

NEWS

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Exploration at Poti Malal, Argentina 2002

by *Tim Francis*

This was our third visit to Malargüe and the focus this year was to be the late Jurassic gypsum outcrops of the Poti Malal valley. Our main objective was to thoroughly explore the valley and note methodically any points of speleological interest. Due to the huge distances involved and variable road quality we elected to camp rather than drive in and out of Malargüe each day. A secondary aim was to push a couple of new caves that I.N.A.E. had explored on a rather cold and wet day in November 2001. It was also hoped that we might have time to visit a couple of other sites in the area and almost certainly Cueva del Tigré. Our visit coincided with a Curso de Rescate en Cavernas to be run by la Comisión de Espeleosocorro de la FEALC (the Caribbean and Latin American Caving Federation) and supported by la Federación Argentina de Espeleología (F.A.d.E.). I.N.A.E. were hosting the event.

Cueva del Tigré

Tigré, an old favourite, is the nearest cave to Malargüe and hence the first cave that we normally pop down just to get ourselves back into the swing of caving, Argentinean style. A feature of the entrance used to be a large metal staircase which made access extremely easy for adventurous tourists and vandals alike. The cave was going to be used later in the week for the rescue training curso (we were not going to be delegates) and hence the local cavers were keen to see its removal. Recently I.N.A.E. had finally been able to drag the whole thing out using a lorry and hence the cave 'luego de retirada la escalera' now has a pleasant 15ft entrance pitch. The ladder removal and general clean up was reported in Los Andes, a regional newspaper for the state of Mendoza, with Carlos commenting that "encontramos enormes cantidades de basura, antorchas, casquillos de bala y restos de comida".

The MCG elected to drop the pitch using a short length of ladder rigged from a natural whilst the others went for a suicidal single rope hang from a pair of extremely suspect and blatantly wobbly anchors. These were a couple of angle irons bashed into the rock and held in place by concrete. So fearing for their health, I converted the 'rigging' into an Y-hang backed up by a couple of shrubs. True Tim-style expedition rigging but it held. Next year we'll take along the bolting kit and sort the thing out. Various bits of kit were cobbled together from the I.N.A.E. tackle store to enable Rubén, Diego and Ariel to get in a spot of SRT training.

At the sharp end our old dig from 2001 was still draughting a hoolie but the focus of this years rummage was up flow - the cave being a lava tube rather than water formed. A low sandy section, spotted by Peat, was opened up at the end of the low crawl on the right but there doesn't seem to be a way on. However later in March I.N.A.E. report some further progress here so I'm intrigued to see whether there is actually a way on.

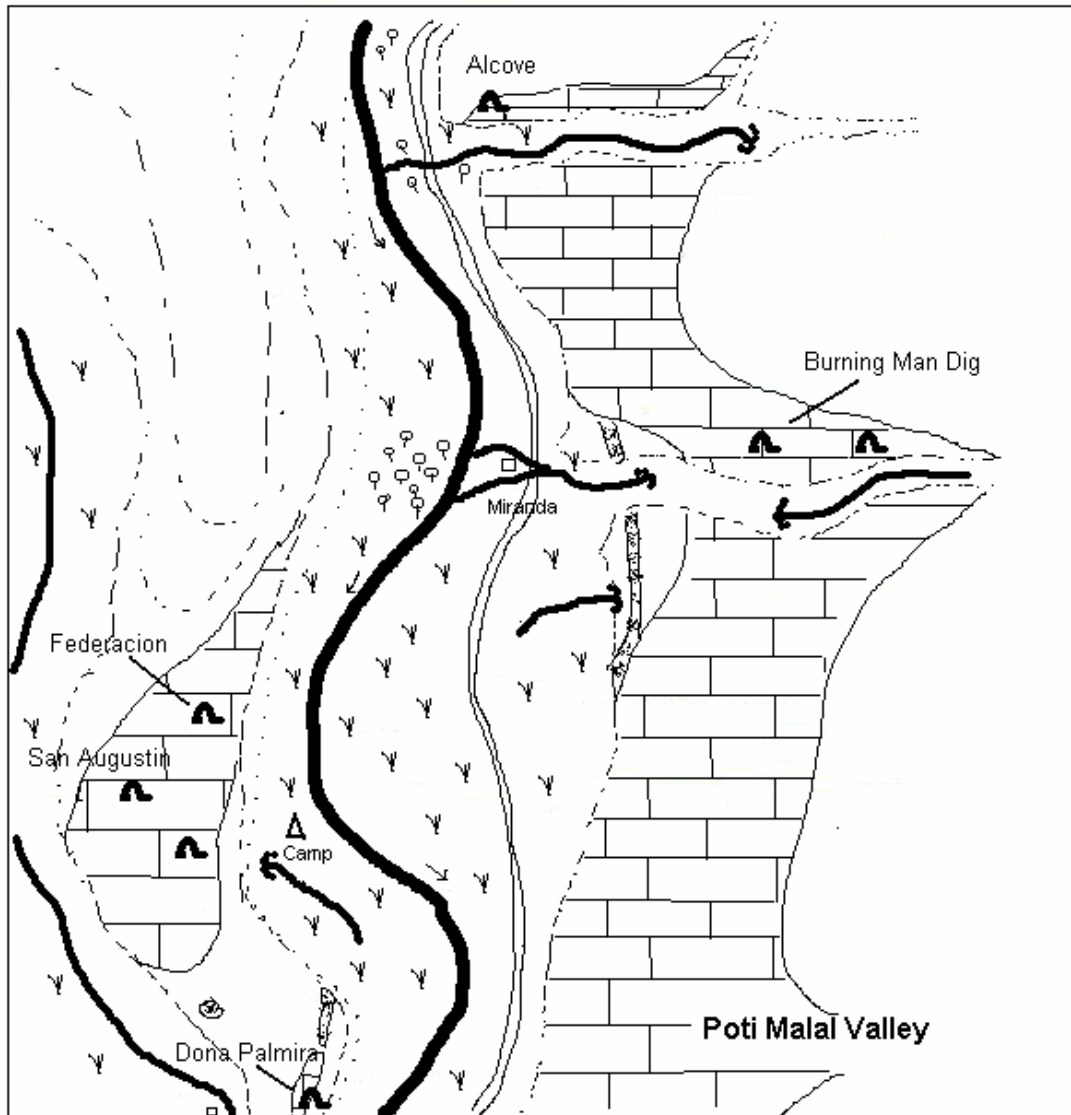
Poti Malal Valley

Camp was established on the inside of a meander just upstream of a small resurgence. Although this meant that we were extremely exposed to dust whipped up by the strong winds conditions were generally comfortable enough. The ubiquitous goats didn't seem to come over this side of the river so we were rarely disturbed. The downside was that the car was parked on the other side of the river and wading across with gear was extremely uncomfortable, particularly in the morning when the water was extremely cold. By the end of the afternoon the blazing heat allows the water to warm up sufficiently to make a swim rather pleasant. After a long hot walk and dusty day in the hills that's just what you need.

Our expedition routine was dictated by the fierce sunshine, which meant that we had to get up as soon the first rays of sun struck the tent. But true to form we never got going much before mid morning. Our main problems were keeping covered up to avoid sunburn and heat stroke and carrying sufficient water to see us through the day. At that altitude, circa. 2500-3000m, you quickly dehydrate especially if you're digging out entrances on the valley sides. *cont. on p4*

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Map of Poti Malal Valley



On the first day we went for a thorough recon of all the possible leads in **Cueva Federación**. A couple of small crawls were noted in the area around the *T-junction* boulder chokes but nothing of significance. I'm still convinced that there is a way on here, possibly a chamber above, as a reasonable draught seems to vanish at that point. We also, despite our protestations, crawled all the way to the end of *Galeria Mendip*. Rubén was convinced he had found a way on at the end but as suspected there is no way on. And no we weren't persuaded to do the survey of this horrendous crawl so the sketch will have to suffice. (See newsletter 299 for the survey).

So after the tourist bit it was down to the hard work. After our first night at camp we decided to systematically walk the gypsum. All the gypsum exposure along the left-hand side of the valley and behind **San Agustín** was looked at. The theory was that there must be a sink or at least some sort of cave on the other side to explain the resurgence next to the campsite. Bear in mind that it was mid summer and the resurgence was flowing strongly. But there really wasn't a lot to report apart from Jules getting struck down with heat stroke and going all dizzy. The whole place seems to be pretty much devoid of cave apart from a few weathered pockets above Federación. The only cave we did find was a hideously loose slot running along a fault. On the last day we discovered a small hole that lay directly above a projected upstream continuation of the resurgence, and that draughted outwards extremely strongly. Despite some vigorous hammering were unable to make much progress. But a decent drill would make short work of the gypsum.

Doña Palmira

After a frustrating day wandering the gypsum we went for a well-earned splash in the river. But our thoughts turned to the only other notable cave in the Poti Malal valley, **Doña Palmira**. Although only 20m in length this cave is extremely significant in that it is located on the valley side just above the level of the river. Immediately inside is a large *sump* (undived) which suggests that there is a flooded phreatic layer in the valley. Above the sump is a short length of fine phreatic passage, stooping sized in height, with a small vadose trench. This is blocked by a roof collapse after a short distance but my notes from 2001 suggested that the vadose trench in the floor might be diggable. So very late on in the afternoon after a swim we wandered around the corner to go and take a look at the blockage. A way on can be seen off to the right but my digging efforts only succeeded in bringing down the ceiling. With hindsight this is definitely worth pursuing, as the small tube off to the left cannot account for the large trunk passage above the sump.

Efforts switched to the vadose trench off to the left. I was quickly able to make progress and cleared a route up to an extremely low phreatic tube. A way on could be seen so despite the long day I persevered and eventually excavated a couple low squeezes. 30ft of flat out crawling suddenly popped up into a larger continuation. A cursory look around revealed that the way on would probably be through a nasty looking area of breakdown. Not wanting to commit myself to some sporting solo exploration I returned to the others where we planned a return for the following day. It was certainly good to be back underground where the temperature is much more tolerable.

The following day we continued on from where I'd left off and negotiated a route onwards through the choke. To quote Peat from the log, "Jules and I let Tim have the honours of testing the route, offering to dig him out if the ceiling caved in." Everything beyond was tight and low. Every few feet a squeeze or loose section required digging out and eventually the passage became too heavily blocked to continue. A side passage was noted on the way out where the in-fill was sediment rather than gypsum blocks. Some progress was made with a couple of larger bits found but this will need serious digging.

Back at the first breakthrough our attention turned to other possibilities. Whilst myself and Jules busied ourselves hammering at a squeeze that went nowhere, Peat followed the main crawl. A low squeeze was cleared and a lowish continuation discovered. We all piled through but again a roof collapse seemed to be blocking the way on. So there was nothing to do but dig again. After an hour and a half we had cleared the base of the blockage but were stopped by an extremely stubborn boulder. We lost a digging tool down a hole in the floor but were determined to bash our way through. We could just peer over the boulder and the way on seemed large. More chipping and the squeeze almost went. It was now late afternoon and by twisting around it looked like we had found another entrance. Encouraged by this Peat, the thinnest on the trip, did a spot more chiselling and forced the squeeze. We were extremely keen to know where we had popped out but Peat called back that we had done a complete circle. He had just stumbled upon our bags that we stashed by the sump pool at the beginning of the day. Oh well, a round trip was better than nothing. Peat did a spot more hammering and the rest of us were able to follow.

The next day was spent knocking off the survey and checking out all the possible leads. The problem with Doña Palmira is that it lies in a narrow band of gypsum. So the cave is blocked by roof falls that bar progress in several places. At the far end there is a slight draught so a weekends digging would undoubtedly be rewarded with more passage although undoubtedly small. My best guess for where to look is back at the vadose trench where we made our original breakthrough. I'm sure the main way on lies behind there somewhere and it should be reasonably large.

Burning Man Dig

After the success of Doña Palmira it was back to the slog of the gypsum hillsides. Ariel and Gustavo Tejerina took a few days out from the curso rescate and joined us for the next few days. This was marred straight away by a double puncture on our car, which meant that they would have to go back to Malargüe to get them repaired otherwise we were stranded. So we wandered over to the tributary valley on the northern side of Poti Malal. There is a small resurgence in the main valley just behind where we parked the cars so we had high hopes of finding something. But as is the case in Poti Malal nothing is ever that simple. Several hours were spent getting extremely hot wandering around the mountains with little to show for it. The local farmer, Miranda, had said that there were a few caves on his land but the only one we came across was just a small fossil relic.

Somewhat dejected we started to follow the valley back down to Poti Malal and lo and behold came across a large active *sink*! This was quite unexpected and got our spirits up. Not really having any suitable digging gear we left it for another day. Just around the corner was what looked like a flood overflow but this was much too low for digging. We were now running low on food and water, Ariel and Gustavo having only brought wine and biscuits for two days camping, so we headed home. I climbed high onto the valley side to see if there was anything like a Doña Palmira entrance. And yes there was, except this time the hole was too small to get into. Well not wanting to go back to the camp empty handed I proceeded to clear out the entrance. Rocks were soon flying out and an intriguing hole started to emerge. The others

eventually wandered to see where I'd got to and lent a hand. After about an hour Ariel and Gustavo wandered back suffering from the effects of the heat. The glare from the gypsum was extremely intense and wearing sunglasses was advisable unless you were actually digging. Jules followed shortly after and that just left Peat, myself and a pint of water. The afternoon wore on but we were stopped from getting in by an extremely block of rock. I even resorted to stripping off to my underpants to see if I could force the squeeze but to no avail. We were finally too knackered to continue so headed home. Again we had been thwarted. Oh for an air chisel or Bosch drill.

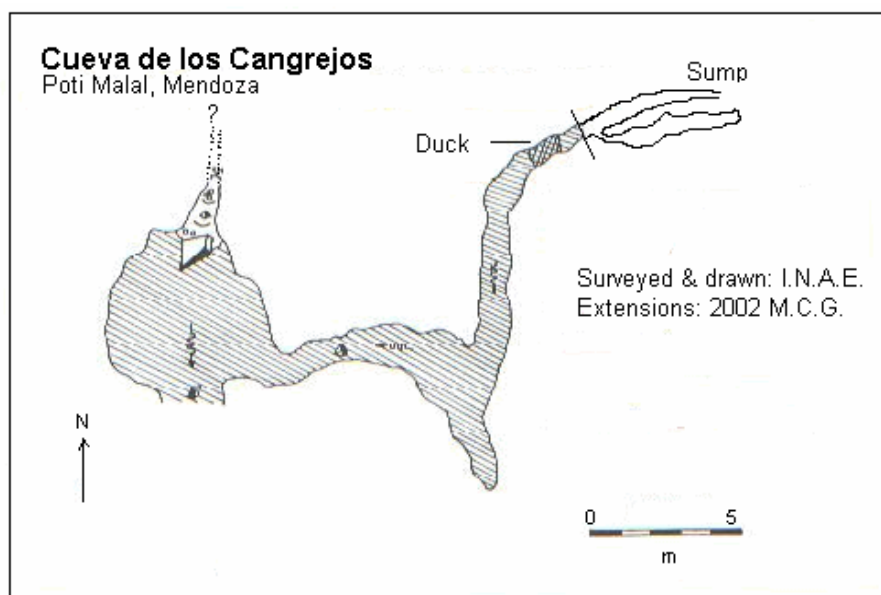
On the way down just across the road from Miranda's farm we spotted another resurgence. This was larger than the one by the cars and looked pushable. So reluctantly I dumped my rucksack and went for a look. I suppose the best way to describe the thing is that it was an Argentinean version of Springwell Rising, Fermanagh. I wriggled up the resurgence for a couple of body lengths but lacked the enthusiasm or energy to continue. Next year?

Another day was spent wandering around most of the rest of the valley. Nothing else was found apart from one or two prospective digs and another fossil remnant. There is now only one chunk of hillside we haven't looked at but that lies a bit further from the road. So I think we've pretty much done Poti Malal and I expect that any new cave will be hard won.

The Green Lakes

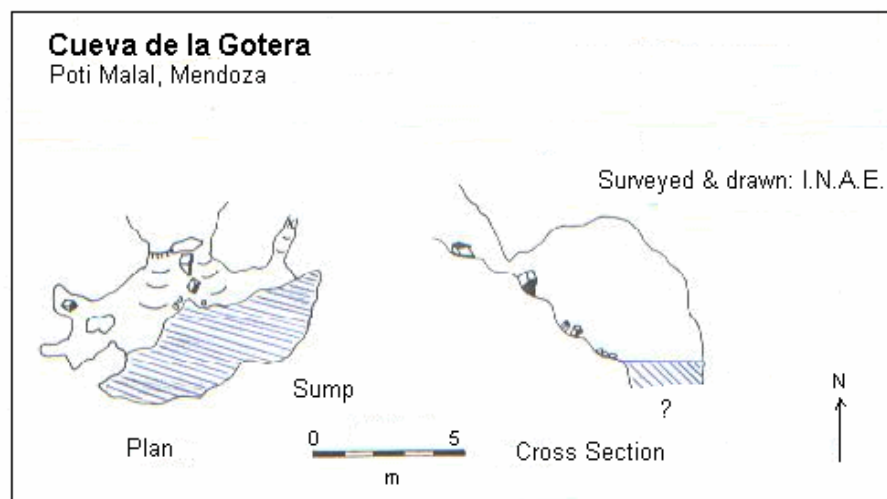
Our final days' caving in Poti Malal was a real adventure. Back in November I.N.A.E. had explored a couple of small caves right on the watershed and almost in Chile. Our information on these was extremely sketchy but they seemed to lie in an isolated lump of gypsum several hours walk from the valley floor and 15kms away from our campsite. Ariel had it in his head that we were going to hire horses to minimise the time taken to get to the green lake. Ariel had ridden a horse when he was seven so thought this might be a good idea. I think actually this was because he couldn't actually remember where the caves were so he was hoping that the local farmer would take us there. After a hesitant start we negotiated a deal for seven horses and headed on our way. All very jolly except for the fact that none of us had ever ridden a horse before and the Andes aren't exactly Brighton beach terrain. Our walking boots were too big to fit into the stirrups so it was a very interesting two hours of trekking before we made it to the Green Lakes.

But it was worth it. What a fantastic place! Hopefully some of you saw the photos at the dinner but there should be a few on the web site soon to give everyone a flavour of the trip. The horses were abandoned and we steamed down the to the lakes to go caving. Essentially it's a bit like a hanging valley with two small green lakes in the bottom. This doline feels very different from the alluvial filled suffosion dolines of Pozo de Las Animas near Las Leñas in that the walls are entirely in solid rock. All around the edge are possible entrances but none went very far. Across the far side of the first lake was a large entrance. Ariel did a daredevil climb but I think we will need inner tubes or something similar to get to the entrance. So our first port of call was **Cueva de los Cangrejos**. The photos and stories we'd been told indicated a decent sized resurgence. And indeed the entrance was walking sized although this soon degenerated



into a low duck, the I.N.A.E. limit. We crawled underneath but after a small enlargement the cave sumped. Ah well, a pretty cave none the less. Just back from the sump I climbed up into a higher level, which could be followed for 30ft or so. We didn't bother to survey this but a continuation can be seen beyond a mud / rock blockage. This might provide a sump bypass but my guess is that the water that comes out of the sump is merely seepage from the bottom of the lakes. Back at the entrance portal there is another continuation off to the left. This can be seen going off into the distance but we weren't prepared to trash the formations to get into the cave beyond.

A quick bite to eat and then were off again, this time to **Cueva de la Gotera**. This is an impressive sink above the lakes and presumably takes a hefty stream in the spring. Essentially it's just one large rubble floor chamber that slopes down to a sump. There was no possibility of further passage but I assume there must be a hydrological link to the cave we could see at the back of the first green lake. Rafael knocked off a rough survey whilst the rest of us tended to the horses. After chivvying him along a bit we headed home, fossil collecting on the way. On the final stretch loco Ariel lead a gallop along the valley floor back to the farmhouse. As a result we all suffered from saddle sore the following day, particularly Ariel. A freshly killed goat was purchased for our final meal in Malargüe the following evening but we had one more night at camp to go before returning to town. Our final camp meal proved extremely difficult to prepare due to a horrendous dust storm. The food was rather gritty as a result, and Jules's tent turned into something akin to the Sahara due to a missing fly sheet.



Bar stool theories

As is usual with any expedition you soon get to discussing the what ifs, whys and wherefores. A number of the delegates from the curso were able to make our final dinner back in the home of comforts of Malargüe. So along with I.N.A.E. we soon got to postulating as to the potential for finding more cave in Poti Malal. I think there needs to be some good old Mendip style digging to be done but there are a few obvious places to start.

1. As is usual with any expedition you soon get to discussing the what ifs, whys and wherefores. A number of the delegates from the curso were able to make our final dinner back in the home of comforts of Malargüe. So along with I.N.A.E. we soon got to postulating as to the potential for finding more cave in Poti Malal. I think there needs to be Underground the best place to look would be the vadose trench choke in Doña Palmira or perhaps on the right hand side just after the phreatic tube breaks out into bigger stuff. There must be a continuation here that explains the large trunk passage that drops into the sump. Digging through the blockage will be relatively straightforward.
2. Above ground there are a number of promising looking options notably the sink / resurgence system in the side valley. The water could easily be diverted down valley away from the swallet to allow digging with spades and perhaps access. Certainly the water flows away nice and freely. The largest of the two resurgences is pushable although a little aqueous. I think both resurgences are part of the same system with perhaps the smaller of the two by where the cars are parked being an over flow or capture.
3. Burning Man dig. There is definitely cave in this valley but finding the way in is a problem. Another days chiselling preferably with the aid of a drill would see this entrance passable. If there is anything more than alcove beyond is anyone's guess.
4. The draughting hole across from San Agustin could be a way in to what lies behind the resurgence. This will need drilling, hilti-ing or something. I'm sure the water must be sucking the air in but quite where the water is coming from is anyone's guess, as there seemed to be no obvious sources in the adjacent valley. Perhaps there is an element of water derived from condensation in the larger voids underneath the hill but my best guess is that some of the surface stream is seeping away. There is some sort of geological control going on here as there is a surface exposure of a volcanic plug not far away.

5. Elsewhere in the valley somebody needs to check out that last chunk of gypsum. I suspect that there is nothing else there but as the old adage says: 'caves be where you find them'.
6. At the Green Lakes there is little else to do. Someone needs to swim across to the large entrance just to check it out. And for completeness the possible sump bypass in Cangrejos needs pushing properly.

The key question on gypsum is where to look. Its been a bit of a learning curve over the last few years as although essentially the karst features are much like limestone its harder to see quite where the caves will be. At first glance the mountains look pretty barren. Cave features tend to be obscured, and presumably also prevented from forming (e.g. there are no pavements), by a layer of dust whipped up by the strong winds. It seems that caves on the valley sides will be found where there are slight indications of water flow such as the shallow gully of Burning Man dig. These gullies are presumably associated with higher levels of water flow during the spring snowmelt. Where the surface layer of gypsum has been weather digging is easy, but underneath the stuff is reasonably hard. More persuasive measures may be required. Underground such as in Federación and Doña Palmira there is evidence that the gypsum can support reasonably large passage but invariably the ceiling collapses when the roof expanse becomes too large. The lower mechanical strength of the gypsum compared to limestone explains the more modest size of the passages e.g. compare Federación to Brujas.

Will we be going again?

Money permitting I suspect we will if only for the jolly. But a key plan is to try and get permission for the limestone behind Brujas next year. I will aim to write to the park authorities to get permission but the access politics are hideous. Although the caves found are rather small I still maintain that there is still considerable potential for exploration in the gypsum around Malargüe. There must be other large chunks of gypsum between Poti Malal and Pincheira and then between Pincheira and Las Leñas. Just a complete lack of road access is the problem.

Team: MCG - Peat Bennett, Jules Flavell, Tim Francis. I.N.A.E. – Ariel Benedetto, Carlos Benedetto, Rubén Cepeda, Diego Torres, F.A.d.E. (Tandil) - Juan y Silvana Mendy. Others - Carlos Cruz (Puerto Rico), Rafael Carreño (Venezuela), Gustavo Tejerina

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