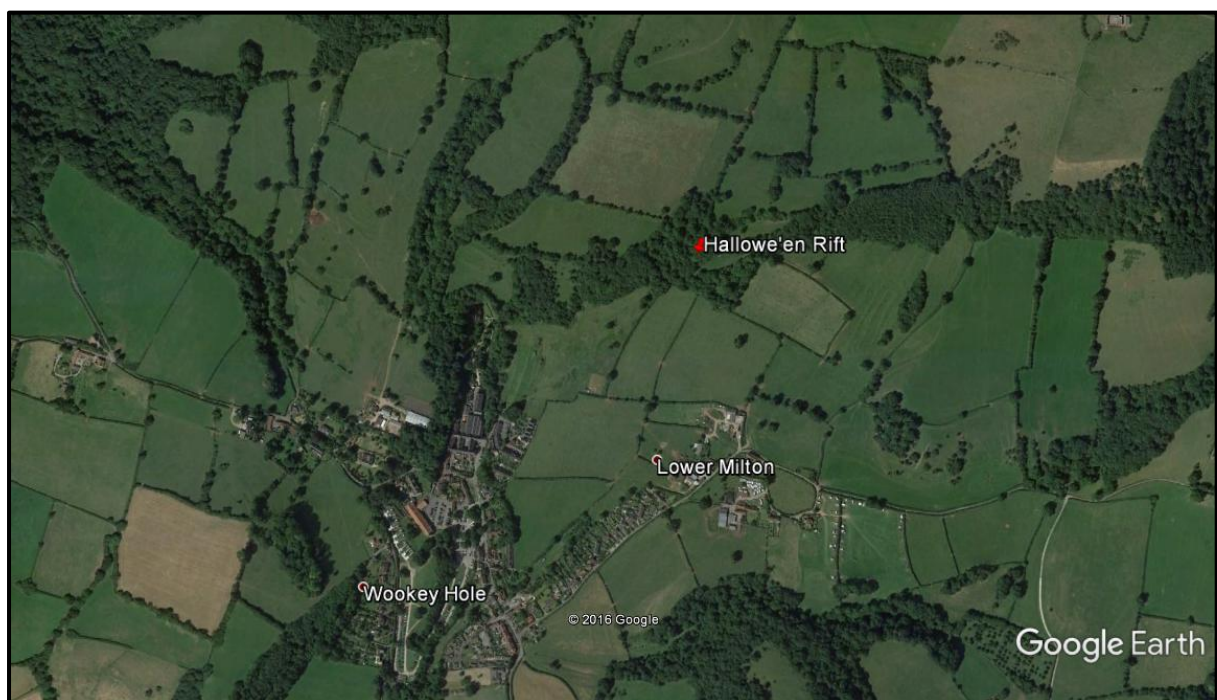


## The research and exploration of Hallowe'en Rift, Mendip Hills: the personal logbook of Vince Simmonds.



### Introduction

This logbook is a record of the excursions and other observations involved in the research of the cave's origins and further exploration of Hallowe'en Rift; a cave, so far, formed within Dolomitic Conglomerate of Triassic age.



The exploration of Hallowe'en Rift was started in 1982 by Trevor Hughes with other members of the Bristol Exploration Club, then during the early 1990's Vince Simmonds and Graham

Johnson with other, mostly local diggers were active at various locations within the cave, including the start of the present dig in December 1991.

The current phase of research and exploration was commenced in 2009, with much of the early work being carried out by Vince Simmonds and Alex Gee, now the regular team includes Rob 'Tav' Taviner, Graham 'Jake' Johnson, Nick Hawkes, Paul Brock, Jonathon Riley and Matt Tuck. John 'Tangent' Williams has been known to lend a hand, on the odd occasion, and there has been added input from Bob Smith, Roz and Callum Simmonds, a guest appearance by Ray Deacy while on a visit from Australia, and the first group meet by several members of the Grampian Speleological Group.

## Geology

On the Mendip Hills, the Dolomitic Conglomerate mostly comprises clasts of Carboniferous limestone cemented into a matrix of sandy marl or fine-grained limestone debris, locally derived material from the Old Red Sandstone and Quartzitic Sandstone Group is also present. The rock clasts are angular to rounded and range in size from varying sized gravels to very large boulders. The Dolomitic Conglomerate forms bold crags, it might be eroded into gorges, and it can support underground drainage systems including caves and swallets and is the locus for extensive lead/zinc mineralization. The formation represents Triassic scree and outwash fans adjacent to the ancient hills of Palaeozoic rocks. It fills 'fossil' wadi's or gorges that have been cut into the hills. Recent erosion has partially re-excavated some of these gorges, as at Burrington Combe.

The conglomerate found on the Mendip Hills has, in many cases undergone considerable secondary changes, such as silicification, haematitization and dolomitization.

Silicification is the result of a metamorphic process known as metasomatism, where the local rocks are changed by heat, pressure and fluids in which the chemical composition of a rock is changed significantly, usually by the action of fluid flow. This process is mostly seen in the rocks along the northern flank of the Mendip Hills and further away at Broadfield Down.



*Boulder of Dolomitic Conglomerate removed from Hallowe'en Rift, the purple-red colour is the result of high iron content and evidence of haematitization.*

Haematitization is the conversion of the conglomerate into an 'earthy' iron ore known as 'red ochre'. The presence of all gradations from unaltered conglomerate to impure haematite rock show that the formation of the latter is the result of metasomatic replacement of calcium carbonate by haematite.



*An exposure of surface weathered Dolomitic Conglomerate [slightly silicified] in Harptree Combe.*

The most widespread form of alteration is dolomitization, hence the name 'Dolomitic Conglomerate'. All stages of dolomitization are present, both matrix and clasts showing varying degrees of alteration. Dolomitization is usually accompanied by hydration or partial hydration of the originally disseminated haematite to limonite so that macroscopically the colour has changed from red to yellow and yellow brown. Dolomitization affects more than one level in the Dolomitic Conglomerate though it is most marked in the upper parts of the succession.

Typically, the dolomitic conglomerate is termed either breccia or conglomerate, these are each defined by clast angularity, generally breccia is more angular while conglomerate is more rounded, of course it must be emphasised that the boundaries between the rock types is blurred and there may be a high degree of variability. The angularity or roundness of the clasts within breccia/conglomerate might be used as evidence of the amount of transportation that has occurred, i.e. more roundness might indicate greater transport/higher energy. Clast size might also be a factor, for example a smaller size would require less energy to be transported a further distance than would a larger rock.

### **The cave morphology**

From the base of the entrance there are passages branching to the west and east. Much of the early exploration was to the west of the entrance, that exploration largely petered out by the mid-1980s, most of the cave exploration has continued, since 1991, to the east side of the entrance and this work continues. Therefore, this interpretation has focussed upon the east series of the cave where most of the exploration work and subsequent discoveries, although

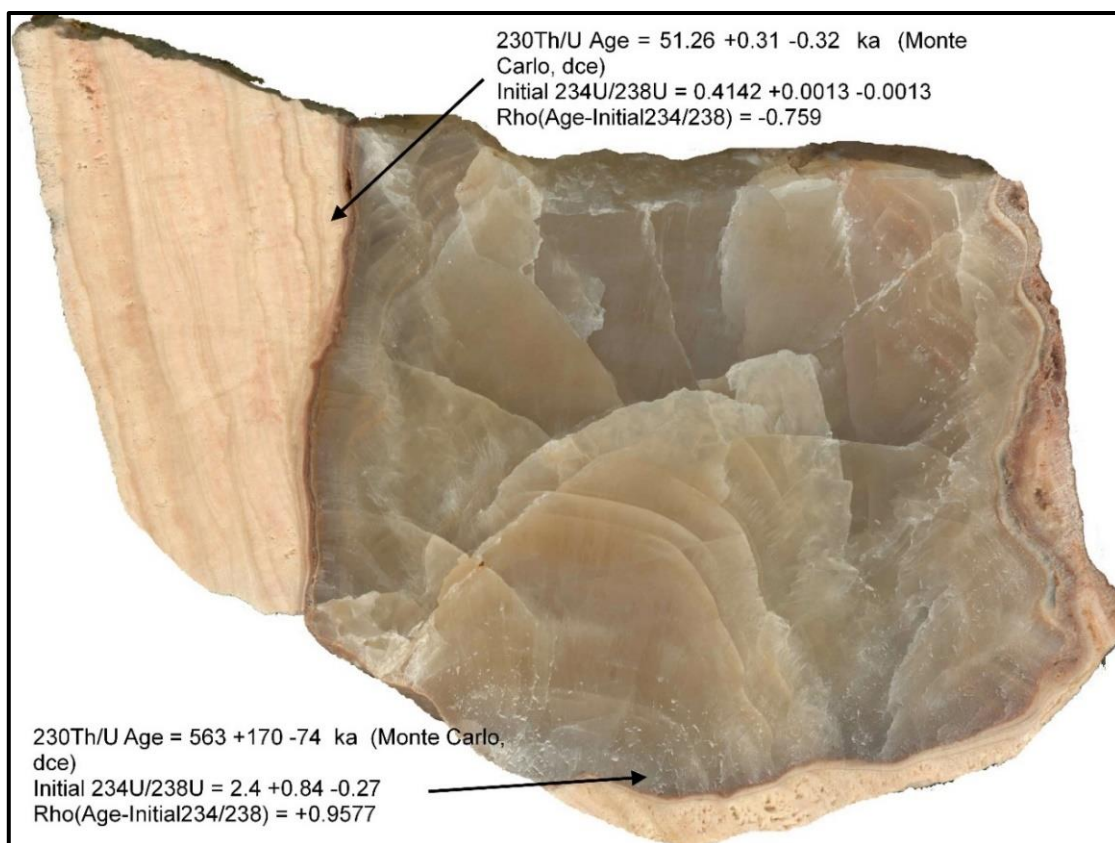
small, have been carried out and, therefore a better assessment of the processes of formation involved can be made.

Hallowe'en Rift comprises a series of approximately north/south aligned rifts or fissures, some of which have been open to the surface but are now filled by sediment. The rifts are interconnected by bedding planes with phreatic development and some of these are particularly low. It is difficult to describe the cave formation in conventional terms along joints and bedding as conglomerates are not formed in the same manner as limestone being more random in nature. There are roots visible in various locations within the cave with diameters up to c.10mm. The cave formation is likely to occur along cracks and fissures induced by a variety of factors be it settlement, desiccation cracking, or earth movements of the parent material. There is some evidence for hydrothermal activity in the local area.



*An exposure of Dolomitic Conglomerate in Harptree Combe showing good sequence of wadi deposits.*

Hallowe'en Rift has, in places, significant thicknesses of calcite flowstone, and some of this has been dated to  $563 \pm 170 - 74$  ka and  $51.26 \pm 0.31 - 0.32$  ka (*the dating was by courtesy of Christopher Smith, University of Bristol*), the latter date has some correlation with dates obtained from speleothem development in Rhinoceros Hole which is located to the south west of Hallowe'en Rift. There are some areas of decent, if small formations exhibiting a good range of colours from white to orange red, stained by the high iron content in the rock.



The sediments that are found within the cave generally comprise variably red to red-brown silty sand with cobbles and boulders of dolomitic conglomerate and calcitic flowstone. These are occasionally interspersed with grey silty sand and yellow and greenish-yellow slightly silty sand; this layer has tended to be toward the base of sediments in deeper sections of the cave.

Three samples were taken for chemical analyses on 7<sup>th</sup> September 2009 and the results are presented below:

Determinant		Surface	Red/Brown	Grey
Arsenic	mg/kg	42	47	54
Barium	mg/kg	179	160	361
Iron	mg/kg	36500	43400	52130
Magnesium	mg/kg	3925	4468	4724
Manganese	mg/kg	3147	1988	7944
Zinc	mg/kg	487	810	384
pH value	Units	6.4	7.3	7.3
Carbonate	%	3.8	14.3	1.8
Soil organic matter	%	0.9	0.8	1.2

**Table 1. Results of the chemical analyses of 3no. sediment samples collected 07/09/09.**

Samples were taken at the surface to provide background data and underground from successive layers c.5 metres east of the base of the entrance in the south bank of the approach passage. The sampling area is accessible to this present time should the tests be repeated at any time.

As expected there were high levels of iron ranging 36500 to 52130 mg/kg, the grey sample having the highest level; low soil organic content for all samples ranging 0.9 to 1.2%; the grey sample has a higher manganese content at 7944 mg/kg, hence the difference in the colour of the samples tested and a higher barium content at 361 mg/kg, it also has a higher magnesium content at 4724 mg/kg. The carbonate values were a bit of a surprise with the difference between the red/brown sample 14.3% and the grey sample 1.8%, it is possible that manganese has replaced the carbonate, this replacement of elements might include barium; the surface sample had a value of 3.8%. The red/brown sample had the highest zinc content at 810 mg/kg compared to the grey sample 384 mg/kg the surface sample was 487 mg/kg. The sample taken from the surface revealed a slightly more acidic pH of 6.4 compared to the samples taken below the surface both were pH 7.3; possibly resulting from exposure to weathering.

These results are difficult to interpret in isolation and many more samples would need to be tested before any real trends might be revealed.

There have been some interesting discoveries along the way. Whilst digging Merlin's passage an interesting deposit of calcified sediment filling a narrow fissure was found. The sediment filled the fissure and carbonate rich water seeped through the sediment becoming calcified. Looking at it closely it is possible to see that the sediment was slowly oozing down the fissure before solidifying.



*This piece of calcite flowstone also found in Merlin's passage. The calcite bands at lower end of this sample are beginning to degrade while the upper bands are still competent, the mid-section is a mixture of degrading and competent bands. the bands are very thin and many of the layer's upper surface stained red probably from sediment flow.*



**References:**

Green, G.W. et. al. 1965. *Geology of the country around Wells and Cheddar*. HMSO, London.

Kearey, P. 2001. *The New Penguin Dictionary of Geology*, 2<sup>nd</sup> Edition. Penguin.

## The digging logs:

*[Prior to this period most of the known cave was to the west side of the entrance shaft. The early trips have been transcribed from my personal logbooks written at the time of exploration, some small grammatical alterations have been made and some, but not all, metrification of measurements]*

### 11<sup>th</sup> December 1991 – the early years!

*With Jake.*

It makes a change to do something new on Mendip albeit small. A drop down through a 4-metre entrance into a short crawl (getting a skip on the way) into larger bedding with heavily calcited roof. To the left a short slither soon closes, ahead a crawl getting tighter in places also closes after about 30 feet but looks like a promising dig site for Tuesdays (*this had previously been dug by 'Quiet John' Watson, BEC*). To the right of the entrance crawl about 30 metres of grovelling leads after a squeeze to a small calcited aven and Trevor Hughes' old dig. The dig looks hopeless, seems to be a blank wall but we cleared some bang spoil away, filled the two skips and dragged them back to empty the spoil on the surface. An interesting night, previously it had taken us about ½ hour to find the entrance in the dark, most of the time spent thrashing about in the woods and brambles, ended up standing right next to it!

### **15<sup>th</sup> December 1991**

*With Jake and Nick.*

The start of the 'not the blank wall' dig. Just like digging in Daren Cilau, dry and sandy following a tiny airspace. Not the place for a great deal of clothing as it gets very warm; a helmet is also an encumbrance it is better with a zoom (*a headtorch made by Petzl*) and a bobble hat. We need to get a small skip system set up to get the spoil back. Progress is relatively easy, but you do have to be careful not to block yourself in as I did, Nick had to dig the squeeze out so that I could get back out. A very productive couple of hours; and it won't be too long before Trevor comes down to see what we are up to.

### **17<sup>th</sup> December 1991**

*With Jake and Rich Blake.*

We didn't bother with helmets this trip, just a hat to keep the mud out of your hair and a Petzl Zoom for light. Also, had a skip for spoil removal which made life a great deal easier. Shifted about 15 skips back, digging is a mixture of rock and very dry mud, thought we could feel a faint draught tonight. Brought home a couple of pieces of broken stal.

### **18<sup>th</sup> December 1991**

*With Jake, Rich, and Nick.*

This is just a fun place to be especially with a spliff and a ½ litre of Amaretto – 'the Daren digging experience'. We also managed to get some digging done. An airspace has opened although some hammer and chisel work is needed before further progress can be made. We hope we can get away without using bang for a while. Also, a lot of mud models (*sculptures*) seem to be appearing probably something to do with this being such a mellow place.

Hallowe'en Rift is located on the hillside above and to the east of Wookey Hole (NGR ST 5353 4809) at an altitude 425 ft. there is a possible connection to some of the passages beyond the sumps in the Wookey Hole cave system.

### **19<sup>th</sup> December 1991**

Got bored at home alone so decided to pay a visit to Hallowe'en Rift. The idea was to suss out a solo dig at the bottom of the entrance rift opposite the crawl (*this is the start of the dig to the east side of the entrance where we are currently working*). When I arrived, I decided that I needed the jemmy at the dig site (*west of the entrance*) so I went to the end to get it. While I was there I managed to pull out some rock flakes to get a better look at the airspace, it looks very good, I could see a space about 4-6 inches high, 3 feet wide and about 6 feet in length, the roof at the end appears to dip down. I managed to find the chisel and tried to chip away the rock blocking the way on but didn't make too much of an impression on it, a couple of shot holes and some bang would be much more effective. After that I returned to the entrance and started the solo dig. A bit of scratching about and I managed to get to a small aven, with a squeeze; a large rock was causing the constriction, so I spent some time removing it; after that spoil removal was a lot easier. The spoil consists mainly of dry, sandy mud although there are a few rocks in it. Managed in all to gain 5-6 feet but can't really see a clear way on perhaps after a couple of digging sessions something might turn up. There were plenty of midges and mossies buzzing about. There are some decorations, although they are old and fractured. A very pleasant way to spend a free evening, much better than sat at home watching TV by myself.

## **20<sup>th</sup> December 1991**

*With Jake and Tony 'J'Rat' Jarratt.*

Yes, again! We went down to see if we could remove the constriction. The new BEC Bosch drill was used on its first mission and a brand-new drill bit, it cut into the rock in no time, soon had 4 shot holes, it took a bit longer for J'Rat to prime the holes. While this was going on Jake ran out the wire and went for a play in the entrance dig. When we set the charge off all the leaves around the entrance jumped, well moved anyway. Hopefully the object is no more, and we can now make a little forward progress.

## **22<sup>nd</sup> December 1991**

*With Jake.*

We cleared Friday's bang debris and tried hammering some more of the constriction away, but another bang would be more productive. The air gap looks very inviting; might have another attempt at hammering with a heavier hammer and larger chisel. J'Rat's off to Ireland for a week so no bang or we'll have to ask someone else.

## **26<sup>th</sup> December 1991**

*With Keith Savory.*

I persuaded Keith to come over and put a bang in at the end. We plastered a stick to try and loosen things a little. Only took one hour from the gate and back. Hopefully there will something to shift when we get a chance to go back down.

## **31<sup>st</sup> December 1991**

*With Jake and Rich.*

The last trip of the year – anymore will be another rescue!

We cleared the bang put in by Keith a few days ago, and one more bang might get us into some caveable passage – not much perhaps but still some.

## **2<sup>nd</sup> January 1992**

Keith phoned to say he couldn't make it. so, I ventured up the hill to drill the shot holes ready for Keith tomorrow. At last I also remembered the heavier hammer. I tried hammering for a little while but didn't make any progress so drilled the shot holes and called it a night.

## **4<sup>th</sup> January 1992**

*With Jake and Rich.*

Keith did the business and it had worked superbly. We had plenty of spoil to remove and the obstruction was no longer there. Rich managed to squeeze as far as we could see and reckoned the only air space was off to the left; we reckon on a length found as 1.72m, because that's how tall Rich reckons, he is. We are going to completely dig out the end chamber to give us more room to work and then we may also get a better idea of what to follow.

## **7<sup>th</sup> January 1992**

*With Jake and Rich.*

Bloody awkward digging! Scrape back mud and rocks into a pile and then reversing 10 feet dragging the mud and rocks with you, load it into a skip and then go back for some more – we love it really! At the end of each session Rich (anorexic whippet) managed to bet a better recce of the furthest points and reported air spaces to the left, right and straight ahead. A little tidying and excavation required before we might gain access, but it sounds promising.

## **8<sup>th</sup> January 1992**

*With Rich and Andy Smith (the 'Apprentice')*

When we had started to dig, it was relatively dry and comfortable but now a lot of drips have appeared and so have some puddles making lying about a trifle damp, at least the digging is still dry. We spent this session clearing the loose stuff that Rich had made last night; it is much tighter at the end and it is becoming a little desperate. Rich and Jake are off to foreign parts, so I shall have to come up by myself and spend some time trying to lower the floor.

## **14<sup>th</sup> January 1992**

J'Rat said he might be over, but he didn't show up, so I had a night by myself. I went to the end and chiselled off some of the floor to make it a little easier to get to the very end. I pulled the skip back, loaded it up and then went back to have a go at the opposite side of the entrance rift. There is one rock that just won't come out although it's loose there's always something just stopping it; I'll get it next time!

## **15<sup>th</sup> January 1992**

*With Andy Smith.*

I was in two minds about going until Andy phoned – so off we went! Walking up the hill the farmer drove across for a chat, he said that he would like a more permanent entrance to the cave for safety reasons; I replied that it shouldn't be a problem. Back to digging, I made a small tray to drag spoil back instead of having to brush it back with your hands, and it worked a treat. We started to digging-out the floor to make what was caveable more digable; and I seemed to detect a very faint draught. Good session.

## **21<sup>st</sup> January 1992**

*With Tav.*

Now that the baby has been born Tav has decided to come out of retirement. The lid that Trevor had fitted on Saturday is a good job although some tidying up may be required. We carried on digging the loose stone and mud away, but it wasn't getting any easier. It seems to be closing a bit or the mud is not as deep as we had hoped, and we've got down to another mineral band. There is still a slight movement of air. Tav was quite impressed and thought the dig "looked promising".

## **25<sup>th</sup> January 1992**

*With Roz Bateman and Matt Tuck.*

We managed to scrape off a few more skip loads of mud; a bang is needed just to break up the band of calcite in the floor. We then crawled up to Trevor's dig to have a look and make a little trip of it.

### **28<sup>th</sup> January 1992**

*With J'Rat.*

As I was walking down to Bat Products J'Rat was trying to phone me, we were both thinking of blowing up the end of Hallowe'en Rift. When we got there, it was a very quick trip, 3 shot holes in no time, the longest job was filling the holes, but the deed was soon done. Back to the surface to set off the charge and job done – lovely!

### **29<sup>th</sup> January 1992**

*With Andy Smith.*

We cleared away the debris from last night's bang, it was a little bit 'fumey' but not too bad. The bang had worked well but, unfortunately it seems we need another one [or two?]. A stal [calcite] bank looks to be causing an obstruction, if there was enough room to swing a hammer, we might be able to chisel through it; anyway, J'Rat wants to get rid of the bang he has before he sets off for Vietnam in March. It's getting muddier and wetter everytime!

*[A short break ensued as attention became focused on several other Mendip digs at Welsh's Green, Wigmore Swallet and Stockhill Mine Cave and there was an expedition to Lechuguilla Cave in New Mexico, USA]*

### **2<sup>nd</sup> September 1992**

Nothing much seems to be happening on the top of the hill, so I thought I would go and get the tools from the end of Hallowe'en Rift. On the way-out I decided to have another go at the dig near the entrance. I had a real battle with one particularly large rock but when that was out of the way digging was relatively easy. The site might have limited potential (*okay! I was wrong*) but it is a pleasant solo dig, for the moment. I do not expect it will be long before the spoil needs hauling out to the surface and that will require some assistance. Dug out a nice piece of stal for my collection at home.

### **4<sup>th</sup> September 1992**

I continued to stuff mud and small stones into any place I could get it; pulled out several larger stones and left them at the bottom of the ladder. It is bloody hard work by yourself! There is a small air space to work towards but at this stage it's impossible to say what, if anything is going to develop. Earlier in the day I walked the dog (*Trog*) up to Arthur's Point and looked across to Hallowe'en Rift and I thought that if I can work my way into the hill there is a very prospect of finding something.

### **5<sup>th</sup> September 1992**

*With Jake.*

Another pair of hands certainly made a big difference; we must have made nearly 2 metres. We dug into another small, rifty space 2-3 feet wide, 6-7 feet long and up to 18 inches high but no real way on. The plan is to dig down and see if anything goes that way. There were some big rocks in the way, but we managed to dig either around them or over them, most of

the digging is relatively easy. Jake seems to be suitably impressed another helper and spoil can be dumped on the surface.

### **9<sup>th</sup> September 1992**

*With Jake, J'Rat and Ivan Sandford.*

When Jake and I arrived J'Rat and Ivan were already beavering away, so as they concentrated on digging Jake and I proceeded to remove the spoil to the surface. J'Rat sent back some impressive stones to be disposed of. We had a quick look at the end to see J'Rat had made good progress, the bedding plane seems to continue and J'Rat reckons there's a draught; looks good!

### **11<sup>th</sup> September 1992**

Another solo digging trip, J'Rat had been up last night and shifted a fair amount of spoil; I tidied up some loose crap and cleared a good deal more. There seems to be a 'T' junction with two possible ways on; to the left a calcite block needs to be removed and to the right there are stones, cobbles, and dry mud, both ways on have a small air space. There is a small air movement, but I can't be sure where it's coming from, I don't believe its surface circulation. There is plenty of spoil to be shifted back to the surface now.

I came out to a superb moonlit evening; it was bright in the glades amongst the trees and a beautiful clear sky.

I really do not believe the theory that Hallowe'en Rift was an old resurgence (*as suggested by Willie Stanton*), chatting with Keith it's more likely to be localised drainage, but I suppose the "experts" will argue the toss!

Still it's a fun place to dig and hopefully it will remain possible to work alone if needs be. The new extension is now pushing a good 20 feet.

### **14<sup>th</sup> September 1992**

*Solo*

Nicky (*my now ex-wife*) was working late so decided to have a scratch around for something to do. I started by clearing some of the crap left at the bottom of the entrance, warm work carrying up a rock and then pulling up the bucket – repeated several times. When that was finished had a poke at the end to the left and to the right. There appears to be a small rift to the left, but a bang could be required to gain a better insight, still a little unsure about the air movement. There is a good pile of spoil to be shifted back to the surface; started to feel a bit knackered so only a short session.

### **16<sup>th</sup> September 1992**

*With Jake, Rich, and Ivan.*

Good to see Blakey back after his exploits in Spain and Austria. We cleared all the accumulated spoil before continuing with the digging. Removed several rocks and some mud from the right-hand side before swapping over with Jake; he continued work in the same place before becoming disenchanted. Jake does not have too much enthusiasm for the spot, although I still think it is worth persevering for a little while yet. I'll have to wait until Keith gets back from Ireland and then blow the left-hand side. I will probably continue scratching about by myself if necessary.

Some bloody big cave spiders, with egg sacs, in the entrance shaft.

*[Now interest in the site waned as we put our efforts into several other Mendip sites leading to breakthroughs in Welsh's Green and Whitepit. In the mid 1990's the effort became concentrated in South Wales following the discovery of Ogof Draenen, where there were significant breakthrough's such as the first-round trip and Big Country. There was some sporadic interest at Hallowe'en Rift, but this didn't add to the known length of the cave]*

### **25<sup>th</sup> July 2009 – when things got started again!**

I got up late, much to the dog's annoyance. Finally, though I got my act together and set off for Wookey Hole. Not running today saving all my energy for the Lakeland 100 next week. Plan was to go up to Hallowe'en Rift and look for Stanton's reputed resurgence. Walked around for an hour or so, found not a lot, so headed off towards home. Noted that the soils are very thin on the hillside and much rock is exposed, any bedding seems to run parallel to the hillside. Popped into the Belfry for a chat with Alex Gee and Bob Smith who have started to dig in Hallowe'en Rift and arranged to meet up with them tomorrow morning.

### **26<sup>th</sup> July 2009**

Arrived at Hallowe'en Rift, Alex and Bob were already there along with Duncan Butler (BEC). I slipped on my oversuit and a head-torch and ventured underground to become acquainted with the cave again. First, went down to trace the suggested resurgence site but could find no obvious signs to support the claim. Then went along to an old dig site where I used to dig with Graham Johnson and Richard Blake in the early 1990's. Bit longer and rather snigger than I remember, Alex described it as a 'wormhole'. Returned to bottom of the entrance to assist with the digging effort where Alex and Bob have decided to resurrect another of my old dig sites to the east of the entrance shaft, only they plan to make it much larger!

### **5<sup>th</sup> September 2009**

Met Alex at the Belfry [Buster, my Jack Russell terrier, came too] and we made our way over to School Hill, Wookey Hole from where we made our way up to Hallowe'en Rift. On the way, we noticed a small collapse feature along the path to Hallowe'en Rift and agreed to have a little poke after digging at Hallowe'en Rift. At Hallowe'en Rift I was underground first and set about clearing some bags Alex had filled on a solo effort a couple of weeks ago. Then I got on with the task of passage enlargement. Some interesting sediments were encountered, and discussion ensued, photographs were taken, we then swapped places and I took my turn at hauling. After a couple of hours, we called it a day at Hallowe'en Rift and made our way to the collapse feature noticed earlier that morning. A quick scratch around and we soon decided it was likely to be the top of a small rift, possibly linked to Hallowe'en Rift, but it is too close to the path to open any further and it was backfilled.

### **6<sup>th</sup> September 2009**

*With Alex.*

My turn to haul first, it was a lot easier today as the rope wasn't so slippery. Pulled out several skip-loads of rock, old stal and sediments and scratched around on the surface until Alex wanted a blow. We swapped around and continued in the same vein. Going to take some samples of the sediments discussed yesterday so avoided digging in that area. Underneath the top 75mm – 100mm of sediment there is a tremendous quantity of broken stal, I think that the cave might have been affected by a slip fault, possibly linked to the Ebbor overthrust.

**7<sup>th</sup> September 2009**

Solo. In the evening, I strolled up to Hallowe'en Rift to take some sediment samples for analysis. Sample from the grey layer (2 no. jars), the red/brown layer (2 no. jars) and from the surface (2 no. jars). Difficult to take surface samples to any depth due to the very thin soil cover. While underground I started to break up a large rock ready for removal to the surface, gave up after twice hitting my hand with a mighty thwack!

**Table 1. Results of the chemical analyses:**

<b>Determinant</b>		<b>Surface</b>	<b>Red/Brown</b>	<b>Grey</b>
Arsenic	<i>mg/kg</i>	42	47	54
Barium	<i>mg/kg</i>	179	160	361
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Zinc	<i>mg/kg</i>	487	810	384
pH value	<i>Units</i>	6.4	7.3	7.3
Carbonate	<i>%</i>	3.8	14.3	1.8
Soil organic matter	<i>%</i>	0.9	0.8	1.2

**13<sup>th</sup> September 2009**

*Solo.*

Went down into Hallowe'en Rift to finish breaking up the large rock, this time I was armed with a heavier lump-hammer from home. Soon reduced the rock too small, manageable lumps, then proceeded to dig out another large rock and broke that up as well. Stacked all the spoil at the bottom of the entrance ready for hauling to the surface later. Had a general tidy around before heading off to Trevor Hughes (TH) original Hallowe'en Rift dig started in 1982 – a bit snuggier and longer than remembered. Need to get caving fit again!

**26<sup>th</sup> and 27<sup>th</sup> September 2009**

Couple of good morning digging sessions with Alex. We managed to shift a considerable quantity of spoil and another couple of sessions should see us in virgin ground as it were. Decided to carry on working in line with the roof tube for a while. Consulted the survey and it appears we could feasibly work our way towards Wookey 22. There is a gap of about 80 metres, not sure what the vertical difference is, must ask Trevor Hughes who surveyed Wookey 22.

**30<sup>th</sup> September 2009**

Solo trip with the intention to obliterate the rock/stal lump at the bottom of the entrance, took my heavy-duty lump-hammer to aid in the task – job done! I then proceeded to dig out another load of rock/stal and made another pile to be hauled out. Got my head in as close as possible to the general direction we are heading in and I was certain that I could feel a draught of fresh air – it could be convection from the surface, we must wait and see!

I had a thought that the sediment is the result of haematitic rock breaking down to become ochre – there is considerable iron content – need more analysis!

## **2<sup>nd</sup> October 2009**

Could not be arsed with work, so took the day off and went digging instead. Spent 1½ hours or so digging mixed spoil from the floor and sides, consolidating Wednesday's effort. Roz [my wife] turned up and we cleared the rocks from Wednesday's session. Kept being bothered by large, noisy bluebottles, squatted several but more appeared so gave up squatting them. All in all, a good session.

Digging solo was ok, filled the skip, dragged it to the bottom of the entrance, climbed up and hauled it out, then repeated the procedure again and again.

In the evening made a return visit with Alex, I spent most of the time on the surface hauling while Alex did some digging. Seems to be a rather large lump of stal barring progress in the direction we wish to go, we'll have to go around it, or try and chisel through it, still a bit more to clear away to get a better assessment of the situation.

## **4<sup>th</sup> October 2009**

With Alex, Bob appeared later in the morning. Progress has been hampered by an accumulation of calcite. We have decided to change direction and see if we can work around the obstruction. Just requires a bit more effort – more hammer, chisel, and bar work!

## **11<sup>th</sup> October 2009**

Miserable, grey, wet morning; I was supposed to be getting some help from Roz and Hazel but that didn't happen for one reason or another. Took a bar with me to investigate a little feature I noticed while out walking yesterday in Smokeham Wood, off the green lane that follows the ridge up from Wookey Hole to the top of Ebbor. In one of the small stone quarries is a low bedding chamber with a small rift leading off. Digging was inconclusive, and it is thought the site might once have been dug out by badgers. Over to Hallowe'en Rift, tied the dog to a ladder and started to clear some loose debris, dog then started to growl so exited the cave to find a black Labrador had turned up, eventually it went off with its owner and I returned to the task in hand. I hauled up a few more skip loads until the rain became too heavy and headed down the hill. Roz and Hazel turned up as I was getting changed.

## **14<sup>th</sup> October 2009**

Scratched around for an hour or so, difficult to see an obvious way on for now. Might be an idea to clear the rubbish from the bottom of the entrance and see if there is another way to get around the stal/rock obstruction. I went along to my old dig site to get in some squeeze practice, then on towards TH's old dig to see whether there might be an option along that way.

## **17<sup>th</sup> October 2009**

Alex, Bob and Callum on his 1<sup>st</sup> digging trip, and Buster came too. As planned, we set about clearing the spoil from the bottom of the entrance. I did the hauling while the others went underground. Callum broke up some rocks and went for a little exploratory trip around the other parts of Hallowe'en Rift – not too far though. Bob came to the surface and scratched around with the wall and 'sort of' assisted with the hauling. Cleared all the spoil and made some progress lowering the floor – we had decided to see how deep the fill is in Hallowe'en Rift and to see if there is any evidence of the deposition of sediments.

## **18<sup>th</sup> October 2009**

Alex had arranged a trip to Hallowe'en Rift for Derek Ford [the eminent geologist] and Graham (?). We all met at the Wessex hut and set off to Wookey Hole on a glorious autumn morning. Derek is now in his 70's and a little shaky so needed a ladder and line in the entrance. Quite a discussion ensued, and we looked at fluorescence although not in detail – lamp needs some batteries, so might give it another go by myself one evening. I took Graham for a tour of the dig's, looking at some undisturbed sediments and the fine roof features along the passage on the way to my old dig. We discussed the idea of earth tremors and stal damage and some of my ideas were accepted as plausible. A very enjoyable morning followed by further discussion at the Hunter's.

## **23<sup>rd</sup> to 25<sup>th</sup> October 2009**

*Friday evening: Alex and me*

*Saturday morning: Alex, Callum and me*

*Sunday morning: Alex and me*

We continued to dig down to find a floor beneath the entrance. Still much the same material to be excavated, mostly rock, stal and sediment; and more interesting minerals were uncovered. Sunday morning a lesser horseshoe bat flew into the entrance and was quite curious as to what was going on and it hung around on the wall about 750mm from where I was sitting before plucking up courage to fly down into the rift.

## **7<sup>th</sup> November 2009**

We had agreed an earlier start this morning, but at the Belfry Alex looked rather worse for wear after Friday night frivolities at the Hunter's, and later at the Belfry. We got to Hallowe'en Rift and I let Alex go underground to work off the hangover; Duncan Butler turned up some time later, also not looking too good so when Alex finally wore out Duncan took his place. I spent three hours hauling and my hands were starting to get sore; the rope was very slippery again, even after turning it around. Eventually retired to the Hunter's taking the rope with us for Alex to wash later.

## **8<sup>th</sup> November 2009**

Didn't bother getting to the Belfry too early, it was Priddy fireworks last night and I assumed a party might have occurred – I was right! Some sorry looking people in the Belfry and Alex didn't appear for a little while. Met up with Mark 'Gonzo' Lumley who had arranged to come up and take some photographs of Alex for the forthcoming 'Wookey Hole' book. Eventually got to the cave and I took my turn underground and continued to clear spoil from the bottom of the entrance. We eventually stopped digging to allow for Alex's photo shoot.

## **29<sup>th</sup> November to 5<sup>th</sup> December 2009**

**Longwood valley** – dug open and backfilled an active sink, too much interference from busy bodies! (refer to hand-written logbook)

## **12<sup>th</sup> December 2009**

With Alex and Callum. Best part of a month [or more] since the last digging session – seems there is plenty of lurgy about. Alex did the underground stint, I hauled until the rope became too slippery – was not feeling 100% either – bit of a negative vibe.

### **13<sup>th</sup> December 2009**

Alex had washed the rope to make hauling a bit easier. My turn to dig; carried on downwards exposing the sand layer that Alex had uncovered yesterday. We can now see definite evidence of water transport and put together some sequences of deposition.

Much of the stal at the sand layer (red) appears to have been naturally fractured as there is a coating of sediment all around and no evidence of a clean breakage. Interestingly, the edges are rounded possibly the result of water action.

The thin grey coarser grains may have been deposited as the result of eddying flow or a flood event. The lack of red colour might be the result of winnowing or leaching over time.

Left Hallowe'en Rift with a positive vibe today. Next job might well be surveying so that we can get some fine details recorded. Also, needs a line survey into my old dig to the west of the entrance, this will aid the recording of features such as scalloping and dog-tooth spar, etc.

### **28<sup>th</sup> December 2009**

Surveyed the dig site with Alex, both feeling crap and tomorrows dig session cancelled.

### **23<sup>rd</sup> January 2010**

We carried out a surface profile of a small valley to the east of Hallowe'en Rift. The dig has become a pool so spent some time crawling about and discussing features. Alex bailed out the pool while I returned to the surface.

### **13<sup>th</sup> January to 25<sup>th</sup> April 2010**

***FUR Hole** – got distracted for a while at this site north of Smokeham Wood.*

### **20<sup>th</sup> February 2010**

Alex had sent an email to Charlie Self inviting him to come over and look at FUR Hole and we ended up on a geological and mineralogical field trip. At FUR Hole, we discussed the crystal formation and whether there is evidence for hypogenic origin or pool formation, this was not concluded. Then over to Hallowe'en Rift and sifted through the spoil heap for samples, before I ventured underground to retrieve a possible sample of gypsum, although Charlie suggested it was calcite. We then discussed what I had previously muted to be evidence of earth movements where there are shear zones in the flowstone, particularly noticed in the roof. One lump of flowstone in the spoil heap provided conclusive evidence for an earthquake and will be part of a tabletop/poster presentation at the forthcoming Cave Science Symposium to be held at the University of Bristol (06/03/10). Several photographs were taken.

A fine morning and a warm walk back to the Belfry with a tackle bag full of digging kit and lumps of flowstone.

### **12<sup>th</sup> June 2010**

With Alex and Bob. The return - again! After some discussion, we agreed to try and head north again towards Wookey 22. After a bit of tidying up we assessed the situation and decided to attack the stal blockage. We managed to shift a bit but it's going to be hard work – we need some more wedges to see if we can peel off layers of calcite flowstone. It might be a long-term project...or not!

## **26<sup>th</sup> June 2010**

With Alex and more stal/calcite bashing, slow progress, nothing hauled to surface. It's very warm on the surface and we thought that we could detect a very slight draught, or at least cool air emanating from the end of the rift area – at least that's encouraging.

## **11<sup>th</sup> July 2010**

*With Alex*

Just hacking away at crusty stal and mud, hopefully heading into the hillside – sort off!

## **24<sup>th</sup> and 25<sup>th</sup> July 2010**

With Alex. Saturday: spent the morning clearing away the debris that has accumulated, using the mattock to clear away the floor to give more space. I spent two hours hauling while Alex was filling the skips.

Sunday: my turn to do the digging while Alex was on hauling duties. I carried on with the mattock to continue enlargement of the working area, also worked at the end for a little and managing a fair rate of skip filling. The fill comprises mixed crystallised sediment, crusty stal and the occasional boulder – still tough going! Swapped over with Alex, but skips to the surface just about ceased, just two in one hour – got bored!

## **21<sup>st</sup> and 22<sup>nd</sup> August 2010**

With Alex, a couple of two-hour morning sessions on Saturday and Sunday comprising one hour of digging and one hour of hauling. We decided to fill the pit at the base of the entrance after a short debate, this was to make digging quicker and if we wanted to move spoil out to the surface it would make things easier. At least we have made a small amount of forward progress; it's relatively comfortable digging but rather on the warm side.

## **4<sup>th</sup> and 5<sup>th</sup> September 2010**

With Alex. Saturday morning: more of the same until just as we about to leave I detected a small, cool draught issuing from a small, straw sized hole – very encouraging! It gives us something to aim for, and it's in the desired direction.

Sunday morning: worked around and expanded the draughting hole into something a bit larger; and the draught is still strong. There is a bit of open space but, rather frustratingly, quick progress ahead is blocked by solid flowstone that will require some hard work to remove. I couldn't quite get my head around how the passage might develop.

## **10<sup>th</sup> September 2010**

Solo. I decided to spend an hour or so over at the dig in the evening hammering and chiselling away at the calcite obstruction. The draught was still strong. I made slow but steady progress, just half a dozen skips and a rock. The calcite appears to be less compacted [or solid] lower down and there might be the possibility to undermine the obstruction and then smash it downwards; time will tell. I think Alex is getting a little over excited at the prospects just yet.

## **11<sup>th</sup> and 12<sup>th</sup> September 2010**

Saturday morning with Alex, and Bob came too! Bob turned up with 'digcam' to see if we could see what was over the obstruction. I didn't see anything as I was holding the camera at arm's length; the result was rather inconclusive, but a useful little tool all the same. After that interlude we carried on where I left off last night taking it in turns to batter the obstruction. Progress was steady but tedious and after two hours I left them to it.

Sunday morning with Alex and some more of the same just hammering, chiselling and smashing – it's not going anywhere fast!

## **20<sup>th</sup> September 2010**

Solo. An evening trip over to Wookey Hole to check out Alex's weekend effort especially after his rather excited phone call. He's managed to poke another hole through the stal blockage; the main draught is still from the original hole on the left side of the passage. I scratched around a bit, chiselled and hammered, got bored and went home.

## **2<sup>nd</sup> October 2010**

*With Alex and Bob.*

We arranged to meet at School Hill rather than the Belfry (BEC AGM to be avoided!). I arrived first and made my way up the hill to Hallowe'en Rift to start digging. I decided to work at the right-hand side of the stal blockage where it seems to be easier going, the stal is fractured and there are more mud layers. Undermining the stal and then hammering down onto the layers into the space was working well. Alex and Bob about 45 minutes later, we each then spent about an hour battering and mining away at the dig face. When my turn came around, I managed to clear the lump of solid stal that was impeding progress and ahead there seems to be easier going and we are nearly able to see into a small roof space where the draught appears to come from. After three hours of digging I decided to leave while Alex and Bob stated on onto the afternoon to continue with the digging effort.

## **6<sup>th</sup> October 2010**

Solo. Alex sent an email saying that they had broken through the stal blockage and were just digging sediment beyond, so decided to check it out for myself on my mid-weekday off [recession hits so on a 4-day week for now]. I spent a short time tidying the spoil dump at the bottom of the entrance shaft before going up to the end. It is easier digging – nice dry sediment! Wormed my way a body length into a small roof space – to the left mostly filled to the roof, although there is some small roof space but can't see much more than a metre; straight ahead there is slightly more space over the top but couldn't quite see far enough. Possibly come up to Hallowe'en Rift for another solo session on Friday evening, Alex is keen to dig at the weekend. Levelled the spoil along the passage floor, looking back along the dug passage it's impressive, more enthusiastic about digging sediment than battering stal.

## **8<sup>th</sup> October 2010**

Solo. Up to Hallowe'en Rift and spent some time enlarging the working area – so that Alex might fit!

## **9<sup>th</sup> October 2010**

With Alex. I arrived at School Hill early and made my way up to Hallowe'en Rift. I spend a while taking some photographs, although most didn't come out too well. I resorted to digging

and emptying the skips at various spots along the approach passage. Alex then turned up, so I let him go ahead and dig while I shifted and dumped the spoil; we made good progress, possibly about 6 metres [on reflection more like 4 metres, 2013]. Alex reported back that he could see open space, but progress was hampered by another block of stal, my reply “keep on digging and try to go around it”. Alex and I changed places and I managed to reduce the blockage with a few blows with a lump hammer and then dug past it into relatively open space with some rather fine little formations and a good draught. I continued to dig for a short while before letting Alex takeover and enter the space first (he’s not had a breakthrough before). Eventually he got there and reported back – a relatively low, domed chamber looks to be the way ahead to the right but needs some work, constricted to the left, but in the floor, is a rift ~2 metres deep with what appears to be a false floor with cobbles/boulders. Later I tried to enter the rift pot but couldn’t quite get in; there will be some tidying required before entry is possible. I tried some more photographs, but these were again mostly disappointing. There was a little more scratching around and chatting but we were both knackered, my left shoulder was particularly sore, so we called it a day and headed for the surface. 5½ hours.

### **12<sup>th</sup> October 2010**

Solo. From the bottom of the entrance shaft I took a bearing to ‘Stal Bend’ (050°/230°: ~7 metres and from the bend to breakthrough point (045°/225°: ~5 metres) – the overall trend of the passage is to the northeast. I tried to take some more photographs which, again, didn’t come out as well as hoped for, might try with a mini tripod and self-timer. Put the camera kit away and then had a scratch around the top of the rift pot, hammered away at one of the large boulders and did manage to break it, unfortunately it fell into the pot along with a couple of others. With a bit of gardening I could crawl over the top of the rift pot into the low chamber ahead about a body length, this enabled me to see ahead; the chamber/passage continues ahead about 0.10m to 0.30m high and 1.50m to 2.00m wide, I could see ahead possibly 4m to 5m and it doesn’t appear to close. The floor is appearing to comprise calcite cobbles and boulders and some formations, it’s extremely dry and dusty and there is still a faint draught (pressure patterns are on the change). Retreated and did some more gardening work along the approach crawl. The prospects seem very, very promising. Shoulder still feels a little stiff. 1 hour.

This new area feels old, possibly because of the dryness and colours of the place.

### **15<sup>th</sup> October 2010**

The idea was to spend some time gardening along the approach passage which I did for a while before moving up and tidying up over the top of the pot. Eventually I reached the previous limit of Tuesday evening and thought to myself that if I could get ahead another metre or so then we might have room to turn. The blocks barring progress were just too big to shift so decided to go around them. I quickly got into digging mode and shoved, dragged, and scratched my way forward, then back dragging large boulders to place them in a more comfortable position. After a lot of thrutching [and cursing] managed to gain access to a draughting and well-decorated chamber up to 3m wide, 0.30m to 0.40m at the highest point and I could see ahead possibly 4m or so. Did not enter the chamber, it’s too delicate. Exhilarating! 2 hours.

### **16<sup>th</sup> October 2010**

*With Alex and Bob.*

I got up to Hallowe’en Rift early so that I could take some photographs of the decorated chamber, this time I took a small tripod and used the self-timer, used auto and night modes to see if the end photographs are of a better quality. After the photo attempts spent some time

'gardening' the approach until the others arrived. We swapped positions so that they, in turn, could see the progress, I continued with the garden duties. After a chinwag and arriving at an agreement to avoid any damage to the chamber we decided to seek an alternative route – down the rift pot! It took a considerable effort to shift some large calcited boulders but eventually I could squeeze down into the rift pot. To the left [west] under a gnarly low arch and crawl the rift continues for about 2m but becomes too tight at a pinch point where there is a possible continuation beyond about 0.75m high and 0.50 – 0.60m wide turning north, but some work is required to gain access and to confirm this [a mid-week task?]. Back at the pot and, very surprisingly, there is a way on under the north side where a phreatic tube about 1.50m wide and 0.30 – 0.40m high leads off, I made some progress with a little bit of digging and gained about 3m to within a metre of an apparent choice of direction; to the left a partially sediment filled tube and straight ahead another partially sediment filled tube, there is a strong draught and things are looking very good indeed. There is also the possibility of another way on straight down the pot. We are almost spoilt for choice, emerged knackered but very happy! 5 hours.

Chamber has been named 'Merlin's Magic Milk Parlour' and the rift pot 'Witches Cauldron'.

### **19<sup>th</sup> October 2010**

Solo. Tried to lower the large block at the top of Witches Cauldron (WC) but was not quite as successful as I would have hoped. So, went down the pot and set about widening the pinch point [on the west side] with a hammer and chisel – it was far too hot with a sweatshirt on! Eventually I made it just about large enough to peer into the possible 'passage' which, unfortunately, turned out to be a solutional alcove. I then decided to turn my attention to progressing further along the phreatic tube, which was draughting well, before calling it a night. About 1 hour.

### **23<sup>rd</sup> October 2010**

With Alex, we planned a digging session at the bottom of WC. Alex spent a while trying to get down the pot before we swapped places and I started to dig at the bottom, passing rocks up to Alex before shifting spoil back down the approach crawl. We came to the decision that we needed to make spoil removal more efficient and easier, the large boulder at the top of the pot restricting access had to go, it was too big to drag along the passage, so we had to break it up. Set about trying to break it up with a lump hammer, not very successfully, I managed to get myself into a position to clout it with the sledge and eventually, after 1½ hours and both of us battering the rock with hammer blows, the boulder split and we could further reduce it in size and get it shifted out of the way. That done Alex then had enough room to get down into the pot for his first look around and he was suitably impressed. After 4 hours of hard labour we decided to call it a day. At School Hill, we met Roz and Callum who had come over to meet us at Hallowe'en Rift but were obviously too late. They continued up to Hallowe'en Rift for a tourist trip while Alex and I went back to the Belfry for coffee.

### **30<sup>th</sup> October 2010**

Solo. After a slow start to the day got my act together and arrived at Hallowe'en Rift around 12:30. Headed up to the phreatic tube and spent most my time scratching away and worming ahead, dragging the spoil back and dumping it at the bottom of the pot. Got up to and passed the left junction which looks too tight and continued along the larger tube straight ahead. When my shoulders began to really ache, I decided to call it a day, I reckon nearly 6 metres along the tub now. I decided to go up to see the 'pretties' and spent a while gardening the approach before heading out of the cave. About 2 hours.

### **6<sup>th</sup> November 2010**

With Alex, we spent the first 1½ hours of today's session hauling spoil back to the surface from the bottom of the entrance shaft, making space for more spoil later. We then set up a drag system to remove spoil from the pot back to the base of the entrance. Alex had supplied a couple of hawser laid ropes although one doubled was adequate for our needs. The pot required a little attention before the skip would fit and the approach crawl was also 'gardened' a little to ease the progress of the skip. Eventually we had managed to get the drag system operational and with a little effort several skips were hauled up the pot and dumped at the bottom of the entrance shaft. After 5½ hours we decided to call it a day and head for our respective homes dropping Alex at the Belfry so that he could collect his van.

### **10<sup>th</sup> November 2010**

Solo. Rather a half-hearted effort really, still I managed to get some spoil out of the phreatic tube. I used a drag tray made spoil removal a bit easier, also didn't bother with a caving helmet, just wore a beanie hat which meant that I could turn my head around more easily, far more comfortably, just need to take care not to bump my head – at least not too often! Just 1 hour.

### **13<sup>th</sup> November 2010**

With Alex, we first had to go to the Wessex to scrounge some plastic drums to make into skips – success - returned to the Belfry to cut them up as required. Spent the first hour or so at Hallowe'en Rift shifting spoil from the base of the pot and dug the floor to make more dumping space, it also makes it easier for Alex to get into the tube. We then concentrated on getting spoil back along the tube using skip/tray and drag line – it worked rather well and good progress was made. Still prospects along the tube look good indeed! 4 hours.

### **20<sup>th</sup> November 2010**

With Alex, we spent the first hour clearing last week's spoil from the bottom of the pot back to the bottom of the entrance; this will require a clearance session soon. Took it in turns to 'worm' our way along the tube, there seems to be something off to the left, either a passage or a turn, but can't quite see enough yet. Still appears relatively open('ish) along the right side and there is, of course air movement. Spoil is still dry and found a lump of broken stalactite in the sediment and it wasn't eroded – good sign? Possibly. 4¾ hours.