

SOUTH WALES CAVING CLUB



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NEWSLETTER 125



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A RETROSPECTIVE OF THE SWCC EASTER TRIPS TO RAMALES 1997 – 2006

Introduction

Although SWCC has been running Easter trips to Cantabria in Northern Spain since 1997 formal reporting of these trips can at best, and perhaps most generously, be described as sketchy. Originally conceived as adjuncts to, or reconnaissance trips for, the summer expeditions, the Easter trips have, more recently, developed their own identity and focused on some of the fantastic sport caving in the area.

This article is an attempt to present an overview record of the SWCC Easter trips to Spain between 1997 and 2006 and, to hopefully inspire others to visit this mecca of Spanish caving.

Over the years the trips have been supported by a variety of people old and young, inexperienced and experienced, including: Gary Vaughan, Brian Clipstone, Gary Nevitt, Ben Stevens, Bob and Elaine Hall, Keith Ball, Martin Hoff, Ian Miller, Les and Nick Davies, Simon Lacy, Mike Hazelton, Chris and Alison Payne, Brendon Stone, Dominic Hyland, Tim Clark and of course myself.

If this list is not 100% accurate then I apologise but, in the absence of any log books it is best I have been able to do.

Where do we go?

Ramales is an agricultural town in the Cambrian Mountains some 20 minutes in land from Laredo on Spain's northern coast and about an hour east of Bilbao. Although Ramales has a number of supermarkets, bars and cafes and, wait for it, its own caving shop ([HYPERLINK "http://www.mtde.net"](http://www.mtde.net) www.mtde.net) and a very active caving club, [HYPERLINK "http://www.aer-espelo.com"](http://www.aer-espelo.com) www.aer-espelo.com.

The SWCC Easter expeditions have always based themselves at the Hotel Anjana, situated about 5 minutes drive out of Ramales on the road to Aredondo. This small rural hotel is run by the ever friendly Carlos and his family. Civilised accommodation, with food, wine, central heating, comfy beds, hot showers and exceptional hospitality

and all for around £120 per week. What more could you ask for? Carlos, muchos gracias, we thank you.

The Cantabrian Mountains provide some stunning scenery and opportunities for straightforward high level rural walking as well as a huge diversity of caving to suit all abilities, including opportunities for exploration as well as sport caving. This is a must go area. Add into this a 20 degree shift in latitude and the relaxed pace of Spanish rural life and a week in Spain suddenly begins to look very attractive, especially when compared with some other Easter destinations I could mention.

If you walk or cave then Cantabria is a wonderful place to visit but a traditional tourist trap it ain't, especially at Easter. For the truly committed it is also worth noting that the area boasts a number of attractively priced "unique fixer upper opportunities" but that's another story.

Getting there

Originally we walked, then we hitched, push biked, caught the bus, caught the train, drove and latterly we have flown – well at least the last bit's true. Driving involves getting to a port, crossing the channel and a full 12 hr drive across France, most often with an overnight somewhere. Good, but not that good, and with advent of cheap flights we have recently taken to flying from Stansted to Bilbao and then hiring a car. Although quicker and cheaper than driving you do of course get to miss the opportunity to sample the internationally famed French hospitality and customer service. "Non, Monsieur, ferme". Ah well.

The Caves

Cantabria is one of the main caving areas of Spain and is home to such world classic systems as Coventosa. There has never been any great agenda for the Easter trips and we have tended to chose to do whatever the group wanted and was within their capabilities. Here then follows a very brief resume of some of the trips that have been attempted.

Cueva del Aqua

This is a straightforward, interesting, if rather short, through trip of some 1.5 hrs which is best done down dip. The trip is essentially dry with some dampness towards the end. Cotton boilers are fine and there are no real obstacles save for an interesting rigged cross pool traverse line which requires a harness and cows tails. The other significant feature however is the full 2 hour slog up what seems to be an increasingly steep, and never ending, mountain. Of course it's a lot easier on the way down - a full hour picking your way through bramble, bracken and trying to prevent yourself from going arse over tit over one of the hidden clifflets which have been lovingly dotted at random across the mountainside. Great trip, make a day of it, but chose a fine day when it's not too hot, take plenty of water and enjoy a good lunch - nothing too heavy, just some cheese, cold cuts, tomatoes, bread, pate and of course the refreshing mountain air which you don't have to carry.

Vallina (Lower / Mid Entrance)

The mid entrance trip is a cracking trip with some of the most weird formations and well within anybody's capability. The car park is an obvious extension of hairpin bend in the track and from there it's but a short 20 min down hill scramble across rutted scrub pastures, over a couple of barbed wire fences and after a bit of search, you should find the cave waiting patiently at the foot of small cliff. Keep to the right through the entrance series (lots of opportunities for an impromptu round trip here, especially on the way out), wriggle a bit, drop down a slightly awkward hole in a rift, cross a canyon with the aid of an in situ, and very muddy rope, climb up and lo, you're in. Loads of upright walking caving and a nice spot for lunch at the end while the young tigers go off and play. Obviously there is a connection to the top and bottom entrances but we have, as yet, never found them. A through trip would significantly alter the dynamics of what is effectively a very pleasant bimbble.

Cueva del Fresca

Fresca is good but finding it can be a bit of challenge. Park considerately in the hamlet of Bob San Antonio, off

the Ason Valley road, and then take a 30 minute walk along a "path" which is increasingly not there, and which becomes increasingly strenuous as you near the cave. Easy caving leads you quite soon to a straightforward traverse followed by some gloopy mud and then an interesting, and rather awkward trench which bisects the passage. This can be crossed using a rather poorly thought through, in situ, traverse line to the left or you can jump it. Hmm. It's not far, and the risk of failure is very low but of course the consequences of failure are high. Your choice. Think on dot, dot, dot. Quite soon after comes the Arana, a more serious traverse, which is thoughtfully left permanently rigged with assorted tat. We re-rigged it. For the really committed there is also a through trip to be had here from Torca Tibia to Fresca which includes 2 x 85m pitches. How big?

Canuella

Canuella is situated on the other side of the river from the Arredondo to Bustablado road, the walk in takes about 20 minutes across the bridge and up through the pasture and woods.

This is an interesting trip and a great introduction to the sheer scale of continental caving. Early on there is a very easy grand traverse using an in situ, fixed line around black hole. Nothing to worry about but harness and cows tails a good idea.

The rest of the going is straightforward and route finding generally not a problem. There is a short cut on the way back which involves a 15m abseil. Be warned the in situ tat seems to come and go so you might want to take your own rope before you commit to this one. At one point in the final, and very enormous, chamber, if you know where to look you can see the entrance from Tonyo which enters the roof many meters above.

Tonyo

This looks like a fantastic through trip but due to an unfortunate "lost in translation" event involving whether our Spanish guide or ourselves was going to provide the 100m rope the trip remains on our "to do list". The

walk in is exactly the same as Ceuto only not quite so far – that's OK then. After a series of pitches you apparently drop into the big chamber at the end of Canuella. By the time you read this we should have done it.

Red Del Silencio

A lovely cave, the second longest in Spain and with 3 main entrances: top, middle and bottom; you can have an absolutely fantastic 12 hr through trip (pre rigged). The pitches are all very straightforward and the trip can be done as a traditional pre rigging or as a pull though. The through trip is a mix of wet and dry but on balance a furry and oversuit are probably the best attire. However there are a few points about the cave which potential visitors might want to be aware of: the mid entrance is tight – those of a more portly disposition need not apply -, the traverse over balcony pitch can be something of a struggle; the lamiradores are 30 minutes of backbreaking stoops and are something of a collectors piece; the survey and description are not 100% accurate. In 2003 we had some fun in RDS when Tim Clarke and myself wasted a lot of time because of this which resulted in an eventual run out of light situation and an unscheduled camp out while we waited for ... Oh Shit. (See SWCC Newsletter 122). God, how we laughed. However, do not be put off; this is a really great cave.

Coventosa

We have visited Coventosa quite a few times. An essential prelude to any Cueto Coventosa through trip it is also an interesting cave in its own right and a trip to the lakes and back takes about 1 hr. The walk in is easy, the cave is easy to find and the caving as far as the lakes is straightforward.

Siam del Cueto

This is it, the big one. Serious caving requiring serious planning and serious man power. The walk in itself is something of an epic slog, and takes over 2hrs up a steep and well defined track – no shade so best done early. A tiny hole in the ground and a very short entrance tunnel leads to the head of the first pitch, all 300m of it – ah!!!.

Time to change the undies me thinks and of course have lunch and generally take in the ambience and view from the nearby ridge, stunning. The caving trip itself is, I am told, a classic and as such should be treated with the greatest respect - for a full description see SWCC Newsletter 120.

Systema Gandara

A relatively recent find at the head of the Gandara valley, and what a find, all 55Km of it and only a 10 minute walk from the car. With fossil resurgence written all over it in braille it's difficult to miss the relatively insignificant hole in the hill side. Once inside there's an "interesting" traverse fairly near the entrance which leads to a 45m pitch and soon after to a huge chamber which, when we visited, was positively pulsating with the noise from a massive waterfall. Helectites abound as do some crawly bits. Quite where we went we don't really know because there ain't no published survey. A trip back is a real must.

Mellino

Sporting little 2 hr trip into a roadside cave. My memory recalls a lot of time spent pushing ascending rifts and then drinking lots of beer in a local café. Such is life.

Systema del Lobo

This cave is situated in woods at the head of the Gandara valley and although the walk in is only about 30 mins it's not that easy to find.

We have only been in here once and there's plenty left to do. The ice plugs and snow formations quite deep inside the cave were a testament to the severity of the Spanish winter.

Cueva de El Soplo

This a old zinc(?) mine about an hour and half west of Rames which at the time we visited it in 2005 was being turned into a show cave complex. During its development the miners had broken into some natural cave, rather like Derbyshire. There in the similarity ends. The formations are quite simply stunning, a mini Lechuguilla and probably the best many of us will ever see. See it and weep.

Exploring and Digging

At various times, and especially in the early years, we have undertaken exploration and digging. Indeed on occasions a few members have supported the work being undertaken in Matienzo. At one time extensive surface walks over murderous karst terrain with GPS in hand investigating every little rabbit hole and shaft were very much the order of the day. Sadly though the elusive master system remained just that, elusive.

One year we attempted some serious pushing and digging. But sadly this too was in vain, and the much sought break through into the master system was thwarted by unstable hanging death the size of buses.

Fun days, in glorious weather and in good company, but you probably have to accept that unless you just get very lucky then you're unlikely to find anything in a week. But ..

Guggenheim Museum

The world famous Guggenheim Museum is about an hour away in Bilbao. Stunningly controversial, the building dominates the Bilbao river front and challenges all architectural norms. The entrance fee – the museum is closed on Mondays - is very modest but the art inside takes you to places that you did not even know existed. What are these people smoking? Seriously though, even if you have no great interest in modern art a visit to the Guggenheim is an experience.

Walking

The Cantabrian Mountains offer some really excellent and very peaceful walking. There are tracks and little farmsteads with the ever friendly, and mostly chained up, dogs everywhere.

Ordesa

Part of the plan in 2003 year was to incorporate a camp site reconnaissance for the SWCC summer expedition to the Ordesa. We were only really there for a day and did a long walk up the valley onto the mountains. The scenery is fantastic and I am told that there are

also some buttock clenching Via Ferata to be had if that's your bag.

If you are from the flatlands then this is a magical place and well worth a visit but combining it with a trip to Cantabria only really works if you have driven down and are looking for something different to do either on the way down or back.

In conclusion Cantabria is a great place to go caving or walking, you don't have to be a super caver. And if all this does not immediately inspire you to leave the fire in the long common and sign up for the next SWCC Easter trip to Cantabria, then there's clearly something not quite right in the state of Texas. See you there.

Paul Meredith

Picture Captions:

Page 7. The head of the Ason Valley and Sistema Gandara (Phil Walker).

page 8. Avalanche on the road to Sotres (Phil Walker).

Page 8. Sotres from above, Sierra de la Corta, The source of the river Ason (Phil Walker).

Page 9. From the road between Sotres and Tresviso (Phil Walker).

Page 9. Both pictures Coventosa (Phil Walker).

Page 10. All pictures Sistema Gandara (Phil Walker).

Page 11. The Dragons Arse, Yunnan, China. Alys Mendus descending a shaft on Mobile Phone Hill, Yunnan, China.

Horse man near Zhongdian, Yunnan, China.

Page 12. The resurgences camp, Yunnan, China. Alys climbing in Yangshuo, Guang Xi, China. Napa Ha, Yunnan, China.

Page 13. The Resurgence at the resurgences camp, Yunnan, China. Moon Hill, Yangshuo, Guang Xi, China. Yak head at the milk river guest house, Yunnan, China.



AN IMPROMPTU TRIP TO SPAIN - EASTER 2005.

By Rhys Williams.

01

With our trip to Belize postponed and contacts for an expedition to Romania falling through, Alan Braybrooke, Phil Walker and myself, with spare annual leave and cash to use, decided on a week in Spain. We booked a cheap flight to Bilbao with Easyjet and arranged a hire car. Easyjet allow an extra 10kg baggage allowance for "sporting equipment" taking the total up to 30kg (plus what you can sneak through in your pockets and hand baggage), plenty enough for caving kit and a bit of rope. The plan for the trip was to take in a bit of tourist caving in Cantabria, based in Ramales de la Victoria in the Ason Valley and then head over to the Eastern Massif of the Picos de Europa for a few days exploration. All three of us were fairly familiar with Ramales, having previously visited with SWCC. Phil had also been more recently with South Bristol SS. Both Phil and I had caved in the Picos before, me tagging along with Oxford University Cave Club in their work on the Western Massif and Phil in his days with Lancaster University Speleological (LUSS) on the Eastern Massif.

Saturday 19th March

For me, the long journey to Spain started with Al meeting near Abergavenny. That morning I'd run a 15 mile fell race and just watched Wales win the Grand Slam so I was ready for a lie down in the back of the van. We headed across to Bristol to pick up Phil before the long trek across to Stansted

Airport for a dawn flight, stopping at some services for a few hours kip on the way.

Sunday 20th March

Phil and Al must've been looking shifty, or perhaps it was the caving bits and pieces sticking out of their tackle bags that attracted special attention from the security staff. The staff got a quick hand full of Al's lucky caving pants and decided that searching further would be too unpleasant so the bags were waved through. At Bilbao, we picked up the car and drove west down the coast towards Ramales. Largely thanks to money from the EU, the roads in this part of the world are of a very high standard compared to what they were when I first came out this way nearly 10 years ago, and Ramales is only just over an hour from the airport.

Phil had attempted to book accommodation in the Albergue, a hostel/bunkhouse aimed at cavers and outdoor types. He'd stayed there the summer before but was concerned that it might be closed for winter as he had not had a response to the e-mail he sent in his best Spanish. When we arrived at the hostel, it was indeed closed, but not for winter, apparently it was permanently shut and had a "for sale" sign up! Actually I think Phil was a little relieved at this as he wasn't sure whether his request for "Tres hombres por dos noches" might mean we would



be greeted by three burly Spanish men offering their services rather than just accommodation for us.

A very helpful lady in the tourist information office sorted us out and we decided on the "Hotel Sobana" on the edge of town. The landlady there looked after us well, while her daughters and the locals just laughed at us for being incompetent. On arrival, Phil opened with the classic line "Hablamos español?" Naturally, being in Spain, she answered "Si", thus confirming to us that she did indeed speak Spanish. He'd meant to ask if she spoke English (she didn't). After a long afternoon and evening of beers, coffees and a fantastic feed in the hotel, we met up with Gary Vaughan and the "official" SWCC crew who were staying nearby. Then finally, after the swimwear round of Miss Spain had finished on the television, we were shown our beds.

Monday 21st March

Up bright and early, we made off for a trip in Coentosa, mainly for Phil to take photos, or so it felt. We dropped right down to the streamway on dodgy aging tat and fence wire traverse lines but were prevented from progressing along it due to high water. That evening we met up with "El Vaughno" again, this time in the comfort of the Anjana hotel where those guys are annual regulars. We dissed their tourist caving exploits and said our good byes, as the next day we would be heading off to the Picos for real hard man exploration stuff. Back in town, I lost our hotel keys. We searched and searched and finally Phil found them in the gutter outside the hotel, but not before we'd driven back



up to the Anjana to search there just to make me look like a fool in front of the "tourists".

Tuesday 22nd March

We drove westwards; On the motorway around Santander, the high mountains of the Picos came into view and they were stunning! Beautifully white and gleaming with snow. Apparently that winter, Northern Spain had been under its largest amount of snow for something like 40 years. As we got closer, the rivers were not sparkling and clear as they had been during my summer visits, they were all brown raging torrents. Conditions weren't looking good for exploring active systems! Still, we persevered and headed up through the gorges towards the mountains. Just after Poncebos, where the road starts climbing steeply,

we were stopped by men working in the road. They were using a large digger to clear a huge pile of snow. There'd clearly been a massive avalanche from high up on the slopes above and the road had been blocked. For 20 minutes of so we watched the work

and were then waved through. Every few hundred metres or so along the next section of road there was evidence of further avalanches; snow and stone on the road and huge sections of twisted Armco barrier hanging off the hillside – they really must have had some good snow up here!

We eventually made it up the mountain to the village of Sotres at around 1000m, after the goats let us through, and we booked into the albergue. After a quick look around the village, we drove further up the road, and parked at the top of the pass that runs over to Tresviso village. The road had been cleared by snowploughs, exposing a depth of snow cover up to 3m in places! We wandered off towards the Sierra de la Corta ridge for a bit of prospecting; this area lies between the upstream end of Cueva del Agua and high mountain feeders Sima 56 and the



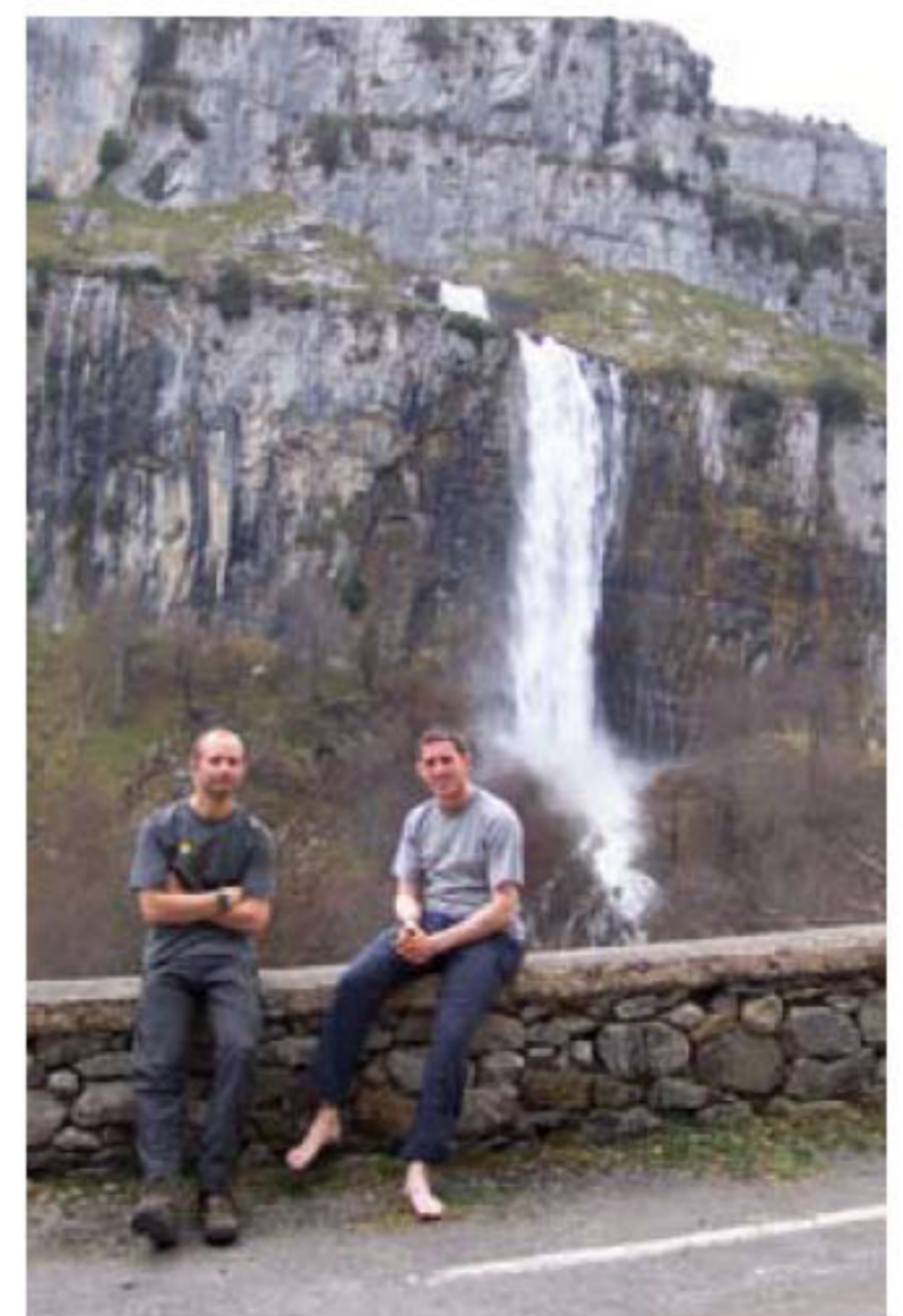
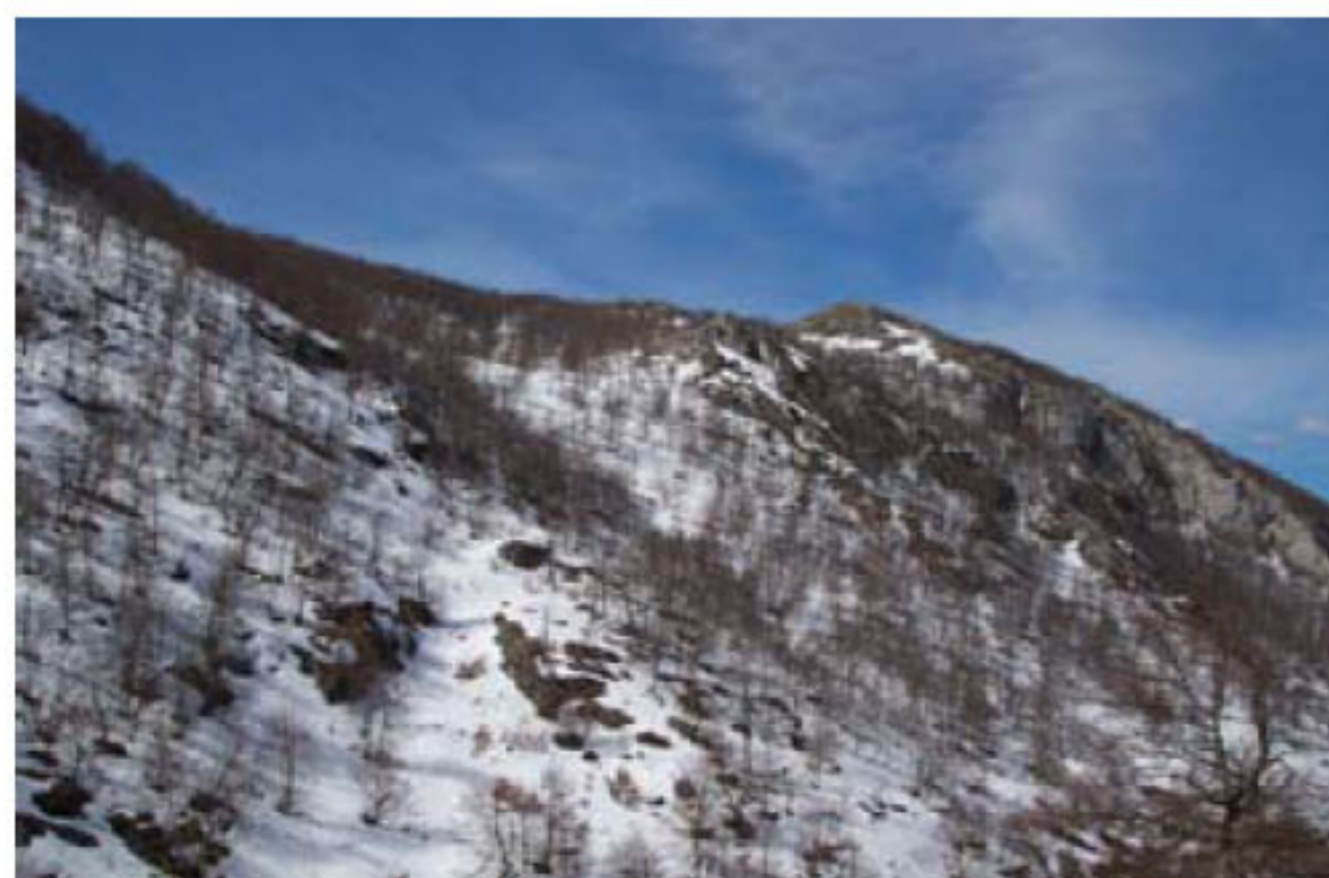
staggering and swearing. We made it up on the crest of the ridge and located a couple of entrances suitable for further investigation before jumping on poly bags and sledging back down the hill.

Wednesday 23rd March

We decided on a lower altitude option than the previous day; the resurgence cave of Cueva del Agua. This cave is a major site, much visited in the past by SWCC and LUSS members, amongst others. As we drove towards Tresviso, it became clear that water levels were still high in the area. There's an aqueduct that runs from the resurgence, carved into the cliffs taking water down to a hydro-electric station. A huge curtain of white water was clearly visible pouring over the side of the aqueduct into the gorge below along much of its length. "Oh well, we may as well go and see the



"Cheesecave" - ideal for filling in a gap in the known system. We were armed with the LUSS cave database on Phil's palmtop computer, GPS and maps. What could go wrong? After just a few minutes walking away from the car, it very quickly became apparent that progress would be hard. Every three steps or so, we'd sink deep into the snow, sometimes up to our waists. That explained why the few Spanish walkers we'd seen in the village all had snowshoes on their rucksacks! We struggled on for the rest of the afternoon, applying a mixed tactic of crawling,





That night as we attempted to sleep back at the albergue, it seemed that the whole of Spain descended on us. It being the beginning of the Easter holiday weekend, people were turning up and all hours of the night and morning, crashing

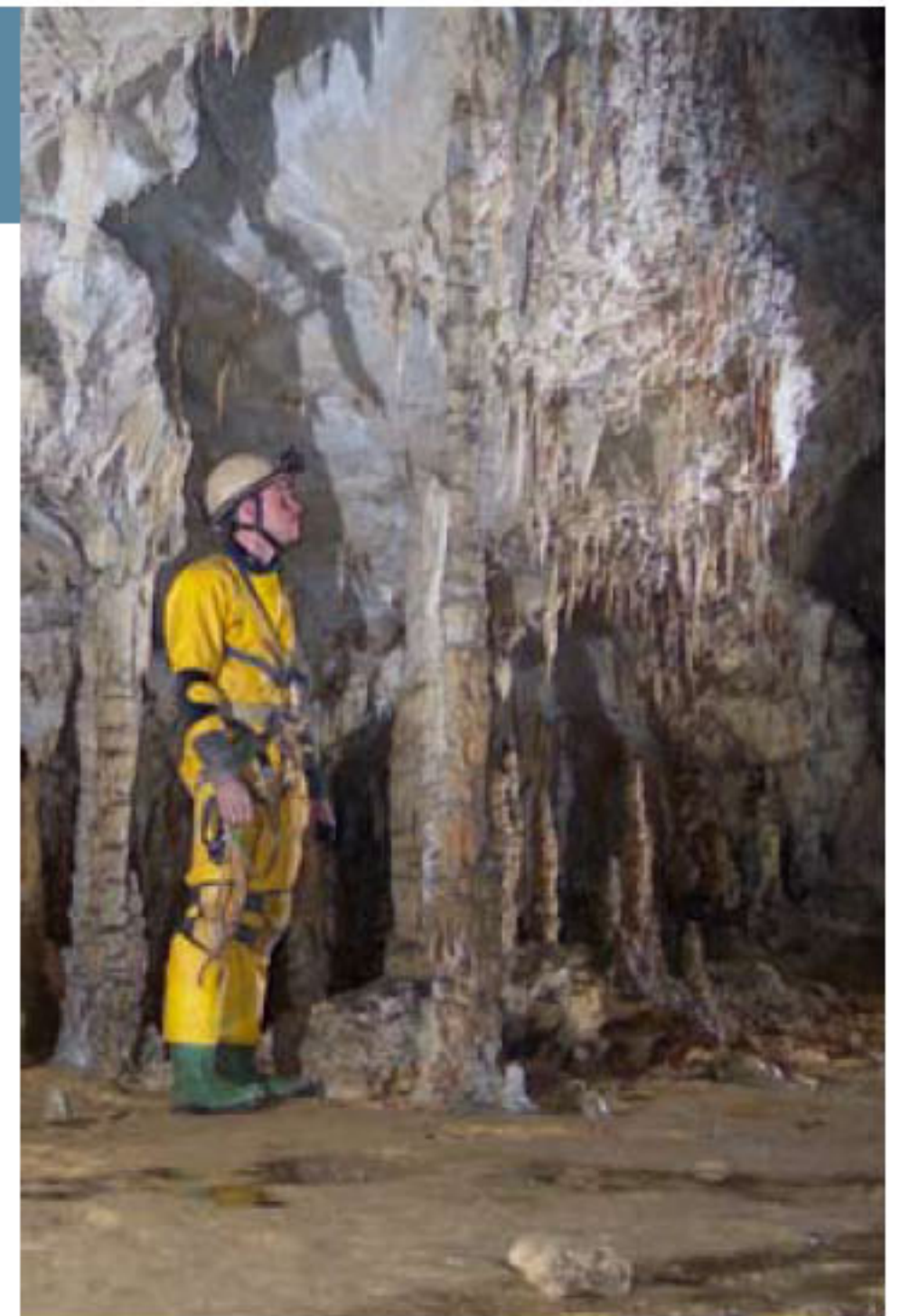
cave anyway". So, we set off with caving gear, passing a recently constructed and collapsed farm shed. Under the ruckle of timbers and roof tiles the remains of a tractor were poking through. It seemed that weight of snow was responsible for the destruction – we saw several buildings like this!

The approach to the cave from Tresviso (or rather the return trip) is infamous, the cave being approximately 400m below the altitude of the road in a deep gorge. After a plod down through the woods and meadows (no longer any snow on this south facing slope) we reached the cave. Water was mushrooming up with quite some force from the resurgence. Crossing the pool to reach the dry passages beyond would've been impossible, so we had lunch and then plodded back up the steep (south facing) slopes in the heat of the day (carrying caving gear). Nice.

about in walking boots on the floorboards and talking loudly with no regard for anyone in bed. If any of us knew the Spanish words for, "I say my dear fellow, would you mind keeping the noise down a little?" we would've used them.

Thursday 24th March

So, three rather tired British cavers headed out into the wilderness again for a serious attempt at prospecting. We would persevere on Sierra de la Corta; locating a few more sites and dropping the shafts we'd previously found. Dressed in wellies and oversuits to keep the snow out we slipped and slid our way along with regular sinkings up to the waist, made all the worse by the ridiculous weight on my back - 90m of rope, SRT kit, bolting kit etc. We followed a contouring track around the ridge, having to kick steps into the



snow for much of it so that we didn't fall off the mountain. We found a couple of interesting sites and logged them on the GPS. The major problem with investigating dolines and shakeholes was the very real danger of falling through the snow into hidden shafts and into the gaps between boulders, fallen and standing trees! Also, the snow would've probably covered any markings or bolts left by previous explorers. After a spot of lunch, rather than following the track up on to the ridge we opted to retrace our steps and examine the two sites we'd previously found, nicknamed AI 1 and AI 2 after our pioneering hero. Phil wisely said that enough was enough and retreated to the car, leaving me and AI to go for glory. AI 1 was a nice little 10m blind shaft that had previously been explored by a goat, who hadn't lived to tell the tale to its kids. AI 2 went much further, down a snow cone, across ice and finally into rock. At a depth of 30 odd metres AI ran out of rope and called up for more. I'd been sitting in the snow on the surface for some time and was chilling off rapidly, with the sun now getting lower in the sky, but came down with more kit. When I reached AI, both of us were shivering wrecks, barely able to speak, so we left the head of an apparently virgin pitch and derigged.

It being holiday weekend, the albergue was now full and we hadn't booked in so we said "Adios" to the wild snowy Picos and drove back to the safety of Ramales, stopping for a particularly





Still, we felt we'd done enough to earn our beer that evening.

Most of the bar staff in town obviously didn't think Al deserved his beer. Despite, waving three empty beer bottles and trying all sorts of pronunciations of "Tres cerveza por favor", he just confused them and couldn't make himself

understood! The evening became early morning and we found ourselves drawn into both of the Ramales nightclubs. Quite a shock for us old men and far too loud.

Saturday 26th March

Rather unsurprisingly, we made a slow start with heavy heads after our socialising the night before. We decided that a trip to the beach was all we could manage. The locals of Noja gave us some very queer looks. There we were, three men, lying out sleeping on the sand, enjoying the spring sunshine. With a view up to the snowy mountains behind, it was all rather surreal. No one else was sunbathing, they were all well wrapped up, but to us it really didn't feel too cold at all!

Sunday 27th March

Our final day in Spain saw us making a quick trip into Cañuela, an amazing

fine meal of baby goat (cabritu) on the way. I slept in the car for most of the journey and refused to get out when we reached Hotel Sobana – I couldn't face the stress and embarrassment of turning up there again and having to sort out accommodation feeling as knackered as I did. It had been a really tough day out on the mountains – really draining. Al and Phil, trained on hot foodless trips to Belize, thrived on this sort of suffering though!

Friday 25th March

There was still time for nice cosy tourist caving in our remaining days. We visited a relatively newly discovered cave near the village of La Gandara, having been given the location by Gary's team. This was impressive. The draught through the small dug entrance was incredible. We took more photos and had a poke about, turning back before the huge waterfall that was meant to be down there. A survey, description or guide might've helped!



cave with huge draughting railway tunnel passages and wind-blown stals. We got as far as the base of a great boulder slope that leads up into a massive chamber and then returned to the entrance via a short abseil.

Back at Bilbao airport, we were patiently waiting for our flight home. With over an hour to kill we had a drink and some food. It suddenly became eerily quiet in the area where we sitting. Before, there'd been lots of British people who were also waiting for our flight, but they'd all disappeared. Something strange was going on... I knew that the clocks were going forward an hour in the UK that weekend, but it took a while for it to dawn on us that the clocks had also changed in Spain! We ran down the stairs to gate and got on the plane with a few minutes to spare, but it could've all gone horribly wrong. We'd managed to spend the whole day out and about and checked in at the airport without noticing a single clock!

Conclusions

- So what did we learn?
1. Don't bother trying to cave in the Picos at Easter; snow and water levels just make it far too hard.
 2. Make sure you find out if the clocks are changing while you're abroad.
 3. Don't send Al to the bar in Spain – unless you want a really good laugh



Photography - Phil Walker





I think I was one of the few people to benefit from the 7th July London bombings, at least in as much as an unlimited baggage allowance due to the 'don't care check everything in' approach the airline had adopted. I was travelling with Alys, a Sheffield Uni SS member. We arrived 12 hours later in Hong Kong, being met by Erin Lynch (Mrs Caving in China). A 2 hour route march across Hong Kong, carrying 30+Kgs of kit in 35°C in almost 100% humidity ensued. We eventually arrived at Rich Gerrish's house (a UK caver) where we overnighted.

3 hours sleep, a thorough soaking in a tropical rainstorm and various public transportation methods bought us to the border with mainland China. I quickly hurried forward so that the temperature detector (due to Bird Flu) would stop flashing 'low temp' and I might get into China.

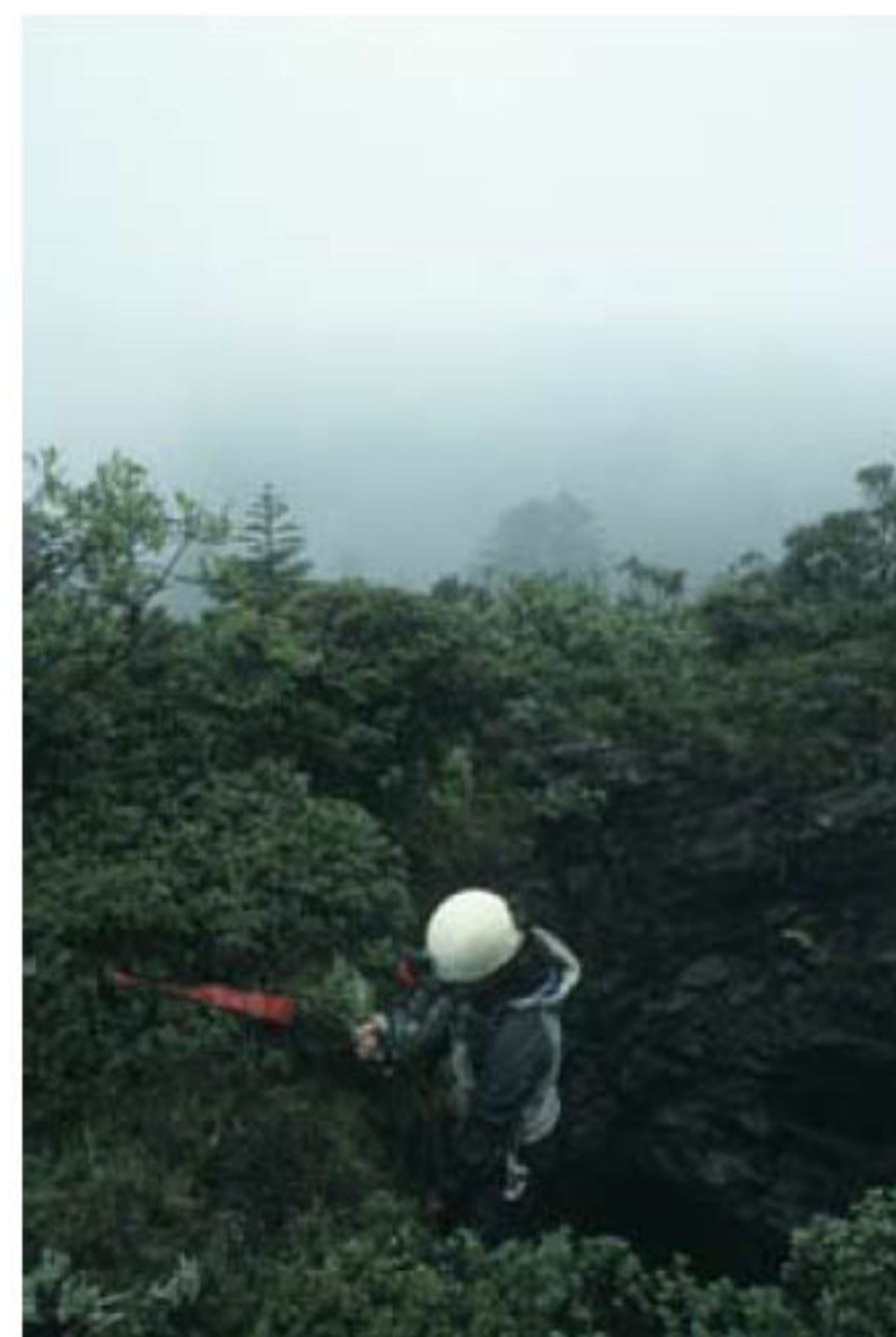
Customs past remarkably easily (apparently we all look the same!) and we caught the sleeper bus from Shenzhen to Yangshuo in Guangxi province. Sleeper buses in China take getting used to: imagine a normal bus but with two gangways with three bunks across in total. The bunks are about 5 foot long, which makes them very uncomfortable for anyone over that height, myself included. Particularly disturbing in this case was the dent in each of the baskets at

the front of the bunks, tribute to no seatbelts and mental driving. I soon learnt about the latter as I awoke to see headlights straight in front of us and a horn blaring. Thankfully we passed without incident, but that wasn't to perturb our driver who appeared to have no desire to see his next birthday.

We arrived in Yangshuo at 4am and walked for another 20 minutes. 5 days in Yangshuo included attending the 'Erin Lynch survey school', lots of sports climbing and general expedition gear sorting. Being cavers it also involved a lot of drinking, especially on the night before we left to catch the train from Guilin to Kunming. The Russian contingent in Yangshuo had organised a BBQ, which involved that most Russian of all things, vodka.

I don't think I slept that night, I certainly felt ill that morning, dreading what 22 hours on a Chinese train would do to me in this state. Added to this the 22 bags of additional kit we were carrying for the expedition and I was ready for a whole world of pain. I couldn't have been more wrong, soft sleeper class on the Chinese railways are luxury, probably including the best toilets in mainland China. Best of all this 1100km journey cost less than £20!

The train arrived promptly in Kunming, the capital of Yunnan province. After we had disembarked, including our 22 bags of additional stuff, there was no sign of the rest of the expedition



who were due to be meeting us. Then the lady from the Chinese railways descended upon us. A 5 minute exchange followed, during which I managed, to her incredulity, to communicate that 5 of our friends were meeting us. I think she would have gone all day if some of the expedition hadn't arrived and helped carry all the bags. Mind you I didn't utter any of the 'bestial words' that the sign in the train station warned about. Around Zhongdian

A hurried day in Kunming saw us with tickets for the overnight sleeper bus from Kunming to Zhongdian, which left at 7:30pm and arrived at 1pm. Zhongdian being at 3300m the beer

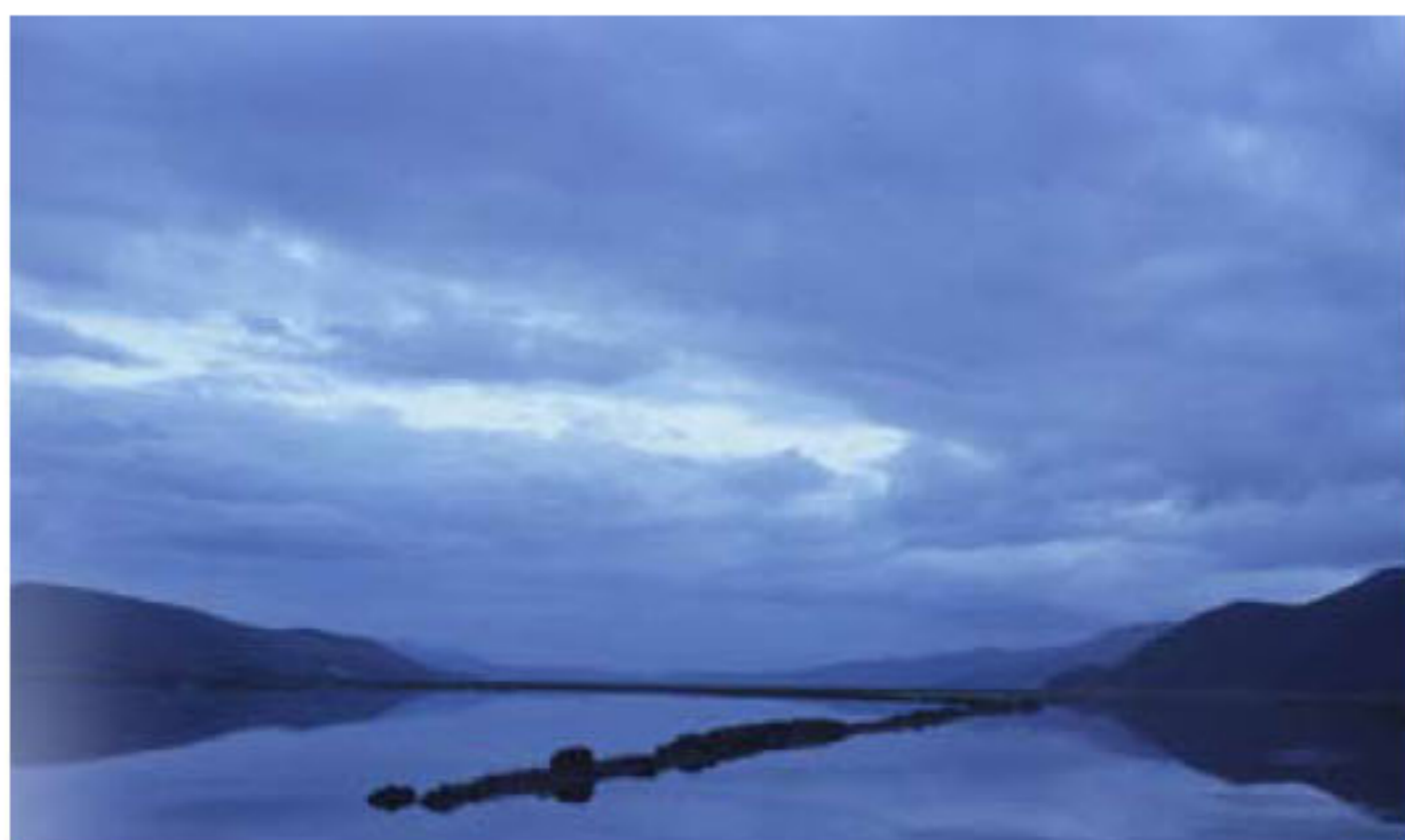




went straight to my head and I retired to my bed feeling ill.

The next day we left to walk around Napa Ha, a large seasonal lake. Various scroty holes were inspected before the clouds opened. Some Tibetan ladies took pity on us and invited us into their hut, where we were fed yak butter tea and the local sour yoghurt with crushed caramel. After we had eaten the two daughters of the family took Alys off to a short fossil remnant, made her climb up and bang her chest.

This obviously pacified the cave gods because as we walked around the next valley we saw a huge waterfall issuing from a cliff. Cave fever took over and saw me lead climbing on SRT rope in an improvised sit harness placing the occasional spit. But two of us were in, with one working headtorch between us. Steve Whitlock (of 'I'm an Army Major, Get Me Out of Mexico' fame) disappeared with the torch up the



going streamway (about twice the size of OFD). I sat there in the dark with the occasional bat flapping around listening to Steve whooping, and then screaming as he plunged into a chest deep canal. Having no caving kit we decided a return the next day was in order.

However we had to repay the cave gods for the glimpse of what we had seen; we took a 'short cut'. This looked like a straight line across grassland: the first half of it was, but getting wetter and wetter. Soon we were wading waist deep in water. However it got worse as hospital waste, nappies and dead animals floated past. We got back well after dark, including a hair raising lift in the back of a quarry lorry.

It rained and rained that evening, all through the night and was still raining when we arrived at the cave. Intrigued locals followed us till the entrance climb, now with in situ line, which was well watered due to all the rain. I arrived at the canal, jumped in and was promptly spat out by the monstrous current that was now flowing. The howling air draft testified to the open passage beyond.

Sadly the weather never improved enough to enable us to pass the canal. The expedition found an upper entrance, about 2kms distant and 250m higher at the other end of the fault marked on our geological map, which we are certain has the same water.

Resurgences Camp

The next stage of the expo for me was to arrange transport to take gear and food to meet some others who had walked across from Zhongdian to the 'Lucky Benevolent Waters' rising. This is a seriously huge rising, issuing ~25cumecs of water a second, so much that the Chinese have built a hydroelectric plant there.

The first stage was to find someone willing to take our money. We eventually managed to hire a 4x4 (that wasn't going to take 4 days to get there!). We weighed this down with



lots of gear and departed. 2 hours later, having driven through rockfalls into the impressive Yangtze valley we reached where we wanted the driver to leave the metalled road and drive his jeep off road! An argument ensued, with Mr 'All Gear, No Idea' eventually conceding when we said we wouldn't pay him. So up we went to within a 5 minute walk of the resurgence camp.

The following couple of days found bugged all. The area is very confusing, here is the biggest resurgence I think I have ever seen and there is no cave associated with it. After two days



because a yak had fallen down and died. All plans of running back down the hill for more rope were dropped and we looked for somewhere to camp.

I was awoken by yaks at about 6am, one of which almost squashed the tent flat. We

found several more choked sinks that day, and broke the magic 4000m mark on top of one of the hills. Sadly we later found out that all but one of the sites had been visited before, the locations hadn't been entered onto the expo maps.

High Camp

A return to Zhongdian, more food shopping and frantic taxi rides to the 'horse village' and before we knew it we were slogging our way from Zhongdian at 3300m up to Dawa's place at 4000m. 700m of ascent sounds easy, but with heavy packs, difficult terrain and the fact that we actually climbed 1100m due to a particularly frustrating valley meant that we were all fairly dead by the time we reached camp. Dawa, I should explain is a Tibetan farmer who farms yaks for their milk, spending 80 days at high altitude to graze his yaks before returning to his house in the valley for winter.

The main problem with camping at Dawa's is that he also keeps pigs, pigs that have an uncanny art of finding any food that isn't tied up a tree. Mind you we soon got wise to this and the pigs were only enjoying the truffles that we'd lay in the woods each morning.

My overwhelming memory of high camp was that it rained a lot. As a result I spent 7 days generally sogging about. I went digging at 4200m at a promising stream sink (The Hobbit Hole), surveyed The Dragons Arse (which sadly ended at a draughting choke after 50m) and dropped some short shafts

on mobile phone hill (choked at about -7m). Despite the lack of any results for this part of the expedition this was undoubtedly the highlight of the expo.

Not even good karma could find cave around here: Simon Froude was most surprised when he prussiked out of a shaft to find 3 monks meditating at the entrance!

The expo ends

After we'd returned from Dawa's and recuperated we planned the last 4 day assault to find cave. Sadly a case of not farting with confidence saw me learning how to squat in Zhongdian, whilst the rest of the expo explored what was probably the sink for waterfall cave.

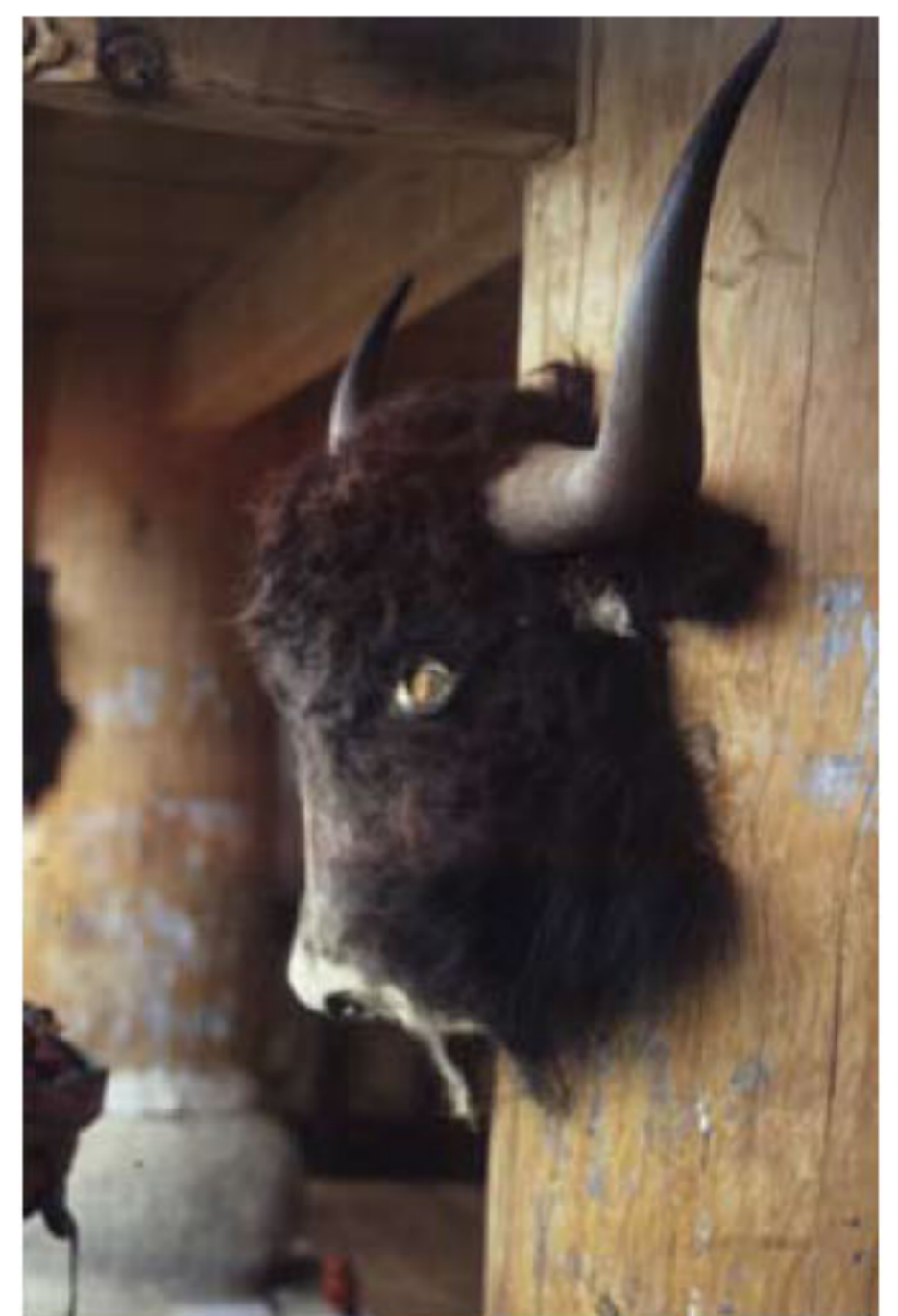
Myself, Alys and Hugh Penney returned via Kunming, Yangshuo, Canton (Guangzhou), Hong Kong and eventually England. The rest of the expedition who left a day after us spent 2 days on the bus trying to return to Kunming due to landslides having washed all the roads away!

If you want more information on this or other Hongmeigui expeditions see www.hongmeigui.net

of nothing we departed back to Zhongdian, via a breadvan (looks a bit like a mini Bedford van, but is an even better offroad than a hire car) for 4 people and kit, with the rest of us hitching. Due to the breadvan having to be topped up with water every 15 minutes the hitchhikers were only 30 minutes behind back to Zhongdian.

A New Area?

Myself and Rich Bayfield (Ex-Southampton UCC) set off up the hill to an area that looked like it hadn't been visited before. The first villagers we met pointed to our phrase sheets, with phrases like, running water, 30m deep and very big. After an hour walking round looking at choked shakeholes the villagers communicated, via acting, that the shakehole had been filled in



Photography - Ben Stevens





developed, discover the cave passage and use this to connect both mines along the large open passage that connects the two mine developments..

So there you are - easy.

We had arranged to go caving with Martin and Hector from the Cantabrian Group. Once again there were problems with communication. What we understood to be a short drive of about half an hour followed by 40 km of passage, turned out to be a drive of one and a half hours to a location about 40 km away, as the crow flies. We started off in the mid afternoon and travelled a seemingly interminable way from Ramales to the La Florida mine site situated in the hills SW of Santander. Apart from good roads around Santander the rest of the journey was by narrow country roads frequented by wide earth moving lorries. On arrival at the site we discovered a working "mine". A new adit was being driven into the hillside to accommodate a railway. The whole system was being converted into a show cave. Access was to be by railway with the minimum of foot-travel at the other end. We were fortunate to be able to visit the complex whilst the development was in progress, and as a result the whole cave system was very well lit and access was relatively unrestricted since we were with the Cantabrian group.

So how about this for recipe:

1. During Lower Cretaceous (about 140 to 100 million years ago) times deposit a large mass of limestone then interbed and overlay with sulphide rich black shale.
2. Construct two parallel metal-rich steeply-dipping lodes with high concentrations of lead (as galena - PbS) and zinc (as sphalerite or blende - ZnS) as well as bits of iron, manganese and copper..
3. Place these 400m apart, and arrange that the veins intersect both limestone and shale.
4. Uplift and erode and in response to changing water tables produce a cave the trend of which is at about right angles to the lodes.
5. Since nature abhors a vacuum - start filling up the cave again with pretties. Arrange that the ambient temperature is relatively high so that aragonite is formed instead of calcite
6. Bring in miners who recognise the

- trace of the lodes at surface and then allow them to follow the veins underground.
7. Finally, when both mines are well





We had also understood that little caving equipment was needed. Another error in translation. However we finally got kitted up with minimal equipment and descended or rather traversed into the bowels of the earth. A nice large adit, to be eventually occupied by the railway, led after some hundred of metres to a gob-smackingly beautifully decorated passage. The passage was large, and had been used by the miners as a cross passage to link the two mines and traces of the tramway were still visible. The miners

had been very careful to preserve the formations. Words fail me in describing the beauty of the formation. The usual stalactites, stalagmites and helictites were in profusion and composed of aragonite, dominantly white, but occasionally coloured with minerals ranging from the red of iron through to black manganese.

Following the consequential wanderings around open-mouthed, we were then lead into the area of one of the mines. This was a zone of large stopes, shaft and winzes, interspersed with beautifully decorated natural chambers. Our Iberian friends diverted themselves by hurling large rocks into bottomless pits. We eventually emerged into twilight and made our way back to Ramales. Unfortunately we were forced to stop at a pub on the way.



By the time this appears the complex should be open as a show-cave. Well worth a visit.

Photography - Martin Hoff



A cold and frosty morning meant a careful drive up Leck Fell. We initially parked at Lost John's car park till Bridget and Ben arrived and advised going back downhill to just past the previous gate. Unfortunately they then suffered gear problems (of the sort of 'OH *~!\$ my furry and helmet are at Red Rose-Ed) and opted for a walk and visit to Bernies. A short walk along an obvious path brought us to the concrete cap over the shaft. The entrance is quite narrow, but once we were inside we were all greatly impressed by the remarkable engineering achievement of the scaffold shaft. Some parts had breeze block steps and holds in the wall, other places had short fixed ladders, while all the shaft is scaffolded and cemented, making for an easy climb down.

Leaving the bottom of the shaft a short passage brought us to a climb down. Although it had a rope on it this is presumably for gear hauling as it was easier to traverse round in the angle of the rack and free climb (especially coming back up). Easy walking passage led us to the junction with the main stream.

We headed downstream first – stonking along a fine stream passage which just kept on going. After passing a couple of inlets we eventually reached a short waterfall. Climbing round on the left and then down in a small alcove before ducking past the spray saved a soaking. A relatively short distance further the roof dropped to a flat out crawl along the stream, as this appeared on the survey to be just before the sump we turned round here.

We headed upstream from the junction and the superb streamway got even better with some brilliant formations. Going upstream we concentrated on the streamway, which opened up into a chamber before narrowing slightly and meandering with some deeper pools. On the return back downstream we explored some of the side passages and inlets. One from the river chamber went a surprisingly long way with mainly stooping height or hands and knees height eventually opening out on the left into a tall dripping chamber with 2 ropes hanging down

(presumably Oliver Loyd Aven). The crawl continued but I gave up when it became flat out. We looked at various muddy digs on the way out as well as climbing up to admire the magnificent stal column again. We had some difficulty trying to tie in all the various bits to the survey, though probably mainly due to missing some higher level inlets.

The climb back up the shaft obviously seemed longer than the descent, but it's easier than SRT provided you avoid concussing yourself on all the scaffolding above your head! Notts II is a superb trip, ideal for a Sunday after a long trip the previous day, especially as it requires no SRT kit. As one of the Red Rose members told me when we got back to Bull Pot Farm "the only reason it's not the best streamway in Yorkshire is because it's in Lancashire!".

Underground party were Brian C, Bill B, Dave & Andy (author) D



Abstract

The origins of the nickname are explained and the various aspects of technology that the club has adopted or developed are reviewed. The topics are taken from right through the 60 years of the club to the present day, with some thoughts for the future. The aspects covered are mechanics, pure science, surveying, rescue and finding new caves. References are given to enable the reader to find more about particular subjects.

Introduction

South Wales Caving Club has, quite rightly, over the years earned a reputation for being able to turn its hand effectively to any aspect of caving and cave research. To be able to gain the objectives of the club, the members have time and again retreated to their workshops and made or adapted any number of devices to assist them in their pursuit. The club has been blessed with a membership that has included many fine mechanics and engineers who have between them come up with the goods. It should be remembered that many of the things described in this article were considered at the time to be state-of-the-art or cutting edge technology. The term "Clockwork Caving Club" was first coined for the efforts to bottom Belinka Pit in the erstwhile Yugoslavia (Peter Harvey, pers. comm.). Before the days of SRT and cat's cradle caving, all pitches were rigged by ladder and lifeline. Belinka Pit presented such an obstacle that the only way to get to the bottom and back in any form of practical safety was by winch. As no winch of a suitable nature was available, members of SWCC built one, took it to Belinka, bottomed it and the rest is history. The only reference in print that I have found to the term is in Newsletter 65 from February 1970, when Mike Coburn exhorts "us [to] have more of the spirit of the 'Clockwork Caving Club'" in a letter to the Secretary.

For the purpose of this review, I have taken the term "clockwork" to mean any application of technology that involves crafting a device or tool, or even using something that is not generally available to the majority of cavers. I think that it is fair to say



that we have never actually had a real clockwork device but, no, wait a moment, wasn't it George Bray who had a chart recorder installed at Y Grithig for recording the conductance of the water emerging from Ogof Ffynnon Ddu? That would have been clockwork! Now we have electronic clocks, so they can be included with the electronic projects that have been undertaken in more recent years. The last few pages of Newsletter 47 (1962) are written by the then Tackle Officer, Frank Baguley and are worth a look in their own right. Of particular note is the following extract: "With a motto like 'Be adept, adopt or adapt' or in plain language 'Be clever, pinch and alter' we should go a long way over the moor, where we have plenty of hideouts." There were a lot more people involved in all the clockworking than are mentioned here, but hopefully their names will be found in the original articles and given appropriate credit. The list is in roughly chronological order, but with some deviations where appropriate. As you read through this list of achievements and, no doubt, think of things that have been missed out, I think you will come to the same conclusion as me: "Didn't we do well!"

Ladder making

Of course, this is not particularly special to SWCC as all major clubs made their own ladders years ago. One of the club engineers would set up a jig and produce miles of the stuff. "Pin and

Araldite" was the standard for club-built ladders as no specialist equipment was required – ferrules and pressure bonding require presses and they were not available to most cavers. In Newsletter 25 from October 1958, Tom Round gives details of making ladders using resin and glass fibre to bond the rungs to the wire. What is interesting is that when glass fibre is put through the splayed strands of the wire inside the rung end and filled with resin, the resulting fixing tested stronger than the steel pin and resin version.

By November 1968 there had been a few rung failures, so Glyn Thomas undertook some investigation as to why. It was determined that the failure was due to "intergranular corrosion" of the particular aluminium alloy that was used in some of the ladders. It would appear that the failing rungs had some 4.5% copper in their composition that gave them strength, but had poor resistance to corrosion. Glyn reports on this, with the aid of photographs, and gives recommendations in Newsletter 61.

On the subject of ladders, Sam Moore wrote up his tests on the strength of 'C' links in Newsletter 96 (1982). He manages to demonstrate that falling on a ladder is not a good idea – falling off the ladder is better for the 'C' links! This illustrates the willingness of members to press into service any device that may be available at work to further the pursuit of spelaeology.

Cave Surveying – The First Electronic Gizmo for SWCC?

Bill Birchenough had picked up on an article in Electronics magazine that detailed a transmitter and receiver system for mapping caves that operated at 2kHz, using loop aerials. A trial had been made at Cwm Dwr, a surprising result had been obtained and an improved version was being constructed. No details of construction are given, but for the record this is to be found in Newsletter 34, published in December 1960.

Its usefulness was not under-estimated as a more powerful version, with a range of up to 400ft was constructed. It was used to locate passages, firstly around the connection between Ffynnon Ddu One and the Smithy area, and then to find a suitable point for digging into the Clay Series, what is now Top Entrance. The use of the device in Ogof Ffynnon Ddu is described in Newsletter 58 by John Osborne, while the construction details are revealed to all in the CRG Publication No.11 (see below). John Osbourne provided the theory for the use of the induction 'radio' devices in Newsletter 64. This is all now "common knowledge" in the cave surveying and electronics circles, but must have seemed quite a major advance in cave exploration at the time (1969). All calculations would have to have been done with log and trig tables – none of these whizzy computer things in those days! The theory of the field generated by a loop aerial has not

changed, even if the transmitters and receivers have advanced in power and efficiency.

Big and Small Engineering - Tunnel Top Entrance

Bill Birchenough's locator was taken into Tunnel Cave and to the aven at the far end, above the Cascades. A point was established on the surface, and a dig commenced. That was the small bit – the electronics. After chemicals were introduced to reduce the limestone, their effect was noted to be a less than satisfactory 10 or so feet of progress, so a conclusion was reached that the only way to get anywhere was to go big and use a compressor and drill. Lionel Dingle, a club member at the time, had access to a tractor with attached compressor and a drill, so drove up to Penwyllt for the August Bank Holiday weekend 1961 in some style.

As the weather was less than clement, there was that delay that we all know until the humidity became less than 100%, then an all out assault was launched on getting the tractor up the hill behind Dan-Yr-Ogof. The weekend saw good progress. At the end of the Monday they left behind a 25ft deep shaft. If only all our digs went at that rate! The following weekend established a good sound connection, where knocking could be heard both ways between the aven and the shaft bottom. November came before Eric Inson climbed to the top of the aven and it was calculated that about 8ft separated the cave from the outside world. Ann Williams wrote this up in Newsletter 38 – a fine piece of club history, well recorded.

The next stage is recorded in fine style by Clive Jones (N/L 42), where a compressor is lugged up to the dig by Land Rover in December '62 and an all-out drilling and banging session got through to air space and a warm draught. The distance that was dug was on target from the estimates that were made from the previous visit. It must be noted by the diggers of today that this session included digging until 03:30 hrs. Yes, gone three o'clock in the morning! Serious stuff! But wait: there is more... "At 10p.m. another team left the Gwyn Arms.....ready to chip out the bottom of the shaft and start drilling again." Digging after the pub!!!



Of course, this was not the only time that "Digging in the Grand Manner" was undertaken by the club. You only have to look at the photos at the front of the 100th issue of the Newsletter to see the efforts put into resolving the mystery of "Blob Hall" in Cwmdwr Quarry.

Some Technical Aids For Cave Exploration – CRG Publication No.11 Members of SWCC got together and produced a 126 page book that was published by the Cave Research Group of Great Britain in Nov. 1962. This gave details of the current technology, much of it not available off the shelf, or at any rate at a reasonable price. The only criticism of the brilliant effort is that there is no contents page or index! The notes below will give the reader an idea of what is in the book and will fill the gap of the missing contents page :

Section I Ladders by W.E.Clarke
This tells you all you ever wanted to know about making your own ladders, but it should be borne in mind the notes about ladders elsewhere in this roundup. The failures came after this publication, but relate to the materials used, not the methods described here.

Section II Self Lifelining Devices
Part 1 A Semi-Automatic Lifelining Device by W.E.Clarke
This is a kind of roller/rack device that pinches onto a lifeline when loaded. A method of using a karabiner with a bar is then described.

Part 2 The Slipgrip by W.H.Little
We should all know what a prussik knot is, but this is an adaptation that puts the turns of rope in a tube and slides up and down the lifeline when evenly loaded. Bill mentions some disadvantages and what to do if left suspended in the event of a ladder failure.

Section III Scaling Equipment by P.I.W.Harvey
Rawl Eyebolt. Peter points out that this device is the preferred method of providing secure belay point for the following equipment.

The Maypole. The aluminium scaffold poles used throughout Ogof Ffynnon Ddu need no further comment!

Uppet. Before the days of battery powered drills, all bolt holes had to be drilled by hand and hammer and were usually for Rawlbolts that are considerably bigger than the small spits that are used these days. To speed up climbing a sheer rock face, the Uppet was designed to cut down on the number of holes drilled. The Uppet

was a three-sectioned steel ladder that fixed at the bottom and climbed until the bolter could sit on the bicycle seat at the top to drill the next holes. The whole affair was then lifted until it could be climbed again for the next set of holes, thus allowing progress up the rock face. Dimensions are given, so if



you want to build another one...

The Skyhook An illustration and description of its use are given, but no dimensions. Peter made two of these cunning devices, although one has gone missing since, and it can be still be used if required.

Section IV Anti-Exposure Suits and a 'Wet-Suit' For Caving Part 1 by W.H.Little

Some of the methods of keeping warm during and after wading or swimming in cold water are described. They have progressively led to improved clothing for caving. The ideal clothing is considered and this is nearly achieved by the 'Wet Suit', specially made for caving.

Bill's turn-buttons failed, so he made his own. These were the days of homebuilt wetsuits, none of these fancy modern things with different coloured panels. Hours were spent at home getting high on the glue fumes! The techniques employed in successfully building your own are well described.

Part 2 by L.S.Galpin

Laurie tackles the difficult, but vital, task of measuring up for the wetsuit. If you got this wrong it could be too tight or too loose, neither comfortable! As

we all know, wetsuits "shrink" with time, but this is not mentioned in the article. The answer to wetsuit shrink is to cave regularly in your wetsuit so that it wears out and has to be replaced at fairly regular intervals. This actually solves the problem in two ways: middle-age spread is held in check by keeping a sylph-like physique due to the activity (so you think) and by each subsequent wetsuit being just that little bit bigger than the one before, without you really noticing!

Section V A Magnetic Position-Finding Device by N.Jones & W.Birchenough

Construction details and the theory of operation are lumped together for the reader to be able to build their own location set. These were the days before integrated circuits became the norm, so discrete transistors were used. It is suggested that Nife cells be used to power the transmitter and U2 batteries for the receiver.

Section VI Comparison of Synthetic Ropes Suitable for Caving by J.L.Hartwell

All you ever wanted to know about synthetic fibre ropes! Their differing characteristics are discussed and tables are presented so that the reader may compare the types, sizes, weights, strengths and even the prices. Advice on the storage, use and abuse is given. Comparison is made throughout to hemp rope, what was the normal rope used by cavers.

Waen Fignen Felin – A dig-and-a-half Paul Dolphin had started a dig at this important sink above Dan-Yr-Ogof back in the late 1940s, but SWCC decided that time was ripe for having a further crack at it. Newsletter 45 (November '63) has a good résumé of the technicalities of this ambitious project, right from the back of a fag packet calculations at the Gwyn Arms to the rigging of the dig. This was no minor dig – winch, generator, Kango hammer, tents for shelter, timber for shuttering, pulleys, shear-legs, tipping bucket and boulder-reducing chemicals. All this lot had to be taken to site, so Land Rovers were pressed into service, the track having to be improved before the August Bank Holiday week of action. In all, 35ft depth was reached in that week, with an estimated "only 6 –10ft. of digging" required to "get to the

valley floor and the cave". "... there can only be a few week-ends work left." If only that was the case!

By the time of the AGM in 1964 it had become 70ft deep, by 1965 - 80ft deep. The 50th Anniversary Newsletter has some photos of the dig and diggers taken by Clive Jones.

Caving and Computing

Aaaargh! Computers!!!

But seriously, folks! The first article on computing cave survey data appeared in SWCC Newsletter 59, way back in March 1968. Yes, some of you weren't even born.

Paddy O'Reilly wrote of the logic behind a program written in FORTRAN for processing Lines, Loops and Links in the data. He presented a table of input data and the resulting x,y,z co-ordinates in an output table. He then offered to process anyone's data provided that it was presented in the correct form. Things have certainly come a long way since, with the adoption of the modern programs that plot out the centreline of the survey and can swirl the 3-D image around on the computer screen in front of your very eyes.

The Chemical Investigation of Cave Waters

The above titled article appeared in the 50th anniversary edition of the club Newsletter, written by George Bray (Newsletter 118). However, looking back through the earlier Newsletters, the first write-ups on the analysis of cave waters were back in 1968 in N/L Nos. 60 and 61, with further work recorded in Nos. 69 and 70 (1971). At a casual first glance it would appear that this excellent piece of ground breaking work was being done with standard instruments and chemical analysis. A closer inspection of the text in N/L 118 reveals that "An improved conductivity bridge had been made...". Later in the text it is revealed that this home-made "...bridge was very accurate but slow in use..." and was replaced by a commercial unit. This should in no way detract from the "Clockwork Concept" of building our own equipment as and when required. George was fortunate to be able to secure better equipment, at someone else's cost – always a desirable thing!

Later in the article comes the description of the continuous recording of data at the resurgence of Ffynnon Ddu. "...a very robust home-made conductance cell was installed in the resurgence pool and the cable link

[to the chart recorder] under the road made via the conduit carrying the water pipe to the cottage." An attempt was made to monitor the water that flowed into the cave at Pwll Byfre. Laurie Galpin laid a telephone cable (good old GPO!) from the SWCC HQ to the sink, but electrical interference and chewing sheep meant that it was not a success. There is also reference to a power surge during a storm that destroyed the input stages to the chart recorder. These last two items are well worth bearing in mind for anyone following on with any other outdoor work in the future.

George's article is rounded off with a full list of references, mostly of articles that appeared in the Transactions of the CRG and later BCRA. Any scientific work that members of the club undertake should certainly be published nationally for wider reading by other researchers.

Looking at the earlier articles on the subject, it seems that the club has not changed that much as there was an attempt to see if "strips of grossly over-burnt toast" would absorb fluorescein dye. Anything to try and reduce the reliance on outside sources! It was not deemed a great success.

3-D Cave Surveying

Before the advent of the 3-D computer generated pictures of today, the only way to get your head round the complexity of some underground passage networks, be they natural caves or mines, was to build a physical 3-D model. Roger Smith explained how this was done in Newsletter 65, in Feb 1970. The very nature of these models makes them delicate, but allows one to look from most angles and appreciate the relationship of the passages to each other.

Nowadays it should be possible to use computer controlled lasers to cure liquid resin to make a one-piece plastic 3-D model of all the surveyed length of Ogof Ffynnon Ddu or Dan-Yr-Ogof. I don't know what we are waiting for!

Bolt Hangers For Single Rope Techniques

Peter Harvey, the well-known engineer, did some calculations in 1983 (N/L 97) to determine the stresses that were imposed on the 8mm bolts that are used in SRT rigs. His conclusion was that there was not enough of a safety

factor in the standard Redhead sheath and bolt arrangement and suggested four ways of rigging a hanger from the sheath itself, that would give a far higher factor of safety. There certainly are a few worrying things about rigging ropes when one stops and applies some maths. Who remembers the Italian Tyrollean rigging at Rescon '92? When we applied maths to the way that the ropes were knotted, tensioned up and loaded with the "casualty", they should have just snapped and created a casualty (without quotes). Happily they didn't!

The Ogof Beacon and the Ogofscope

Anne and Andy Bell have done their bit for the Clockwork CC, by coming up with the small camera system that was lowered down the borehole in Cwmdwr Quarry to take the pictures of Blob Hall, and also building a more advanced cave locating transmitter/receiver system. While the camera detail does not appear in the club publications, the photos are still on the wall in the Small Common Room for all to see.

The Ogof Beacon, meanwhile, was written up in full with all its circuitry, construction details and experience of use in Newsletter 101 (1986). It is a far cry from the simple discrete components of Bill Birchenough's system, but represents the drive to keep our clockwork up to date!

The Ogofone

Messrs Williams and Todd published the details of the speech transmitting



answer to the North's Molephone in the BCRA publication Caves & Caving No.35 (Spring 1987) and also in Newsletter 102 (1986). Not only could it be used as a beacon for determining a location, but proved its worth as a radio system for rescues. It was state of the art at the time, but soon became prey to the onward grind of obsolescence as far as some of the components were concerned, though not before others took the design and built their own units. The range of the Ogofone proved to be about 500ft of rock, established at Ogof Daren Cilau.

Earth Return Telephones

Stuart France adapted the design of Neville Michie in Australia, to produce a set of extremely effective telephones for use on rescues by the West Brecon Cave Rescue Team. The publication of the circuits in Caves & Caving No.40 in 1988 ensured that other rescue teams around the country, (as well as ordinary



cavers for their digs), could build their own systems. Being very simple in construction, the cost is also very low – a major factor for most teams! The phones are still working well over 15 years later, provided the sheep don't chew through the phone line in the middle of an incident (4 times in 24 hrs!!!).

Making Your Own Caving Lamp and Charger

There is certainly not the same amount of lamp fettling going on these days as there used to be. At one time lamps needed a lot more care to keep running and were relatively expensive. Asking around a caving club normally got you lots of (conflicting) advice and assistance in modifying, maintaining your lamp and building a charger. Stuart France has published some useful information and circuit diagrams on lamps that can be found in Newsletter 107. Anyone relatively new to caving would be well advised to read this sort of article to get a grip of some of the problems that beset caving lamps. Understanding how a battery charges and discharges may help extend the life of your lamp in both the long term and also not leave you in the dark in the short term!

Project Greensites

Clive Jones co-ordinated what must have been the SWCC's most ambitious venture into trying to evaluate new ways of finding virgin caves. A meeting was held in December 1989 and the proceedings published as Newsletter 108. Clive drew on the fact that we were once called the "clockwork cavers" and that with the same spirit we could build the present day equivalents of the clockworks of the past. The modern "clockwork" discussed covered seismic mapping, electromagnetic and resistivity mapping, ground-penetrating radar, gravimetric and magnetic mapping. Also mentioned were geographical information systems, digital terrain mapping, gas geochemistry and dowsing. The report is well worth reading if you haven't yet and reading again if you have. Follow on by reading Newsletter 109 which contains more on the project, with illustrations of some of the computer generated resistivity

scans. This really underlines the fact that the spirit of clockwork caving lives on, maybe ebbing and flowing a bit over the years, but always there.

Hand Capstan Descender

Previously unpublished, we can now reveal the design of a descender devised by Peter Harvey, who had a number cast from alloy. He still has the original drawing from which the castings were made. He has been quick to point out that there is one minor problem with it – if you let go of the tail end rope, you will descend more quickly than anticipated!

Rope Washing

Paul Meredith was obviously not impressed by the state of the club rope washer back in the mid '90s and thought about making his own, but to a better design. Instead of just doing it, hanging it on his wall at home and keeping it to himself, he published the details in (Reference N/L 116). One of the commercial rope washers of the time was a simple tube with a lining of Astroturf. If held in a bucket of water and the rope was pulled through, it was fairly effective. Paul improved this concept by enlarging it to the wall mount-size of the club washer. With simple plumbing parts and a hose to feed water in from the side, the device presented considerably more Astroturf to the rope, though probably not as much as the club washer, and ensured a constant feed of clean water. Pulleys mounted top and bottom steered the rope through the pipe and he is

pleased with the result.

This article seems to have had the effect of getting the club washer repaired and it has been running well since. I think that a few bits are showing signs of wear, so it may be time to service it. Or perhaps build one to Paul's design?

The Balinka Pit Winch

This magnificent item must surely be the ultimate in Clockwork Caving. The Belinka Pit expeditions in 1964 and 1966 had the aim of descending a shaft that proved to be 996ft deep. The club had some very talented engineers who built the man-riding winch that would lower and raise the expedition members, a preferable choice to climbing ladders. Remember that this was before the days of SRT and presented a considerable challenge. More recent members will be able to refer to the photographs in the 50th Anniversary Publication (Reference N/L 118) which gives a good idea of the sophistication of the winch.

Two Velocet motorcycles were stripped to provide parts, Dexion and scaffolding used in the cage and headframe. When the team were unable to find a drive wheel that was large enough, they forged their own using alloy from a crashed aeroplane. To build a foundry and cast a wheel would stretch the skills of the members these days, but I expect that in the mid '60s more members had actually worked in engineering shops and knew all about casting from experience.

The Babysitters' Dig Winch, etc

This was another winch that was built out of necessity. On the edge of the limestone escarpment to the north of Ogof Ffynnon Ddu 3, this dig had been





minimally dug, taking only enough spoil out to make a secure man-sized shaft. Following some collapse and the bottoming out of the solid walls, the cross-section of the shaft had to be increased to reach "solid" rock all round. This meant that a lot of spoil could be dug fairly quickly and thus put into buckets quickly. This further meant that the buckets had to be hauled to the surface and emptied quickly. The net result was that when the diggers came up to grass, the hauling team was were too knackered to want to start digging and the diggers were too knackered to want to haul. Graham Christian managed to persuade his father that he really did want to buy a new lawnmower, releasing a Suffolk Punch engine and other bits for constructing a bucket-hauling winch. The calculations that came before the actual construction are recorded (Reference N/L 119) so that others may

use the methods for working out the needs of any further winches that may be built. The construction was helped by having access to the knowledge and skills of Paul Thorne of Kent Underground Research Group who has built a number of winches and other devices, including a certified man-riding winch. It certainly pays to keep up contacts with as many clubs and cavers as possible, as you never know when someone might have particular skills that you will need. Chris Grimmett did a sterling job in constructing the buckets, or kibbles, for the dig. With a volume in excess of 30litres, there was now the problem that the banksmen could do themselves a serious mischief when trying to land the kibbles and tip them into the wheelbarrow. The shaft top at Babysitters' Dig, or Pwll Meillion, was rebuilt with bank doors that cantilevered together so that opening one automatically opens the



other. They are assisted in opening by a gas-strut from a car hatch-back. This makes the operations at the dig a bit safer, as when the buckets are hauled to surface the bank-doors can be shut and the wheelbarrow trundled onto the doors directly under the buckets. The buckets are built so that by releasing a couple of catches they can be spun over to empty directly into the wheelbarrow without having to lift them at all. After the wheelbarrow is removed from on top of the doors, a swift yank on a rope opens the doors, assisted by the gas-strut.

Water has continued to be a problem after the dig got to a certain depth, so some thought was given pumping it out. At the turn of the century (Reference N/L 121) some calculations were presented on the scale of the water problem, along with some possible solutions. This was all put on the back burner as Andy Amatt acquired a borehole pump that can allegedly lift water to a height of 120m. This should keep things going for a while, but the diggers feel that there is room for improvement as it still takes hours to pump it out before work can commence. It does make one wonder what sort of old cave is being dug into.

Cottage Industry Clockworking

What is ticking round the club at the moment? What evidence of the "can-do" philosophy can we find? Let us take a walk along the line of cottages and see what lurks behind the doors.....

No.1 Here is the birthplace of much clockwork! The workshop is still used extensively, although the lathe is in dire need of replacing. Tools are always wanted.

No.2 Rescue. Home to the West Brecon Cave Rescue Team. Look round here to find a lot of hard work by Brian "Jopo" Jopling. The stretchers are perhaps the most live bit of work at the moment as he is constantly improving on the design. After any rescue or practice where they are deployed he invites comment about what did or didn't work and makes moves to redesign the problems out. Other bits of rescue equipment have been made by various members, and I have no doubt more will be in the future.

No.3 Upstairs to the tackle store to see the chargers and battery packs for the Bosch and Hilti drills that have made placing bolts and bang so much easier. Downstairs, the showers undergoing a full refurbishment – we

have the skills!

No.4 To be rolled in with the shower refurbishment, the heating system will be reorganised, along with the drying room.

No.5 Married Quarters had a kitchen refurbishment a few years ago, that took little more than a week. We have the skills to make good the walls and clad them with modern materials, make the kitchen furniture, rewire the electrics and plumbing and make the place look good enough to cook in! The flooring upstairs is looking good too.

No.6 The Main Kitchen can now be cleaned properly due to the refurb that it enjoyed a few years ago. Admire Pete Cardy's stainless steel work surfaces! A fine piece of engineering.

better. With no previous experience of doing up walls, he asked around for advice, set to, stripped the old rendering off, cleaned the stone, re-pointed the mortar and ended with a job that he could be proud of – it looks really good.

No.9 New bunks. The chippies of the club have done a good job in replacing the old metal bunks and making a little more room in the front bunkroom.

No.10 The library hosts the survey data for Ogof Ffynnon Ddu. Don't have too many drinks before asking for a demonstration of the 3-D plot of the cave to be rotated on the screen in front of you! Other data being collected is an increasing amount of meteorological information, currently

rainfall, pressure and temperatures. These are to be tied in with water levels recorded in the caves and streams and may provide more information about the hydrology and airflows. We may end up asking more questions than the answers we get, but we don't know until we try.

Taking a look at the cottages as a whole, they are looking good. A testament to the hard work put in by the members and a lot of us have learnt new skills by mixing with the more experienced clockworkers. It has been said that if you want anything, someone in the club can supply it, be it an item, a skill or just advice. Let us hope that these skills all get passed on.

Up and Coming

Activity at present is being undertaken on a number of fronts. Dave Edwards and Ian Todd are working on a combined electronic compass and clinometer, sighted by laser beam. The clinometer part is up and running and being used by Brian Clipstone, along with a laser rangefinder to increase the accuracy of the cave surveying.

Stuart France is working on logging depth gauges for streamways. Combining his data with rainfall may tell a tail or two.

The Babysitters' winch may get a few modifications to improve control. Jopo will continue to improve his stretchers, and is stirring things up for a "Digging Week". This sounds like a good opportunity for all the clockworkers to flex their muscles! The cottages will continue to provide a training ground for people's skill sets well into the future.

Drill bits will be pushed into either rock that needs to move, or rock-that-had-better-not-move-now-I-am-hanging-on-it.

Dowers will continue to twitch hither and thither, back up their claims with resistivity scans and to then maybe dig into new cave.

And hopefully the flickering of arc-light will shine out of the workshop long into the future!

Let us pull up the weights and carry on ticking!

Photography - David Dobson

Photo Captions

Page 27: (clockwise from top left): Formations in Column Hall OFD2. Paul Medhurst, Mainstream in flood, OFD1. Rick Hodgson in the streamway, OFD2. Felicity Norman in Selenite Tunnel, OFD 2 (Peter Collings Wells)..

Page 28: (clockwise from top left): Noel Cleeve climbing down from Maypole Inlet, OFD 2. Martin Hoff in the Mainstream, OFD 3. Tom Whalley on The Traverses, OFD 2. Tom Whalley and Martin Hoff in The Crevasse, OFD2 (Peter Collings Wells).



No.7 Upstairs into Ladies (shout first!) and see the cork tiled floor. This was a bit of an experiment – we did not know if it would stand up to the wear and tear of a caving club. However, it seems to be doing a grand job. It is easy to clean and warm to the feet. See the doors – the fire doors fitted by club members, fitted fair and square – a job not made any easier by the somewhat vague adherence to orthogonal concepts when the cottages were built.

No.8 Have a look at the walls in the back of upstairs. Inspired by the cleaned up bare stone walls in the dining room, Ian Alderman decided that the tatty rendering on the walls of the bunkroom could look a whole lot

In the early seventies one of the big rescue 'problems' was the Traverses OFDIII.

The plan was to conduct a rescue by the centenary method. Anchor a line at each end – support along its length with stemples and sling the stretcher underneath. In those days the ropes available were limited and the line of choice was steel wire cable – abundant in the Clockwork Caving Club. To drag the stretcher along a wire rope on carabiners was not an option. The friction and wear would be too great. The only non threading pulley available was a latch plate pulley, (passing stemples required a non threading pulley), These were industrial strength and weight and had a hinged plate secured by a split pin and chain which allowed the pulley to be placed over the wire without threading. Each one weighed in at some 10k each and at least 4 were required. I mulled over this problem for a while and the swing cheek pulley was born.

It is difficult to know if you have seen something and stored it away at the back of your brain but I have looked for any reference to a pulley of this design and have not found any previous to my

'invention' which took place about 1974. The pulley was immediately dubbed the Jopul.

The first sets were manufactured with hardened steel sheaths and case hardened cheeks – intended for wire rope – and proved successful. I do not have any pictures of the MKI Jopul's but a couple of years ago two MKII Jopul's (stamped SWCC RESCUE – which dates them), were found in the rescue stores. They were nearly thrown out but fortunately I was there to save them for posterity. The MKII was designed to be used on the new static man made fibre ropes that had become available so the sheaves were Tufnol and the shaft and plate stainless steel (see pics). Interestingly the shaft was riveted which is now part of the standard. Some later pulleys which I did make commercially had a bolted shaft to make the shaft and bearing maintainable.

In 1977 I went to a cave rescue conference in Poland and demonstrated my pulleys. I suppose there were some 18 countries represented and the Jopul's were certainly the first time this design had been seen by any delegate.

The following year a well known manufacturer started producing them commercially.

If only I had thought to patent them.

So that is how swing cheek pulleys came about, manufactured now by dozens of companies – and you never see a patent number on them.

An interesting footnote is that several years later we were doing a practice over the Traverses when, during the rigging, I queried what the bottom of the Traverses were like. The rest is history. Drop the casualty down 40' pitch at the far end and haul them up a 60' pitch on the out end. After an easy carry along a nice flat floor! If this had been common knowledge in the early seventies then the swing cheek pulley might have had to wait several years before being invented.

Jopo

The MKII Jopul. Circa 1976





The first section of this article was previously included in an earlier SWCC Newsletter as part of an article entitled 'No Sense of Direction'. It is reproduced here for completeness.

While Ian persevered with the digital compass, obtaining parts and laying out a sophisticated, double-sided printed circuit board (which I managed to manufacture using simple, home techniques) and doing some early tests, I became sidetracked by a request from Brian for a temperature sensing data logger. It was needed to assist in Clark Friend's work on Radon distribution in caves.

Again, the Monday Morons sprang into action and downed another pint. Brian produced the first circuit diagram which was used as a basis for research. A set of requirements was formulated and the various components selected and bought. The complete system consisted of a real-time clock, a digital temperature sensor, two memory chips (each holding 8000 bytes of data), a microcontroller and a chip capable of turning microcontroller outputs (0 to 5 volts) into voltages capable of being read by the serial port of a computer. Ian had devised a method of data compression so that the logger could store up to 85.33 days worth of data in its memory.

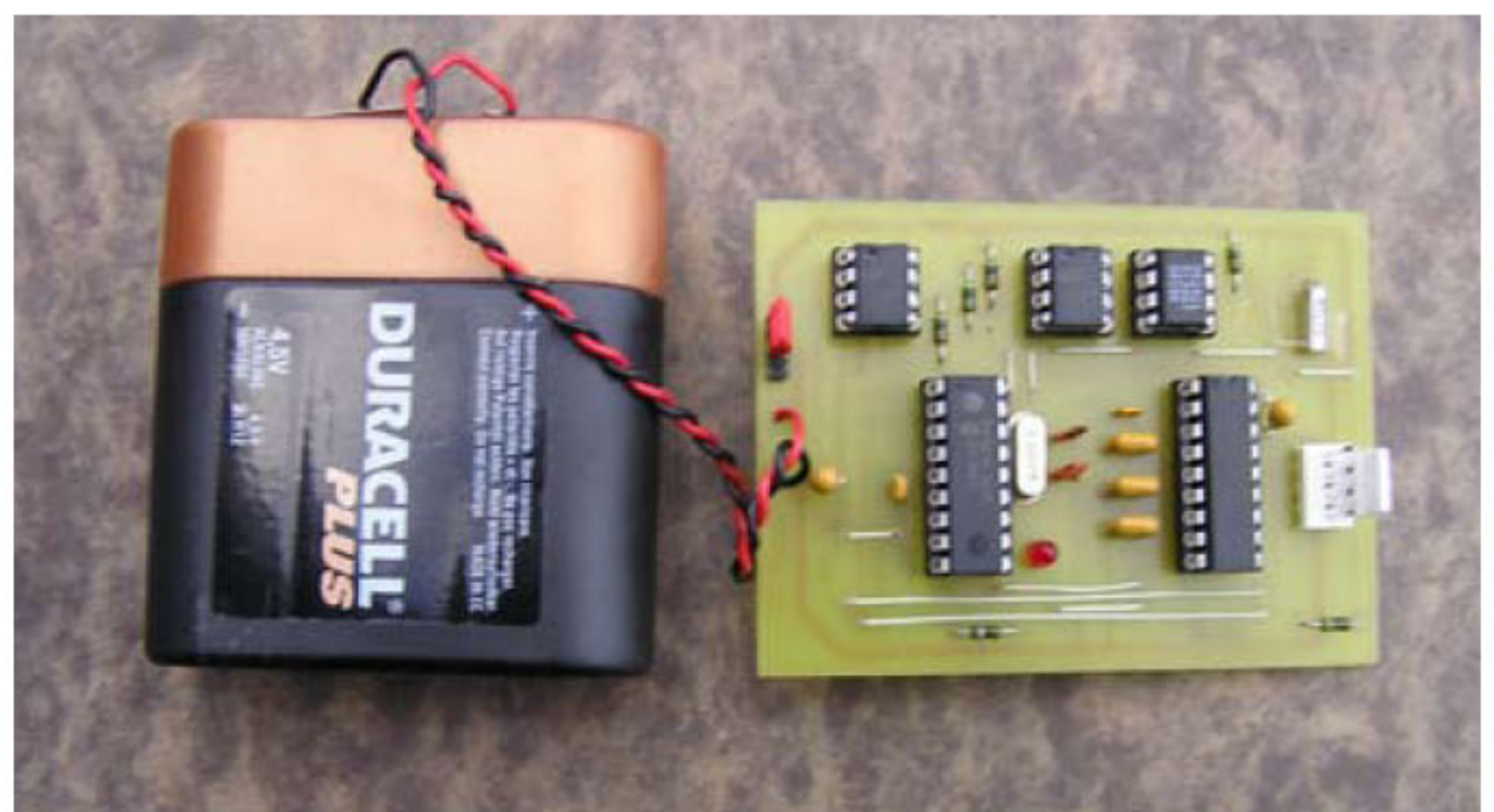
All of these chips talked to each other over two lines (I2C bus), one known as the 'clock' line and the other the 'data' line. Each chip has an

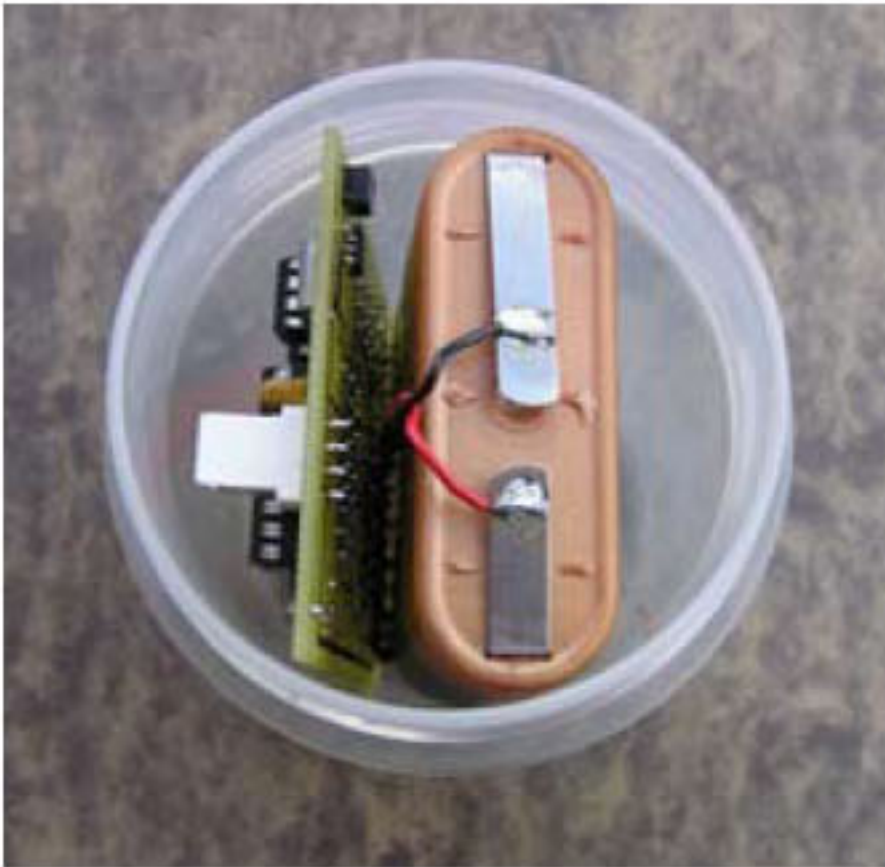
address and the communications procedure consists of a complicated set of rules for deciding which chip was being addressed and whether it was being written to, or read from. Most chip addresses could be selected but one was fixed. Unfortunately, the fixed address fell between the addresses of the two memory chips and required some awkward procedures; however, this problem was solved by some more clever programming by Ian. The next problem was how to talk to a computer serial port. The port works at a fixed speed (in this case, 9600 bits per second) and some considerable work went into programming the microcontroller (working at 1 million instructions per second) to produce the signals at precisely the right moment in time. Eventually, with the aid of a storage oscilloscope, it was possible to see what was happening and get the program working properly. Another assistance

was a computer program which would run the microcontroller program step by step and (sometimes) show up any errors. It did not show up errors which could occur from outside influences or failure to take into account mistakes in the instructions so getting everything working correctly took some considerable time. The data logger program was finally completed on the 7th December 2001 and tests began on a prototype printed circuit board. The next consideration was what the units would be contained in. Whilst scouring the shops for suitable ideas, I happened upon some food containers in clear plastic with screw-on, sealed lids that looked about the right size. It turned out to be so perfect that six more were purchased the next day (at £2 each) and required only one minor adjustment to the PCB. As a final test of the units ability to cope with a year change on December 31st, and negative temperatures, the unit was left in the car at the HQ on New Year's Eve. It successfully coped with the year change and recorded a lowest temperature of minus six degrees centigrade!

Work was then started on building six more units and, once built, on adjusting the real time clocks for accuracies of better than 1 second per week. The units were then left in the same place for three weeks and the recorded temperatures compared. These were all within half a degree centigrade of each other, a very acceptable result.

The finished units are connected to a laptop and the current date and time downloaded into the logger. On removal of the computer connection, the clocks start running and the unit goes to sleep until the point when the next whole hour is reached. During sleep periods, battery consumption is minimal (in the region of microamps). When the whole hour is reached the





unit wakes up, measures the temperature and stores it in memory along with the time and date. It then goes back to sleep for 30 minutes and then repeats the process. Each waking session lasts for about half a second and is indicated by the flash of an LED. When it is required to recover the data, the laptop is again connected and the memory is transferred to the computer. At this point, the microcontroller is sitting in a loop waiting for this to happen again. Disconnecting and reconnecting the computer allows the data to be retrieved again in case of any errors first time round. The power supply to the microcontroller is then interrupted using a small pull-off connector. This resets the microcontroller and the date and time can be downloaded again.

There are currently six of these units spread from OFD1 to Top Entrance (one being just inside Top Entrance) and results have been obtained for nearly four years now. During this time only one unit has failed, due to the container mysteriously half filling with water! The unit was repaired and has had no further problems.

The reason for measuring temperature was to investigate what could be causing changes in airflow within Ogof Ffynnon Ddu as suggested by the results obtained by Clark Friend in his Radon analysis.

The original intention was to look for temperature inversions (warmer at Top Entrance than at OFD1), the sort of thing that causes the mist level at HQ height. The early results were so interesting that it became necessary to have some idea of how the atmospheric pressure was changing in the immediate vicinity of the HQ. Accordingly, I became even further sidetracked by

obtaining a digital absolute pressure sensor and building a suitable circuit. This has now been incorporated into the same circuit currently being run to record Graham Christian's rain data (from August Bank Holiday 2002) and we now have a permanent record of barometric pressure as well.

The continuous record began on the 31st March 2002 although the unit inside Top Entrance was not installed until the 21st March 2004.

The units are located as follows: (1) close to OFD 1 entrance; (2) north facing wall in Cwm Dwr Quarry close to entrance; (3) in the wall at the south end of the cottages; (4) in a stream sink close to the tramway/track crossing on the way to Top Entrance; (5) in a hollow just above Top Entrance and (6) a short way inside Top Entrance. In siting, care was taken to place units away from direct sunlight so that the recorded temperatures would be that of the local ambient air. Mostly this has been successful but not in the case of the unit above Top Entrance. This seems to be in a sun trap and, although covered by rocks, only makes a good indicator of when the sun is shining. Obviously, this matters less at night. To a lesser extent, the unit in the cottage wall is affected the same way.

So what information has been gained from the results? I think that it is fair to say that those of us who are interested are more confused than ever about the airflow patterns in OFD. Unit (4), in the stream bed and roughly half way up the hill, is located close to known cave (adjacent to Merthyr Vale), and shows strong evidence of air flowing out of the cave at a roughly constant temperature of 8 degrees centigrade. This airflow is not constant and shows periods of rest. The temperature also falls significantly below other temperatures on cold nights (frost pocket or inward flow?). The temperature inside Top Entrance also remains surprisingly constant, again at cave temperature, but tends to rise slightly to mirror periods of hot weather outside.

My theory of cave air is that the external air is usually warmer than that in the cave. Warmer air can hold more water vapour than cold air and is therefore less dense (I know that that seems wrong, but it is true). As the warmer air enters the cave and cools,

it releases water vapour and becomes more dense. More dense air will sink, drawing in more warm air and also falling out of OFD 1 entrance as a howling draught. Passages halfway down the cave, if connected to the outside, should also draught outwards under these circumstances. Presumably the opposite should happen when the outside air is colder than the cave air. However, it has been reported by many people that airflow at various entrances has not been doing what was expected.

Data analysis so far has been limited. A histogram was prepared showing periods when Top Entrance temperature, at 6.00am, was equal to or warmer than OFD 1 entrance. Since the temperature difference over that height would normally be around 1 to 1.5 degrees C cooler, an equal temperature could be regarded as an inversion. This piece of analysis only covered the period April to March 2002 so is not definitive. Of the 229 results, 108 showed equal temperatures; 65 showed 0.5 deg C warmer; 36 showed 1 deg C warmer; 15 showed 1.5 deg C warmer; 3 showed 2 deg C warmer and just 2 showed greater than 2 deg C warmer.

Other, limited, analysis has included rolling 7 day average temperatures and a comparison of midnight temperatures between OFD 1 and Top Entrance.

What is now needed is a comprehensive analysis of all the data collected to date, by someone better qualified than me. I'll happily undertake the work with appropriate guidance. Is there anybody out there??

Dave Edwards
December 2005



Photography - Dave Edwards



High on the slopes of Fan Gyhirych it is raining. Well, this is Wales after all. Several streams rush down into a huge soggy peat bog, dotted with marsh grasses and reeds. After slower progress through this obstacle the Byfre Fechan emerges, enlivened

and more acidic than before. It then promptly sinks into the mud, rocks and flood debris that is Pwll Byvre and discovers a deep band of Carboniferous Limestone to get its teeth into. The local sheep, having jumped over the stream to reach another juicy patch of grass, carry on chewing and don't give it another thought.



One thousand feet lower, in the Tawe valley, a wide rock arch disgorges a strong and languid river, dark and rich with secrets. This is the Ffynnon Ddu, the Black Spring. After rain this resurgence swells and boils as the underground river rushes into daylight. In heavy flood, unable to cope with the pressure, the river finds release by bursting out from rocky crevasses in the woods and fields nearby.

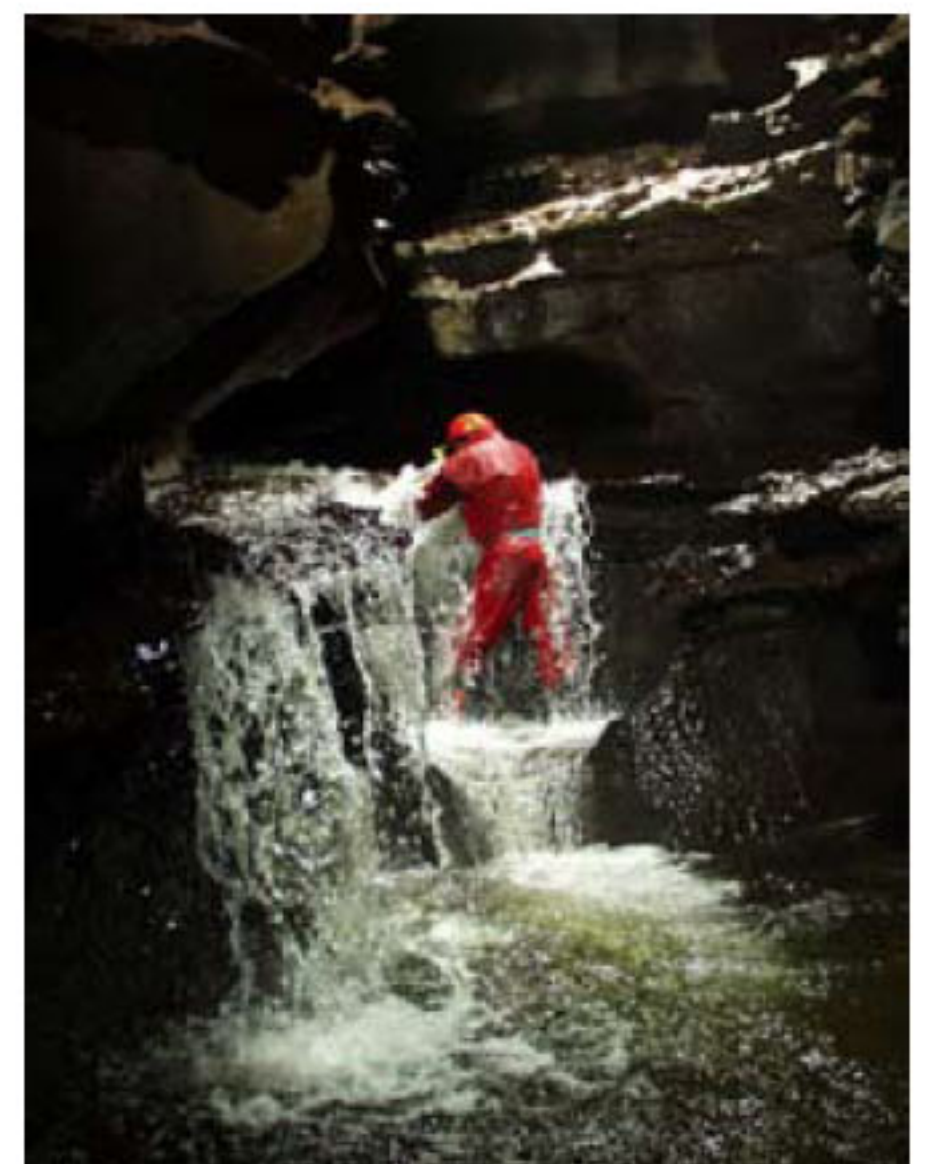
Early Explorers. In the summer of 1946, Peter Harvey and Ian Nixon, fascinated by this promising but impenetrable resurgence, turned their attention to



these occasional springs, and began to dig.

What they found was what we now call OFD 1, a sporting and sinuous river cave, sculpted out of dark limestone. Dangerous in flood, the clean-washed high river passages are a joy to explore, as long as you know how to climb up to the high level dry passages if need be! Delighted by their new discovery, early members of SWCC were stopped in their tracks by a huge boulder pile about half a mile into the cave.

After much hard work, rock falls and determined wriggling, they broke through Boulder Chamber, only to be faced with a deep and ominous sump pool. By now it was the 1960's, and cave diving was very much in its infancy. The first underwater visitors were still at that time using "bottom walking" techniques with lead boots and heavy oxygen re-





breathing apparatus. Fortunately the cross-over was beginning to diving with fins, and this allowed the early explorers much more freedom and flexibility.

The Connection. Dip Sump was finally passed in 1966 by pioneering cave divers Charles George and John Osborne, who even dived a ladder through, so that they could climb out at Shower Aven! The way was open into the long sought-after upper reaches of the mainstream, OFD 2. Month after month, longer and longer trips were made upwards and upwards as the cave slowly revealed her secrets. Some of the hardest work was carrying scaffold poles up the mainstream and the scaling of Maypole Inlet. Finally in 1967 they came to within a few feet of the surface, having traversed two miles of passage and climbed up some 700 ft, passing underneath what are now our Club cottages.



With a combination of hammer blows and early radio-location, a surface party dug down, earth and rocks rolled in, and the underground party kept out of the way! The Top Entrance was open, and with it a classic through trip.

In the rush of exploration that followed, the connections to OFD 3 and Cwm Dwr were made, although the Cwm Dwr entrance had been known since 1963. More recently the discovery of the Northern Lights has filled a blank space on the survey, but there is surely more to find.

Playground. Edge your way along daunting high-level traverses, chimney down winding canyons, slither through narrow passages, post yourself backwards through the Letter Box, wander through broad tunnels, hold your breath as you jump into deep plunge pools or stand in awe in front of beautiful calcite columns. And if you sit alone for a while by the Gothic Sump, you will hear voices amongst the gloops, drips and splashes.

The underground river roars and tumbles along its deepening course, it is the system's backbone as well as its creator. In the upper levels, the great sandy chambers stand still and silent, and the delicate stalactites drip quietly, and all in total darkness, even as you read this,

even as we sleep. Back on the surface, the sheep are still chewing contentedly, and still don't think to ask where the stream goes.

Text and Photographs by Peter Collings-Wells. (See the virtual tour at www.ogof.net)



"I recommend three pairs of shorts", said Gary Vaughan. "It can get pretty hot in Cantabria at Easter".

Really Gary? It's 7.30am, I'm walking up a [really steep] hill and it's 2 above freezing. Myself, Gary Vaughan, Neil Weymouth, Brian Clipstone and Paul Meredith are moving to the top entrance of 'Red Del' in Northern Spain to start a through trip to the Vallee entrance.

"Oh look", says Gary, "you can see the village where the exit is", "the nearest set of houses" I say, looking at a set of tiny houses several miles away, "erm no the furthest set", bloody hell I can just see the red roofs in the distance.

Still this is the trip that I trained every lunch time in the office gym, 12 kilometres of rowing every day, I know what a Vaughan trip entails after spending two weeks in the Ordessa last Summer. So the SRT gear goes on, the lessons so kindly taught by Gary Evans in the Welsh hills speak to me now, cows tails to the left, ascender to the right, I'm a firm believer in routine.

The entrance is blowing warm air, the pitches come in quick succession, a 7m, a 10m a 40m, then a 21m, on and on, deeper and deeper still, "rope free" comes the call from below. Huge delicately fluted walls rise either side of me, beauty underground, massive black and smooth limestone walls, waterfalls from above scatter droplets of cool water across rock and caver.

At the bottom now, 1 hour and a few hundred meters underground and our first challenge, a malfunctioning light. A change of carbide bought locally in an Aladdin's cave of a hardware shop, the light blossoms into life lighting the fossils in the rock and team is off into the cave.

Red Del Silencio is a challenging cave offering numerous zones; the first is the 'Marmite Zone', the local name for water filled pots. The marmites prove an interesting challenge, smooth water worn rock, jet black light absorbing rock with these deep pots, one after the other for several hours, high traverses over the narrowing passage with the wet foot-

prints of the others marking the way, the splash of carbide light illuminating the next challenge and, as suddenly as they began the marmites are gone, we emerge into a cross rift, walk down it and ascend a muddy 13 meters rope into a high level fossil passage.

It doesn't do to start questioning these in-situ ropes. My reasoning (probably very unscientific) runs like this. A brand new rope has a breaking strain of 26 kilo-newtons, that's 2,600 kilograms to you, roughly the weight of a transit van and 7 fat cavers. Tying the knot at the top halves that to 1,300 kilograms. Imagine that the rope is pretty old (when you see the rope this doesn't take too much imagination) and so suffers a 50% loss in strength and that, of the remainder, a further 50% goes in the fact that the rope is saturated with water and you still at the very worst have a 80 kilo caver supported on a 300 kilo rope. Now I find this comforting, so if you know that my maths is wrong, whatever you do please don't tell me.

The passage is much bigger now with pots in the floor of near cosmic proportions, holes filled with water are waded, or traversed on lines abraded to spaghetti or steel wire, "still a long way to go to that far off village, only 4 hours gone, another 8 to go", comes the tiny voice in my head. The wide passage ends in a series of hilariously muddy roller coaster crawl ways, slithering to the top we enter the next phase. An 18 meter pitch is ascended and lunch is eaten. Walking further reveals a quick five-meter pitch and leads to a confusing side passage that doesn't seem to agree with the written description of the through trip wonderfully translated from the original Spanish by Martin Hoff. We find that Martins translation of Spanish is spot on and our reading of the English is flawed. We ascend a 15-meter pitch walk for half an hour and descend a 25 meter pitch to 'El-Libro', a book hanging on a wire in the centre of the passage. Parties write their name in the book and this is used by rescuers to see if people are above or below 'El-Libro'.

"Wow this place is BIG", maybe you thought an OFD top to bottom trip is big, we've been caving pretty hard for

6 hours and we're only halfway! Just for fun we look at the first squeeze in the middle entrance above El-Libro, Gary, whose idea of a good time doesn't include squeezes, can't help an involuntary giggle at the tiny hole high above yet another piece of continental tat-rope.

We carry on, through an area of undulating sand and low roofs 'El-Sahara', an area of outstanding formations where the roof is less than three feet high and crawls pass below hundreds and hundreds of fabulously white formations.

Another two hours pass and finally we reach the main stream, we've been caving for almost 10 hours surely it can't be far to the exit, we stomp off to find boulder chokes blocking our exit, weird slippery mud climbs above the dazzling streamway far below, do people really climb mud? Slippery [mud] slides deposit us back in the streamway, more hours pass, bloody hell this is getting beyond a joke. More climbs follow the flat out crawls. I find myself referring to the cave as a woman, "give it up love, we've done enough let us out" on and on, I slip and lose my footing and involuntary yelp turns heads. Finally, the last climb. Neil whose sure footedness and head for heights has led the way on most of the climbs looks down, "I don't like this much" he says after some consideration, he slides down anyway and I follow. Still not out, I can't believe it, "Give it up love" I say to myself and suddenly we turn the corner and all we can see is trees and evening skies.

Red Del Silencio, eleven hours, five cavers and one hell of a good time.

Gary Vaughan organises a trip to the Cantabrian region of Spain every Easter for one week, mostly people who've been return with him. This was my first year, I don't know about you but I'm coming next year.

Dominic Hyland.



Introduction

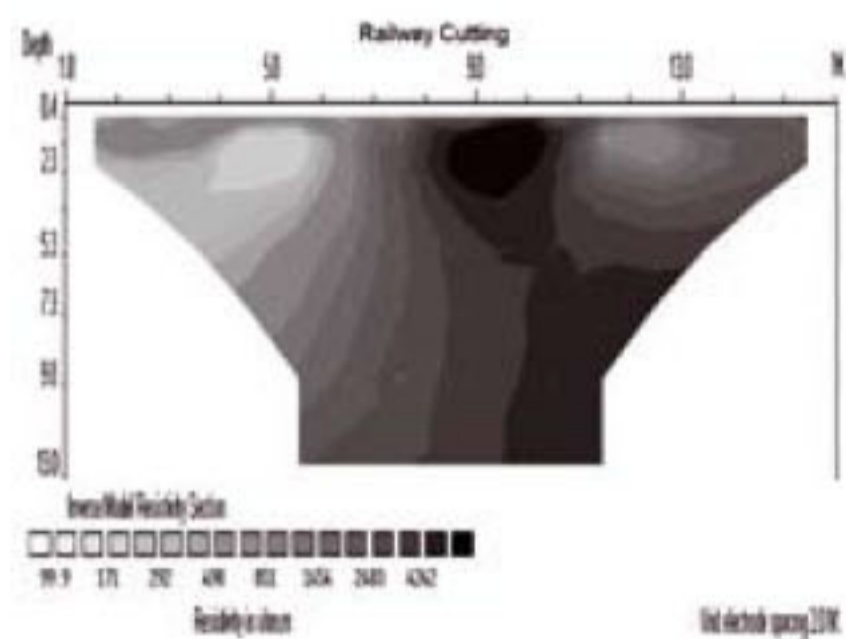
I was drawn towards resistivity surveying as a method of locating unknown caves that may lie close to the surface, and hence to potential digging sites.

On the Internet I found a program called Res2Dinv, which automatically determines a two-dimensional resistivity model of the subsurface for the data obtained from an electrical imaging survey.

I was so impressed by the results from it, particularly the one showing the discovery of an unknown cave, that I constructed my own Resistivity Meter. The following is a brief summary of the areas I have investigated so far.

Beginnings

1. Old Railway Cutting



This is the first site I investigated, using my home constructed Resistivity Meter and using Res2Dinv.

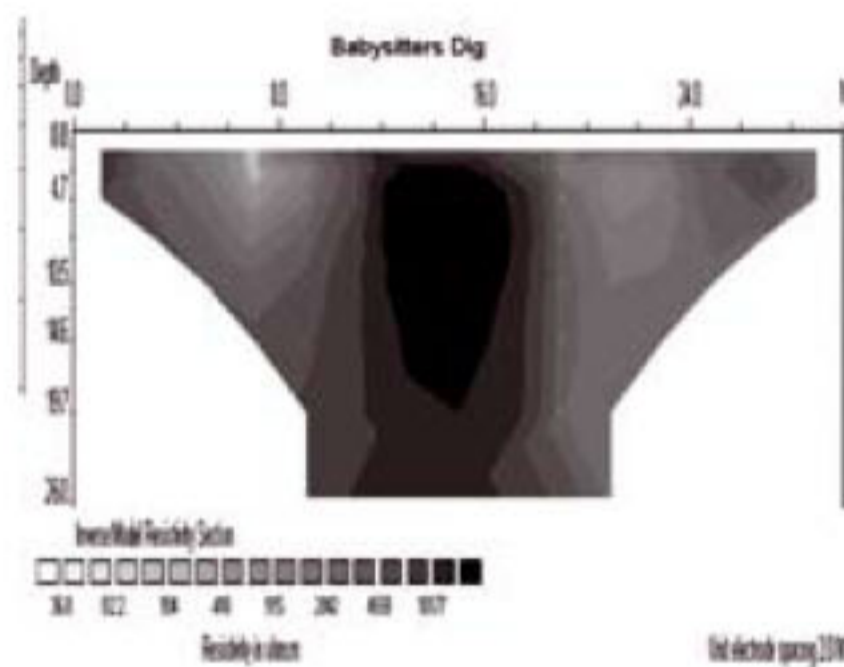
My interest in this site was attracted by an article in the library, which stated "when the railway cutting was being dug a void was broken into which was too big to fill in, so a concrete raft was built over it to carry the railway track." The site of this cave was said to be near the railway bridge. Due to the trackbed ballast making it difficult to insert electrodes and the waterlogged

conditions in the cutting, I was unable to come to any conclusions about the existence of a buried cave.

I bought a metal-detector to try and locate the steelwork that must exist in the concrete capping, but was unable to locate this. There is a lot of old wire and various metal objects buried in the cutting, which is unhelpful, plus the capping would probably be at a greater depth than the detectors range.

I have recently noticed a reedy hollow near the bridge, which takes water. This area needs further investigation.

2. Babysitters Dig



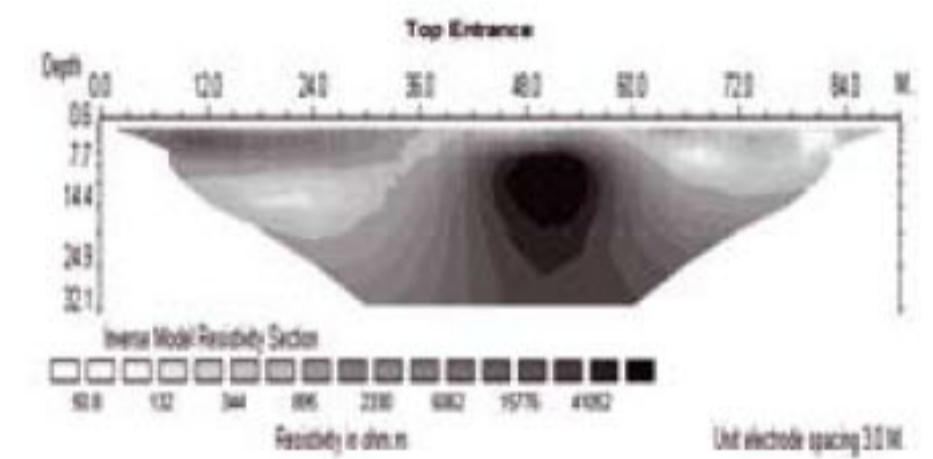
This was another survey conducted with my home constructed Resistivity Meter. The resulting plot shows the Babysitters shaft very clearly and shows it going deeper than the then excavated depth of about 20m.

For details of the dig see the Babysitters dig web pages.

I then discovered the club's Resistivity equipment stored in the laboratory. Before I could use the Res2Dinv program on the laptop I had to write a conversion program to convert the data files produced by the Club's Meter program format to the format required by Res2Dinv.

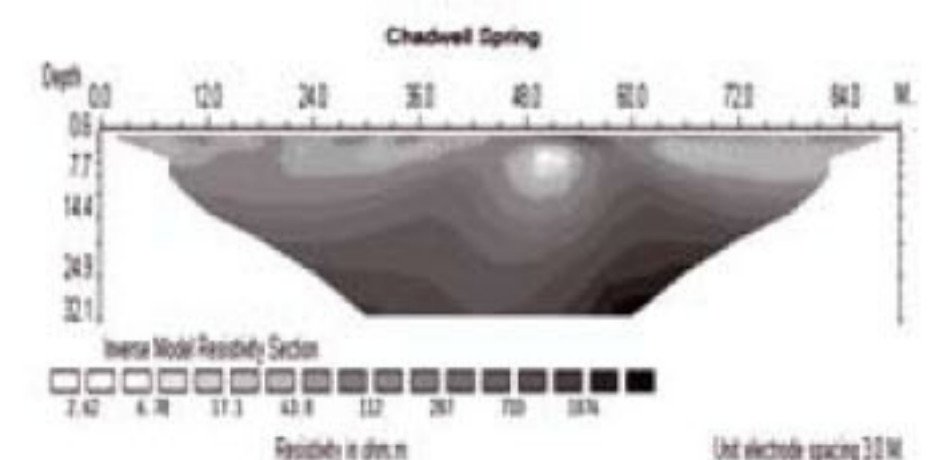
Tests over known cave

3. Top Entrance O.F.D.



When Martin and Krysia joined me for the day to test the Club's Resistivity Meter and the new software, we needed somewhere to prove the system so chose Top Entrance, as this is a very large passage close to the surface. As can be seen from the survey plot obtained, this large passage shows up very clearly, and this dispelled any doubts as to the effectiveness of the method.

4. Water End - Chadwell Spring



These two sites are in Hertfordshire and were investigated after taking the Club's Resistivity Meter home to repair it. The Mimms Hall Brook flows north

from Potters Bar over London Clay, and when it reaches the underlying Chalk at Water End, it sinks at a large depression containing numerous swallow holes. This is the largest such site in England and is an S.S.I.

The underground water flows for 10 miles in a northeast direction across the strike of the Upper Chalk beds, to the resurgence at Chadwell Spring near Ware. As up to four million gallons per day can resurge here it was used as the source of the New River, which was constructed to supply London with water.

The first resistivity plot was not very successful, as due to high water levels and abundant undergrowth I was unable to approach the swallow-holes closely. There was also a belt of trees between the nearest swallow hole and the resistivity array.

If the flow was formed by a number of small water channels they would not have shown up, due to the loss of resolution at depth of the imaging software. However the second plot I attempted of the Chadwell spring is much better as it shows the conduit for the water quite clearly.

5. Cwm Dwr - Twll Gwynt Oer area

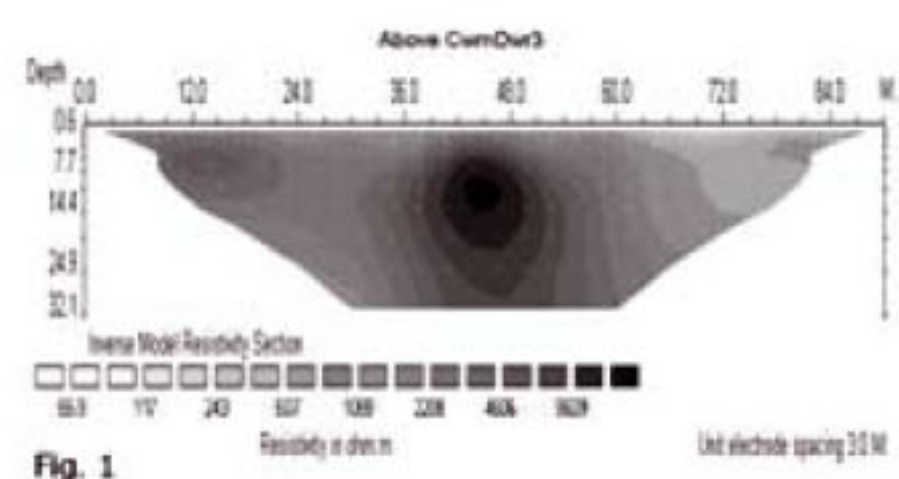


Fig. 1

This is an area that was previously investigated by Stuart France in the 1990's and contains various caves and digs i.e. Gents dig, Zaks dig, and Twll Gwynt Oer, and this is also the area in which I have done the most work so far. To test the resistivity equipment and

new software I did a survey over Cwm Dwr 3, which is a cave in Cwm Dwr quarry which runs towards the Reserve and ends in a surface collapse. The resulting survey is shown in fig.1. This clearly shows the large cave section lying near the surface.

Into the unknown

I then did a survey 3m beyond the collapsed end of the cave, which appeared to show a continuation of the cave. Fig.2.

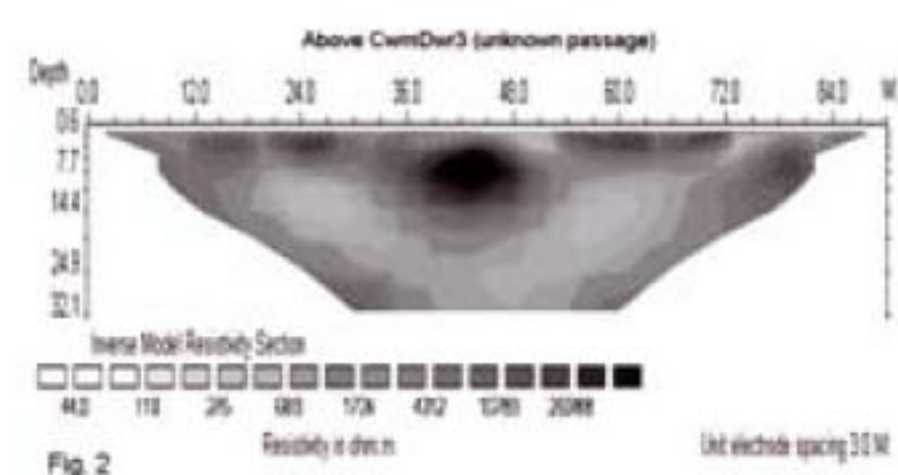


Fig. 2

With Allan Richardson now assisting we did two further surveys in the Reserve across the postulated line of the cave which are shown in fig.3 and fig.4

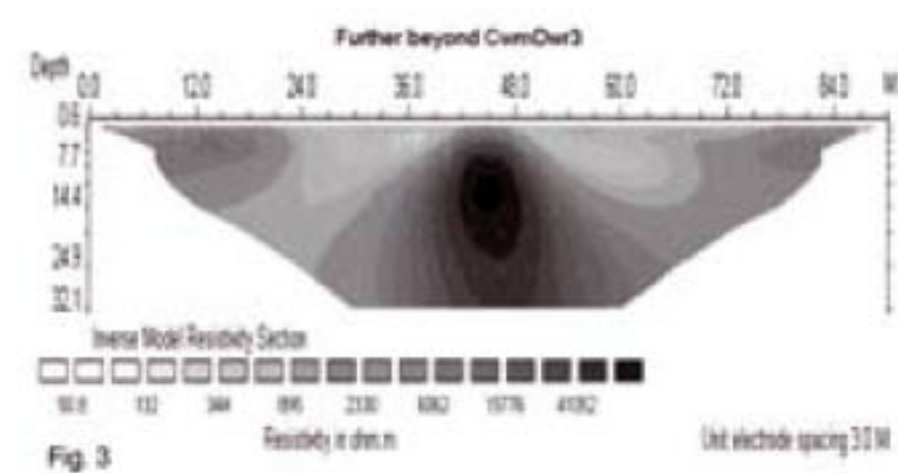


Fig. 3

Fig.3 appears to show the continuation of the cave now back to its former large cross section, and fig.4 appears to show

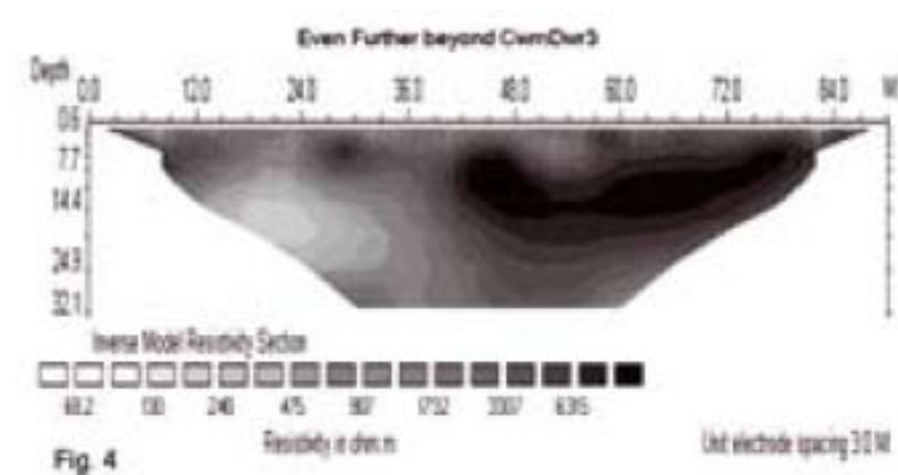


Fig. 4

a side passage heading off to the left. The next survey was completed further towards the dry valley and appears to show a continuing passage possibly developed to a greater depth.

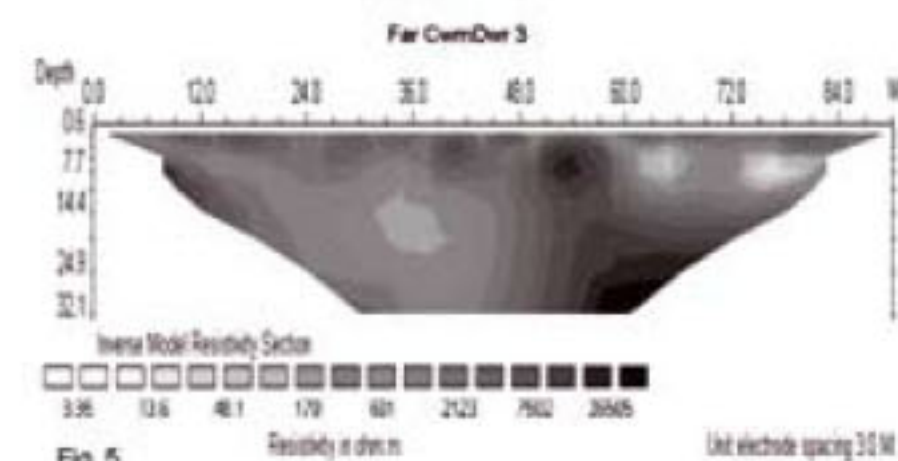


Fig. 5

A further survey completed in the dry valley below Twll Gwynt Oer shows the continuation of this cave beyond the downstream sump.

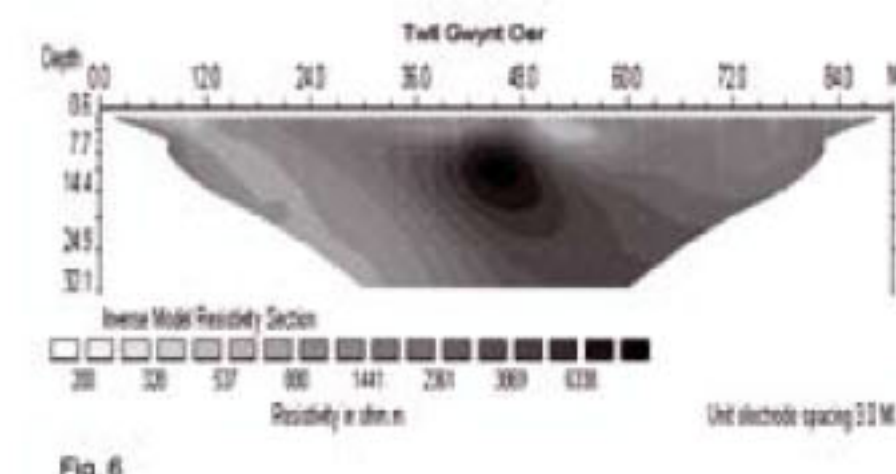
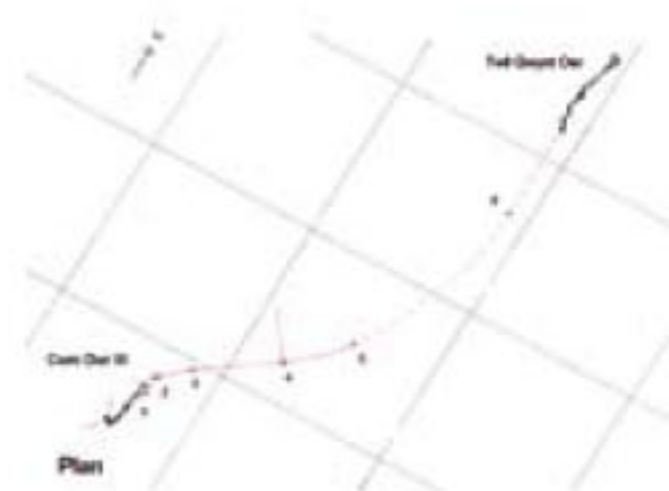
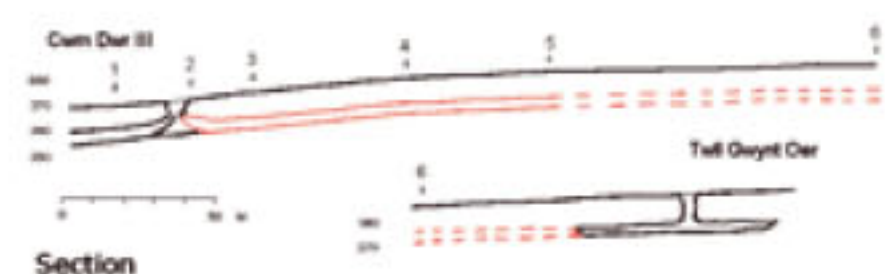


Fig. 6

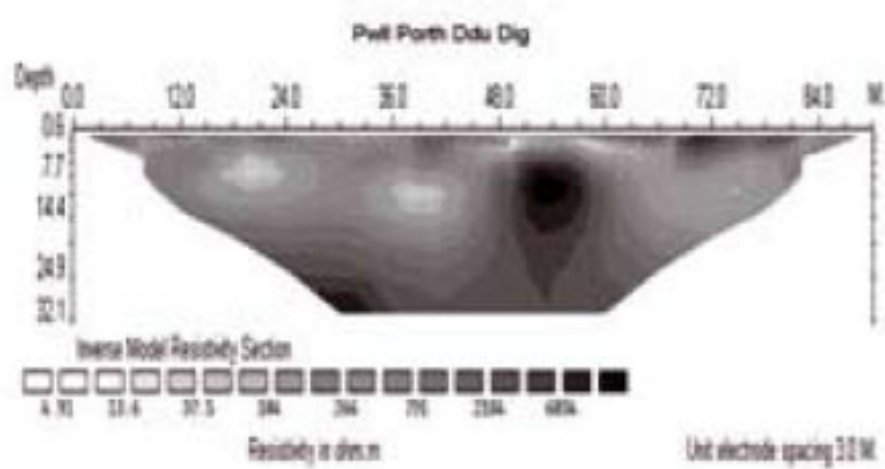
When a cross section is plotted from the survey and G.P.S. data a very interesting picture emerges, which shows the known cave and postulated cave are developed down dip. It is possible this cave may connect with Twll Gwynt Oer.



A plan drawn from the data shows this possible continuation of Cwm Dwr 3 heading towards Twll Gwynt Oer. In view of these promising results I am attempting to dig at the surface collapse in an attempt to break into this extension.



6. Pwll Porth Ddu Dig



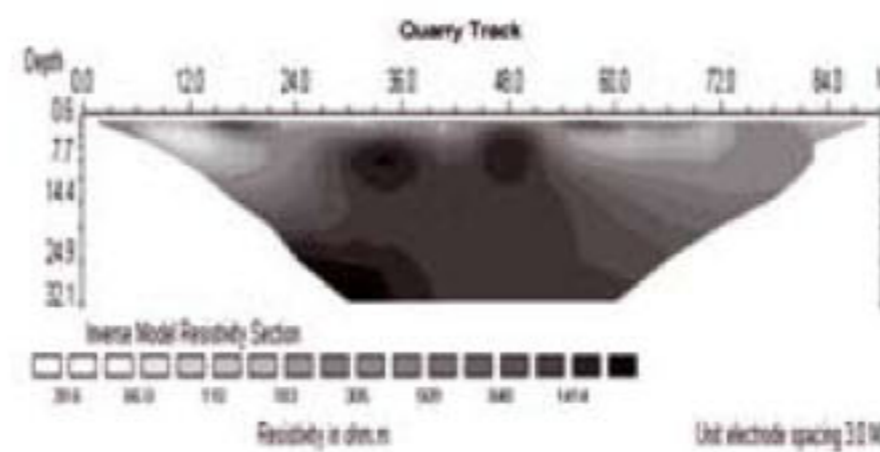
This dig was started by Tony Baker, Martin Hoff, Gary Vaughan, and Paul Meredith after winter temperature measurements had identified it as being a good site. Initially it was a fissure beside a large rock, its temperature being 7.5`c when the surface temperature was 1.5`c. Tony requested me to do a resistivity survey of the area so that the team could have some idea of what lay below. It is a very interesting location, with possibly open passage at depth, which the team are steadily digging down towards. However the resistivity plot shows that there may be open cave closer to the surface in the opposite direction to which they are digging!

7. Llŵchwr Catchment



In an article about the Black Mountain prospects (in Descent issue No.81) Liam Kealey wrote, "Near to the Llŵchwr is a disused quarry which has an access road leading to it. The road is said to have fallen in years ago, exposing a massive subterranean river which took quite a bit of filling in."

I went to investigate this area and found a short stretch along this quarry track where the worn surface of the track changed to angular stones. This area was also adjacent to a row of shakeholes running up the hillside.



As the resistivity plot shows, there may have been open passage below. Is this the spot where the reported collapse took place?

Conclusions

Resistivity surveying has proven itself to be a very useful tool in the search for new digging sites, and thereby caves. A careful selection of the location is essential, so guidance from one of the Clubs geologists would be useful. As the main time consuming task is the unreeling of cables and insertion of the electrodes the assistance of one or more persons is a great help.

References.

Resistivity Software Downloads.
www.giscogeo.com/pages/resabsw.html
 Earth Resistivity Meter
 Everyday Practical Electronics Jan.-Feb. 1997



The entries for the photo competition to help celebrate the club's 60th anniversary are presented here. Club members were invited to enter photos in either a film or digital category. These were then judged by Jem Rowland (Film) and Peter Collings-Wells (Digital). The best digital, best film and best overall pictures were then printed onto posters which are available from the club for £5 for the three. The winners were Jenny Johnson (digital), Tony Baker (film) and Brendan Marris (Overall).





Jenny Johnson, Digital. Ash Burrows at the mini-Columns, OFD.



Jenny Johnson, Digital.



Jenny Johnson, Digital. Ash Burrows at the Wedding Cake, OFD.





Ben Stevens, Film . Dom Hyland with ice formation in Cueva de Lobo, Cantabria, Spain.



Ben Stevens, Film . Gnome Passage, OFD.



Ben Stevens, Film. Sistema Gandara, Cantabria, Spain.



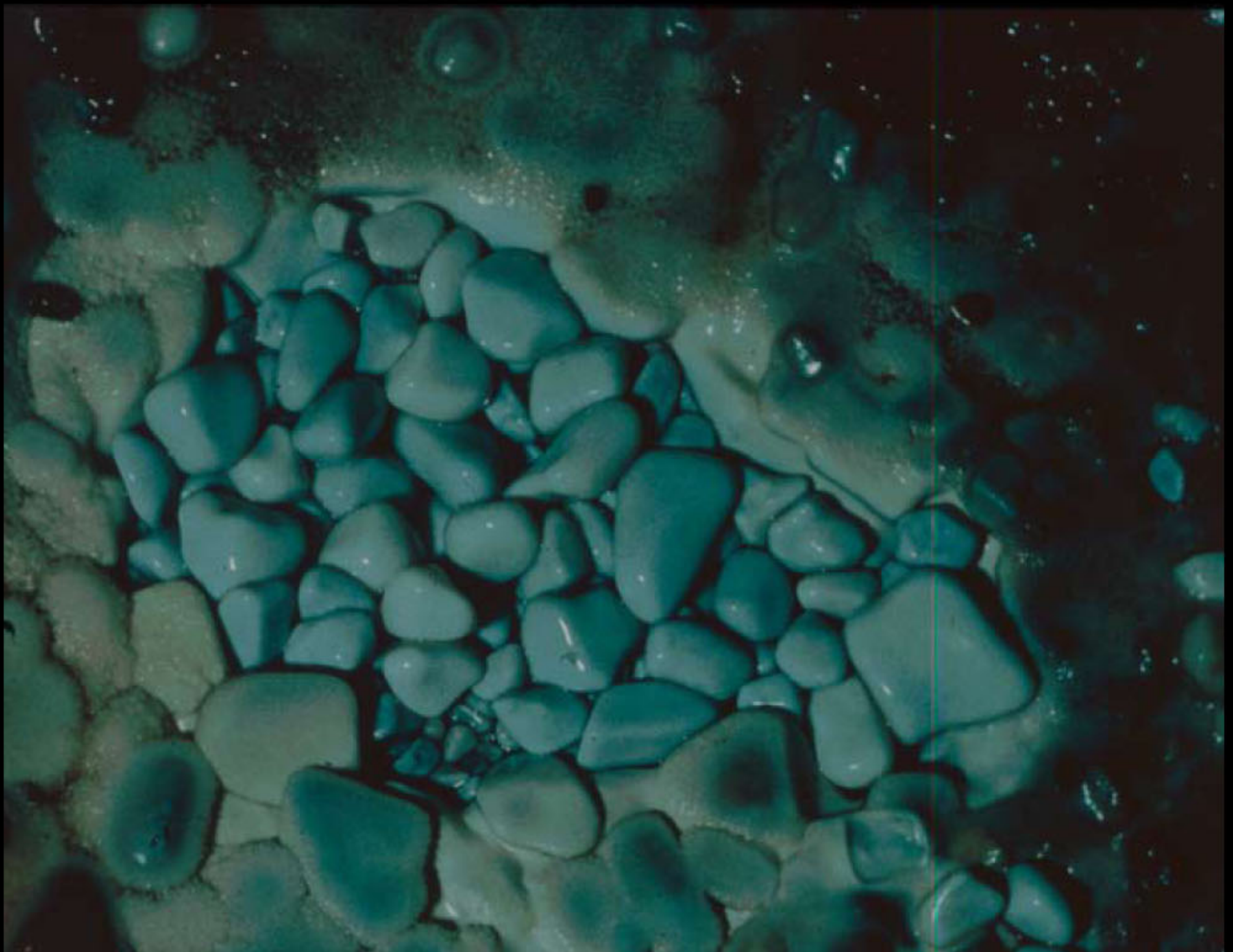
Dave Dobson, Film. Puits Aldo, Gouffre de Berger, Vercors, France.



Dave Dobson, Film. Grotte de Granges-Matthieu, Jura, France.



Dave Dobson, Film . OFD.



Dave Dobson, Film
41



Dave Dobson, Film. The Wedding Cake, OFD.



Tony Baker, Film. Helen Brooke in Dan-Yr-Ogof.



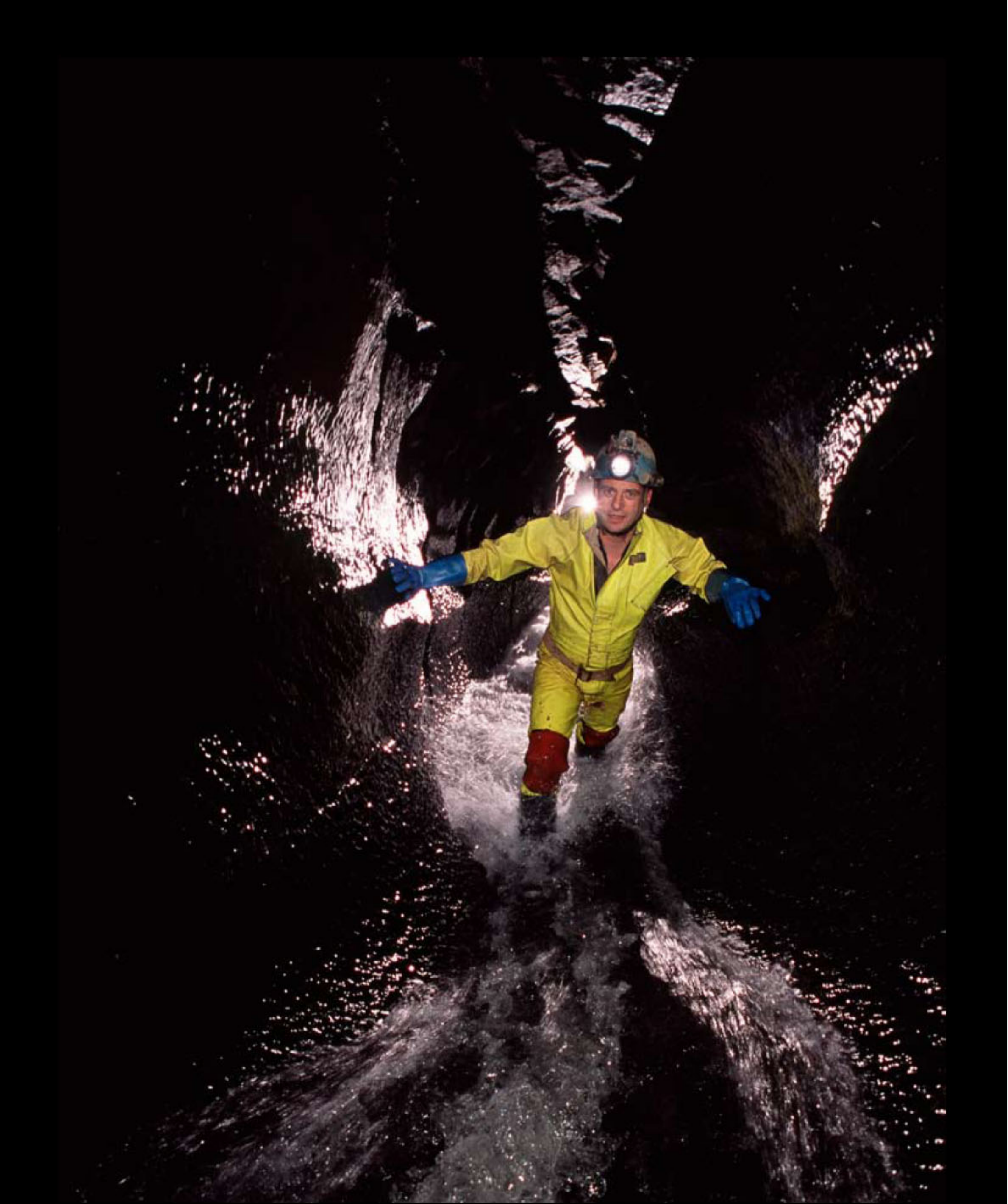
Tony Baker, Film . Helen Brooke in Cloud Chamber, Dan-Yr-Ogof.



Tony Baker, Film . Martin Hoff in Cloud Chamber, Dan-Yr-Ogof.



Tony Baker, Film. Helen Brooke in Upper Piccadilly.



Tony Baker, Film

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