rick returned the sherpas were keen to get out. That it was also a Sunday night, and everyone had to work the next day, didn't help matters.

The next trip took place on 2nd July. Because of the depth and distance from base John and Rick elected to dive separately from now on as it was clear there was not going to be an easy route up to dry passage. The two had continued diving together both in the forlorn hope of this possibility and as a contingency against damage to equipment during transport through the cave. Due to the gear-intensive nature of each venture, should there be a problem with one set of equipment on the approach, then the 'mission' could still go ahead with the other diver. With only



Fig. 28.7.
Andy Chell, 12 June 2005.
Photo by Antoinette Bennett



Fig. 28.8.
Gavin Newman, 12 June 2005.
Photo by Antoinette Bennett

Fig. 28.9
Rick Stanton at dive base in 24
with Charlie Reid-Henry and
Gavin Newman, 2 July 2005.
Photo by Martyn Farr

one exploration diver the logistical mountain was now somewhat eased. John was going to use two rebreathers – his chest-mounted unit that had been employed on previous dives and his own side-mounted rebreather, like Rick's, but smaller. Gavin Newman was keen to get some footage of the cave beyond Parker's limit so Rick was put into the sump with the aim of filming up to the dug out boulder choke. Martyn Farr was also present to take some still photographs so the dive base was all rather crowded. Unfortunately John was unable to make progress through the gravel squeeze with both rebreathers and has to turn back. Rick got to the second squeeze but on surfacing found that the camera had turned itself off. Not a successful trip and a re-think was needed.

A few weeks later on July 23rd everyone was back for another go. Technically it was Rick's turn to dive, but John had streamlined his gear and was ready for a second attempt so it seemed fair to let him have another chance. Gary Jones and Gavin Newman had helped set up equipment in the cave mid-week prior to the trip and a smaller team of Jon, Charlie, Rick and I put John into the water for the push. Clive Westlake joined the sherpas in 24 after a couple of hours to help carry out the gear. With lower water levels than in June the sumps from 24 to 23 were largely open and there was improved air quality at camp. Rick was rather bemused to find himself one of the support team for the first time. John was able to push on from Rick's limit, laying another 30 m of line, initially going up to -80 m, and then descending again to -90 m in a chamber where the water appeared to rise through boulders in the floor. The dive took over four hours and John was adamant that he'd gone as far as he felt he could, and that it was Rick's turn.

The divers took their summer break and reconvened at Wookey on 17th September in preparation for another solo push – this time by Rick, who had only just returned from a cave diving trip to France. David Haselden and Brian Judd turned up to help Rick, John, Charlie and I with the set-up trip to 24, but in the event both Brian and Charlie retired early with various problems giving the smaller team a bit of a challenge to transport all the extra gear to the end.

The next day the gang was back Newman on hand to take surface Other familiar faces were on Bennett, Helen Rider, Jackie – to assist, this being the final year. Rick was launched into

at Wookey with Martyn Farr and Gavin photos and shoot more video. hand – Antoinette and Harriet Ankerman and Lee Hawkeswell scheduled exploration of the the water at Chamber 24 and

Fig. 28.10
Rick Stanton, about to dive
on 2 July 2005.
Photo by Gavin Newman

Fig. 28.11 John Volanthen,
Chamber 24, 2 July 2005.
Photo by Gavin Newman





Fig. 28.12 John Volanthen and Rick Stanton, with dressers Jon Beal and Andy Chell, Chamber 24, 2 July 2005. Photo by Gavin Newman

was accompanied by John Volanthen to about -40 m in the final sump. Here John left a back-up rebreather for Rick to decompress on in an emergency. Rick also carried a small 'helmet cam' built by Gavin to film some of the passage en route to the end. This time everything worked. Rick reached John's previous limit and confirmed that the route ahead was blocked by boulders. So far in, and at such a depth, the prospects did not look hopeful. However, Rick reckoned that if a diver could pull a few of the rocks aside, it might be possible to squeeze through by removing most of his equipment. The choke however, is unstable with friable walls. A very low route ahead could be seen to continue for a few meters beyond this point – so it was not too inviting. Whether this will ever be attempted by Rick, John, or anyone else remains an unanswered question.



Fig. 28.13
Jon Beal and Duncan Price in,
Chamber 9 after the final dive
of the 2005 season,
18 September 2005.
Photo by Martyn Farr



Fig. 28.14 John Volanthen and Rick Stanton, Chamber 9, 18 September 2005. Photo by Martyn Farr

Rick's last dive on 18th September 2005 was nearly five hours in duration, of which one hour was spent beyond the 1985 limit, and required two rebreathers, a heated undersuit and endless patience by the sherpas: Jon, Brian (who came in behind the others on his own) Charlie, John and myself. Some equipment was left behind and removed later on a clean-up trip under high water conditions in December 2005. The final sump in Wookey Hole had been extended upstream by a modest 230 m since Parker's dive and remains (now at -90 m) the deepest cave dive in Britain. Gavin Newman was able to use the footage from the 2004 and 2005 campaigns to provide an up to date conclusion to his *Wookey Exposed* film.

A return match is not being actively considered, but is also not discounted. The technology exists to enable a diver to operate at such depths, but the physiological problems of extended decompression in such conditions, to say nothing of the psychological barriers of the dangerous and unstable squeezes at such great depths, now present new challenges to future explorers. Wookey Hole remains the unconquered Everest of British cave diving.

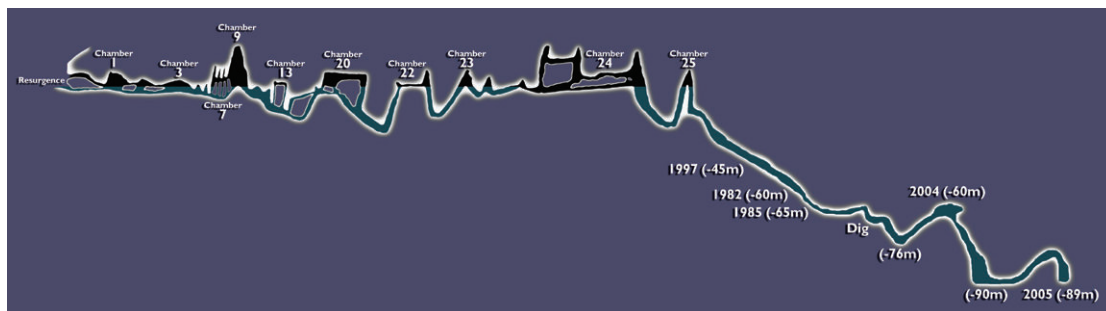


Fig. 28.15 Extended section by Gavin Newman and Jon Volanthen



Fig. 28.16
Rick Stanton sets off from Chamber 24 on 16 June 2005 followed by John Volanthen.
Film Still by Gavin Newman



Fig. 28.18
Rick Stanton films himself squeezing through the 2004 breakthrough. A 12 litre cylinder pushed ahead of the diver gives scale to the passage.
Film Still by Gavin Newman



Fig. 28.19
Illuminated only by the diver's helmet-mounted lights, the cave continues...
Film Still by Gavin Newman



Fig. 28.17
The way on into new territory as revealed by Gavin Newman's video footage (Chapter 27), filmed by Rick Stanton using a helmet-mounted camera on 18 September 2005.
Film Still by Gavin Newman

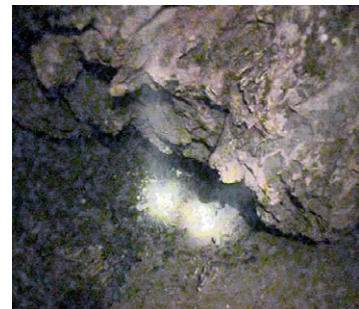


Fig. 28.20
Even if this was in a dry cave, it would not be appealing! The excavated squeeze at ~70 m.
Film Still by Gavin Newman from footage shot by Rick Stanton, 18 September 2005

Fig. 28.21
Wookey Hole Cave, 2010.
Survey drawn up by Duncan Price

