



UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH



University of Limerick Caving Club

Expedition Report

1998

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Highcamp at Picos



INTRODUCTION

The overall objective of the University of Limerick caving expedition to Northern Spain was to gain an understanding of the scientific, logistical, and technical approach required in remote cave exploration. While club members have previously caved in known cave systems in South Wales, Yorkshire and France this was predominately in a private capacity. This expedition represents the start of the University's involvement in major international caving expeditions.

Cave exploration involves many different scientific disciplines including both underground and surface surveying, geological studies and hydrology studies. The time spent with the Oxford group gave a fascinating insight into many facets of cave exploration. And our time spent exploring the caves of Cantabria allowed us to develop our technical and scientific skills

essential for the safe exploration of deep caves. The technical skills required included safe rigging and SRT techniques, in addition to advanced first aid and rescue techniques.

Cave exploration in remote regions of the world requires dedication on the part of the team members as well as confidence in your equipment, your techniques and also your team members. With the experience that was gained through participation in this expedition more ambitious projects are in the pipeline for the future.

EXPEDITION MEMBERS

Co-ordinator: John Sherry

Adam de Eyto, Patrick O'Donnell,
Tom Toomey, Nancy Serrano,
Christian Staunton, Kate King,
Sorcha de Eyto, Barry Watts and
Anne Kennedy.

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**Oxford University Caving Club and the Expedition Leader
of Jultayu '98 Jonathan Cooper**

Cambell's

Everyone in ULCC, who helped with all the preparations, even though they were unable to join us abroad, especially:

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Thanks to **Conor Cahill** for the design and set up of the web site.

We would also like to take this opportunity to thank **Jose Antonio** and his twin brother, for introducing us to some spectacular caves in the area surrounding Ramales.

EXPEDITION COORDINATORS REPORT

John Sherry

From July 18th to August 7th, ten cavers from the University of Limerick Caving Group explored cave systems in the Picos De Europa and Cantabria in Northern Spain. The Team was divided into two groups traveling at different but overlapping times. The first group spent their first week in the Picos then met the second group in Cantabria for a week before returning. The second group then went to the Picos for a further week.

In the Picos we teamed up with Oxford University Caving Club (OUCC) who have a well established reputation of exploration there. Base camp was a Los Lagos, from here after a 2-4 hour walk the main camp at Vega Ario was reached. At an altitude of 1500 metres the views across to the central massif and down into the Cares Gorge (1000 metre drop) were spectacular, made even better as at this camp we were generally above cloud level. The main objective of the Oxford expedition and hence our own was in extending a cave (2/7) called Pozu de la Oja de la Bruja

(the cave of the witches eye, altitude 1900m) which was renamed Pozu Jultayu to satisfy the Spanish authorities. This cave was last explored by Oxford in 1992 to a depth of 810 metres and over 9km long. Pushing trips downstream in this cave would camp at Primula Point (6 pits at -800m) and those pushing upstream at the big ledge (2 pits at -600m).

Life at the Ario camp revolved around cavers going into 2/7 on both portering trips and camping trips, shaft-bashing (wandering around the very sharp karst landscape hoping to fall into a pothole) and carrying food and supplies up from base camp. For the first group of Irish cavers 2/7 left a very mixed impression. Tom Toomey regained his honorary position in the Fat B*\$tards caving club at the first squeeze (7th Heaven) which was a hammered slot at the head of a 50 metre pitch. Barry Watts enjoyed a trips to the end of the rift series, however dedicated his remaining days in the Picos to shaft bashing, in the hopes of finding a new 2/7! I remained working in 2/7 achieving underground camp on the 29th July.

On the surface Barry was involved in the first pushing trips into 27/9 and before leaving for Cantabria pushed it, along with Jo and Bill from Oxford, to a depth of 80m. This cave has to date been pushed to a tight

rift at an approximate depth of 100m and dye tracing of its streamway is hoping to connect it to the 2/7 streamway. Oxford University Caving Club will publish details of the dye tracing.

Many further trips into 2/7 were done by Adam De Eyto, Patrick O'Donnell, Christian Staunton & Nancy Serrano. Adam and Christian managed to spend time camping underground at the Big Ledge campsite. By all accounts their final exit turned out to be quite an epic! Patrick and Nancy enjoyed several trips between them, bottoming out at -400.

In Cantabria the caving (which I unfortunately missed) at first was difficult to find, however a lot of spectacular caving was done. Of particular note was the meeting up with local Spanish cavers and the subsequent joint caving trips done. Cavers from South Wales Caving Club were also in the Cantabria area and much useful information was exchanged. Details of all of this caving are included in the report.

Caving in the Picos with OUCC taught us a great deal about the organization required for the exploration of deep caves. In the underground camps the need to be self-sufficient in all regards and the equipment to survive such a harsh environment became obvious.

In all the expedition was a success as everything we set ourselves to do was achieved. The experience gained through this expedition will stand to us as we plan more ambitious future projects.



John at the entrance to 2/7

EXPEDITION DIARY

Week 1: The first group of the expedition members arrive to cave with Oxford University in Picos de Europe.

John Sherry, Tom Toomey, Nancy Serano, Barry Watts

Week 2: The remainder of the group arrive. This week is spent exploring the caves in the region of Ramales de la Victoria in Cantabria.

Tom Toomey, Nancy Serano, Barry Watts Patrick O Donnell, Kate King, Adam De Eyto, SORCHA De Eyto, Ann Kennedy, Chris Staunton

<u>Date</u>	<u>Cave</u>
27/7/98	Cueva Calaca
28/7/98	Cueva Solviejo
29/7/98	Cueva Mur
30/7/98	Cueva Caballos
30/7/98	Cueva Coventosa
30/7/98	Cueva de la Cullalvera
31/7/98	Cueva de Poza Laguna

Week 3: The Expedition members return to the Picos region to continue exploration of 2/7 with Oxford University Caving Club

John Sherry, Nancy Serano, Patrick O Donnell, Kate King, Adam De Eyto, SORCHA De Eyto, Chris Staunton,

Cueva Calaca

Depth: 30m

Lenght: 800m

Location: Macizo del Mortillano, Pico Tejes/Depression de Cellagua, Collado de Cruceros, San Pedro, Soba, Cantabria.

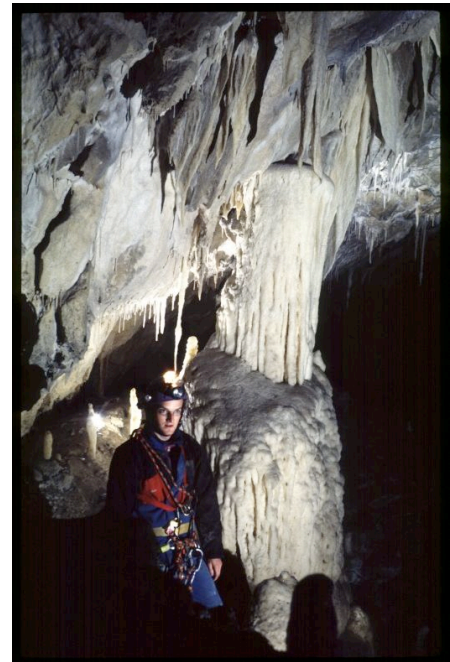
Comments: Fluke day, most bog Irish weather imaginable - Hazy, breezy at first, then misty and drizzly; karst type landscape, small bushes and trees (for all the world like West Clare).

Route finding: A strong desire to do unlawful things to the author of our guidebook was the general feeling after several hours searching for the cave entrance (which was supposed to be a mere twenty minute walk from the cars). The descriptions were shall we say non-committal. After walking around the wrong mountain, Chris and Adam bumped into some French cavers, who gave directions as to the location of the cave. Patrick the billy goat skipped off and sniffed out the exit of Cueva Calaca. Dense mist had descended so we decided to abandon looking for the entrance and enter through the exit instead.

A 30m free hanging pitch down a daylight shaft leads into a massive cavern. Climb up a mud and boulder slope towards the back wall arriving at a

3m pitch, which when descended opens into another huge chamber. This chamber is graced with many fine and beautiful formations ranging from small (2ft.) to massive (20ft.) columns, stalactites /mites and helictites.

Adam and some impressive formations



Spent one hour photographing the cavern and formations. Afterwards, we pushed further into the cave, which remained huge throughout. The passage culminated in a boulder choke, but with further exploration Patrick found more passageway down through a false boulder floor. This took the streambed of the RIO NEGRO notable due to its finely carved ceiling. Barry and Adam pushed on beneath the boulder floor and arrived at the SALLE TERIBLE, another impressively large chamber that was to remind us of

the sheer complexity, size and endless beauty of this cave. Due to time, we decided at this point to return to our ropes, and climbed out to a warm and clear Spanish evening.

There was a Blind swallow in the entrance chamber which Christian was determined to rescue but heated discussion on Plato's Cave and whether or not the Swallow would be happy outside ensued and in the end the swallow was left to its own devices.

Quotes for the day:

"It wasn't my idea to come on this ***** expedition" - Patrick (said mockingly)

"All you have to do is sit down and wait 'til it gets bored" - Patrick, said on sight of an approaching huge white bull.

"Just look for the burning bush and all will be revealed!!!" - Patrick interpreting the Spanish guide book

"It must be the way they do it around here" - Christian's Comments on Spanish SRT

Cueva Solviejo

Depth: 38m

Lenght: 1000m

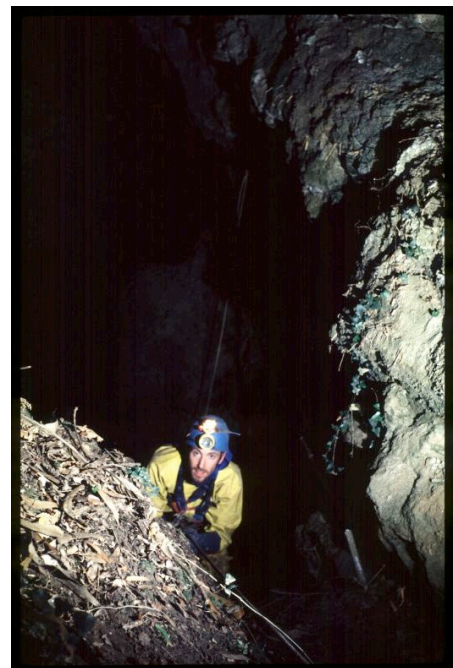
Location: Llanos de Piedrashitas, Caserio de Secadura, Voto, Cantabria.

Comments: DISASTER DAY - "They thought the Titanic was bad"

Route finding: After a little off-roading we lunched at a farm yard and set off for a short 20 minute stroll to the large cave entrance.

Three and a half-hours later a hole was found which on examination was not the hole we were looking for. By that stage we had searched approx. 2 sq. km of the hillside, in the scorching sun with various degrees of caving kit on. This exercise, in hindsight, probably helped Tom get through the SQUEEZE in Cueva Mur.

Patrick exits 'The Wrong Hole'



A rough abseil down a pitch approx. 20m. Strange rigging techniques in place - single bolt, old wooden pole ladder (rotten), that provided a perfect habitat for 'interesting' fungi. Two tubes leading off the pot. Both were investigated. One ended 20m in with a pitch head which

offered no safe rigging possibilities. The other led down a series of minor drops leading to a pitch head (approx. 20m) - one spit, one hanger. Decided not to continue due to the rather dangerous rigging set up. Awkward jamming back out because of rope rigging. "Maybe that's just the way they do it around here!"

Cooling down during the search



Cueva Mur

Depth: 120

Lenght: 1500

Location: Ramales de la Victoria

Comments: Joined by a local caver, Jose Antonio, a extraordinary 17 year old who has been caving since he was 12. Safety is not priority. He and his twin brother are both members of the local

cave rescue team for which they get paid £20 per day.

Route finding: Not a problem (might have something to do with not using the guidebook). This gigantic entrance could be seen clearly from the road, however, we were so gobsmacked that we missed that turn off first time round.



Entrance to Cueva Mur

The entrance was on an impressive limestone rockface and approx. 70/80m high and wide. The actual cave entrance was at the top right hand corner of this through a small metal picture frame! An airy 70m traverse followed a short crawl into a colossal cavern entered by 7m slanty pitch, then wire traverse to right sidewall of chamber to a ramp pitch of 20m - slippy and muddy! The other side of the chamber was not visible with light, great echo! After the 20m pitch, scramble in muck another 40m. Scramble up to the back wall through a series of reducing size caverns, (GREAT FORMATIONS!) into

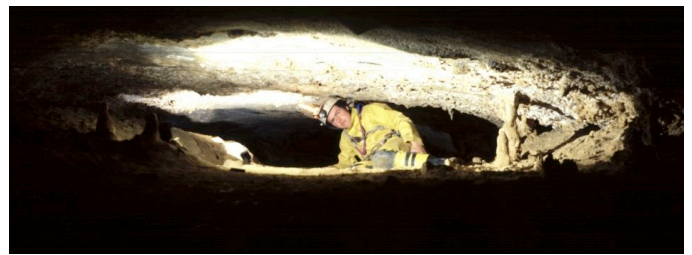
a narrow broken passageway, reduced eventually to squeezes and muddy crawls..... at the tightest squeeze everyone removed all gear even helmets! TOM MADE IT! Phew! Led to highly decorated passage crawl. 'EL DIABLO' - mud sculpture. After formations (spiraling helictites), a muddy crawl led back to the top of the 20m pitch. Back to the traverse and out. A shortage of water in the caves required the guys having to fill their generators with bodily fluid, batteries were nearly totally wasted on exit.

Basic observations: Frightfully HUGE cavern, massive helictites - up to 1/2 inch in diameter; dry earth ramp; cauliflower walls, graffiti in mud, hundreds of swallows at the entrance; hanging nests; huge floor full of gour pools; cave pearls. Largest cave entrance in Cantabria and Kate still managed to bump her head after removing her helmet! EVERYONE WAS HUGELY IMPRESSED!

Chris in Paso del Cordino

Quotes:

"Ah, you don't need a traverse line" - Jose Antonio, over a 30-50m sliding drop!



"You're not going to wear your oversuits in here are you? They will be destroyed."

- Jose Antonio, sporting a paint stained well-worn tracksuit.

"Holy Mother, I thought he was going to go down naked." - Patrick about Jose Antonio as he descends ruthlessly down the first pitch; safety - no way!

"Take your kit off and come on in on your back!" - Anne at the very tight squeeze (referred to as the BILBOYO BACK PASSAGE)

"I've been through smaller squeezes, it's dead easy!" - Barry, at the extremely tight squeeze after removing his helmet, carbide and SRT kit.

"O Solo Mio" - Nancy goes for opera in the main chamber.

Cueva Caballos

Nancy Serrano

On the fourth day of our caving expedition, some of the group went to visit a small local show cave called Cueva Caballos with prehistoric cave drawings recommended to us by the locals. A maximum of 60 people were permitted to view it daily, so we set out early at 9.30am, to be sure of place. At 10am the tour guide arrived; a middle-aged local

man who brought us and some other people, through the cave telling us every bit of information with such enthusiasm and energy that the whole cave and its painting was brought to life in his descriptions of how things must have been in this region of Spain thousands of years ago.

The cave paintings in that cave were actually 18,000 years old; 4,000 more than the famous Altamira cave paintings, which took us all by surprise, as none of us had ever seen cave paintings or actually considered them being that old. The paintings were mostly painted at eye level, in a red, natural colouring, ochre, and varied in complexity. It was hard to spot some of the features until the guide drew our attention to certain contours and subtle details. The paintings were mostly of animals, horses, deer, oxen, and some geometrical shapes whose precise meaning is still not clear. At first glance the pictures didn't look much more than something my little brother might have drawn but envisioning a Neolithic ape-like human coming into a dark unwelcoming cave with a flaming torch to paint pictures with his fingers; the way he used the contours of the stone and the actual shading of the rock itself to meld with his paintings, the way the torch light flickered and played

on his galloping horse which lay before us, as full of life and expression as the day he painted it, 18,000 years ago!

The cave was originally discovered during the early part of this century and had been used as a place of refuge during the Spanish civil war. But the significance of its paintings wasn't properly investigated until the 1960's. Preserving these cave paintings is not an easy task. The cave itself has not had water flowing through it for millions of years, but ground water still seeps down through the rock and over the paintings, which is very gradually forming a layer of calcite on some parts of the paintings. Redirecting the water channels may stop the calcite depositing, but drying out the rock face may cause the delicate layer of paint to flake. Therefore, leaving the paintings as they are, not touching them and no flash-photography are the best way to ensure they'll survive a few more thousand years! There are a few more caves in the locality in which prehistoric human remains have been found, and an international National Geographic team were actually investigating a cave directly below the show cave while we were there.

Seeing these images first-hand was definitely one of the highlights of the trip! We had all been in caves before; big, tight, mucky, dry; we'd seen all sorts of fascinating formations, but these cave paintings brought a whole new dimension to our caving expedition. It was an exciting new angle to caves with our own ancient origins intertwined in these magical natural formations; to know that our ancestors had been in that very spot 18,000 years ago, shed a whole new light on caves, for me at least!

Cueva Coventosa

Depth: 695m

Lenght: 6,500m

Location: Pena Lavalle, Socueva, Ason, Valle del rio Ason, Cantabria

Entrance to Cueva Coventosa

Comments: Two groups; one went with Jose Antonio to the first lake, the other explored the entrance series on a photographic mission.

Route finding: Drove along a hairpin bending road towards Bodora. Followed a track to the right for about 500m. A very cool breeze announced the cave entrance before it was visible.



Getting ready for another trip

Group 1: Jose Antonio, Nancy, Barry and



Patrick.

Group 2: Tom, Adam, Kate, Sorcha, Anne, Coy and a very hungover Christian.

We bumped in to a Hungarian trio at the entrance. One girl with impressive plaits and a hairnet! Bit of a language barrier as they had only basic English. They were meeting the rest of their group who were doing a 50-hour through trip, crossing the three lakes - they had no bolts!

Group 1 were after the Hungarians and met at the top of the first pitch (10m). A wire cable led about 5m down to the

anchor point, a large freestanding boulder. Despite the enormous amounts of solid rock around, the least safe thing around was what you were attached to. ("It must be the way they do it around here!") At this point Patrick gave the Hungarians some hangers, and off they went, one having a spectacular slip on the way down! At the bottom of the pitch we continued to the right through old formation chambers; formations were large and dirty.

Continued on left down small crawly tubes to mud slope, 20m hand line down; then walked down mud boulder slide to left into canyon - 35m high, 10/15m wide, 500m long. Traversed around line cable to short pitch 6/7m down, start of 4 gradually decreasing in size interconnected chambers, some boulders, last one with a large rift, 3m climb into an active streamway - huge passageway 23m wide, 20m high.



Patrick just before the muddy crawl.

Jose Antonio was very reluctant to get wet, even though the water was only knee high in most places. Came across a 15m traverse with very dodgy rope that ripped as we hung off it which was above a rather deep pool. This then opened out to the first lake - JA said we needed a boat to pass it, but it's relatively shallow.....maybe a 10m swim. Met the Hungarians again, with their purple/ pink beach dinghy, helped them blow it up, then headed back to the outside world.

Group 2 was on a mission to explore the entrance series of the cave on a photo trip. Tom, our highly esteemed photographer with his entourage of models, wandered through these spectacularly decorated caverns. It felt rather like walking around a large iced cake, one decorated chamber leading into the next. So serene the surroundings, Christian decided to take 40 winks while waiting for the remainder of the group to ascend a short 5m climb into the most exciting chamber. Here, a column had broken and lay propped against the chamber wall with its base still in the original position. New calcite had formed over the break and so the formation had a 'Leaning Tower of Pisa' look about it. After plenty of photos had been taken, the group

returned to entrance chamber and to the top of the first pitch on route to the lakes.



Coming home from a good days caving, Adam, Kate, Christian and Coy descended this pitch and had a wander around the passages before heading back to join the others and exit the cave.

Cueva de la Cullalvera

Depth: 70m

Lenght: 2500m

Location: Ramales de la Victoria

Comments: Remarkably large

Route finding: Walked about 5 mins up the road behind the supermarket, then crossed into a field. The entrance lies about 500m from the road.

The entrance was approx. 40m x 40m, and a cool draft could be felt about 100m before the entrance was visible. Entrance was used as storage space by the farmer

for tractor-trailers. A fence with a gate in it lay about 50m in and was unlocked. Our aim was to find some cave paintings, which were about 1 km in on the left in a passageway. On route, we checked several left passages. The main passage was as big as the entrance the whole way in. About 150m from the entrance we came across a group of bats in the ceiling. There were some boulder falls near the entrance also after which the cave floor became extremely mucky - thick, heavy and really slippery - perfect for mud wrestling. Eventually about 1km in, a passage off to the left led to the paintings in an oval chamber. Red in colour, these primitive markings looked really spectacular in the flickering carbide light. No photographs were taken, however, as Tom had exited the cave due to faulty lighting. We continued after for another 500m to see if we could find the caballos paintings. Some still pools of crystal clear water. We stopped when the passage became bouldery - tired and late after a long day caving; we trooped out to another misty, cool evening.



Sorcha and Anne enjoy a quick snack.

THE LOCALITY AND THE LOCALS

Adam De Eyto

We were blessed in some ways by the fact that both Nancy and Adam had a good degree of Spanish and for this there is no substitute. Getting to know some of the locals became easier as time went on and in both locations we had some super conversations with cavers and non-cavers. The lack of a decent guide book and some decent descriptions really meant we were at a loss at times and our fortune in meeting up with Jose Antonio and his brother in the middle week meant that we had the local view on things. He and his brother were only too helpful and even though we were worried about imposing on them, it seemed that they were keen to help us and show us some of the better systems. It is great to get the other perspective on caving from the locals and certainly when we were in the Picos High camp the discussions Adam had with the

Pastor Gustavo were a fresh change from the obsessive cave talk at the camp! Gustavo and his brothers had the grazing rights to the mountainside around Los Lagos and all the way up to Ario, which is where our high camp was situated. Gustavo watched over 300 odd sheep, goats and cattle with his dog and lived there till the snows came. He lives in a simple shepherd's hut and goes down only to collect food and talk to his brothers. He had not been down to the valley for about a month when we met him and in that instance it had only been to visit the dentist. It was surprising that in all the years of OUCC camping up there that he had never gotten to know them (again the language difficulty) he knew we were exploring his caves; couldn't see the logic in it, but understood we were fanatical about it. He was a wise man and knew plenty about the world. We had long discussions about Spanish politics, the Irish troubles, wolves, the EC and all the things that affect their tradition. It's the side of Caving abroad that makes it fascinating, not just the caves but their location and the people you encounter and learn from.

SHAFTBASHING

Barry Watts

Shaftbashing is probably the oldest and noblest professions known to modern man. Neanderthal man sought out caves or refuges in the ground; who knows why, rampaging wildebeest and disgruntled neighbours are my long shots.

In an area such as the Picos, with a combination of steepness, altitude, distance and inaccessibility of cave entrances, foot slogging is still the universal way to explore cave entrances on the surface. Too often entrances are only obvious when you are standing at the entrance. It would be right to say that while expeditions focus on big finds, they never lose sight of the larger picture, subterranean exploration doesn't discern between big and small finds. Indeed it is only through shaft bashing a lot of caves are found.

There are limits to how many people can go underground through logistical, safety and individual whims, so there are more things to do on the surface than go swimming or

get tanned. Shaftbashing can be fun as well as serious surveying. "On sight " adventure caving is a good buzz and it is also doing some thing worthwhile, probably the general consensus of the expedition.

Shaftbashing is normally done in pre determined areas, some of which like area 5 have been flogged to death due its proximity to the high camp at Aria. Area 6 has had little attention notably because it is the northern side of the Cares gorge, a 1000 foot of sliding slabs and rocky outcrops which would be daunting to anyone but the serious cavers. To enable proper surveying of the expedition area it is marked off from the other cave groups jurisdictions by water sheds (the high ridges.) Each pot is located by compass bearings to surrounding peaks or to three prominent immovable objects. It might seem colonial but entrances are dated and tagged with paint markings so as to avoid confusion. It is unbelievable how many holes in the ground there are, John and I went tramping a more secondary form of shaftbashing for an afternoon where we passed 5 or 6 entrances. In these times of

information guidebooks and aerial photography it is good to know that there are unexplored places left, it is hard for me to believe that area 9 hasn't been explored fully seeing that OUCC have been coming here for 3 decades.

Unlike cavers going to the main cave which is pre rigged shaft bashers normally carry everything, rigging equipment, surveying, water, 40m rope and personal kit takes up a 70 litre rucksack with little room to spare, great way to get fit. It takes you to wandering the valleys looking for doline shaped depressions, up rock faces and down fossil canyons learning the lie of the land, indeed physical geography brought to life. Never mind trying to scan for bulges on a green landscape like Ireland here the land is left bare for all to scrutinise. Shaftbashing frequently is only in minor sized caves, suitable for beginners or even trekkers. However, some minor sized caves are more minor sized than you would imagine. Lev and Dave two more adventurous chappies spent an afternoon in the sun trying to squeeze into badgerholes, turning cartwheels and

going at problems face down face first scary, very worrying if you were more than 10 metres underground. As such it can provide valuable training underground not dissimilar to bouldering for climbing.

There you have it shaftbashing for fun one of the last great exploration games, it'll give you a tan and get you fit who knows optimists still bring passports when they are going "under the earth's shroud".

CAMPING IN 2/7 AT -800m

John Sherry

First week spent carrying food up from base camp to Ario camp, it had better be worth it. Still being here for 3 weeks means I should achieve my ambition and get to underground camp. Two excursions into 2/7 were had in this period. The first to the end



of the rift series (-200m) and the second to the Armageddon ledge (-350m). Fortunately first impressions of 2/7 didn't last. Exhaling to get through squeezes and dreading the thought of carrying a tackle bag through the rifts all faded into

John prepares to enter 2/7

oblivion at the bar nurturing a steak sandwich and a glass of beer. Second time through was much easier and a taste of the shaft series including the 70m Pessimists Pot left me itching to get to see the rest of the cave. Returned from this trip to Ario camp at 2.00am after having left at 11.30am the previous day, the cold curry was wonderful.

Scheduled for a camping trip on Wednesday 29th July so the phsycing up begins. Plans were put on hold for a short while when we realised on Tuesday evening that there was a severe shortage of carbide at the Ario camp. Finally at 8.00pm Wednesday laden with a heavy tackle bag each, Chris Densham and I commenced our

descent to the Primula point campsite at -800m. 8 hours later having traveled non-stop we reached the camp exhausted and hungry. On the journey down the sheer size of some of the passages was impossible to appreciate; thoughts were focused on getting to bed and not in standing in vast passages trying to imagine where the walls and the roof might be. Crawled into a sleeping bag at 5.00am Thursday morning. Primula looked unappealing and felt very cold, strange to think that in a few days it would feel very familiar and relatively comfortable (well relative to sleeping on a bed of nails). As we'd arrived so late at camp we decided to reset our body clocks by getting up Thursday evening, hence our nighttime would actually be from early morning to late afternoon. It was strange to be talking of afternoons and evenings when there was no change in the light, the permanent darkness easily messed up any sense of time passing.

Cooking up a storm dinner in 2/7



Sleeping quarters comprised of six pits. Each pit had an Alpine fleece to wear under your own fleece, a single or double layer fleece lined sleeping bag and a Gore-Tex bivy bag. All were required to keep the cold out and to get a good nights sleep (whatever version of night you happened to be working on).

Thursday afternoon and the camp looked a little more appealing with a few candles lit and a decent carbide flame to see where you were walking. The campsite at Primula was well organised. It was situated on a ledge about 3m above the stream. From the upstream to the downstream side were the cooking and food storage area, the gear area, the sleeping pits and the escape ladder, and finally the carbide and toilet area. The escape ladder lead to a ledge 4m above the campsite, which was also the route used to get downstream.

Two meals a day was the norm and snack food for periods spent working. Some water was purified for drinking however by using excess water in cooking the packet meals dehydration was easily avoided. Raven meals were

studiously avoided in favor of pasta meals and bean feast.

For our first days work in 2/7 we planed to continue a bolt climb up a large phreatic tube that had been started by Paul Mann. The climb was at right angles to the streamway and was reached by a natural bridge 20m above stream level. A further climb of about 15m reached the start of the tube. It was roughly 5m in diameter and extended upwards at an angle of 45deg. At first the climb was easy with a layer of thick mud on the floor into which steps could be cut, however this soon ended as the floor turned to a very thin layer of mud over calcite. I attempted to climb up the left-hand side of the passage but failed to make progress when my mud footholds collapsed. Instead we concentrated on bolting the right hand wall. 6 bolts later we were halted for the day when I managed to break all the teeth on a spit and jam it on the driver. No amount of cursing and battering with the hammer managed to shift it so a return to camp was our only option.



Gear maintenance is an essential task

Back at camp moral regarding the state of the exploration was low. One of the more promising leads, a dig in choke Egbert, which was being dug by a hotbedding team of 4 working in 12 hour shifts (thus using only 2 pits between them) had turned to absolute squalor after 4 days digging. This team had planned to spend a week digging at the choke, but what had started as a dry sandy dig had turned into a flat out dig in water. Ill equipped for this type of extreme hypothermia inducing dig meant progress was slow and the team had decided to return to the surface.

Friday morning Tony and Alec arrived from the big ledge camp. Thinking that our clocks were running late they planned to work on the climb until Chris and I got up. As we had two days work left we left

them at it and instead went to dig and survey Pixie Steps. This involved hammering a slot in a boulder choke at the top of a climb at the downstream end of the cave. By Friday evening no progress was being made and we surveyed our way back along the stream. Tomorrow we will return to our original climb and hopefully push it to conclusion. As Tony and Alec's message had been considerably optimistic. "GO TO THE CLIMB" had been written on the floor of the campsite using slings, tape and various bits of bolting kit.

Saturday morning we returned to the climb. The previous day Tony and Alec pushed and rigged to an overhang near the top of the vertical section. Climbing to this point and belayed on a dynamic rope I hammered in a bolt to traverse to the left to try and reach an 80deg slope leading to the wall. Managed to reach the slope and climb up about 3m before my handholds disintegrated and I ended up dangling in free space about 3m below my recently installed bolt. Time for Chris to have a go. Another bolt later and Chris reached

the wall. Re-rigging the climb to this point I set off up the climb again. After an exposed climb of 6m I reached a rift in the right hand wall put a bolt in the roof for protection. Onwards and upwards the passage went with the going much easier now and the floor was again a thick layer of mud making cutting steps with a crowbar easy. About 20m up and no end to the climb in sight I put in two bolts to make a stance. Meanwhile Chris went to get another static rope so we could rig to that point.



Exploring 2/7

Then disaster strikes. Hammering in the second bolt my carbide packs it in. No problem turn on electric light. A few minutes later battery packs it in. The spare carbide and my spare

batteries are conveniently in my bag 20m down and Chris is gone for another rope and probably won't be back for about 40 mins. Finished the bolt in the dark and talking to myself continuously I managed to abseiled down the climbing rope in the dark to my bag and found my spare battery. Abseiled down the next rope to a gentle slope part way up the climb and lay in the mud in serious need of a phsysing up to go back up the climb. My heart at this stage realised what had happen in the previous hour and started going ballistic.

Anyway a bite to eat when Chris returned and back up the climb we went. Chris climbed the next section and within about 7m reached a deep canyon. The passage appeared to continue at the other side of the canyon. A number of bold moves later and Chris reached the far side of the canyon and the end of the climb as the tube ended about 5m further on. Regarding the canyon we came up with various theories - 1) It was the same streamway we'd been climbing away from, 2) It was a parallel streamway and 3) It was an inlet that

connected to a boulder choke further downstream. Having run out of rope static rope to drop the canyon and being somewhat tired after 15 hours of work we decided to return to camp and leave the descent of the canyon and the surveying of the climb to the next team of campers. Returned to camp 3.00am Sunday morning. Beanfeast curry for dinner, delicious!

Sunday afternoon and another beanfeast curry for breakfast, starting to dream about steak sandwiches and cold beers. It was only as we geared up for our climb back to the surface that it struck me just how deep we were. Up to this, ignoring the constant darkness, it had been just like caving for 4 days in a row. But now a lot of prussiking was called for before we could breathe fresh air again. 5 days after entering the cave we emerged from 2/7 at 4.00am on Monday after 12 hours of climbing. No words could ever describe the hike back to camp in the dawn light, needless to say it was an unforgettable experience from which much was learnt. Avoid too many bean feast curries in a row and holds that fall apart.



Returning from 2/7, tired, dirty but happy

Latest News from Oxford: The climb has been named Bright Lights and the canyon Hunt the Crowbar. Unfortunately it turned out to be an inlet to the main streamway. Survey data and other details of the climb will be published by Oxford University Caving Club.

EXPENDITURE

Summary Cost

(This outline a summary of the costs involved)

Personal U/G Equipment	4,750
(10 @ £475)	
Insurance	240
(10 @ £24)	
Food	900
(10 x 3 weeks @ £30)	

Travel	1,630
Accommodation (10 @ £40)	400
Training (10 @ £120)	1,050
Expedition Write off <u>900</u>	

Total Expedition cost	£9870
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<u>Insurance (x10)</u>	
Federation Francaise Speleologie (FFS) Insurance	<u>240</u>
<i>Total</i>	240

<u>Food (x10)</u>	
Overground Food	600
Underground food	240
Emergency Rations	<u>60</u>
<i>Total</i>	900

Breakdown Details

Personal U/G equipment

Oversuits	740
Fleece Under suits	500
Thermals	360
Helmets	360
Belts	100
Carbide lamps	900
Back-up Lights	270
SRT Kit	1300
Boots	120
Knee pads	<u>100</u>
<i>Total</i>	£ 4750

Travel

Ferry Costs	840
Fuel / toll Costs	580
Extra Costs	<u>210</u>
<i>Total</i>	1630

Accommodation (x10)

Hostel Cost (4 Nights)	256
Camping fees	<u>144</u>
<i>Total</i>	400

Expedition write off

(The following equipment will be consumed over the course of the expedition)

Ropes	550
Rigging Gear	150
Carbide	100
First Aid	<u>100</u>
<i>Total</i>	900

Training Costs

First Aid Training	850
Vertical Rescue Training	<u>200</u>
<i>Total</i>	1,050

Income

Personal Contributions

Personal Equipment (10 @ £400)	4000
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Personal Contribution 3400
(10 @ £340)

Total	£7400
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SPONSORSHIP

Thanks is due for the financial assistance from the following sponsors

USIT - 10% deduction non our fairs
RDMH - 25% discount on gear bought for trip

Dunnes -	50
Campbell's -	50
Paddocks -	100
O' Mahony's -	100
Stables Club -	100
Bank of Ireland -	150
Students' Union -	250
SUI - -	250
OPC -	450
University of Limerick -	<u>1000</u>

Total	£2500
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TRAVEL COSTS

Tom Toomey

We opted for the fastest route through France and Spain to maximize our time caving. This meant travelling on the autoroutes where possible; this added an extra cost. (Tolls). The following is a break down on tolls. (Exchange rates 8 FF. to 1 Punt & 207 pesetas to 1 Punt).

Ireland. Extra costs were insurance (AA Five Star) which came to £210.00

Tolls

Toll at	Cost
Nantes south	49FF
Noirt to Bordeaux	61FF
Bordeaux to Bayonne	63FF
Bayonne to Biarritz	19FF
Biarritz to border	20FF
Border to Irun	215 Pesetas
Irun to Bilbao	1655 Pesetas

Packing the cars again

Fuel

Fuel is expensive in France. We had knowledge of this before travelling so we had almost a full tank when departing Rosslare so that we could get as far as possible before refueling. We had no knowledge of fuel costs in Spain.

Fuel stops

210 FF. near Nantes

4000 Pesetas at Irun

The cost in Punts is £195.00 return, per car including other travelling cost in Spain and fuel purchased in



PHOTOGRAPHY

Starblitz 16A

Unomat B20



Slave units (2) Firefly 2

Cateye

Film 200 asa slide/print AGFA

Batteries 16 AA duracell

This was a difficult job for me (TT), to record the expedition on film. On a previous trip to Wales I shot off two rolls of film in the best known cave in that part of the world Ogof Ffynnon Ddu (OFD), and all I got back was just black prints. (all caves are dark !). Every one on the expedition took photos /slides for their own memories, but all the pictures taken on the trip were also used to produce the best possible presentation / report.

Photographic equipment used under ground

Camera Praktica MLT5

Flashes (3) National PE-206

All this was carried in a Pelican case 150, which is waterproof and fairly durable. A tripod would have been very useful but it is very difficult to carry under ground. A little pocket size one will be the next on my shopping list.

Setting up another shoot in 2/7

Most of the experience that I had on under ground photography was on small passageways and small formations, so one flash was plenty. Under ground photography at the best of times is very slow and tedious requiring the setting up of flashes and

getting people to pose. Some people are more patients than others who want to explore the system. It was the exception in this case that every body was willing to take part, and stand around like prats.

The main problem was the size of the systems, carrying personal gear (food, water, spare lights and a first aid kit)

plus the photography equipment. But luckily, everyone in the group helped share out the load.

Another serious problem with u/ground photography is when you are taking the photos you cannot tell if all the flashes have fired. If you do a test fire you are then hanging around waiting for the flashes to recharge. So time is what it's all about.

For the amount of time we had it was decided to take the camera on all trips so that we would not have to

return to take pictures but this also meant that trips were going to be slow. After a number of trips I came up with a cunning plan, the plan was to buy cheap Spanish wine, so that some of the people in the group would drink lots. It worked on one or two whom had slight hangovers the following morning and who insisted



on moving slowly and taking lots of breaks (great for photography). The only problem with this was I could not get those good action shots. But hey, I was glad the flashes were working and the camera seemed to be reacting to my efforts!!

The moon over Picos

I used an infrared trigger system for the slave flashes, which has the advantage of not overexposing close to the camera.

I would like to thank the whole team for their time, patience and understanding the difficulty with underground photography even though it may have been in a fuzzy haze of the previous evening's vino!

give us the will and ambition to look farther afield to bigger more ambitious projects.

Watch this space!

CONCLUSION

We had set ourselves an ambitious schedule, but from the outset we were determined to fit in as much as possible. The activity never stopped, from day one it was all go. Initially the caves of Cantabria proved a little elusive but teaming up with the local Rodriguez brothers proved to very fortuitous. We could have spent the entire three weeks exploring that area but Picos was always calling. Our time with the Oxford Caving Club was without doubt an invaluable experience. It was here that we saw exactly what remote cave explorations were all about. We learned much that will no doubt be invaluable to us in the future. Although this was our first expedition per say we have had many a successful caving trip with each other over the years. This coupled with our newly gained knowledge has

CAVE SURVEYS

2/7: Pozu Jultayu

Location

1 13' 48" W, 43 14' 00" N. Altitude: 1860m; Depth: 820m; Surveyed Length: 7345m; Plan Length: 5915m. The entrance is approximately 30m below the eyehole (el Ojo de la Bruja) on the Juracao ridge linking the peaks of Jultayu and Cuvicente. The best route from the Ario Refugio is to follow the cairned path as far as the Jou del Jultayu and then to cross the Jou, aiming a little to the west of the Jultayu summit. The cave is situated below the most easterly of two obvious notches in the ridge.

Entrance Series

The entrance is an impressive cleft in the hillside in a large shakehole. Almost immediately a 10m pitch lands on a very loose bouldery slope. Rocks from here fall straight down the second pitch. Originally, it was recommended that no-one move on this section while anyone was on the pitch below. Now, however, three years of use has gardened the slope to the point where, with care, it is possible to avoid dislodging the still-plentiful ammunition.

The second pitch lands on an earthy ledge next to a strongly draughting (hammered) slot

36m below the boulder slope. The pitch continues for a further 10m before ending in a boulder choke.

Beneath the slot is a tight 3m climb below which is a 42m pitch, Seventh Heaven. A rope is best rigged above the slot, so that descenders may be attached before the squeeze. There is room in the climb to put on descending gear, although this situation is rather more exposed. The main hang, 10m down gives a free hang to the steeply sloping floor of a chamber.

Roughly 15m above the floor of Seventh Heaven is the entrance to Somnambulist Series. A cobbly ledge runs along to an alcove where two routes lead off. A rift drops to the left and connects with Seventh Heaven; straight ahead an opening at head level develops into another rift. After a few feet it is possible to climb down and head 'downstream' back towards the pitch in a larger passage. This ends at the base of a small blind pot where water sinks in gravel. Returning to the top of the rift, a squeeze can be passed into the continuation. Another small blind pot is to be found on the right, but straight ahead a hammer-modified passage has not been pushed far beyond a corner.

At the top of the chamber at the bottom of the pitch are three routes. To the left is an unascended climb up moonmilk to a ledge. Straight ahead lies a loose, tight passage that remains unexplored. To the right, a short crawl, Gavin's Grovel, leads to the head of a ten-metre pitch. At the bottom, a 3m climb up leads to another short pitch, the bottom of which is choked. The slope is now very eroded by the repeated passage of most of OUCC, and a handline cum haul line is useful. At the bottom of the slope is a 3m climb, followed by the first of the squeezes in Paradise Rift: a vertical squeeze with few footholds.

From here a rift leads off which almost immediately becomes tight. The largest route is at ceiling level until a left-hand bend when it is possible to descend the rift through a succession of squeezes. A line is useful on this section, for clipping tackle bags to (to guide their fall on descent, or to slide them up on jammers, with pauses for the extensive cursing necessary to aid their passage). The climb lands on a small ledge above a 20m pitch, the Flying Rébellés.

From Flying Rébellés, two routes on exist: the original main route (The Rift Series), and G.S.P.

Pitches

P10 *65m*
Tape round boulder, bolt for traverse.

Traverse *(cont.)*
Three bolts.

P36 *(cont.)*
Two bolts; rebelay with two bolts; thread deviation.

P45 Seventh Heaven
60m
Two tapes through threads (above squeeze); two short wires and rope protector; thread rebelay 15m down (3m wire); bolt deviation 5m down.

C7 Paradise
20m, L8m
Two tapes around spikes; ladder for lower part onto ledge above P20.

P20 Flying Rébellés
30m
Bolt traverse; bolt Y-hang; deviation 5m down, long tape round spike.

G.S.P.

To the left of the shaft, an inlet enters about halfway down the pitch. A pendule into this enters a rift. Two ways on are possible: a strenuous thrutch in the base of the rift, or a pitch up for 20m. Both unite in a rifty traverse level. Just before the end of the rift is a hole in the floor: this is a 40m pitch. The base of the pitch is well decorated with white moonmilk formations, and the short slippery traverse to stable ground needs care to avoid damage to cave or caver. A couple of short crawls lead

to Blind Pot series: an eight-metre climb, a six-metre pitch (named Blind Pot, because the original explorers inexplicably thought it to be blind) and another six metre pitch.

The route continues down two climbs and a short crawl to the top of Tumbling Dice pitch (p30, p70). Beware - large rocks fall out of the roof without warning! At the bottom is a very large, inclined rift chamber. Short climbs lead down to a chamber where the water disappears into a tiny rift, That Tuesday Afternoon Feeling. A way through may be possible by hammering; the passage visibly widens after the terminal stal blockage. Other possible ways on here are via a parallel shaft visible halfway down Tumbling Dice, or maybe via other routes through the boulder floor.

Pitches

P15 Pendule

20m

Rigged from two bolts at top of Flying Rébellés; deviation 5m down; lower end secured to tapes round spikes.

P20 (up) 25m

Three natural rebelay.

P40 Serendipity 60m

Bolt Y-hang, bolt rebelay; natural deviation; traverse to bolt; traverse to natural.

C8 15m

Natural belay.

P6 Blind Pot

10m

Natural belay.

P6 10m

2 natural belays.

P30 120m

Natural backup; two bolt Y-hang; natural deviation; natural rebelay; natural deviation on ledge.

P70 (cont.)

Bolt and natural Y-hang; bolt rebelay 25m down; natural deviation 20m down.

Rift Series

Flying Rébellés lands in a small chamber with a rift leading off. The original route was an easy, lined traverse through a squeeze to a thrutch along the rift. At an aven it is possible to redescend the rift. This is Pablo Pot, which although free climbable, is best rigged with a ladder. The current, easier route from Flying Rébellés is to follow the bottom of the rift, along a crawl, to the foot of Pablo Pot. A hole is passed on the left, down which the water disappears: this is believed to drop into G.S.P. and may be worth further exploration.

Pablo Pot marks the start of Popcorn Rift. The rift is at first easy to follow, with a couple of short climbs down. After a while, the rift becomes narrower, with various ways on. The easiest route is a narrow rift to the right, leading to a climb down to a small chamber (3m x 3m). From here a traverse along a piece of

white rock reaches the head of Gripper Pitch (10m).

The pitch lands in a chamber with a 2m climb up. From here another squeeze, Stimulated Emission Squeeze, is followed by a right-angled bend into Black Crystal Rift. A 6m climb is met halfway along the rift. The route leads back up through a hole in the rift to a wider section, which ends at a small chamber with a trench in the floor. The trench may be descended to a traverse, leading to the head of a fine 17m pitch, Graham's Todger Pitch. The original route descended the pitch fully and then climbed seven metres up the rift opposite the landing. The current route uses a Tyrolean tight line connecting the top of the pitch and the top of the climb; abseiling clipped to this line saves much effort.

The rift bends to the left to a small chamber (4m x 3m) with a trench in the floor. The trench may be descended for 5m to a wider section of rift. From here there are two possible ways on. A tight, awkward rift, Travellers' Scrabble, leads off horizontally. It is possible to avoid this by an exposed climb through a hole in the roof and a traverse above the tight rift until it becomes wide enough to descend. This reconnects with Travellers' Scrabble just before Ascension Pot, an 8m

pitch. This pitch is now avoided by a lined traverse over the top and a climb down the rift on the other side. The rift here is narrow with a number of passable levels. The lowest route is the best. Care should be taken as the rift ends at a 70m drop, Pessimists' Pot. High level routes in the rift open out directly above Pessimists' and are not recommended.

Pitches

P10 Gripper

20m

Tape traverse; Y-hang off spike and thread.

P17 Graham's Todger

20m

Long tape for traverse; short wire and bolt Y-hang; thread deviation 1.5m down; 15m tension line to rift.

Traverses (Ascension Pot)

25m

Bolts.

Shaft Series

From the small chamber at the foot of the climbs, a traverse slightly upward gains the head of Pessimists' Pot, the beginning of an impressive 400m shaft system. The initial short section bypasses the original belay ledge (The Fun Starts Here) and the main hang is a fine 70m drop: the longest free-hang in the cave. Large pinnacles of rock are visible on a ledge on the opposite side of the shaft approximately 35m below The Fun Starts Here, and

one wall has massive calcite crystals, round which detackling ropes can snag quite firmly. The pitch lands on a boulder strewn ledge, Supper Time, which has a supply of clean water entering from the inlet above Pessimists' Pot.

A short ascent up the ledge, using a traverse line, leads to the 31m pitch, Sing to the Devil. A short steep slope leads to the pitchhead; halfway down, the shaft splits, the route on being the larger and deeper of the two. From the bottom, a short traverse round a large hole in the floor leads to a spiky rock bridge from which the next pitch, The Bells, is reached. The pitch lands on a large (5m x 3m) wet ledge with a pool, a useful carbide fettling spot, from where it is possible to look down to the First False Floor, 140m below.

A 44m pitch, Armageddon, leads to another ledge, from where the next pitch descends in a series of drops, separated by small ledges. This pitch is awkward to rig as the walls slope outwards at approximately 5 degrees to the vertical. The pitch must be rigged near to the drips as, away from the water, the walls are coated in thick mud. The pitch lands on another wet ledge, from where a lined traverse leads to the head of a 22m pitch, landing on the First False Floor.

Pitches

P75 Pessimists' 85m

Thread and bolt for traverse; two bolt Y-hang; bolt deviation; two bolt Y-hang (main hang) with two short rope protectors; bolt rebelay 55m down; bolt deviation 2m lower.

P31 Sing to the Devil

35m

Two bolts for sloping traverse; bolt; bolt deviation 2m down.

Traverse 25m

Bolt, bolt, spike.

P37 The Bells / 5 Second Warning 45m

Y-hang off two bolts; natural rebelay; bolt rebelay (replace by bolt deviation); bolt deviation; thread deviation.

P54 Armageddon

60m

Two spike traverse; natural and bolt Y-hang (main hang); thread deviation; bolt rebelay; spike deviation; thread deviation; thread deviation; bolt rebelay.

P70 The Hundred

90m

Two bolts for traverse; bolt; bolt rebelay 2m down; six bolt rebelay; traverse to spike.

P22 30m

Thread traverse to bolt; thread deviation; bolt rebelay.

First False Floor to Just Awesome

The First False Floor is a fine chamber divided by a 5m ridge. Climbing up onto the ridge reaches a short pitch down to the other side of the chamber. From here, there are

a number of possible ways on. A large rift enters from the right. This can be climbed for about 5m ending in a very steeply ascending muddy slope. Below the ridge, a short climb leads to a route through a very loose boulder pile to a 30m pitch, Great Expectations. This lands in a rift with a stream running south to north. This rift was later explored, and lands back in the main shaft at the bottom of Rosy Crucifixion.

The main way on from the below the ridge is a route to the right which leads between boulders to the head of Rosy Crucifixion (38m). The head of the pitch is beneath a very large poised boulder. This pitch is against a muddy, sloping wall. A number of deviations fails to prevent the rope becoming quickly clogged with mud.

The pitch lands in a small chamber with a stream that disappears down a crack in the floor. This may be the same stream that flows down Great Expectations. The way on is to traverse along a ledge 5m above the base of the pitch to reach the next pitch, Cemetery Gates. Part way down, a swing right onto a wall leads to the final 10m drop to the start of Gusamo Grovel.

If the swing round the buttress is ignored, the pitch ends on a small ledge behind rock spikes

(the original route). The rock spikes and rifts make the route to the final pitch complicated. However, all routes appear to lead to the same place, a boulder chamber with water entering from a number of inlet rifts. A hole in the floor leads to a 6m pitch landing in a small chamber, That Monday Morning Feeling, with a pool in the bottom. A small waterfall lands in the pool. The only possible way on is to follow the water down a westerly trending body sized tube, which closes down after about 3m. A narrow slot in the tube draughts strongly but is far too small to be descended. No other routes were found from this chamber.

The 1988 extension was found at the bottom of Cemetery Gates where the water is left behind and a dry high level followed. A short climb down with the help of a handline attached to a large spike led to a roped climb up into Gusamo Grovel.

Following the draught through the sandy crawls and stoops of the Grovel, past the squalid 1988 campsite, soon produces results in the form of the noise of a very large amount of falling water. A descent down a dry muddy slope (rope useful) leads to a chamber, from where the first of the pitches into Just Awesome is rigged.

Pitches

Pitch Through First False Floor

15m

Bolt backup; spike; spike deviation at top; bolt deviation.

P40 Rosy Crucifixion

45m

Thread backup; bolt (main hang); thread deviation near top; bolt deviation; bolt deviation.

P30 Cemetery Gates

40m

Medium wire backup; long wire; bolt rebelay; bolt rebelay (pendule round ridge); bolt rebelay; bolt rebelay.

C8 Gusamo Climb

12m

Natural belays.

Just Awesome

A 17m pitch in a rift is followed by a lined (semi-tension) traverse onto a ledge. A large block forms the initial belay for the next pitch. The bolt for the main hang is just above a large undercut, making the changeover airy and somewhat strenuous. This 42m pitch lands on the Big Ledge. A very large stream (flow rate measured as 250 litres per second in 1989) enters the chamber on this ledge. The stream flows into a 2m wide passage and falls 50m down to the chamber floor, from a hole about 15m below the level of the ledge.

From here, the full size of the chamber is apparent, if not visible. The chamber is 40m by

70m and over 120m high, the largest chamber by far at comparable depth in Spain. The Big Ledge is horseshoe shaped, and roughly 100m by 100m.

The stream passage may be followed upstream, after wading across a waist-deep pool, in a tall 2-3m wide rift containing many clean-washed boulders. After about 100m, the way on is blocked by a large boulder over which the stream falls. A possible way on is visible about 8m up. The upstream passage may also be reached from the top of Just Awesome, by following a descending phreatic tube for about 40m to a short ladder climb. From here, the route continues in a narrow rift, traversing on jammed boulders high up in the rift upstream from the big ledge. A tight section, traversing over a large drop, is followed by wide bridging to jammed boulders, to where the stream is met, about 10m downstream from the large boulder described above.

About 30m further round the Big Ledge from the main stream is an inlet, with a much smaller stream and passage. This can be followed about 25m upstream before a waterfall blocks progress.

The descent from the Big Ledge is against the wall for about 10m to the final bolt. Here, the

wall is sharply undercut, leaving the caver struggling in space 5m from the waterfall to accomplish the last changeover. 38m lower, this superb, very free-hanging drop lands in the boulder-strewn immensity of the base of Just Awesome.

From here there are two ways on. The original route follows the stream; the present route ascends the cemented boulder pile to the right, to the climb up to the London Underground.

Pitches

P17 Just Awesome I

35m

Natural backup; short tape (for climb to pitch head); medium wire and medium tape Y-hang; bolt deviation; Y-rebelay (short tape and medium wire); five bolt traverse.

P42 Just Awesome II

120m

Bolt backup; tape on spike; long wire on spike; bolt on lip with rope protector.

P50 Just Awesome III

(cont.)

Backup where previous pitch lands; bolt Y-hang; bolt; bolt; bolt on lip

Upstream from Just Awesome

Upstream begins at a 5m climb at the back of the Big Ledge camp, into The Forbidden Zone. At the top a window on the left looks back down onto the stream, but the way on is

to climb up over car-sized boulders, until a spikey flake on the right hand wall is reached. This slopes up at about sixty degrees and provides another easy 5m climb. At the top of this climb the route moves to the left hand wall, where a scramble between boulders and a solid wall leads to the stream.

Straight ahead are two climbable cascades, but the best way up is to double back where the water is met and thrutch up in the narrowest part of the rift. This leads to the bottom of a 45m handline, up a three stage climb, to the top of the cascades.

At this point the main route follows the water upstream through boulders into The Paris Metro, a large stream passage. Doubling back and following the rift back towards The Big Ledge leads, via Barnes Loop The Loop, to a fork. Straight on opens suddenly at a window where rocks fall for five seconds into Just Awesome.

An easy but obscure climb goes up to large fossil passage, which connects, after an exposed, sloping ledge, with downstream end of The Paris Metro.

The Paris Metro continues as a wide stream passage, with the driest route changing sides several times, until The Windy Sump is reached. Slightly

downstream of the sump a window at chest height on the right leads into dry rift but becomes too tight. Directly above the sump, a chain of footloops make the climb up through The Blowhole reasonably straightforward, although the strong draught makes a working electric light necessary. Once through The Blowhole, a rift on the right, similar to the one downstream of The Windy Sump, but carrying a small inlet, also becomes too tight.

Upstream from The Blowhole a sump pool is met after 15m. This has been plumbed to a depth of 5 m, and, although a traverse over the pool is probably possible, the safest route is a handline protected climb up through a squeeze into a chamber. Climbing up on the upstream side of this chamber leads to a loose 20m pitch down into a very large chamber, with the stream flowing through the middle. This is Echo Beach. Following the water downstream leads back to the sump pool; upstream ends at a low arch where complete immersion might lead to a continuation. The way on is to climb up on the left of the chamber, where a route down through boulders leads to a static pool, The Dead Sea. This deep pool is passed by a climb up the left hand wall and a bold step across at the narrowest part onto a broad ledge, worse on the way

back, which comes down to meet the floor of a fossil streamway. 15m along the passage there is pitch down to the stream.

Rather than descending to the stream, the way on is an exposed traverse around on the right into The Dead Sea Strolls, a continuation of the fossil level. This is 300m of passage on two levels: a fossil floor and a high level on boulders. The route is not always obvious. At the first inlet climb up on the right. At the second inlet climb down on the left and then traverse along the rift. Under a rock arch on the left the passage opens out again and the only remaining tricky bit is where the bouldery level suddenly ends. Circling round and down between the boulders is the least exposed way of regaining the solid floor. This ends with a 5m pitch, Oregon Pitch, at the bottom of which is a short series of disproportionately noisy cascades. Upstream two easy 2m climbs lead to a wide stream. This is a temporary end to exploration.

Streamway to Primula Point

From the bottom of Just Awesome, moving away from the waterfall leads to a brief scabble over boulders with a 2m climb down to the stream. The stream at this point is about 5m wide and shallow, with a gravelly bottom. The

streamway passage continues at an imperceptible gradient, and with a very variable roof height. The water varies from being ankle deep to being too deep to wade. In several places the stream is blocked by fallen boulders which have to be climbed over or through.

200m downstream from the chamber the 1988 Second Camp was located on a ledge 2m above normal stream level. In the extraordinary floods of 1988, the stream rose 2-3m as the camping party took refuge on ledges on the wall.

After a short wade it is best to traverse above the stream on the left wall (line needed). 100m further along there is a 5m climb down beside a waterfall, which can be avoided by rigging a pitch from high up on the right hand side. This is followed by Fool's pitch, which drops into a large chamber full of massive boulders.

The stream continues to a narrow deep section that must be traversed (using a line) in order to reach Mesopotamia. Here there is an island in the middle of the streamway. The way on is reached by jumping across the stream, 2m below (Dan's Bold Step). Another awkward traverse (line needed) comes immediately afterwards. A wide passage then soon closes down and high levels have to be followed

by climbing up into a narrow section that opens into a large muddy chamber. A handline climb down rejoins the stream in a narrow passage, which is traversed to a 1m waterfall.

The stream is best left here. A high level route through huge boulder floored chambers (Mr. Jones) continue for 150m until the stream is met again, just beyond the 1989 camp. An alternative route at the end of Mr. Jones descends to the camp by a small inlet. The route through Mr. Jones is cairned, as it was found to be easy to get lost in the monotonous boulder-scrambling slog through to camp.

It is also possible to follow the water (the Sumpy Streamway) round to just below the campsite, as one very lost party found. This very aqueous route has only been partially surveyed.

Immediately downslope from the campsite, the main stream emerges from the Sumpy Streamway, in a low (2m), wide, stalactitey passage. The way on is to turn right, up slope, and then along a short length of passage to a climb up behind a block, to emerge in a large chamber at the top of a rockpile. A waterfall inlet can be heard on the right. The cairned route leads over to the left, and back down to the stream just before a region,

which appears to be blocked by large boulders. There are many easy routes through here. Some are cairned. It is also easy to go round in circles. Few people have managed to go through this choke the same way twice.

The route emerges briefly into open stream passage, which is crossed (left to right) and then recrossed. A cairn here marks the 1988 limit of exploration. The stream heads to the right, into Choke Cuthbert. The route on is over the choke, to the left, via an ascending rope (15m). At the top, a brief scramble up leads to the first of two 8m ropes down (3m and 10m), rigged from rather dodgy bolts. The first descent may be bypassed by a devious climb. At the bottom is Floodlands; progress is made between large rocks at stream level.

The passage soon becomes more open and continues along the right hand side of the stream, past a large rock 'duck' (like one of the bits in Tate Gallery in Swildons Four). A climb up over boulders to the right follows, and then the left wall is followed, round the back of a large block. A descent to the stream, with a few more manoeuvres around boulders, leads to the impressive wide meanders at Primula Point, the site of the 1990 camp. The stream runs to the right of a

wide sandy ledge, in a wide and tall 'L' shaped passage.

The London Underground

The boulder pile in Just Awesome ascends for 30m to the base of a flowstone waterfall. A 40m bold climb up this (rope in place) reaches the enormous sloping sandy plain of Heathrow. This is an excellent vantage point for the Just Awesome Chamber. Following the well-trodden route on the left side of the passage (further damage to the sand and mud floor must be avoided) leads up to the base of a wide boulder slope. It is possible to go wrong here by heading too far right; if in doubt, follow a bearing of 40 degs.

On the right-hand side of the passage, a steep stal-coated inlet slope contains numerous small pools with an amazing profusion of cave pearls. A wide, high passage leads off from the top of a climb. This passes a drippy inlet and an undescended shaft on the right. A steep climb up a mud slope leads to a boulder choke with no way on.

At the top of the boulder slope a cairned route leads off down the 1000m length of the London Underground. The passage here is about 70m wide, and is sufficiently straight that lights can be seen 400m away in places. The

route ascends and descends steeply in several places.

After 400m, the route bears slightly right, becoming narrower (about 10m width), and descends for 50m. One then passes a particularly large block, by which is a 20m diameter shaft (Marble Arch). Descent of this (15m) leads to the Picadilly Line, another large boulder-strewn passage. Heading downslope on the most obvious route leads to a 12m drop to another large, bouldery passage. Fortuitously, this is Mr. Jones, just above the inlet to the 1989 campsite. Following the Picadilly Line in the opposite direction from Marble Arch leads to a steep descent to a platform, which overlooks the stream near the 1988 limit.

Continuing along the London Underground, the route leads to Euston Choke. This is a steep strenuous ascent up loosely packed sand and rocks, first up the right-hand side and then crossing over to the left (the descent is easier on the return). A handline is now rigged most of the way up. The last steep section may be avoided by heading to the right, and ducking under some large boulders. Near the top of the handline, on the left hand side, a promising-looking rift leads off, but all routes here end in mud chokes.

Once over the top of Euston Choke, the descent is easy into

a tall rift passage about 8m wide. A short walk leads to the base of Paddington Choke. A rope is rigged up the left-hand side, ascending about 20m. Alternatively, it is possible to ascend to this point by an "interesting" climb on the right-hand side. At this point, it is possible to penetrate the choke, and various routes have been pushed to no conclusion as yet. The most explored of these is Lost Paul's Rift. Another way on may be to continue the climb up the left-hand wall.

Behind a large block at the base of Paddington Choke lies a hole in the floor, giving the entrance to Zadska Way. Short, oversuit-ripping squeezes and rifts open out at the top of a series of six short, awkward pitches. The last of these lands in the stream just before Primula Point. It bypasses neither Drucilla nor Egbert, as its optimistic explorers hoped.

Pitches

P40 (up) Dead or Alive 60m

Two bolts; lots of deviations.

P15 Marble Arch 20m

Bolt backup; bolt; bolt.

P15 (to Mr. Jones)

20m

Wire and bolt Y-hang; bolt rebelay; deviation from natural.

C10 15m

Natural belay.

Zadska Way P6

150m

2 natural belays, bolt rebelay under lip (pitch would be better rigged from bolt in roof).

Traverse (cont.)

3 natural belays; bolt belay

P12 (cont.)

Bolt; bolt rebelay (needs another bolt).

P8 (cont.)

Two tapes round boulders; bolt rebelay (needs bolting).

P12 (cont.)

Natural, bolt rebelay.

P10 (cont.)

Bolt.

P10 (cont.)

Bolt; bolt rebelay (bolt needs to be moved).

P15 (cont.)

Natural belay (needs bolt deviation near top to help avoid the crack); bolt deviation (needs natural deviation on large boulder, 4m above streamway).

Below Primula Point

Beyond Primula Point, the stream deepens in a tall 6m wide passage, and the easiest route is to traverse along ledges on the left-hand wall. A four metre pitch, with an irritating take-off at the top, leads up to the first of these. An easy walk (line for safety) reaches a broader ledge, and then a tension traverse to another ledge. Here, two routes diverge.

Downwards, it is possible to pendule across the stream to a two-person sized ledge, from

which a traverse (currently unlined) round the downstream buttress gives a climb down to stream level. Here the passage widens slightly, and the shallow stream runs round the left hand side of a boulder pile before vanishing into choke Dreadful Drucilla. On the right, a small unexplored inlet enters. A route exists through Drucilla at stream level, but this could only be refound (once) by the original pushing party. It has only been partially surveyed, and is likely to remain so, as a bypass exists via Postman Pat.

From the junction described above, a rope ascends on muddy walls past a ledge to a 3m diameter rocky chamber about 2m high. From here, a window looks down onto the start of Choke Drucilla. Traversing past this reaches another small sloping chamber. Upslope a narrow exit emerges into a vast, steeply sloping, boulder-filled chamber (Postman Pat).

Routes on were initially explored by dangerous climbs upslope. In several places holes lead down into the boulders; these have not been fully explored. Halfway to the top, on the left, a hole in the floor leads, via a series of short pitches, back to the beginning of Choke Drucilla. Near the top of the chamber, a large arch divides it into two. In the left

branch, more dangerous climbs and traverses lead to an obscure series that may provide a bypass to Choke Egbert. A rift at the end of this appears to be part of Lost Paul's Rift in Paddington. The right-hand branch ascends past several promising looking holes to a traverse rightwards at the base of a steep wall. At this point the climb was abandoned, though continuation may be fruitful. The roof is visible at this point, but a way on at the top of the wall appears to exist. Rocks thrown from here crash down for a long period, landing in Bod.

The route into Bod is a hole in the right hand wall, near the base of Postman Pat. A 'bold splits' across a drop emerges into a large boulder floored passage, about 10-20m across, and very reminiscent of the London Underground. The main route through follows the right hand wall, and is well cairned. In the left hand wall is a 10m, 27m deep circular pot, Big Sloppy Job, dropping onto a flat, mud floor. A small cascade passage leads off at floor level. A 5m, overhanging climb leads down to a short pitch into a chamber with a suspended boulder roof. A tiny stream flows down a tight, muddy rift reminiscent of the top of Drucilla. The rift eventually closes down at a draughting hole from which

comes the sound of roaring water.

Back in Bod, at the top of a ridge, two routes diverge. The original route descends a 20m pitch over loose rocks on the right-hand wall. The passage narrows after a while, to a choice between a squeeze under, or a climb over, a chockstone, Chockstone Climb. This enters a chamber, from where a climb to the left is a route into Soup Dragon. The passage continues, past a large pit in the left hand wall, which is blind at the bottom, before rejoining the main route.

The main route from the ridge in Bod, is a short climb up the left hand wall. This reaches a descending traverse cum sloping pitch, onto a large ledge above Bod, Soup Dragon. In the left wall is a large hole, the entrance to Tantalus. A short pitch leads to a muddy, loose slope. Round the corner is a second, larger pitch of about 50m. Initially the descent is in a narrow rift, but soon opens out to give an exposed hang in a large chamber, with an inlet entering from one side. The pitch was not fully descended due to lack of rope.

The route in Soup Dragon continues to the base of two small inlets, the White Inlets which flow down over moonmilk. A ledge is visible at

the top of these, which may be worth further exploration. Carrying straight ahead from the White Inlets, reaches a short drop. Penduling across reaches a ledge at the bottom of a promising looking climb. However, on closer examination it was found to continue upwards, getting steeper and chossier, rather than gaining a higher level. Alternatively, continuing straight downwards, reaches a chamber, from where a further pitch descends into the pit in Bod, described above.

Crossing to the right hand wall at the White Inlets, and passing behind a very large boulder, the route descends over muddy boulders to the top of a short pitch, Clanger Pitch. This drops back into the original route through Bod, much to the disappointment of the original explorers, who were expecting the passage to continue further.

Continuing along Bod, a second pit is passed on the left. This can be descended for thirty metres, to a floor from where a miserably small rift leads off. Alternatively, from half way down the shaft, penduling rightwards reaches a ledge form where a route over large boulders continues, unexplored. Continuing above the pot reaches the top of a muddy, sloping pitch, Pimpernel Pitch (P30), which lands on a rockpile in the

streamway, halfway between chokes Drucilla and Egbert.

Pitches

Pitch out of camp site 10m

Bolt for traverse; bolt

Traverses beyond Primula Point 80m

Bolt and natural belays

Climbs into Postman Pat 60m

Bolt and natural belays

C4 30m

Bolt.

Traverse into Soup Dragon (cont.)

Bolt; bolt deviation; bolt; bolt; tyrolean line on first two sections.

P6 Clanger pitch 15m

Natural backup; bolt for traverse; bolt; bolt deviation.

P30 Pimpernell Pitch

50m

Natural backup; long wire round spike; thread rebelay (needs backing up with long wire round spike); bolt rebelay.

Pimpernel Streamway

Upstream, a climb down from the rockpile lands in an 8m wide rift, carrying the stream. Easy progress in the stream or close to the walls in deep sections leads to the survey cairn on the downstream side of Choke Drucilla.

Downstream, a route following first the right hand wall, then the left hand wall, descends to a small beach at stream level. The stream in the 3m wide, tall, rift is 2-3 feet deep, and

the wetting can be avoided, by a tension traverse along a muddy ledge on the left. At the end of this, crossing to the right hand side of the stream, reaches a beach, at the foot of Colostomy Climb. In wet conditions, a pendule or a deathslide can help to avoid the water, or can simply dunk the caver in the middle of the streamway. Colostomy Climb ascends for ten metres over two horrendous rubs, to a ledge, which can be followed, to a choke, Not Colostomy Choke.

Alternatively, continuing up the rope for a further 25m reaches a platform of boulders, very similar in character to Bod. It is possible to see from here to Clanger Pitch, and so it is believed that this is a continuation of the old high level. Traversing round to the right, reaches a choice of two routes. A climb straight ahead reaches a further climb up to The Black Hole. This is unfortunately just a route over boulders, leading to a shaft back to the streamway. An inlet enters from above, but was not ascended. Alternatively from the foot of the climb, continuing to the right reaches Colostomy Choke, which draughts strongly, and which appears easily diggable.

From the base of Colostomy Climb, the stream continues about 4-5 feet deep. This can be avoided by recrossing the

stream to the left bank, via a rock island. From here, a roped, semi-tension traverse leads to a beach, various muddy side passages lead off from here: most end in chokes, but further exploration may be fruitful.

Alternatively, continuing straight ahead, a mud bank can be ascended to a climb into a loose choke; at the top it is possible to look through small holes into an open space beyond. This appears to be the continuation of the main rift.

From the beach, the streamway cuts right, and completely changes character, becoming a phreatic tube, about 5m in diameter; previously the stream had run in a high rift, with the roof out of sight. This soon reaches Choke Egbert: a dense and dangerous choke of small boulders. Just before Egbert, a low, wide crawl leads off from the right hand side of the stream. After several grovels in gravel, the passage splits. To the left is a series of very loose climbs up into a chamber in a boulder choke, several routes lead off but none go. Ahead, the passage continues as a low, wide, flat roofed phreas with boulders on the left. The passage ends at a boulder blockage, which may be diggable.

It is possible to climb into the choke at various places, but no way on was apparent. The stream splits in two, with both

branches sinking. A flood overflow continues straight ahead, between the two branches. This leads into the choke for about twenty metres, to a short drop, which needed some boulders removing from it. Just above this was a very dangerous chute, which had the annoying habit of dropping boulders onto unsuspecting diggers.

A caver at Choke Egbert is only 10m or so below the level of the camp, and about 700m metres above resurgence level, at an unusually remote and difficult barrier to exploration.

Pitches

P35 (up) Colostomy Climb
45m

Natural backup; Y-hang from two bolts; natural rebelay; bolt rebelay

First Pimpernell traverse
40m

2 bolts; 3 bolt rebelay; natural rebelay; 2 bolt rebelay; natural backup

Second Pimpernell traverse
45m

Natural belays.