

ARIO 2000

Report



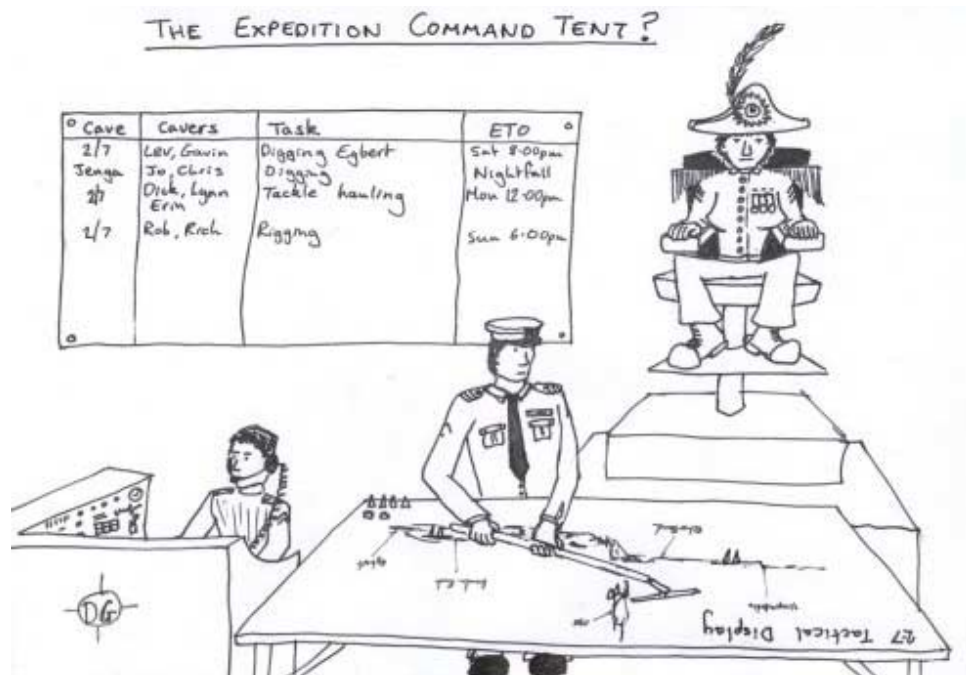
Oxford University Cave Club Expedition
to the Picos de Europa, Northern Spain

3rd July – 22nd August

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More information and personal views can be found on the expedition website at www.crosby.f9.co.uk/ario2000 If you have any queries, please contact me at pipcrosby@hotmail.com



Introduction

Pippa Crosby

Since 1961, Oxford University Cave Club has been exploring the limestone karst of the Western Massif of the Picos de Europa. Several huge cave systems have been found, explored and meticulously surveyed, and over the years we have pieced together an ever-expanding picture of the underground complex hidden in these mountains.

Exploration in recent years has focused on "Pozu Jultayu", also known as "Pozu del Ojo de la Bruja" or "2/7". The entrance of this cave system was discovered by the 1981 expedition and by 1999 the cave stood at 822m depth, with nearly ten kilometres of passage surveyed. The cave quickly drops from its mountaintop entrance down a series of vertical shafts to a streamway at -700m; the streamway then extends horizontally both upstream and downstream. The understanding of the local geology we had gained over the years suggested that exploring the current known limits of 2/7 could reveal not only substantial amounts of further passage but several possible connections between 2/7 and other cave systems in the area.

Our main aim was to go upstream. In 1999, exploration had been stopped by a section of deep water. We planned to return with a Goon suit, allowing someone to walk through the water without getting wet and rig a tension traverse over the streamway. Our surveys showed an inviting 2.5km horizontal distance to the neighbouring Sil de Oliseda and a connection would create a combined system of 20km in length and nearly 1km in depth. A second possible connection was to Systema Verdelluenga, an 8km long complex with a downstream sump tantalizingly close to last year's limit. The worry was that our section of deep water would become the other end of the sump just around the corner...

We also hoped to continue digging at Choke Egbert, the downstream limit of exploration. A positive dye trace links the water in the 2/7 streamway to the resurgence at Culiembro, some 2km distant from and 600m below the choke. If we managed to reach the resurgence-level streamway, 2/7 would be among the deepest known caves in the world. However, three previous expeditions had already focused attention on this obstacle and made little progress into the boulder choke.

Alongside the major underground projects, both of which required camping down the cave for 3 or more nights at a time, we had several smaller projects. These included the exploration of 10/9, 27/9, F80 and Pozu Jenga.

Summary

The Ario 2000 expedition was incredibly successful, finding some of the most significant cave passage of recent years.

- Over 1700m of passage found and surveyed in upstream 2/7.
- Second largest chamber in the cave discovered with two streams entering it, one from the North and one from the South.
- Northerly streamway heads towards Verdelluenga and ends in a sump.
- Southerly streamway heads towards Sil de Oliseda and ends in a boulder choke.
- Downstream 2/7 has proved too dangerous to dig without scaffolding.

A Big Thank You to... -

The Gordon Foundation for the loan of the Landrover. It was ace!
The Ghar Parau Foundation
The Royal Geographical Society
Oxford University
Shell UK
Lyon Caving Equipment
Dragon Caving Gear
Bernies
Mornflakes
Thorntons
Bahlsen Biscuits
HDS Systems

Thanks also to our field agent, Juan-Jose Gonzalez Suarez and home agent, Steve Roberts.
Everyone else who came out on, or helped with, expedition- thanks loads!

Expedition Members

Pippa "Siren" Crosby	Leader
Jo "Little Present" Whistler	Medical Officer
Lynn "Sin Leche" Mullely	Gear Officer
Lev "El Raton" Bishop	Gear Officer
Hilary "Third of a Mule" Greaves	Secretary
Rich "Lardarse Wideload" Doyle	Sponsorship
Dick "Wibble" Gerrish	
Rob "Dos Mas" Garrett	
Ian "Baboo" Wilton-Jones	
Bridget "Destroyer" Wilton-Jones	
Nicola "Arbol Claus" Brankley	
Wlodek "Me, Always" Scheimenovski (?)	
Chris "Bitch" Rogers	
Gavin "Dinnerlady" Lowe	
Martin "The Thing in The Big Green Tent" Laverty	
Erin "Hamster" Lynch	

Diary

Date	Who	What	Comment
3.7.00	PC, LM, EL, DG, CR	Leave Oxford	The Landrover (kindly donated by the Gordon Foundation) copes admirably with our trailer.
5.7.00	PC, LM, EL, DG, CR	Arrive at Los Lagos	The main team starts carrying equipment up to Ario camp.
5.7.00	LB, RG	2/7	Rigged to Flying Rebelles.
7.7.00	RD, EL	2/7	Rigged to Serendipity.
8.7.00	PC, CR	2/7	SRT training trip.
8.7.00	LM, DG	2/7	Rigged to Blind Pot Series. Rock drops on Dick.
8.7.00	LB, RG	2/7	Rigged to Tumbling Dice 1.
9.7.00	RD, EL	2/7	Rigged to Streamway pitches. Deviation snaps on Rich.
9.7.00	LB, RG	GPS logging	Logged 15/5, 3/5, 1/5, Canalizos, C3/C4 and Martini pool. Water container found smashed.
11.7.00	RG, GL	2/7	Who knows what these two were up to?
11.7.00	DG, LB, LM	GPS logging	Area 9.
12.7.00	PC, LM, RD, CR	2/7	Portering to Tumbling Dice. Pip got sick.
12.7.00	DG, EL	2/7	Found and rigged a shaft parallel to Tumbling Dice.
13.7.00	GL	2/7	Rigging
13.7.00	LB	2/7	Portering / Rigged Streamway climbs.
13.7.00	DG, EL, RG, RD, CR, LM, WS	Maria Rosa	All six people lose same 4 hours of memory after drinking Asturian Sidra. Conclude that aliens abducted them. Erin distinctly remembers being taken round the back.
14.7.00	RD, WS	2/7	Wlodek discovered he was getting fat.
15.7.00	CR, EL	2/7	Portering to Blind Pot series.
15.7.00	DG, LB	2/7	Attempt to rig to Big Ledge. See "A Slight Sketch".
16.7.00	EL, RD	2/7	Re-rigged Tumbling Dice. Again.
17.7.00	CR, JW	Pozu Jenga	Digging. Chris learnt to bolt.
18.7.00	CR, JW	2/7	Portering to Blind Pots. Jo left a present.
18.7.00	RG, RD	2/7 camp 1	Rigged "Dos mas" Traverse and all the way to Primula Point camp. Discovered distinct lack of cooking pots and had to eat cold custard. See "A Caving Convalescence".
19.7.00	PC, CR	Shopping	Drove to Oviedo to buy carbide. Far, far scarier than caving...
19.7.00	DG, EL, LM, RG	2/7 camp 2	Established Echo Beach camp. Pushed "A Savage Journey". Discovered the huge chamber "Buy the Ticket, Take the Ride", "Canals on Mars" streamway and another pitch.
20.7.00	LB, GL	2/7 camp 3	Rigged to Choke Egbert. Dug. Got scared. Dug some more. Gave up – too dangerous. Derigged.

Date	Who	What	Comment
22.7.00	RD, JW	2/7 camp 4	Explored "Tapeworm" passage to the north of "Take the Ride". Surveyed 170m.
25.7.00	PC, RG, LB	27/9	Rigged to Chocolate Staircase. Lev started bolting a traverse.
26.7.00	GL, RG	F80	Rigged to snow plug.
26.7.00	DG, LB, PC, CR	27/9	Lev finished scary traverse. Rift too tight to go on.
28.7.00	PC, CR	2/7	Took out shock-loaded rope from Tumbling Dice 1.
28.7.00	HG, GL	F80	Rigged and de-rigged a lot.
28.7.00	RD, EL	2/7 camp 5	Took rope from London Underground and started rigging a tension traverse in Canals on Mars. Surveyed 450m in Tapeworm with a broken pencil.
29.7.00	LM, HG	27/9	De-rigged.
30.7.00	GL	F80	Rigged to bottom of second pitch.
30.7.00	HG, LM	2/7 camp 6	Tried to find a sump bypass. See "Pieces of 22".
31.7.00	CR, PC	10/9	Rigged to second pitch. Got scared.
1.8.00	GL	F80	No way on at bottom of second pitch. Window leads to drafting rift.
2.8.00	GL	F80	Found 6m climb.
3.8.00	PC, CR, IW-J	10/9	Rigged to big pitch.
4.8.00	GL, IW-J	F80	No way on. One small lead left.
4.8.00	RD, CR	10/9	Rigged a handline.
4.8.00	PC, EL	2/7 camp 7	Discovered Misery Loves Company and Aven Country Ledge. Surveyed 375m in Canals on Mars.
7.8.00	HG, IW-J	2/7 camp 8	Surveyed 365m in Canals on Mars, swimming in places. Found Choke Zebedee. De-rigged camp to Guzamo's Grovel.
7.8.00	CR, RD	10/9	Dropped through Pipsqueak. Found 3 ways on.
7.8.00	ML	GPS logging	Top camp area
9.8.00	ML	GPS logging	Area 4.
10.8.00	CR, RD	10/9	Stopped at tight, draughty squeeze. De-rigged.
11.8.00	CR, RD	2/7	Portering from Space Trout.
11.8.00	EL	2/7	Portering from Tumbling Dice.
12.8.00	EL, RD, PC	2/7	De-rigging camp at No Space Sardines with only 2 pit sets... De-rigged to (almost) top of Space Trout.
14.8.00	HG, CR	2/7	20 tackle bags, 30hours... De-rigged to Tumbling Dice.
15.8.00	EL, RD, PC, IW-J	2/7	Paella'd to Flying Rebelles. Had a few problems with worn-out SRT kits.
16.8.00	HG, EL, RD, ML	2/7	De-rigged to surface, leaving only 300m of rope in the cave.
18.8.00	Everyone	Carrying	Impressive group effort with many rucksacks weighing over 40Kg. Lots of food at Maria Rosa.
19.8.00	Everyone	Packing	Most people head home. Erin, Rich and Hils go prospecting in the Central Massif.

The Nervous Novice

Chris Rogers

It wasn't just that I hadn't been on an expedition before, or that I had only been on four caving trips ever; it wasn't even my dislike of heights or that I had never done any SRT in a cave; it was all these things that made me quake in my wellies as I stood at the top of the entrance pitch in 2/7, staring down into a black abyss. And when Pip told me to lean out onto the rope, above what she claimed was 'only' a ten-metre drop, I was petrified.

Why had I let her talk me into this? How had I ended up here, thousands of kilometres away from home, hours away from the nearest car park (and hence hospital), clinging to a rope in some cold, damp, drippy cave halfway up the side of a mountain? I gradually let my weight rest on my Stop, clinging to the rope for dear life, praying that it would hold...and it did.

My first descent was a jerky one, but fortunately a short one; the pitch was, after all, only ten metres. My second was not quite so smooth; after waiting for me to pass a rebelay for five minutes, Pip called down to ask if the rope was free. 'Just a minute, almost done'. Five minutes later, and a now shivering Pip repeated the question. '****. I'm ****ing fine' came the reply. Five minutes after that, and Pip decides to come down and have a look, to find me unattaching myself from the wrong rope, and reattaching myself to the other wrong rope. Again.

Eventually I made it to the bottom of Paradise Rift, and then turned around. I made it back through Paradise squeeze okay, and slowly progressed to the top of 7th Heaven. After about five minutes of trying to push my way through, Pip made it to the rebelay below me. After another five minutes of desperately trying to push my way through, I began to curse and remove gear. After another twenty minutes, I made it through. But that half hour mini-epic wasn't the longest time I spent at the top of 7th Heaven. That would come six weeks later...

We had left derigging too late, and were now facing a mammoth task - 800 metres of depth and a kilometre of rope between six people and seven days. So I was persuaded to enter 2/7 for the last time, with the aim of moving as much gear as far up the cave as possible. When we reached the point where the previous team had stopped, we realised just how much rope there was to deal with. A huge pile lay in front of us, with as much again hanging half way down the pitch in a giant knot. Hils, my partner, began to make her way down the pitch while I began to pack the rope into tacklesacks.

Four hours later the rope was untangled and packed, allowing us to move. Our first task was to move the tackle up along the Streamway, a section of passage with various small pots and two short pitches. I climbed up the first pot so that Hils could throw the tacklesacks up to me. After 6 came flying past I called down to her "is that all?" She replied with the immortal words "No, there's another twelve". And so it went on, for ten hours.

As dawn broke on the surface, we faced shifting twenty tackle sacks through a large boulder choke. Dogged by persistent light failure, I began to pass the sacks up to Hils, and we shifted them through the choke, five at a time. I grew particularly attached to a pair of sacks dubbed 'the twins' - the rope within was too long to fit in one sack and so had been placed in two, rope running between them.

I began to make my way out with Hils following behind. After twenty-five hours of caving, Paradise Rift almost broke me. I couldn't fathom how to climb it, even though I'd done it at least ten times before; I would try to thrust my way up one section, make two or three feet in height, slip down again, and then repeat the process further along the rift. It wasn't until Hils talked me through it that I managed to make it out.

At the bottom of Seventh Heaven, Hils and I had our first argument. She had taken three tacklesacks most of the way out of the cave, and insisted on taking them right to the surface, when it was clear that harness rub had made her unable to do so. After a short argument I persuaded her to leave two behind, which I took myself. One was moderately heavy, containing the remains of the camping equipment we'd used underground, the other was full of metalwork; together they were an unpleasant prospect. By the time I reached seventh heaven squeeze, I was exhausted. I was lucky enough to meet another team coming down, to whom I passed the tacklesacks, after twenty minutes of struggling. More vicious swearing followed as I tried to push myself through for another twenty minutes.

And so, exhausted, I clawed my way off the top of the first pitch, into the rays of the setting sun. Again I asked myself; why had I let her talk me into this? This time, as I collapsed into the 2/7 shakehole, the deep red of the sun gleaming off the huge mountains to the East as the sun dropped below the horizon, the answer was obvious. It wasn't just that I had gone on a world class expedition, and gained superb experience in caving; it wasn't even the gorgeous mountains of the Picos and the unparalleled experience of living there; it was all these things, and many more that made me determined to come back next year.

Medical report

Pippa Crosby and Lynn Mulelly

In order to improve our first aid kits for future expeditions, we asked all expedition members to tell us the types of problems they encountered and whether those problems could have been avoided. 10 out of the 16 people responded. The results show the variety of situations that we must be prepared to deal with:

- Several cases of trashed hands due to excessive caving without gloves. Underground they were treated by attempting to cover grazes and skinless fingertips with tape, which rarely stayed on. On the surface the wounds were treated with iodine and allowed to heal in their own time. A supply of spare gloves should be taken to underground camp and gloves should be worn when handling carbide and fettle.
- One urinary tract infection that led to a high fever for seven days. Treated with Penicillin, potassium citrate and Rehydrats. More Antibiotics and medical book would have been useful.
- One case of tonsillitis, treated with Amoxycillin.
- Two cases of very bad harness sores. A variety of methods were tried to alleviate the pain. Talcum powder was only very slightly effective. The best method seemed to be Melolin patches held on by either tape or triangular bandages.
- Two cases of mild confusion and disorientation, probably caused by messing around with the 24-hour clock. Difficult to avoid as long trips are necessary for active exploration.
- Two incidents of large pieces of rock detaching themselves from the wall. Luckily, no serious injuries were incurred. Cavers need to be aware that large bits of cave, as well as small handholds, can give way unexpectedly.
- Two cases of old injuries playing up. Both were treated with Ibuprofen.

All members of the expedition carry comprehensive personal first aid kits. The size of the underground first aid kits were reduced to small Tupperware containers and actually made it down to the underground camps this year. Small kits are essential as there is often little spare room and we have found in the past that larger kits are just left on the surface.

It has been suggested that next year we should reorganise the surface camp first aid kit. It should be split into two containers. One medium sized everyday patching kit containing things like iodine, bandages, Vaseline and Ibuprofen; and another box used to store emergency stuff that you need to find in a hurry like eye-wash and burns treatment.

A Slight Sketch

Dick Gerrish

NB The following report is taken from the expedition log book. In order to preserve accuracy, much of the original material has been retained. The reader is warned that this piece contains some strong language...

After swift progress to Tumbling Dice, we were well up for a big trip. However, the events that followed prevented us from achieving our aims. Upon arrival at Tumbling Dice Two we found that the rope was taught. It was caught on a projection further down the pitch making descent tricky. Lev attached his jammer onto the rope and pulled it up enough for me to rig my Stop. I then abseiled down to where we wanted to place the deviation but found the rope too tight to swing across. I left the tape for Lev to put in the deviation after I had freed the rope from below and continued down, attaching the second bolt at the rebelay on the way.

After I was well clear(?) at the bottom I shouted up for Lev to head on down. Tucked in between two very large boulders, I awaited Lev's arrival. Lev abseiled down to the large pendant of rock and began scrabbling across the shaft to it using his sky hook. Wrapping his legs around the pendant, he began tying the deviation tape around it. At that point the bottom two feet of the pendant broke away and fell. "Below!!!"

I cringed in my little shelter as loud crashes of big boulders falling a long way hit the bottom of the pitch. Medium sized rocks flew in front of my field of vision clattering off the walls and small pebbles rattled into my hideout, pattering over my helmet and oversuit. "Shit! Missed!" I breathed a sigh of relief.

Lev, who had swung back across the shaft the moment it broke, began moving back across to the stable looking pendant. Once again he clung to it but this time managed to tie the sling around it. Pulling it tight, he gave the rock a sharp kick - just to confirm its obvious stability. At this point, the whole goddam fuckin' enormous megalith peeled away from somewhere way out of Lev's field of vision high up in the roof.

In slow motion the rock cruised past him like the star destroyer at the start of Star Wars, falling past him with seeming endlessness. His first thought was one of penduling back across the shaft to bash into the far wall. His second was that, in order to prevent dropping the five-metre sling down the shaft, he had tied the other end to his short cowstail. As the rock's momentum grew, the sling tightened on Lev sending him spinning and swinging in all directions. Miraculously, just as the rope tightened, the rock hit a ledge either breaking it or tumbling it out of the loop in the sling.

"BELOW!!!" The urgency in Lev's voice conveyed the sheer size of the four metre long bastard that now whistled with increasing venom down the 65m shaft. The pregnant pause and distant booms caused fear to well up deep inside me. I braced myself for what was to come. Forcing my arse as far back as I could, I concentrated on making myself as small as possible. BANG!!! The most fuck-off almighty crash sent shrapnel flying in front of me again. This time the broken rocks were much larger and crashed all over the base of the shaft. One struck the rock I was sheltering beside not two metres from my head. The Transit Van sized boulder reverberated sending me into uncontrollable shakes of terror. It was official... I was fucking bricking it.

"Okay!" I quivered back up to Lev.



"Fuck... Fuck... Fuck!" came the reply. Lev was held taut on the rope. Below on the ledge, a large boulder pinned the rope tight preventing him from unlocking his Stop. Once again he inverted his jammer freeing up enough slack to unlock and continue down.

"There's more stuff to come down," he hollered.

"Wait!" I shouted back before scrambling off to an even safer hiding place, "Okay!"

Crash! Bang! BOOM!!! Tinkle, tinkle, as pebbles fell through the gaps in between the boulders. I listened carefully for the sound of Lev abseiling as he slowly inspected the entire length of rope on the big hang.

When he reached the bottom he called out for me to come out from hiding. We swapped stories and giggled with relief. Lev showed me his cowstails. They had taken quite a shockload and were ridiculously tight. His short cowstail was now almost the same length as his long cowstail. We hurried back to my hiding place stopping to look at the large white crush mark where the rock had hit the boulder I was hiding against.

Once in safety we considered our choices. Despite escaping all injury we decided that carrying on with Lev's badly shockloaded cowstail was unwise. We ferried the tackle to the head of the next pitch and returned to the bunker to eat peanuts.

It was here whilst putting our ascending gear on that Lev noticed that one of the straps on his sit harness had been ripped off. I could see the wave of nausea cross his face as he realised just how close it had been. After steeling ourselves to prussik back up a shockloaded rope, we began our ascent out of the cave.

We were both very glad to see daylight, eat food and drink wine! Tomorrow we will visit the spares kit. A fresh bag of nerves and replacement sphincters all round!!!

GPS Project

Martin Laverty

The Shaft-bashing Guide

The shaft-bashing guide has been a stalwart feature of OUCC expeditions to the Picos for something like a decade and has served well under Gavin's custody. It is a list of all the features thought possibly likely to lead to greater things, or on which time has been frittered away, or occasionally just thought of as worthy of inclusion in a comprehensive list of karst phenomena. The contents have been gleaned largely from expedition reports and logbooks. It appears on expedition as a neatly printed document which provides something to sit on, to flick through, to swat flies with, or affect to study, but is not too good as a quick and easy shaft-bashing guide. It is now maintained on a computer and has been available over the web as html produced from its current source format, LaTeX. It ought to be a guide as to where new sites may be, where to go to prospect, or where to knock off several of the prospective sites at one go. Already portable and field updateable, it needs maps and flexible means of filtering, indexing and cross-referencing.

Entries are usually given a tag id, sometimes a name, and are grouped by area. They have some form of location and descriptive text which varies from the stark to comic; laconic to obsessive; scientifically objective to impressionistically literary. Often, the location is not clear – bearings may be given to sites that may or may not be identifiable, errors may have been introduced on entry or transcription, or the context of the original entry may have been entirely lost. We needed absolute locations.

In April 2000 I noticed on a trip to Skye that the normally jittery location readings given by my GPS had become stable and accurate. It was soon confirmed that the US Government had provided a gift by turning off selective availability. Suddenly, the use of GPS coordinates to improve the shaft-bashing guide became a viable option. In brief, satellites broadcast their identity and position together with a precise time and a receiver picks up as many as possible of these transmissions (so weak that even your body may block them) and calculates a fix from the timing differences it observes. The reported position is given in one of many different possible coordinate systems, although most of these will be obtained by more or less approximate conversions from a base coordinate system for the receiver in question (probably WGS84).

Global Positioning in Spain

In the field we had a variety of units available to us. Most readings were taken from my Pioneer and from the Landrover's Garmin. There were occasions when considerable drift was noted and this seemed to coincide with low satellite availability, but generally repeatability appeared to be good and the unit's own estimate of accuracy was usually about 7m. When recorded with or converted to the map datum the positions coincided with dead reckoning and relative locations appeared correct. Altitudes were not recorded with the GPS as these were never very stable, but a cheap barometric altimeter worked well.

In the field Lev and I recorded some key cave entrances but many sites, some scarcely locatable from our current records, remain to be checked. (We also have a few GPS records from previous years but these do not make it clear what datum was used – as will be seen below, this is important, so future users please ensure you record it!).

A few years ago it was not unreasonable to complain about the standard of Spanish maps but the same cannot be said today. The old maps showed latitude and longitude (relative to Madrid) and/or a Lambert grid; detail based on mapping dating back to the Civil War, sometimes showing evidence of hasty interpretation of aerial photo data with valleys recorded as ridges and, in the Picos, lots of fictitious watercourses. Today, the 1:25,000 Mapa Topografico Nacional de Espana maps from the Instituto Geografico Nacional appear to be extremely accurate, clearly drawn and show latitude and longitude (relative to Greenwich) and a UTM grid based on the European datum (date not stated but as the maps show a publication date of 1995, it must be assumed that the datum is that of 1950 rather than 1995).

The choice of datum is important – the difference between the WGS84 and European 1950 datums is calculated (by Lev using the Molodensky transformation; parameters in the WGS reference) to be between 101-109m E and 210-211m N (using constants optimised for EUR-M (Atlantic Europe from Portugal to Finland) and EUR-D (Iberia)). Repeated GPS readings at the Ario camp showed 102m E and 210m N. The detailed mapping of the Top Camp area reported in Proc 13 by Gerhard Niklasch gives figures which are far more accurate than can be delivered by GPS give differences of 107m E and 205m N.

Using the Data

Recording coordinates is one thing, making them useful is entirely another. Technology has come to our assistance this year in the guise of the acronyms XML and SVG.

The data about a site is held in an XML format; essentially this is plain text where every element of data is tagged (using angled brackets and a closing slash) and may have additional named attribute/value pairs. It could (for the sake of argument) look like this:

<AREA name="Area 7" >

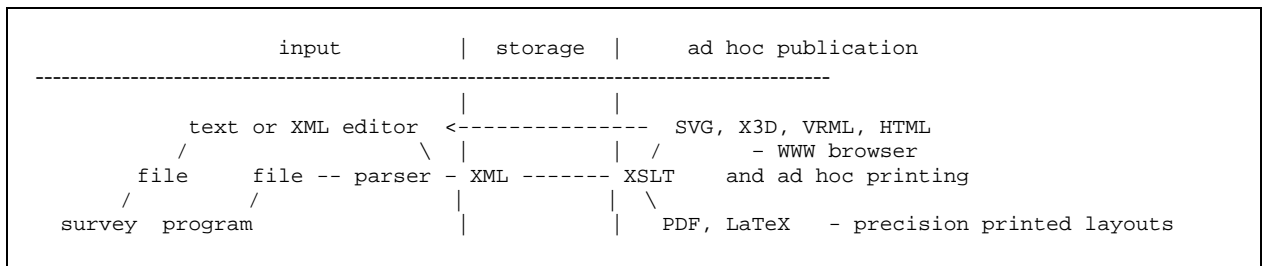
<CAVE NAME="Pozu Jultayu" TAG="2/7" DESCRIPTION="see elsewhere">The main target of the Ario2000 Expedition

<LOCATION>Near the top of Jultayu

<UTM Zone="30" X="343978" Y="88012" /><ALTITUDE>1848m

XSLT allows data to be selected, sorted, and transformed (using a suitable processor) to another format. For example, we might want html for web publishing, pdf for printing, svg for mapping on web or in print, and x3d or vrml for 3D representations.

SVG allows us to produce graphics (including text) from an (XML) text description – the quality is limited only by the display or printer we use; no artistic skill is needed except in deciding what the map should look like in terms of layout, symbols to use, etc. In particular, we can take an XML file containing the location data and get XSLT to generate a description of a corresponding map. If new sites are added to the cave register, a new map can be produced easily. Also, the same data can be displayed in different ways: for checking maybe we need an uncluttered map with just a dot and the site's tag, plus some peaks which might be used for taking bearings; for publication we might want to display different symbols for horizontal and vertical entrances overlaid on a geological map, a topographic map, or a combined topographic and geological map where transparency allows one to be layered over the other.



We are now well on the way to having more than just a better shaft-bashing guide; we have a definitive list of sites with standard entry structure suitable for searching and processing into reports and maps. Together these will remove the need for the obtrusive physical tagging which used to be needed but which the National Park understandably disapproves of, at the same time as removing the duplicate entries that have arisen from repeated investigation without physical tagging.

It is now possible to have a palmtop computer hold and process all our cave details and deliver them in an updateable text or graphic form; it is also possible to have a palmtop computer which incorporates a GPS system. Our new system may mean that getting lost in the Picos is a thing of the past, but its greatest application will be in pointing the way towards new areas to explore. There is still much to be found...

References

Geographical coordinate systems - <http://www.colorado.edu/geography/gcraft/notes/coordsys/coordsys.html>

GPS - Global Positioning System - <http://www.colorado.edu/geography/gcraft/notes/gps/gps.html>

Lambert – a conformal conic projection

LaTeX – a publishing language popular in academic circles

PDF – Portable Document Format – a publishing language popular in commercial circles

Proc 13 – Geodesy and Mapping Projects in OUCC Proceedings No 13 (1991)

SVG - Scalable Vector Graphics - <http://www.w3.org/Graphics/SVG/>

UTM – Universal Transverse Mercator – a cylindrical projection applicable to all but the polar zones beyond latitude; the Cornion is in zone 30.

VRML – Virtual Reality Modelling Language

WGS – World Geodesic System – <ftp://164.214.2.65/pub/gg/tr8350.2/wgs84fin.pdf> (175 pages)

X3D – an XML language for 3D modelling

XML – eXtensible Markup Language - <http://www.w3.org/XML/>

XSLT – eXtensible Stylesheet Language Transformations - <http://www.w3.org/TR/xslt>

A Caving Convalescence

Rob Garrett

Things were not going well on expedition. My last two trips had seen me sitting around at the top of Tumbling Dice getting cold while the pitch had refused to be rigged. Since then, I'd been ill. Not very ill, just enough to make me not want to go caving – especially as I'd lie in bed of a morning listening to the sound of rain on canvas. Just as it looked like things might be picking up, with waves of camping trips meticulously planned in the back of the log book, things had gone even more pear-shaped. Nobody was fit to camp.

Pip, our enthusiastic leader, was laid low with a persistent fever. Erin, our even more enthusiastic guest caver was busily sewing her oversuit. Gavin was surface-locked with harness sores while Lev was similarly hampered by the untimely demise of his harness – an incident that had left Dick wanting a holiday to recover! Lynn wanted another day or two to prepare for a camp, Jo wanted a couple more and Chris, our novice, wanted far longer. Only Rich showed any interest in camping and we'd already had to let schedules slip by a day as proposed camps were being successively cancelled.

I knew that I should really go caving but the thought of prussiking out from The Big Ledge just didn't appeal, especially if I really was ill. I looked in a mirror and immediately identified the problem, as my tonsils were a hideous swollen technicolour of pus. Tonsillitis, I guessed. I went to the first aid kit in search of treatment. Nestling in a corner under a mountain of rehydrats, I found a small plastic bottle with a 7 day course of amoxicillin. That should do the trick. But, wait a minute, that would mean no alcohol for a week – a plan began to form in my mind...

Ideally, we wanted an advance party to go in and camp the next day at The Big Ledge – that would have to be me and Rich. The next day we would move camp to Primula Point while the second wave took over The Big Ledge – that would be Lynn, Dick and Erin who all wanted to explore upstream. They would need four people to set up the upstream camp, so on day three I would join them (neatly avoiding the laborious ascent from The Big Ledge to the surface) while Rich would head out. Meanwhile, Gavin and Lev by now would be ready for the first downstream digging camp. The upstream team would then have one full day of pushing before heading out to be replaced immediately by Jo and Rich (again). It was efficiency itself – what could possibly go wrong? (The wise money was on at 2:1 for a clusterfuck).

The next day Rich and I set off, arriving at The Big Ledge in good time and setting up camp. The plan was to rig a bolt traverse across Just Awesome as this would make further exploration downstream much easier. The view behind us as we bolted was amazing although our lights didn't do it justice. After four bolts and a couple of scary bold steps, I'd had enough – it was way past midnight and we'd not eaten yet. The remaining separation would require several bolts to rig as a traverse. Much quicker would be a simple penduling abseil-and-prussic arrangement and I could see the ideal place for a bolt to facilitate this. An hour later and it was finished. I rejoined Rich where he'd prepared dinner. "Dos mas bolts!" I announced. Although we were both very pleased with our achievement, it still needed a couple more bolts to become a sensible trade route.

The next morning we set off with three heavy tackle sacks and 70 metres of rope to go and rig Zasadka Way. Notoriously hard to rig, we were not helped by the fact that several bolts had been previously removed leaving unusable holes. On top of this we had a shortage of rigging gear and no guide as to which order would be best for using our ropes – if we were too inefficient we might not have enough. Light failure rounded off our problems with my back-up battery failing just as I reached the main streamway.

Our second night's camping proved less enjoyable than it might have owing to another minor misunderstanding. We had assumed that pans had been stored at Primula Point when, in fact, we'd been supposed to bring them with us from The Big Ledge. We had everything except something to actually cook in. For dinner we found the cleanest Daren drum and filled it with water. To this we added all the custard powder we could lay our hands on and agitated the solution. This, together with small handfuls of nuts, raisins and fudge served as dinner and breakfast.

Our slow progress so far meant that by the time we awoke I was already late for my appointed meeting with the second wave. I rushed along the London Underground only to find the three of them had not made much progress, encumbered as they were with 12 tacklebags!

Installing an upstream camp was even harder work than Primula Point and it soon became obvious that it was gong to take a long time to reach Fear and Loathing in Las Brujas – the proposed campsite. I'd never been upstream before so it was a pleasant change to see the new and spectacular streamway. I was particularly impressed by Echo Beach with its little sandy cave and sump pools rising and sinking. In fact, I was so impressed that I suggested we camp there – a suggestion gratefully seized upon by the others who were all as tired as I was. It was by far the best underground campsite I've ever encountered, and noticeably warmer and less draughty than my accommodation of the previous two nights. The food was considerably better too, thanks to my more culinary-minded companions.

The next day dawned, and finally we were to go pushing. I was unenthusiastic about prospects, as reports of the leads had not sounded encouraging. I was firmly convinced that the main lead would sump around the next corner. To everyone's surprise (even Dick's who had been there before), the way on was nothing like we expected. We had with us a goon suit, which Lynn had volunteered to wear so she could be the first to cross Catheter Canal. Instead of a passage about to sump, we found an easy traverse into a draughting passage with the way on wide open.

Erin and I accepted the challenge of Vanilla Inlet, leaving Dick and Lynn to go in search of glory in Alien Changes – the name given to the main continuation in honour of the aliens who, it seemed, had once again been playing games with our minds. Vanilla Inlet proved to be horrible. We found about 70m of new passage there– it was a shame that no one would ever force their way back to survey it. Finding our way back to the others was hard enough....

The others hadn't had a good time. Lynn had fallen in the water at the start of the traverse and Dick had turned back at a point where he now insisted that a goon suit would be essential. We told them what we'd done and the passage was renamed "A Savage Journey (into the heart of the American dream)". Although we were still keen to explore, multiple carbide failure meant that a return to camp was the more prudent option.

One disadvantage of having such a pleasant campsite is that nobody wants to get up. It's not clear for how long we would have stayed in bed, but fortunately the next wave of explorers came to our rescue, in the shape of Jo and Rich. Such was our enthusiasm for exploration

that we all wanted to go pushing again. However, we had a callout to meet so at least two people needed to head out. Pulling rank, Dick and I grabbed the glory trip. Dick was keen to spend another night camping but I, expecting to be cold and wet, was keen that we should head straight out after pushing. It wasn't until Lynn and Erin suggested the possibility of a beach trip the next day that I was able to persuade him.

It worked like a dream. Surveying as we went, we passed the limit – again without recourse to the goon suit – and discovered an enormous chamber! Up the predicted boulder ramp for around 50m to a hole down to – we dropped a stone... sploosh – deep water! We shone our lights down – could it really be the sump-lake? Dick rigged the pitch and went down. "Rob," he called, "put on the goon suit and come down". I did this with some difficulty, failing to get my wellies on properly over the goon suit.

It wasn't C3 but it was a canal disappearing as far as the eye could see. There was nothing for it but to explore it on my own. The passage was beautiful. Deep, blue-green water with a sandy floor that you'd sink into if you stood still. I kept looking out for sumps to the side that might lead to C3 but saw nothing. It just kept going. At one point I thought it was going to get too deep as the water rose up my chest but then it got shallow. Eventually I reached a wide meander but no sign of an end. About 500m of new passage and still wide open. I turned around and immediately got lost. A minute later and I had rediscovered my footprints, which led me back to the canals where Dick was waiting, shivering.

As we headed out, I suggested as an aside that we "just take a look at that black space over there." We climbed up a boulder slope, which was reminiscent of the Gouffre Berger, as first the roof, then the walls and finally the floor disappeared! This was a very big chamber. At first we couldn't see any way out of it, but as I was looking around the lowest point I thought I could feel a draught. Dick felt nothing but then he'd not just been up to his neck in freezing cold water. I looked around and spotted what looked like a rift heading off above. At my encouragement, Dick climbed up to it and, to our surprise, found another 20m pitch. Not enough time to rig it, but we'd already done enough for one day. We'd leave this lead for Rich and Jo.

Back at camp, we woke them up to tell them the news and eat some food. They had been planning to visit Holier Than Thou but we persuaded them our lead was rather more promising. From here we exited the cave, stopping only to sleep at the occasional rebelay whilst we waited for each other. We finally emerged to a glorious midday: expedition was finally in full swing.

Pieces of 22

Hilary Greaves and Lynn Mullely

Lynn: This was my third year in the Picos and my third camping trip in 2/7. The previous trips had all been essential to my training and to the set-up of the camp at Echo Beach, but I had yet to experience the much-hyped thrill of finding new cave.

As Hilary and I set off from underground camp on our first pushing day, I wondered whether it was all going to be worthwhile. Was the time I had put into organizing the equipment, driving through France, carrying up to Arrio and the previous camping trip to set up the campsite going to be rewarded? I was beginning to have doubts that anything I did that day was going to live up to the expectation caused by the amount of effort I'd put in to be there. Why was I so keen to spend six days away from light, warmth and dry clothes?

Hilary: Our mission: to connect the upstream limit of the cave we were in, "Pozu Jultayu", with the downstream limit of a neighbouring system, Sistema Verdelluenga. Satisfyingly, this had been the official "major aim" of the previous year's expedition; now, with the finds of the first half of the 2000 expedition, we knew we were tantalisingly close. "Sistema Verdelluenga" ("C3/C4" in the OUCC entrance cataloguing) had been explored 5 years previously and found to end in a sump. We had the survey data from the C3/C4 exploration and by plotting the survey of what we had already found this year, we knew that the separation between the downstream C3 sump and the upstream 2/7 sump was just 30 horizontal metres, give or take the inevitable surveying inaccuracy. We had clearly found the other end of the same sump.

Lynn and I mandated ourselves to find a dry bypass above the sump level. Neither of us had been in C3 - a cave of a previous generation of Oxford explorers - but we knew an inflatable boat had been left on the C3 lake. We wanted to play in that boat.

So, we made our way up to the 2/7 sump, turned round and walked slowly downstream, searching the walls and ceiling for possible routes. After 20m we found what we were looking for: a rift in the left wall. Lynn climbed up and into it. "I've found a chamber!"

My hopes soared. Already my mind was composing a song about connecting the two caves: It's a long way, to Verdelluenga, It's a long way, to cave...

Lynn: My excitement grew as I climbed up ~3m to another chamber. The way on was another climb. The first few metres were easy, but then there was a difficult move. It began to dawn on me that I was quite high up and a long way down and that I really didn't want to fall from this crux move. The climb would need a bolt, which I placed while Hills shivered in a survival bag. Eventually it was done and I clipped my long cowstail into it. The move went well, much better for the confidence of the length of dynamic rope protecting me. Along a little rifty bit I reached a chamber with a high blank wall.

Hilary: Lynn rigged the rope and I followed. There were two ways on, both 8m above us. Straight ahead was a climb. Had we had a top-rope, or decent running protection, or had we been on the surface, either of us would have climbed it in an instant. But we were 700m underground and 3 hours' healthy-person caving from underground camp, let alone the surface, and we both knew the untouched rock was untrustworthy - as one quickly discovers in the Picos, "handholds" had a tendency to become "pieces of rock you were holding in your hand", with no warning. A fall could have had exceedingly dire consequences and neither of us were prepared to risk it. We could have bolted up the climb, but progress would have been slow, so we chose the second route, up to the right and round a corner to a just-visible hole. The first part was easy - I threw a sling around a sizeable projection above me, tied knots to create footholds and was soon standing on said projection. A couple of bolts saw me round the corner. Another sling-throwing move, scarier than the first but actually safer since I now had a decent running belay and was high enough off the floor not to hit it, got me to the top so that I could walk into the higher passage that would carry us over the top of the C4 sump. The "top". Another ledge. We called it a day and headed back to camp, arriving 21 hours after we'd left, and slept for 16 hours.

Lynn: Day 2 - this time we went prepared. We packed a tacklebag with Hils' foil tent kit as well as the survival bag and took the one working stove and plenty of food and hot chocolate. It was my turn to bolt, so as I retraced Hilary's steps, she set about making a tent from foil blankets. We had planned a system of protection using cowstails and shockcords (the only dynamic rope we had) as well as using the static rope like a conventional lead rope. My resolve 'not to lead climb on static rope' was clearly not going to last very long. The extended cowstail idea didn't work. We set up the static rope with a long stretch of rope beneath me so that any Fall Factor would be extremely small.

Hilary: Lynn started tackling the 5m up to the new top of the climb while I attempted to construct a cosy shelter. The idea was one that Lev, another expeditioner, had dug out of a book back in Oxford. Rig hammock, construct foil "tent" around it, lie in hammock with candles lit underneath. The original plan had been to get the system good enough to replace sleeping bags for underground use; however, the need of the non-bolting partner on a bolt climb, sitting still, probably in wet clothes, in 4°C air, was equally great. I found myself an alcove, hung the hammock from a rock spike, unfolded my flimsy foil sheets and got to work. Almost two bolts later I had my result. I climbed inside, lit the candles and tried to relax in the hammock. Hmm, meagre points for comfort (cheap hammock), but definitely warmer than outside. I was more than happy for a first trial. Delicately, I climbed outside again, taking care not to rip or melt the blankets, and photographed my silver beast. "Can we call this chamber 'my tent's so f*****g cool?!'" I didn't bother interrupting Lynn's serious endeavours with this inane remark, but I was Proud Of My Tent. The constant hammering stopped for a minute... ten more "tings"... I knew what was happening above me. "Hils, I'm done, time to swap?" I was unimpressed. I had finished my tent 30 seconds earlier, I was Proud and I wanted to try it out Properly. "Don't suppose you want to do another one, I'm just starting to warm up - ?" "Erm... Okay...?!" I could understand Lynn's surprise: of all the reasons I had ever wanted someone not to finish putting in a bolt, being too warm and cosy was a new one on me too. Frozen solid and unable to face moving out of a semi-functional plastic survival bag yes, too comfortable no.

Lynn: So Hilary paused in her constructions to belay me to my next bolting point. There was a ledge not too far from me that would provide the best place to bolt from - so I went for it.

Crash - simultaneous handhold and light failure. I fell onto my previous bolt in the dark. Well, falling on static rope seems to be okay then.

Hilary: One bolt later we did swap places, and I was climbing again. Here I was between two walls, so I could bridge across the gap, one foot on each wall, and make relatively easy progress upwards. I climbed perhaps 4m before the exposure started to scare me (static rope...) and I felt it was bolt time again.

Lynn: The climb continued to tease us. Each 'top' we saw was just another ledge with another climb above it. We stopped on one of the nastier ledges to cook dinner. It was small and drippy with a deep puddle covering most of the floor. As Hils cooked I got to try the most comic move of the climb. Standing below the last bolt I made some etriers and clipped them in. With Hils belaying me from our dinner ledge I was able to stand in the etriers and thrutch through a squeeze in the roof. I popped out into a lovely chamber - unexposed, dry and almost warm. Ahead was yet another climb, which Hilary found an ingenious way around by climbing up the wrong side of the chamber and traversing. This was as far as we got. By now we had been caving for about 24hrs and were getting pretty tired. We left our climb unfinished and draughting upwards, and surveyed our way back to the sump.

Hilary: At the end of this second trip upstream, 28 hours this time, we had climbed and surveyed 46m of height and reached a chamber with not even any false summits for 10m or so up the wall. I recalled the concluding line of a story about Greek gods that had for some reason stuck in my mind since childhood: "He had been defeated, but he had not been disgraced." Well, we certainly hadn't been disgraced, and although we hadn't achieved our noble ambition of playing in a boat, we hadn't exactly been defeated either - the climb was still going and dangled its prize for any would-be returners.

Lynn: Our two 'days' actually took us 96 hours. My hands were trashed (again), Hilary had bad harness rub and I was popping pink smarties (ibuprofen) so that I could ignore my shoulder. The journey out was made more pleasurable for me by knowing that I had made my peace with 2/7. I had finally found some new cave and I didn't have to put myself through this again - well, until next year ...

Songs

The Prussiking Song

When this bloody pitch is over
Lots more prussiking for me
If I thought that I had finished
O how foolish I would be

For when I'm through Guzamo's Grovel
I'll prussik Cemetery Gates
And when I've prussiked up that one
Rosy Crucifixion waits

I'll prussik through the first false floor
I'll launch myself over the top
I'll prussik down that climb
Then up Space Trout I won't stop

And then I'll prussik through the
streamway
For though I need not take such pains
By then my tendency to prussik
Will be too thoroughly engrained

I'll prussik both the Tumbling Dice
I'll prussik Blind Pots Series
I'll prussik all the GSP rifts
I'll prussik Paradise Squeeze

I'll prussik up the pebbly slope
I'll prussik through Seventh Heaven
I'll prussik up those entrance pitches
I'll prussik right out of 2/7

And then when I am on the surface
I'll know that this is the last bit
I'll prussik down the ridge to Ario
I'll prussik straight into my pit

And when my prussiking is over
O how knackered I will be
Don't ask me how I liked my prussik
Give me a flippin' cup of tea.

It's a Long Way to Verdelluenga

It's a long way to Verdelluenga
It's a long way to cave
But you can get there
If you're very hard and brave
Up Viagra Falls
Past Benedicks of Mayfair
It's a long, long way to Verdelluenga
But 2/7 goes there.

The Cave of the Witch's Eye

(to the tune of "The House of the Rising Sun")

There is a cave in the Picos
They call the witch's eye
And it's been the ruin of many Oxford
Cavers such as I

Now Erin is a seamstress
She sews her TSA
And now she's going down 2/7
Exploring the streamway

Rob Garrett is a drinking man
He always says 'Dos mas!'
And he is down at the Maria Rosa
Drinking his Gin y Kas

There's nothing here that Lynn can eat
Not even top camp stew
For she's allergic to milk & eggs
And there's nothing she can do

The one we call 'la Jeffa'
Pip Crosby is quite ill
And she must stay inside her tent
Lying very still

Now Chris he is our novice
He porters all our bags
They are full for camping gear
For the use of the Old Lags

Now Wlodek is our hero
As told in tales of yore
But he has grown old & fat
And caves so fast no more

Now Gavin has bad crotch rot
His harness makes him sore
And though he likes deep caving
It rubs his skin quite raw

Jo has gone a diggin'
In the valley of Dry Bones
And she has hauled from Pozu
Jenga
Lots of bags of stones

Rich Doyle he is a night owl
He caves from dusk til dawn
The only time you'll hear him
returning
Is in the early hours of morn

Lev rigged a deviation
From a pendant on the wall
Then he nearly killed himself
When he made that bastard fall

Rich Gerrish at the bottom
Trying to lay low
Knew that he was out of luck
When he heard Lev yell 'BELOW!!!'

I've got one foot in my footloops
The other's on the floor
And I'm going back to Tumbling Dice
To rig that pitch once more

Now mothers tell your children
Not to do the same as I
And spend your time in Fear &
Loathing
In the cave of the witch's eye

The only thing a caver needs
Is carbide for his lamp
And the only time he's satisfied
Is when he's cold and damp

There is a cave in the Picos
They call the witch's eye
And it's been the ruin of many
Oxford
Cavers such as I

Pack up your Pit Set

(to be sung as a duet with "It's a Long Way")

Pack up your pit set in your tackle bag
And ab-seil down
While you've got carbide to light your way
There's no need to frown
What's the use of sunlight?
Mud can make you brown
So, pack up your pit set in your tackle bag
And ab-seil down

LED's

Lev Bishop

During recent years, most OUCC expeditioners have settled on a semi-standardised lighting set-up comprising a carbide generator (usually a 300g Fisma) and headset (Petzl aceto) combined with an electric backup (often an oldham headset connected to a helmet-mounted 4.5v "flatpack" alkali battery). This system is very appropriate to the type of caving we undertake in the Picos, but apart from the details it is one that hasn't changed in many years. This year, due to the kind generosity of HDS systems, I was able to use an ActionLight, altogether a much more state-of-the-art lighting system. The model of light which I was using is the original All-In-One version, which is a single box that contains one 'D' sized lithium battery, 24 white LEDs, and the associated power-supply and switching electronics.

The light has three brightness settings, easily changed by a rotating knob. I found the medium setting provided ample light for most of the caving, resorting to the highest setting only for the large walking passages such as the London Underground. The lowest setting gave enough light for SRT and for sitting around whilst eating or waiting for other cavers. This, I think, is the big advantage of LEDs over ordinary incandescent bulbs; the ability to dim the light without losing efficiency means that it is possible, with a little willpower, to be very frugal with batteries without having to struggle with insufficient light for any task. The colour of the light was very white and I found it very pleasant to use, although it did occasionally appear to other cavers that there was a patch of daylight somewhere above them. It was quite soft and diffuse, rather more like a carbide than a typical electric. I carried a helmet-mounted 2xAA diving light for looking into the distance (and as a backup) but found I rarely needed it.

Overall, I was extremely pleased with the light. It provided a very easy light by which to cave. It was totally reliable and gave me no problems with loose connections or unexpected darkness whilst negotiating tricky moves. It was much more convenient than a carbide lamp, requiring no fettling, filling with water, or any of the other attention-seeking antics that you get with carbide, nor did I have a generator on my waist and a tube on my back to catch and hang me up at inconvenient times. The biggest advantage, however, was that I didn't need to carry spare carbide with me. When others were lugging bottles full of rocks up the mountains and down the caves, I was able to carry a single 85g spare battery with me, even on camping trips. I am now of the opinion that anyone thinking of buying his first lighting set-up for expedition would be well advised to purchase a lamp like mine, for all of these reasons, as well as the fact that the "learning curve" is much lower than for carbide, and that by getting an LED system you avoid the need to have separate carbide set-up for expeditions and electric lamp for use in the UK.

Cave Descriptions

Pozu Jultayu

Misery Loves Company

A short pitch up leads to a small chamber with a 1.5m climb up into tight rift, Misery Loves Company. The rift continues, sinuous and slightly wider, with several levels possible, breaking out into a larger chamber ending with a 5 m waterfall. Doubling back, a climb up in the rift and traverse over the chamber bypass the waterfall. The rift widens substantially above the waterfall, continuing for 40m to a sharp left bend. The way on is low through a tight, popcorn-encrusted rift for 15m to a 20m high, smooth walled aven where the stream enters.
Erin

Dos Mas Bolts Traverse

As a time-saving alternative to descending Just Awesome 3 and climbing Dead or Alive, a truly spectacular traverse has been installed around the left (northern) side of the Just Awesome! chamber. This can save approximately 30 minutes of journeys between The Big Ledge and Primula Point, while at the same time providing some stunning airy views of the Just Awesome! chamber and waterfall.

From the bottom of JA2, instead of descending JA3 follow the wall away from the Big Ledge camp until the ledge is no longer wide enough. From here a rope traverse (*natural followed by 2 bolts*) takes you to a 5m pitch and pendule onto a small shelf of rock (*bolt belay*). A 5m pendule and prussic now gains the continuation of the traverse on sloping, muddy and chossy ledges. This continues for about 40m to the head of Dead or Alive (*bolt belay followed by wire thread to three more bolts*). The final section to the top of Dead or Alive was originally rigged as a genuinely bold step with a traverse line, a second line for balance and an alternative 5m pitch to a ledge which was the base of the final 5m prussic on Dead or Alive. We later re-rigged it to discourage the bold step approach. With additional bolts, a better rigging solution may well be possible. (*The rigging on the far side of the bold step is as for the top of Dead or Alive – approx. 5 bolts/naturals*).

The traverse gets its name from the requirement of (at least) two more bolts to remove the short abseils and prussiks currently required. Some of the traverse sections are quite long and exposed between the bolts and the fainthearted might appreciate some additional rigging.
Rob

"A Savage Journey into the Heart of the American Dream"

A 20m thrutch through tight rift ends at a bend with several ways on. A climb up leads to an undescended 4m pitch overlooking a long, narrow aven chamber. The pitch is bypassed by continuing in the rift for 5m. On the left of the chamber is an oxbow with an uncompleted muddy climb up. The main way on is a traverse and undescended climb down to where a 15m waterfall enters at the far end of the aven chamber. Back at the bend, a climb up to the right over a mud slope gains a small chamber, where a climb up on the left is uncompleted. At the end of the chamber, a slanting, tight, popcorn-covered rift heads of. A thrutch up in the rift bypasses the worst of the constriction, beyond which the rift widens, intersecting a high chamber at a chossy 5m climb down. A short walk across the chamber leads to a muddy climb that was left after 10m, from which empty space can be seen above and to the left.
Erin

Close Encounters Series

Catheter Canal to Buy the Ticket, Take the Ride

The initial step into Catheter canal is quite tricky (look for footholds under the water's surface) but quickly leads to easier traversing near water level. Before long, the walls open to reveal a deep pool about 4m wide and 6m long, Alien Changes. Traverse with care around the right hand side, at the end of the pool the going gets easier again. A little further upstream the walls open wide and the water gets shallow enough to walk through. The way is obstructed by two shoulders of rock, which stick out from either side of the passage with a 2m gap between them. Here the water becomes deep and fast flowing. Climb up the left hand shoulder (a 10m handline is useful here – anchor to dodgy spike up on the left wall). Past the shoulder, the passage opens into a large chamber. To the left of the stream lies Buy the Ticket, a boulder strewn chamber with the pitch (Martian Landings) into Canals on Mars at the end. To the right of the stream, climb a very loose, steep boulder choke (take care! The left hand side is easier) into Take the Ride, a vast chamber nearly 40m wide.

Tapeworm Passage

At the most northerly point of Take the Ride is a climb up over jammed boulders to the head of Aardvark's Bathtime pitch. Untraversable rift leads straight on, but this quickly opens out on descent. The pitch lands (with a bit of swinging) on a ledge about 3m by 6m. Walk to the other end of the ledge, where you can climb over the boulders to reach a mud slope that leads back to the shallow stream. Downstream soon sumps and upstream follows a series of bends known as Tapeworm Passage. Eventually the bends give way to a beautiful open streamway. The going is easy walking past a number of inlets. Almost 500m from Aardvark's Bathtime, the water deepens at a right hand bend. Climb up the right hand bank and over the shoulder to meet Return of the Sump Thing, where the roof arcs down to meet the stream with a small notch at the far end. This is believed to be the downstream end of the sump in Systema Verdelluenga.
Doyle

Pieces of 22

Pieces of 22 is a dry inlet near the upstream end of Tapeworm Passage. 30m downstream from Return of the Sump Thing, a huge flake (~5m high) on the left-hand wall (if facing downstream) may be climbed, and leads to a short rift to a chamber. From here, two climbs of 4m each (both free-climbable but easier on (in-situ) rope), separated by a ledge, lead to a second ledge, and an alcove/chamber. From this level two ways on are visible. A large hole 5m up the wall, straight ahead from the top of the second short climb, has not been explored but a route to it looks climbable (certainly bolt-climbable). The explored route leads up from the ledge on the right, past two further ledges and through a small hole in the ceiling. This hole gains a dry chamber, the Randolph. A 5m pitch leads to a further chamber, from where no leads were visible for at least 10-15m up the wall.

Canals On Mars

From the West end of the Buy The Ticket Take The Ride chamber, a 10m pitch drops into the downstream end of a linear canal series, Canals On Mars. (Note: all visitors to this passage at time of writing (Oct 2000) have worn immersion suits.) The passage can be followed upstream past a number of small inlets. The slow-flowing water varies between ankle and waist depth. Watch out for the quicksand in some sections. After 250m a boulder chamber is passed through before returning to stream level, and further progress upstream is made largely by boulder-hopping. A short section of deeper wall-to-wall water in narrower passage may be negotiated while immersed to chest depth using handholds to prevent total immersion, or possibly traversed above the water. A waterway on the left at a right-hand bend in this passage has not been investigated. This section is followed by 100m of easy walking passage in a shallow stream, partway along which an inlet on the left-hand wall is passed and has been explored to an immediate aven. After the 100m is Olympus Mons, a large boulder chamber. Large boulder passage continues for a further 60m, from which all routes onwards, sideways and upwards end in boulderchokes. Ways on through these chokes may be possible but none have been found.

F80

Location

Ascend onto the Cabrones ridge via the scree gully at the north east end, and follow the ridge for about 500m. The cave is just below the ridge to the south, just before the subsidiary ridge leading to Robliza. The best way to get to the cave is to start down the subsidiary ridge, and then contour across.

Description

The obvious way to rig the entrance shaft is from the lowest point on the rim. This route descends for about 50m, via a number of rebelays, to land on snow. It is possible to descend further, between the snow plug and the walls, but no route looks promising. The GER reportedly descended to a depth of 150m at the south west end, although this route was blocked by snow in subsequent years. There is an obvious rock arch to the south west at a depth of 25m, with an unexplored window visible beyond.

The way on to the deeper parts of the cave is to begin rigging from high up on the east side, descend a gully, then swing left into the next gully; 15m lower, swing further left to the start of a permanently rigged traverse line, which leads onto a ledge.

The ledge is at the top of an 80m pitch. Descending the pitch fully lands on a steeply descending snow slope, in a large rift heading north east, ending at a blank wall with no obvious leads. Alternatively, there are two windows visible on the opposite side of the shaft at depths of 15 and 25m.

The lower window can be reached by a pendule and traverse along the left hand wall. Ahead, a short drop leads to a hole in the floor, which leads back down to the snow slope. An aven above is believed to connect with the upper window. Traversing across the hole leads to a climb up, with no way on at the top.

The upper window has not been reached, but remains an excellent lead. It could be reached via a pendule and long traverse (about 8 bolts) on the right hand wall. There is a strong draft at the head of the 80m pitch; some of the draught is met again at the lower window, but then appears to head up the aven towards the upper window.

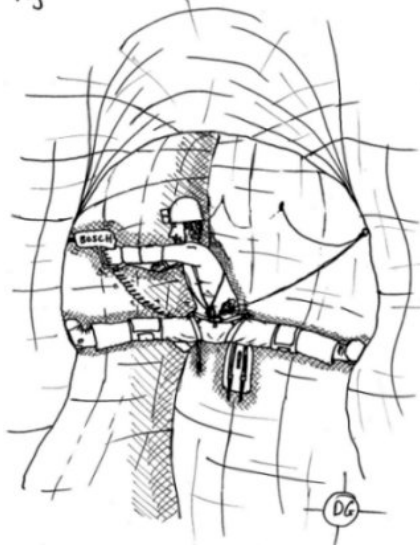
Gavin

F80 Rigging guide

Pitch	Rope	Rigging
First pitch, direct route (P60)	75m	Bolt and spike Y-hang; natural rebelay; 5 bolt rebelay to snow; 2 bolt rebelays down side of snow.
First pitch, to ledge (P25, T12)	45m	Bolt and spike Y-hang; spike rebelay; spike rebelay for swing into next gully; bolt rebelay; bolt deviation; thread deviation; bolt rebelay; bolt at start of traverse; bolt in middle of traverse; bolt at end of traverse (replace traverse by further descent and pendule, followed by ascent up loose slope).
Second pitch, direct route (P80)	90m	Two bolts; bolt rebelay (needs a second bolt); spike deviation; 5 bolt rebelays; spike deviation; bolt rebelay.
Snow slope	25m	Bolt
Second pitch, to lower window (P25, T10)	45m	Two bolts; bolt rebelay (needs a second bolt); spike deviation; bolt and spike Y-hang rebelay; bolt at start of traverse; thread belay; spike belay; spike belay at end of traverse.
Descent and traverse (P5, T8)	20m	Spike belay; bolt at start of traverse; thread belay; spike at end of traverse.

27/9

My ass! Seriously you guys! 27/9



A team returned to 27/9 to try to find out what happens to the strong draught that is felt at the top of the final pitch. There is no strong draught at the bottom and it had been suggested that perhaps it would be worth rigging a traverse from the pitch head. This year's discoveries in 2/7 made 27/9 seem an especially worthwhile place to look for a way on.

The traverse was successfully rigged in two trips, made much easier by the use of the Bosch drill and long stud anchors that were able to provide a reassuring belay despite being placed into flowstone. The airy traverse, named "My ass! Seriously, you guys", involved extremely wide bridging with footholds on overhanging walls, and each of the 6 bolts held at least one fall during the rigging. Unfortunately, the far end of the traverse simply reached the calcite grotto which had been found in 1998 by climbing up the rift at the bottom of the pitch, and it was determined that the draught definitely did disappear down into this rift.

A return was then made to the bottom of the pitch and Lev tried to insert himself into the lowest point of the rift. He believes that he could feel it widening by his feet and that a bit of sustained capping effort would probably be successful, allowing one into the navigable continuation which is visible (but not accessible) from higher in the rift. Given the cave's potential for providing an easier route into the far upstream reaches of 2/7 and/or a dry link between 2/7 and Sistema Verdelluengua it seems well worth the investment of effort.

Lev

Expedition Accounts Summary

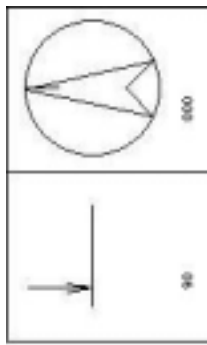
Ario 2000 expedition

	Members	16
	Approx Person Days	420
	Average Personal Contribution	£628.00
<u>Income</u>		
<u>Grants (Core)</u>	GPF/ David Hood	£550.00
	Oxford University Initial Grant	£559.00
	Oxford University Subsidiary Grant	£550.00
	Oxford University Sports Federation (for Training)	£371.25
	NCA Training Grant	£45.00
	Total	<u>£2,075.25</u>
<u>Members Contributions (Core)</u>	Deposit and Insurance	£2,160.32
	Travel	£360.00
	Total	<u>£2,520.32</u>
<u>Members Contributions (Additional)</u>	Equipment purchase evening	£1,000.00
	Gear Order	£2,790.46
	Individual Travel	£2,340.00
	Food Kitty	£1,218.24
	T-Shirts & Postcards	£186.50
	Total	<u>£7,535.20</u>
<u>Other Incomes (Additional)</u>	Interest	£2.72
	Float	£300.00
	Total	<u>£302.72</u>
<u>Total Income</u>		<u>£12,433.49</u>
	Discounts Negotiated	£1,300.00
	Vehicle Loan	£1,300.00
	Sponsorship, Goods In Kind Received	£150.00
	Total discount & sponsorship received additional to incomes	<u>£2,750.00</u>
<u>Expenditure</u>		
<u>Core</u>	Insurance	£294.00
	Travel	£1,038.93
	Rope and Rigging Equipment	£1,264.09
	Underground Camping Equipment	£410.14
	Surface Camping Equipment	£250.60
	Underground Food	£370.27
	Camping Fuels	£125.43
	Surveying*	£56.42
	First Aid	£89.61
	Dye Tracing	£25.46
	Publications*	£160.00
	Training	£537.05
	Administration*	£132.98
	Total	<u>£4,754.98</u>
<u>Additional</u>	Float	£300.00
	Gear Order	£2,772.01
	Equipment purchase evening	£1,000.00
	Individual Travel	£2,340.00
	Food Kitty	£1,080.00
	T-Shirts	£186.50
	Total	<u>£7,678.51</u>
<u>Total Expenditure</u>		<u>£12,433.49</u>
Total Income		£12,433.49
<u>Balance</u>		<u>NIL</u>

Core transactions affect the expeditions assets, and pass through the expeditions accounts.

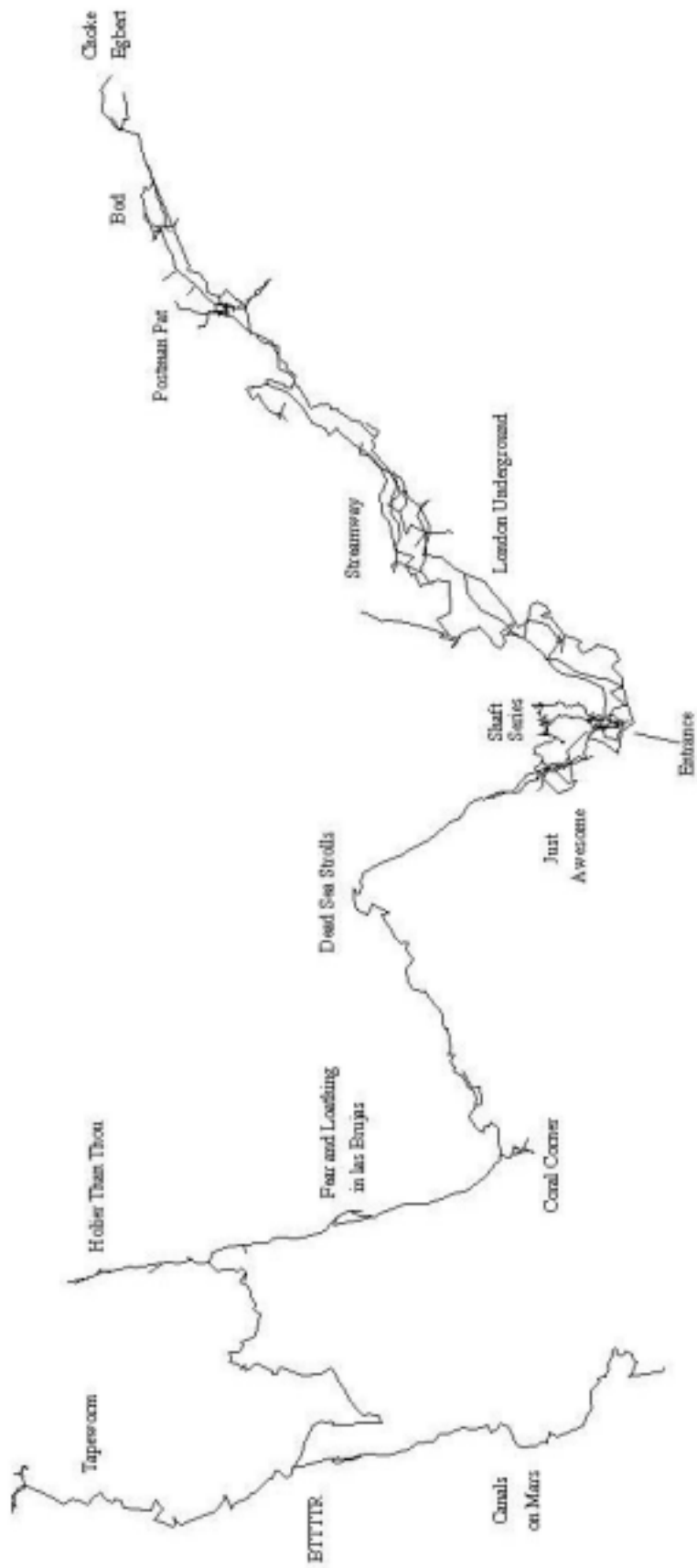
Additional transactions have a neutral effect on assets, (e.g. costs passed directly to members); not all of these transactions pass through expedition accounts, but are included to give a fair representation of the expedition's overall finances.

* Projected figures at time of report



1 km

Pozu Jultayu



5 km

Area Plan

