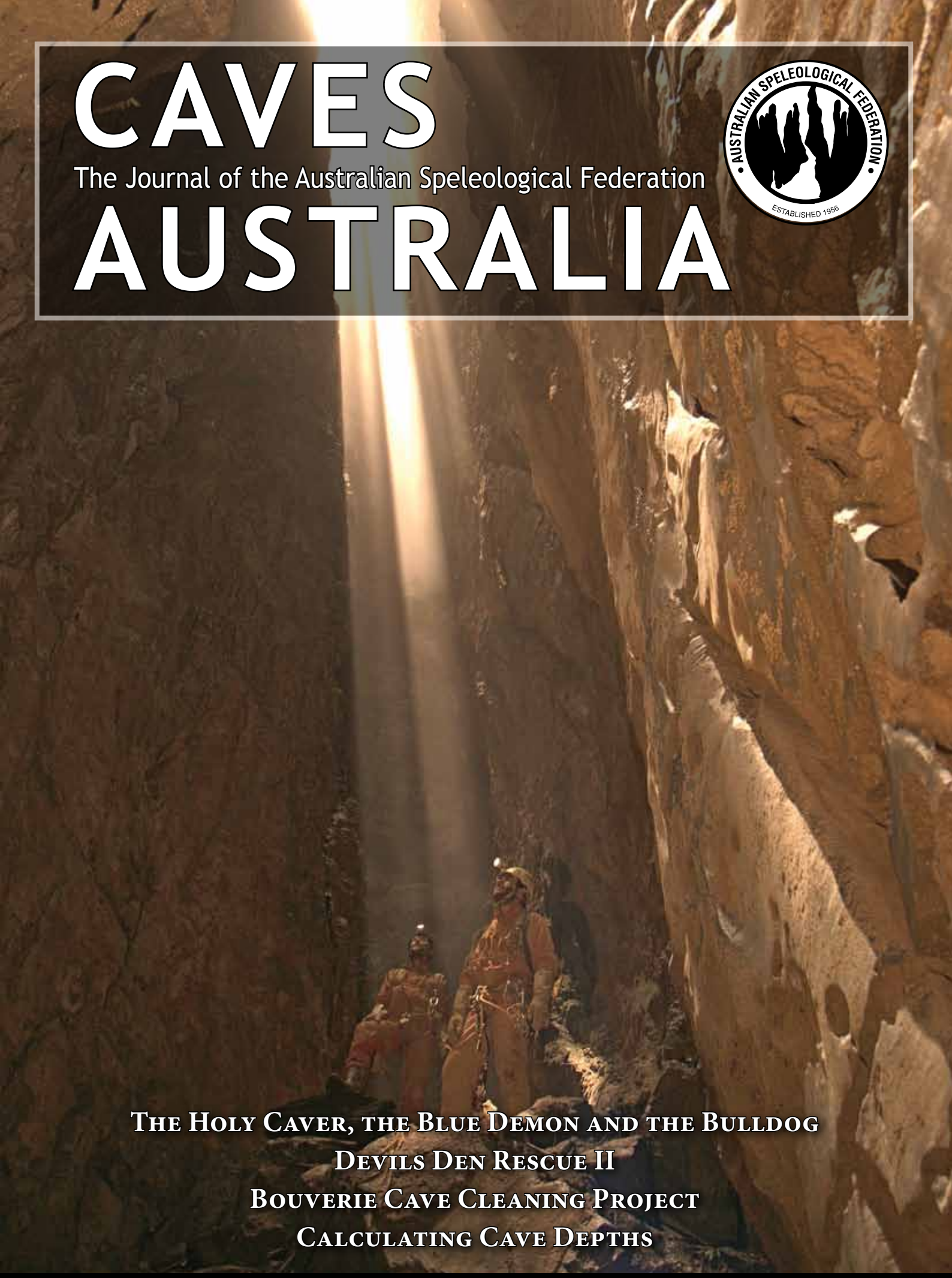
# CAVES AUSTRALIA

The Journal of the Australian Speleological Federation



**The Holy Caver, the Blue Demon and the Bulldog**

**Devils Den Rescue II**

**Bouverie Cave Cleaning Project**

**Calculating Cave Depths**

No. 182 • JUNE—SEPTEMBER 2010
(Printed September 2010)

# Caves Australia

No.182 June—September 2010 (printed September 2010)
Australian Speleological Federation
PO Box 388 • Broadway • NSW 2007 • www.caves.org.au
ABN 15 169 919 964
ISSN 1449-2601 • Registered Publication NBQ0005116


ASF

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*Cover: Akemabis, Mexico: The Chosen Ones. Photo by Gustavo Vela Turcott*
*Opposite: Santito, Mexico: Looking up the first big drop. Photo by Zape.*

## ASF Executive



## CAVES AUSTRALIA

*Caves Australia* is the Journal of the Australian Speleological Federation and is published quarterly.




Editor:
Ian Curtis

Production and Advertising Manager:
Alan Jackson
Email: alan.jackson@lmrs.com.au

Proofreading:
Susan White
Greg Middleton
Joe Sydney
Jodie Rutledge

ASF: asfinfo@caves.org.au
For all ASF publications:
publications@caves.org.au
Editorial contributions are welcome!
For contributor guidelines, contact the Production Manager.

**Advertising**
Contact the Production Manager for commercial, caving community and classified rates. Rates range from $5 to $400 for full page mono back cover. Discounts apply for placements of 4 adverts and an up-front payment.

**Issue Dates**
March, June, September and December

**Magazine Subscription**
Journals are included within ASF membership fees. Subscription to magazine is also available to non-ASF members at $25.00 including postage within Australia for one year (four quarterly issues).

**Change of address**
Notify us immediately of any address changes to ensure delivery of your *Caves Australia.*

*As no issues of* Caves Australia *were able to be published in 2007, the publication dates will include the actual dates the issue is produced.*

*Layout and Production by Summerleas Print, Kingston, Tasmania*

# FROM THE EDITOR

**THE WEEKS of wet and cold weather this winter have driven me indoors. I've been meaning to sift through the caving library, housed in the shed, and this seemed a good opportunity.**

**Leafing through the minute books from the 1950s, admiring beautifully crafted maps and reading unknown correspondence led me to thinking what great treasures club libraries are.**

**What did I learn? I learnt of early exploration and crude attempts to manufacture lights and make ladders and scaling poles; of attempts to source overalls and helmets from nearby mines.**

**A widening of ideas was revealed, too: seeing the club join the fledgling ASF; working with other clubs at RDF and joining them on away trips; getting involved with Search and Rescue exercises; working with the CSIRO bat counting and banding; guiding academics through local caves to help them find what they were seeking.**

**A closer look at recent years brought forth trip reports of water samplings, trogging days, areas needing to be revisited that had slipped from memory, maps never quite completed, names of cavers gone and remembered with affection.**

**The overall impression I was left with was of groups of friends who caved; some caving as a social pursuit; some caving to explore and chart; some laid back, others driven. The club itself was almost a living organism — occasionally comatose, asleep, at other times energised.**

**The warm weather has returned and I'm outside again with a head full of projects that need to be revisited over the coming months.**

**Might I suggest to readers that they, too, delve into their club libraries?**

***Ian Curtis***
***OSS***

# President's Report

**WINTER is well and truly here and I wish for a timely spring… time to head north to escape the grey dampness!**

Some of the more organised amongst you have managed to escape winter and find caves in the tropics, warm, wild and blissful.

For many others there are no obvious seasons inside their favorite caves — they maintain their own cool and damp climates. I recently spent several weeks in Denmark but unfortunately the land was flat and non-cavernous and the 17 hours of daylight did nothing for my insomnia.

In ASF we are working to make public more information on what the Federation does and what we stand for. We wish to make it as current and relevant as possible. We wish to encourage all clubs to be diligent and effective in their operational processes, their care for individual cavers' welfare and in the ways and means of karst information storage and retrieval.

We are also continuing to improve on more unified ways that cavers are able to record, organise and store karst information and ensuring its completeness and security for the future.

A recent postal vote was organised to accept several revised ASF codes. The minimal impact caving code was adopted in full. Likewise the science minimum impact code was also adopted. We hope that this code proves useful to scientists, owners and managers in planning and sampling of karst environments to obtain meaningful scientific results whilst having minimum impact on caves and karst.

Also in draft and undergoing substantive revision are the ASF safety guidelines and

when accepted they will find their home on our website as a well respected document.

On the near horizon is another ASF conference, this time in Chillagoe from 17th to 22nd April 2011, as most of you are aware and hopefully planning to be there.

I look forward to making the journey and being amazed as I was 30 or more years ago both by the calibre of the caves and the special breed of local cavers. Be there or miss out!

Attracting interest to what Australia has available in a rich heritage of volcanic-formed caves was demonstrated by the interest in the International Vulcanospeleological Symposium held for the first time down under, in western Victoria and at Undara in August.

A short but reassuring message for you all. We are what we are and we have what we have— let's keep the spirit of caving and the knowledge of speleology alive in us all and for future generations of troglophiles.

*Yours in speleology*
*Stan Flavel*

# WANTED
## ARTICLES FOR *CAVES AUSTRALIA!*

**Whether caving, cave diving or general exploration, *Caves Australia* readers are interested in YOUR story.**

It is only with YOUR contribution that we can produce a quality magazine for all to enjoy. For writing and style guidelines, contact the Editor or Production Manager for further information.

# ASF Grants Scheme

**Fiona Beckwith**
*ASF Grants Commission*

**ASF has instituted a range of grants to support worthwhile speleological projects. These notes provide an outline of each grant type, some of which may be partly funded by ASF's Karst Conservation Fund (KCF). Where possible, applications for grants will be publicised in *Caves Australia* and in electronic media normally received by all ASF members. Applications for the first round of grants will be advertised in the next *Caves Australia*.**

## WHO'S ELIGIBLE?

Unless otherwise mentioned, all applicants, who may normally include provisional and corporate member clubs, must be financial members of ASF at the time of application. Exceptions may be made where appropriate for conservation and environmental grants, and for some conference grants.

## HOW TO GET STARTED?

For further details and general enquiries about the grants, you can in the first instance e-mail grants@caves.org.au. If you have a good proposal, discuss it first with land owners, other clubs and speleologists. An excellent source of ideas for cave conservation projects may be found in the annual Conservation issues of *NSS News* (USA), the most recent being those for March 2010 (especially pp. 6-7) and April 2010. The Karst Conservation Fund (John Dunkley, jrdunkley@gmail.com) and the ASF Conservation Commission (Nicholas White, nicholaswhite@netspace.com.au) are also available for advice.

There is no form as such but please make sure your application doesn't exceed 2-3 pages, and ensure you include an outline of the proposal, a statement of the significance of the project (particularly within the broader context of speleology), a brief statements of capability based on experience, proposed project time lines, and (for individuals) a short curriculum vitae. Applications, when called, should be sent to the chair of the Grants Commission, Fiona Nitschke, at finitschke@yahoo.com.

## IN-KIND AND PARTNER SUPPORT

ASF encourages all members to work in close cooperation with landowners, managers and other speleologists in the project area.

In general, applications will require an indication of at least some in-kind support from the proponent club or individual member. Applications may also include support from other sources.

## SELECTION

The Grants Commission will seek advice from one or more referees able to comment on each proposal. All applications will be considered by a selection committee whose decision will be final.

## WHAT ARE YOU EXPECTED TO PROVIDE IN RETURN?

In addition to any other expectations for individual grants, all recipients are expected to provide a final report including a statement of moneys expended. Acknowledgment of ASF support must be included in reports and other publicity.

## GRANT DETAILS

### *CONSERVATION AND ENVIRONMENTAL GRANTS*

#### *Purpose, scope and amount*

To encourage projects consistent with the environmental objectives of ASF as set out in the Constitution ss. 2 a) and 2 b). The amount is at the discretion of the directors of the ASF Karst Conservation Fun.

#### *Eligibility criteria, applications and selection*

Any individual or organisation (including non-members) is eligible for a grant under this heading but the purpose must demonstrably advance the above Constitutional objectives, and preference will be given to ASF members.

Applications may be made at any time or as determined by the directors of the Karst Conservation Fund.

These grants will normally be administered by the management committee of the Karst Conservation Fund which will make a recommendation to the KCF directors, whose decision is final. In exceptional circumstances a KCF grant may be supplemented from funds of ASF itself.

#### *Expectations*

All recipients are expected to provide a final report including a statement of moneys expended and an article suitable for *Caves Australia,* along with any other requirements which will be discussed with proponents at the time.

### *EDUCATION AND ADVICE GRANTS*

#### *Purpose, scope and amount*

Development of educational programs relating to caves, karst and their conservation e.g. information booklets and pamphlets for students, land owners, presentations to primary and secondary school students, scout and guide groups (but not training). Grant amount is $250.

#### *Eligibility criteria, applications and selection*

Normally corporate member clubs and their members are eligible, and karst conservancies partnered with ASF are encouraged, but in exceptional cases others (including non-members) will be considered.

#### *Expectations*

A written final report including copies of any printed or electronic material prepared, and a project report for *Caves Australia,* with acknowledgment to ASF.

## RESEARCH GRANTS

### Purpose, scope and amount

To encourage and share original research on caves and karst, normally within Australia, in any field relevant to speleology, cave and karst conservation and management, including but not limited to natural sciences (e.g. cave biology, geology), social sciences and humanities (e.g. cave history and conservation). It may include work in progress. One or two grants per year totalling $500-750.

### Eligibility, criteria, applications and selection

Not restricted to academics or scientists. Projects involving original research by any ASF member or member club will be considered, including (but not restricted to) that done as part of the requirements for acquiring a formal qualification, or as part of post-doctoral studies.

Special encouragement is given to projects that will involve and/or inform other ASF members. Applications will be called for annually in *Caves Australia,* in ASF electronic media, and where possible *Helictite,* not later than three months prior to a closing date of March 31 in each year. When funds permit, a further round will be conducted in July.

### Expectations

The grant may be used for any purpose connected to the project, including equipment, travel costs, publication expenses etc. Recipients are expected to submit one or more of the following: a suitable review article or paper at an appropriate level to *Caves Australia,* a submitted or presented paper to the following ASF conference, a paper to a peer-refereed journal (preferably *Helictite),* or at least an abstract for *Helictite.* In all cases a written final report including copies of publications emanating from the project is required. Proposals associated with acquisition of formal tertiary qualifications (including from post-doctoral students) will in addition require a standard preliminary research plan and a copy (electronic or hard) of the final thesis. Publications and theses must include acknowledgment of ASF funding.

Where the project fits the requirements, further funding may be available from the Karst Conservation Fund.

## CONFERENCE ATTENDANCE GRANTS

### Purpose, scope and amount

1. To encourage attendance at and active participation in ASF conferences by new ASF members

2. To attract valuable conference presentations relevant to speleology by persons who may not otherwise be able to attend the conference.

More than one grant may be made for each conference totalling between $1000-$2000.

### Eligibility, criteria, applications and selection

New members must be of not more than five years standing, and have not attended any previous ASF conference. In exceptional circumstances, consideration will be given to members of long-standing who have not attended a conference for 20 years and who have an active contribution to offer to the conference.

The conference organising committee will publicise these grants in *Caves Australia* generally about six months before the Conference, and through normal ASF electronic media received by all members. The organisers may in addition approach prospective presenters and contributors. Subject to these general guidelines, administration will (at their discretion) be by the conference organising committee, which will determine the amount of each grant and may at their discretion supplement the ASF grant with a small amount from the conference registration budget.

### EXPECTATIONS

The grant provides for whole or part remission of conference registration fees and travel costs etc., and personal attendance is required. An appropriate presentation is required from those funded because of their ability to provide a valuable contribution, and is encouraged from others where possible.

## EXPLORATION GRANTS

### Purpose, scope and amount

To support ASF members in undertaking expeditions concentrating on original exploration (including surveying), covering travel, equipment and other expenses. While preference will be given to expeditions within Australia, foreign expeditions organised by ASF corporate members will be considered. One grant not exceeding $500.

### Eligibility, criteria, applications and selection

Any individual or corporate member club is eligible, and the grant may be used for any purpose associated with the expedition. In all cases (including foreign expeditions), a clear indication is required of liaison with landowners, managers and/or speleologists in the area to be visited.

### Expectations

A copy of all reports and publications deriving from the expedition (which must acknowledge support from ASF) and an article for *Caves Australia* and/or *Helictite.*

## WHEN AND HOW DO YOU APPLY?

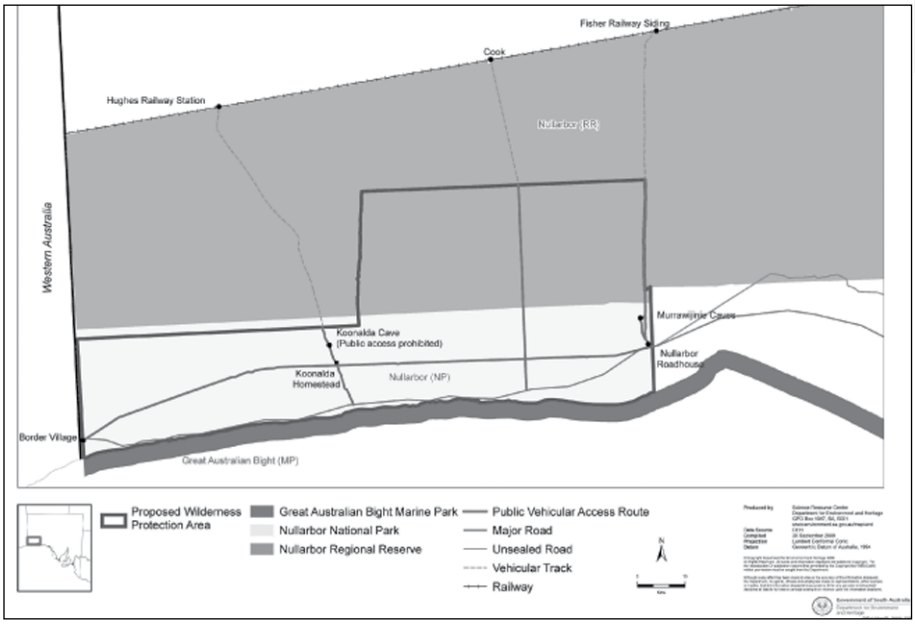
Grants will be available for the next conference; details will be in *CA* 183. Applications for the other categories will be called for prior to the March 2011 deadline.

# Proposed Nullarbor Wilderness Protection Area

**Nicholas White**

**EARLY this year there was a proposal to declare part of the South Australian Nullarbor Plain as a Wilderness Protection Area under the SA Wilderness Protection Act 1992. ASF submitted a response to the document *Report on the Proposed Nullarbor Wilderness Protection Area 2010*. This document was prepared by the Wilderness Advisory Committee and released by the then Minister, The Honourable Jay Wetherill MP, just before the SA elections.**

The area proposed is on the attached map (modified version of Figure 3 from the report) which delineates the area which extends from the coast, includes the Eyre Highway all in the existing Nullarbor National Park and then extends into a portion of the Nullarbor Regional Reserve. The Nullarbor Regional Reserve portion is part of the area explored by VSA in the last four years for caves under a scientific research permit from the SA Department of Environment and Heritage.




*Map showing proposed Nullarbor Wilderness Protection Area (adapted from Figure 3 of the report)*

This is a summary of the points made in our submission:

- The area chosen includes the Eyre Highway and the service centres at Nullarbor Roadhouse and Border Village. This area is incompatible with wilderness definitions as understood by most people, since it is a high-use area in sight and sound of traffic from the highway over much of the area.
- ASF believes the Nullarbor National Park is an area of intense usage with many iconic values appreciated by park visitors as well as the traveling public and that these values are best provided for by managing the area directly as National Park and providing additional infrastructure such as a remote camp ground as needed.
- To include the coastal and highway portion the Nullarbor National Park in the area proposed is incompatible with the requirements under the Act for wilderness. The management suggestions such as closure of roads and tracks are what a developed management plan for the Park should embrace and what the Parks Service should be adequately resourced to undertake. The fact the Eyre Highway runs through the proposed wilderness area is incompatible with wilderness.
- We have drawn different conclusions to those of the Wilderness Advisory Committee for the Area. We suggested that different boundaries on the Plain with much higher wilderness quality should be considered. The currently proposed boundaries do not reflect high quality wilderness criteria very well.
- There is a continuing need for research and discovery on the Plain. This would add to knowledge of speleological processes, to palaeontology, to the climatological history of the Nullarbor Plain and other sciences. Caving and speleology is mostly conducted by volunteers and their discoveries have been in many cases the starting point for much of the detailed scientific research undertaken on the Plain. The wilderness proposal as presently constituted is likely to seriously restrict the ability for further understanding of the karst.
- Introduced animals have had the greatest effect on the biota of the Plain. There are signs that there is a recovery in numbers of animal species on the Plain and this is particularly the case with the recovery of southern hairy-nosed wombat numbers. Certainly we have never seen the profusion of native flowering plants, that were present on the VSA expedition in 2009, which reflected recent rain but also the lack of grazing pressure over many years

from the lower rabbit population after the calicivirus introduction. Camels damage rockholes and vegetation and need control regardless of whether the area is park, reserve or wilderness.

- The comments and strategies to connect the coastal ecosystems with those of the Nullarbor Plain through to areas north of the railway as a corridor is supported. We believe the areas are currently protected by adequate legislation to provide the linkage to other biological systems to the north and east. The proposal will not have any positive affect on these biological corridors or values beyond that which already occurs from its management as Regional Reserve or National Park.
- The boundaries chosen for the proposed wilderness are not appropriate. There are too many detractions from high quality wilderness in the areas chosen. The Nullarbor National Park can and should better provide for its many visitors, both travellers and tourists alike. To do this needs both planning and resources. More appropriate areas of the Nullarbor Regional Reserve are available for the wilderness than the area chosen, as this was the most changed by the pastoral industry and by the rabbit industry. The wilderness inventory identified some larger areas of the highest wilderness quality in the Nullarbor Regional Reserve deserving of closer examination.
- ASF has real reservations about the consequences of this wilderness proposal as no information has been given as to the resources to be provided to manage it. There is implied criticism of the existing management of the Park and Reserve in various comments in the report. This should be addressed separately. The areas in both Park and Reserve need the resources for strategic planning, execution and ongoing management. This could well focus on providing the facilities and interpretation for travelers and tourists that would improve the local economy.

NICHOLAS WHITE

*Camel on the plain*

NICHOLAS WHITE

*New 38 m deep cave in proposed wilderness protection area*

NICHOLAS WHITE

*Creek Tank Cave and Doline N-151*

## CONCLUSION

When using management zoning techniques to classify land, an assessment of the area's attributes should be taken into account. A start could be made with the statement of the Minister's in his foreword to the Proposal. "… and is an internationally recognised karst landscape." This statement is not in question by the ASF. What is in question are its implications. If it is truly internationally recognised then its protection should be recognised nationally and internationally.

This in fact was the conclusion of Professor Paul Williams in his study for the IUCN World Heritage Committee *Caves and Karst: A Thematic Study* in 2008. National recognition is thus warranted which means that it become listed under the Federal National Heritage legislation. It would be desirable that the Nullarbor Plain as a whole, including the coastal cliffs and escarpment form part of this listing.

An extension of this thinking would take it to the International context and once again include the whole Nullarbor Plain in a multistate agreement to propose the area for World Heritage listing by UNESCO. This would need the governments of South Australia, Western Australia and Australia to agree to proceed with such a nomination.

# The Holy Caver, the Blue Demon and the Bulldog

## The story of three years of expeditions to the Sierra Negra in Puebla State, Southern Mexico.

*Based on articles by*
**Gustavo Vela Turcott**
*Translated by*
**Alan Warild**

GUSTAVE VELA TURCOTT

*The Keyhole, Santito*

### OCOTEMPA PART 1 - 2007

We'd all heard the story of how the GSAB (Grupo Espeleológico Alpino Belga) had stopped exploration of Sótano de Akemabis at –1015 m at the edge of a 30 m drop because they were out of time and had never returned.

That was in 1990 and part of a series of expeditions to the Sierra Negra in the south of Puebla State. Over the years the GSAB had moved the focus of their explorations and had left the area behind.

Motivated by rumours that Akemabis continued, and tired of stressful big expeditions with way too much hype attached, three of us, Franco Attolini, Gustavo Vela and Al Warild, organised a low key expedition of 30 days, 13 cavers (from six nationalities, although most were Mexicans).

Our objectives: have a good time with like-minded anarchist cavers; explore a bit in Akemabis; and, if we had time, do a 'tourist' descent of Pozo Verde, another 1000 m deep cave in the area.

Of our three objectives, we accomplished only one.

A distant 'Freeeeeee!!', almost drowned out by the crash of water falling 130 m, was how Gustavo let me know that I could use the next rope.

He had just passed the second rebelay and a 60 m stretch was free. The light drizzle on the surface had turned to rain not long

after we'd entered the cave and the soil just couldn't absorb another drop; so what had been just a few drops on our way down was transformed into a good-sized waterfall. We were completely soaked but nearly out. It was my turn to swing out into the waterfall …

## LUCK

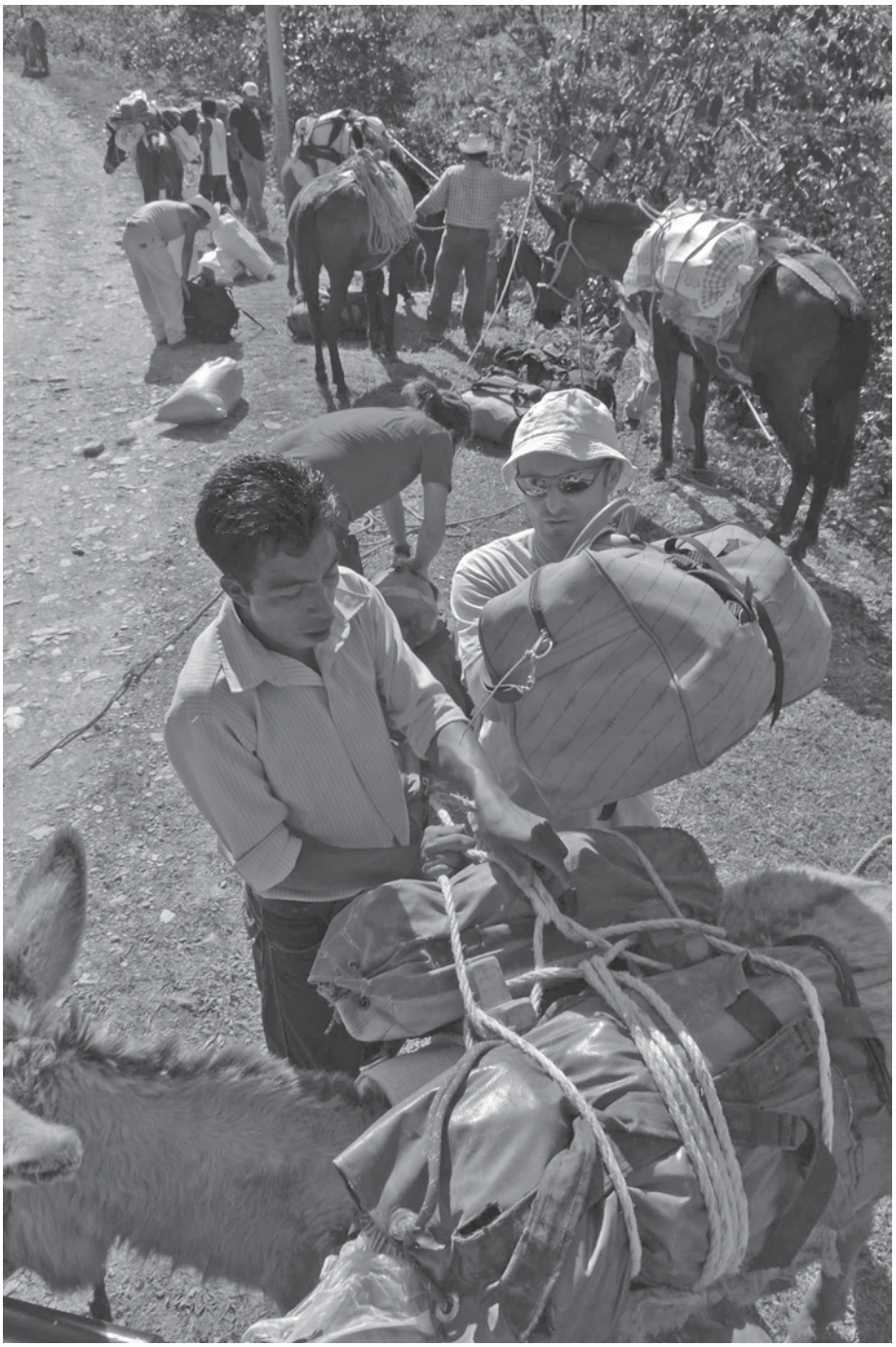
There were seven of us in the tiny community of Ocotempa in the Sierra Negra. While some continued to set up base camp, the others went in search of the entrance to Akemabis. Two of us believed that we knew where the entrance was from our expedition to the area a few years previously. So we two went looking, and after a short battle it was found, well-hidden in the scrub. After only a short way in, though, we realized that the cave we were in bore no resemblance to the map we had. So our confusion grew. 'Are we in Akemabis… or is it a new cave?'

GUSTAVE VELA TURCOTT

*Gear store, dining room and kitchen, base camp*

A few more hours of searching, instead of clarifying our doubts, only increased them. In the dense cloud forest we found more cave entrances and any one of them could be Akemabis, or so we thought. If this weren't enough, our Belgian friends had given us the coordinates, but we didn't have a GPS (although we were dubious about 1990 GPS points taken under thick forest anyway). The topo map with the entrance marked in the wrong spot didn't help either so we navigated through the forest with map and compass and explorer instincts.

Tired, we rested beside the track discussing the problem before checking one last doline. Laurencio, a young landowner from Huizmaloc, appeared around the corner. He assured us that he could take us to Akemabis — for a price.



GUSTAVE VELA TURCOTT

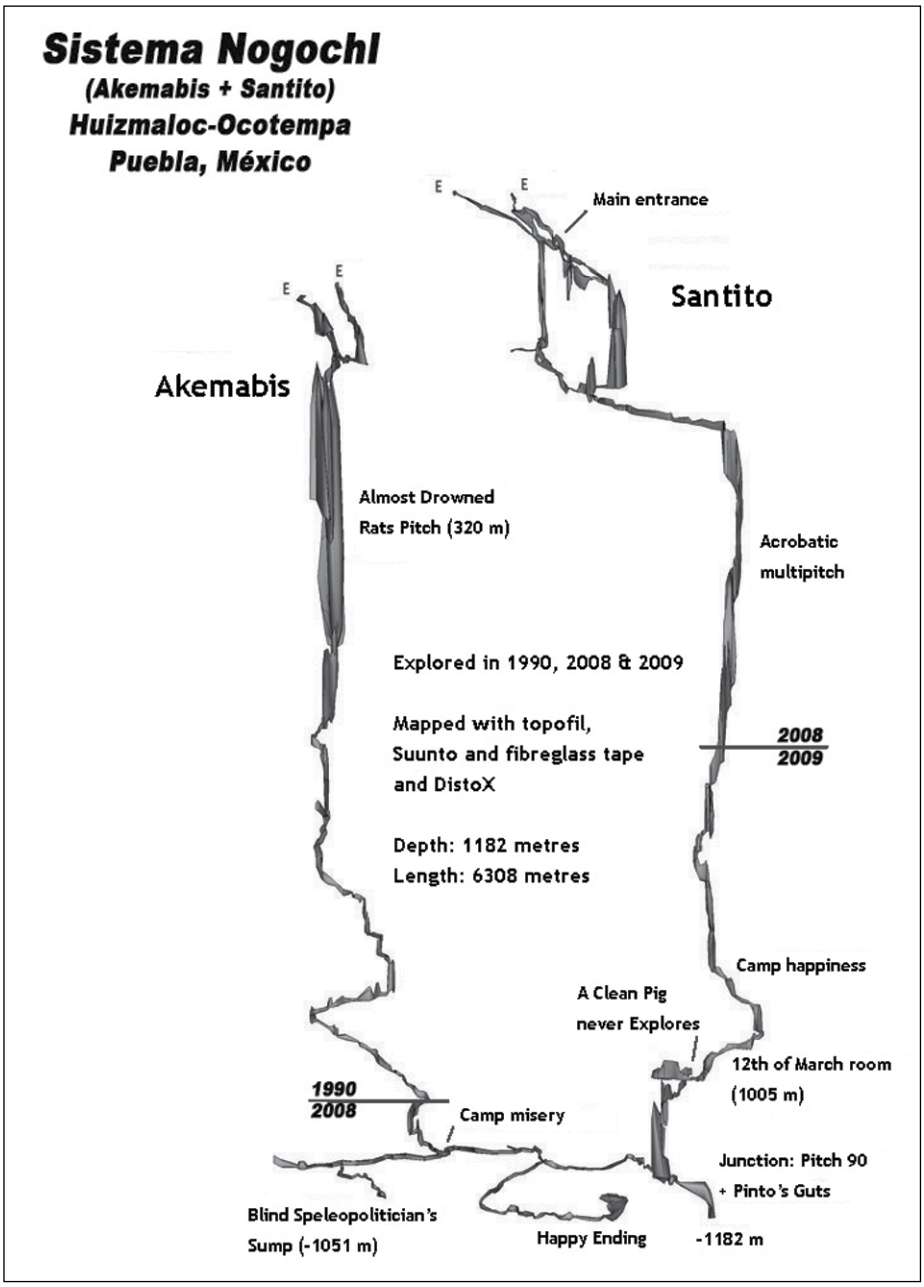
*The traditional method of carrying caving gear in the Mexican mountains*

After discussing everything from burro fodder to chainsaws we settled on a price and he led us several minutes uphill to the entrance that we apparently were looking for, although it didn't even nearly fit the location that we had been given: '… only 100 m away in a straight line to the northwest, and 20 m lower than Akemati'. Oh, well, it was a very nice entrance.

The next day Lorenzo and Tony began rigging the cave. Eight hours later they returned, telling how they had found some pits near the top and descended a 130 m pit, only to stop at the top of a 30 m drop. Everything inside the cave appeared to indicate that we were in Akemabis — at last!

Overnight a misty rain had dampened base camp. We began the descent: first a 5 m drop, then another of 4 m, a short ramp, a narrow passage and ZAS! We hit the big pit over 100 m deep. As we descended we realized that our friends had rigged the rope directly where the water would flow should there be more than the few drops that moistened our clothes and helmets. We commented how 'interesting' it would be after rain, but there was not much we could do about it with the rigging gear below, so we continued down to where they had left off the day before.

We rigged and descended the 30 m pit, but instead of finding more pitches, we hit a horizontal gallery. 'What?? A horizontal passage instead of more pitches? Where are




we?' we asked ourselves. As we realized that the cave no longer looked anything like the line plot that we had of Akemabis we also searched for footprints or marks from any previous explorers, and found none. We had to admit that we weren't in Akemabis but some other partially explored cave. Below -200 m there were no marks. A 'new' cave is better than an old one any day — we decided to continue.

After walking, and occasionally crawling, we eventually hit another drop. Even though it was small, we descended, hoping to find more pitches to explore, but to our dismay we found a second horizontal passage, and this one even narrower than the previous one; so narrow, in fact, that some spots were only passable by squeezing along the low bedding plane between roof and floor, and sharing it with the water — no chance of getting through here dry!

We got about 100 m further through more bedding plane until we eventually stopped at a tiny 4 m drop. Eight hours in and having strategically left the rigging gear at the foot of the previous pitch, the decision was made to head for home. On our way up we passed Franco and Jon who were on their way down to relieve us. They told us not to hurry as it was still raining and cold on the surface.

Only when we arrived at the foot of the 130 m pit did we realize that there was a 'little' more water. It was Gustavo's first cave flood and he didn't fully realise what was happening. He soon found out, however, as the few intermittent drops that had dampened us on our descent had been transformed into a healthy waterfall.

In a few moments we were completely soaked, but we chose to continue climbing rather than spend a cold, wet night below a waterfall that might get even bigger. The worst of it was, looking right, then left, we could see that only 2 m to 3 m away in either direction there was no water falling at all and that our problem was due to the rope being rigged in precisely the spot it shouldn't have been.

Was it really better to continue and end the torture as fast as possible or drop back down and wait a few hours for the water to subside before trying again? Up, we decided. As we emerged into the evening we saw that it was, in effect, still raining and getting colder — nothing more was needed to make a flood in this cave.

A hot meal and dry clothes made us feel much better as we recounted our adventure to our companions: just how wet it was, and how the only thing that kept us warm was that we kept moving. Now all we had to do was wait for Franco and Jon who were still below.

Two hours later Franco arrived after a similar experience, with the bad news that

GUSTAVE VELA TURCOTT

*Santo: Combictites*

'Jon had a problem'. From below, Franco had called, 'Look down!' Jon heard, 'Come down!' and did. Once committed, he had decided to keep going and wait in a dry place for the water to drop, rather than have to wait on the rope and get hypothermia. Clearly, with Jon now trapped and wet it was important to get him some dry clothes and food for his stay. Fortunately, Lorenzo was rested and in condition to volunteer. With a PVC suit and pack full of food and sleeping gear off he went, to return in a couple of hours with the news that Jon was fine and would be out in the morning.

Early next morning Jon surfaced and Tony returned to repair the rigging and hang the rope completely clear of the water so that if the rain continued, we wouldn't have a repeat performance. As it turned out

ALAN WARILD

*Akemabis: Zape very much in 'Pinto's Guts'*

we didn't have another flood, anyway.

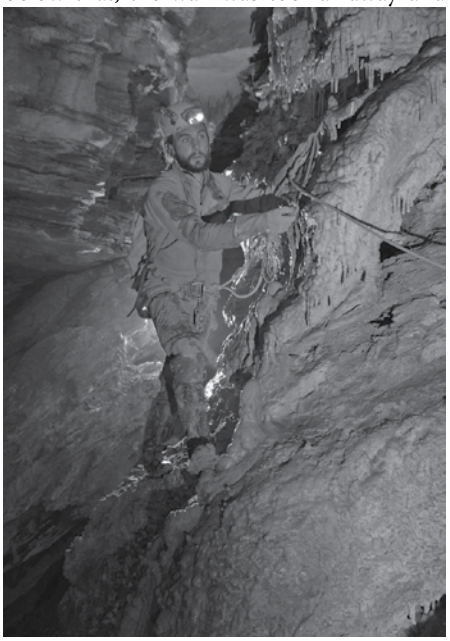
In all the excitement, Franco had forgotten to tell us that they had reached the end of the horizontal passage and found another estimated 80 m pitch. Even though it looked interesting, they hadn't tried to descend it with the short rope they had.

Next day two groups entered. Our group — Al, Franco and Sergio — was to rig the new pit. The beams of our lights hit nothing but blackness and when I threw a rock off the top no sound of it hitting the bottom returned. A truly bottomless pit. Only when I dropped a real rock did I get a faint echo some 8 seconds later. The quick'n'dirty 'rocometer' depth formula is 5 x 2t. Just a 'little' more than 80 m, then.

Once again the rigging was difficult due to the thin interbeds of limestone and chert which meant the rope had to be positioned with great care. Using the altimeter, we calculated the pit to be 134 m deep to the knot swinging in space and that the pitch began at about -340 m. At the same time the second team of Lorenzo and Gustavo began mapping the cave.

Eight hours later our two groups met on the way out, exchanging long, boring survey stories and hanging-in-blackness-with-the-bottom-still-invisible-way-below stories. Tired but happy, we were all excited.

Early next day Tony and Jon and a 200 m rope headed in to continue the rigging. They spent several hours hanging on the rope in an effort to find the best route down. In the end the top 115 m had several rebelays, but below that, the wall was too far away and the rope hung the final 130 m free. A few days before we thought that we'd found an 80 m - 100 m pit. Only when they reached the bottom did they realize that it was 245 m and overhung all the way.



GUSTAVE VELA TURCOTT

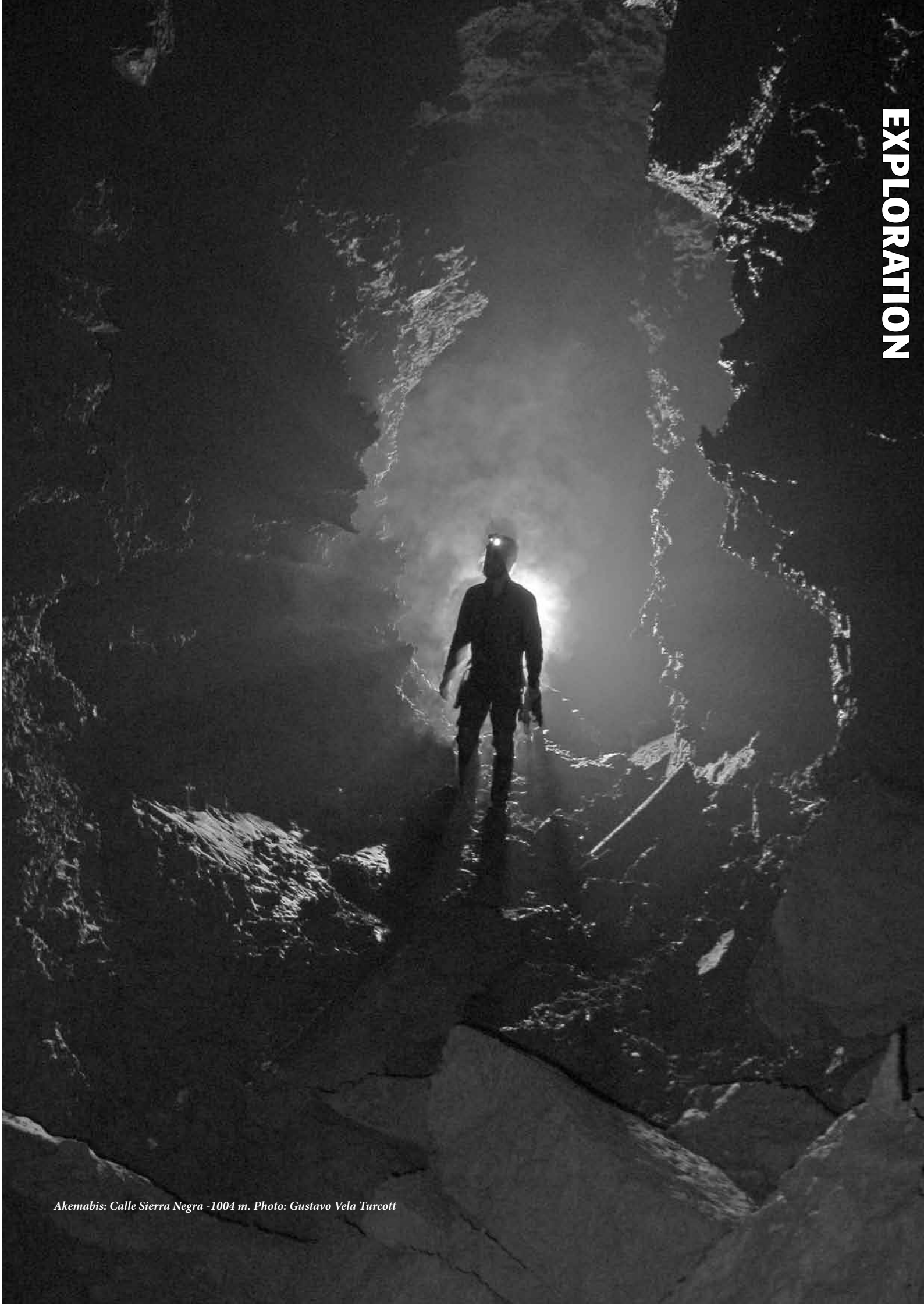
*Santito: Guillaume on the stal traverse — one of many. Get used to it*

They searched the pitch bottom and the chaotic boulders that covered one end but found no continuation. A day later Lorenzo and Al also went to the bottom to search a little more. They spent hours poking between boulders and climbing the walls, but found nothing.

On the way up they surveyed the pit and lower part of the bedding plane passage that remained unmapped.

A day later and five of us managed to derig the cave and take a few photos. Back in camp we summed the metres and got 593 m deep and 1627 m long. The joke was that if we could find only another two pitches like that last one, we'd pass -1000 m. Pity it didn't work out that way.

Our cave needed a name. Akemawho-knows perhaps? Pozo Negro, (Black Pit) as a companion to the nearby Pozo Verde (Green Pit)? The ubiquitous Mexican country radio was playing as usual 'el Santo Cavernario [Holy Caveman], Blue Demon y el Bulldog ...', all 'actors' on the popular Mexican wrestling scene. El Santo Cavernario it was.



*Akemabis: Calle Sierra Negra -1004 m. Photo: Gustavo Vela Turcott*

NACHO

*Akemabis: The last drop for ages that has a bottom that you can see*

## RESIGNATION

With only seven days remaining we had (finally!) been shown the real Akemabis. We spent the week rigging as far down Akemabis as we had time and people for. We only reached -730 m, not the bottom, but there's always next year.

## MEMORIES

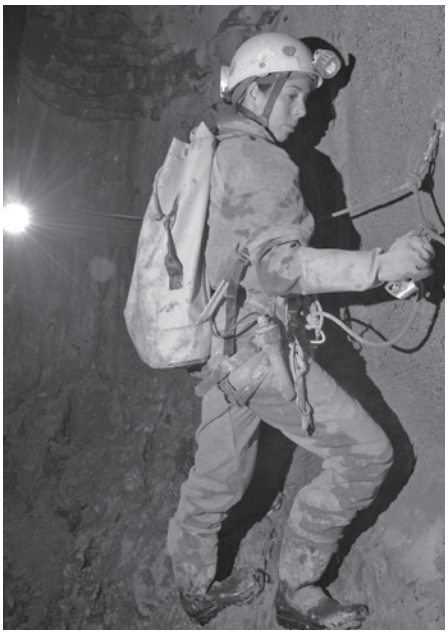
Months later we found out that the GSAB had entered the cave now known as Santo Cavernario. Once they saw our photos they remembered it very well. In 1990 the passage below the 134 m pitch was plugged up with boulders, water and mud, and impassable to humans. They climbed a few walls, but found nothing. In 1990 it was a 180 m deep cave. The cave must have been opened by one of the many floods that have swept through the cave between 1990 and 2007.

## OCOTEMPA PART 2 - 2008

A year later we were back with 19 cavers from six countries. Once again, the organisation was Mexico-based.

This time we knew the entrance to Akemabis, and down the first 700 m. Just weeks before we started we got word that the survey didn't actually go right to the bottom; the last bit had been estimated. So, with the depth in doubt and none of the survey stations retrievable, the decision was made to map the entire cave.

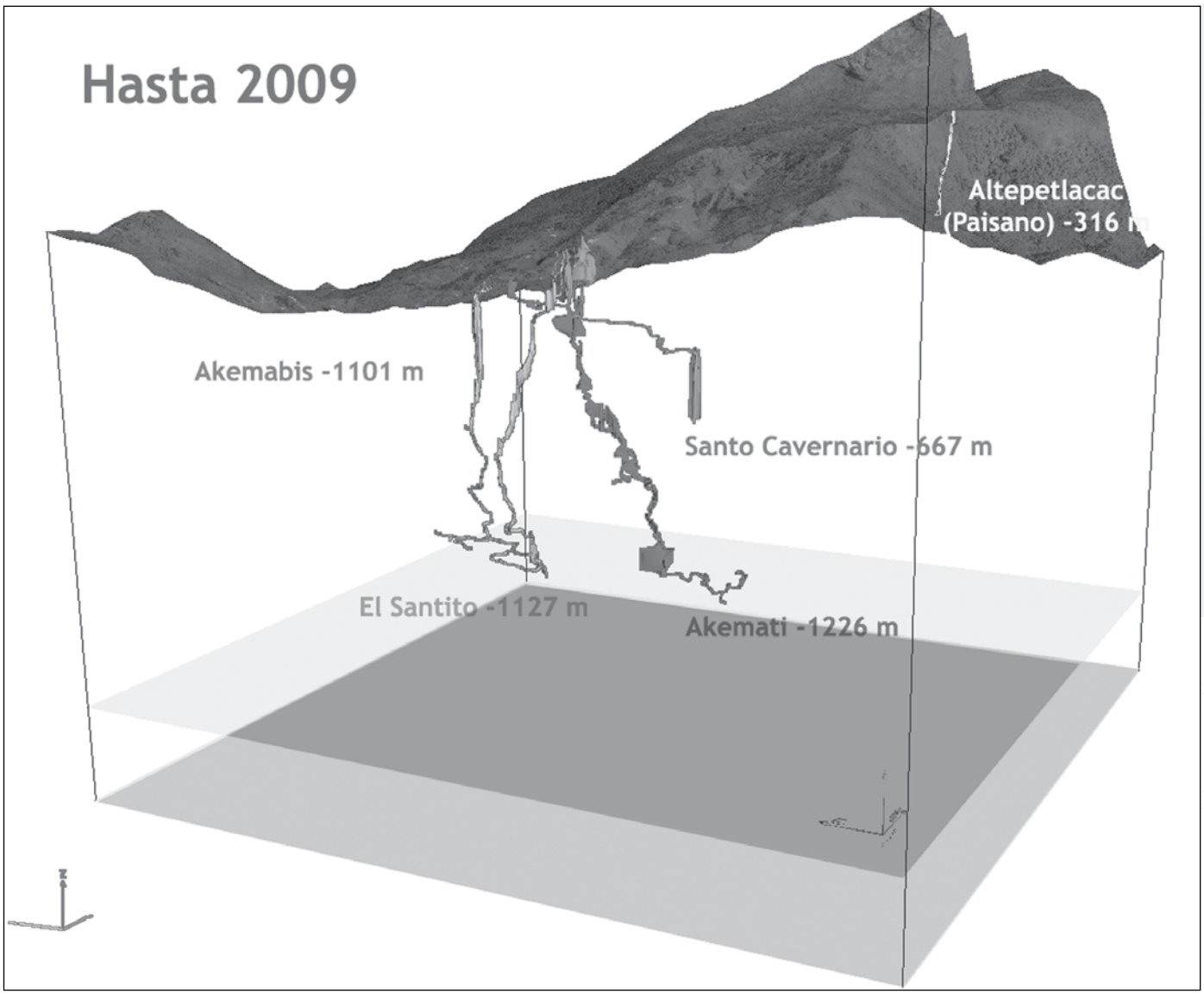
As it turned out, we got an almost identical position for the previous last survey point. Perhaps we wouldn't have known that we were there though, had it not been for our survey, unless of course a sausage packet jammed in a crack is an internationally recognised survey marker and we just didn't realise it. Beyond that last point we found three 'bottoms', the first at -1051 m, Blind Speleo-Politician Sump. Because it was taking so long to get down and back out we set up Camp Misery at the first comfortable point for many hours. The next deep point we found was beyond a narrow section and four pitches down where the water disappears between boulders at the base of a large ascending shaft: Happy Ending Chamber at -1101 m. Our next deepest point reached was -1092 m, via Pinto's Guts — clearly a less than pleasant place — and another ascending shaft with water cascading down it. I remember looking up and thinking 'one day the Ocotempa Speleo Club will come down this way'.



GUSTAVE VELA TURCOTT

*Santito: Marta on another, longer stal traverse, with more air below*

After adding about 150 m of extra depth we extended the cave from 1015 m to 1101 m deep and 3219 m long. Those who can add up will realise that this doesn't. Let's just say that it's the sort of thing that happens when cavers estimate the last bit of the cave as being 150 m deep.




GUSTAVE VELA TURCOTT

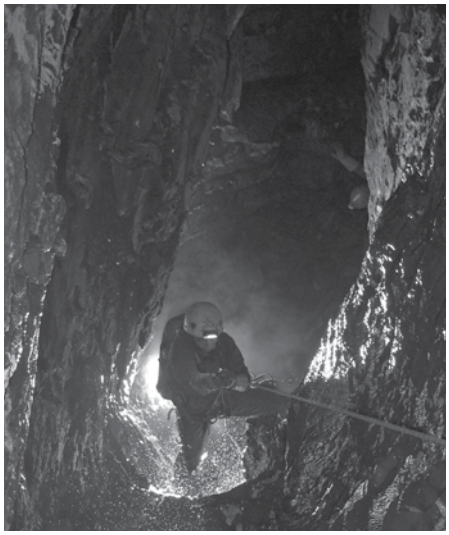
The year before, during our search for Akemabis, we had found a cave only 15 m from the track with a comfortable walk-in entrance that we descended about 30 m to a narrow slot with a strong draft coming out. As we knew that it wasn't Akemabis, we left it — but didn't forget it — and looked elsewhere on the mountain.

In 2008 we returned to the cave believing that it would connect with El Santo Cavernario whose entrance is only 30 m away. As it is so close we called our new cave El Santito — The Little Saint. Two years later we still haven't found the connection between these two caves, even though with further discoveries, their closest points are now only ten m apart.

So, as an easy option, while we were taking turns at the bottom of Akemabis, we explored our way down Santito to -523 m. To this point and despite the tight first pitch, Santito was a very nice cave indeed with spectacular pitches following a small stream. The last 250 m was a clean-washed cascade on-rope all the way. The water disappeared down a narrow crack and an overflow pitch kept on dropping, but we were out of time.

## OCOTEMPA PART 3 - 2009

It was the third year running that we had met in the pleasant provincial city of Tehuacan in the South of Puebla State, Mexico. Our group of 13, as in previous years, comprised mainly Mexican cavers, as well as cavers from Australia, Spain, USA, France and Switzerland — the international mix, really.



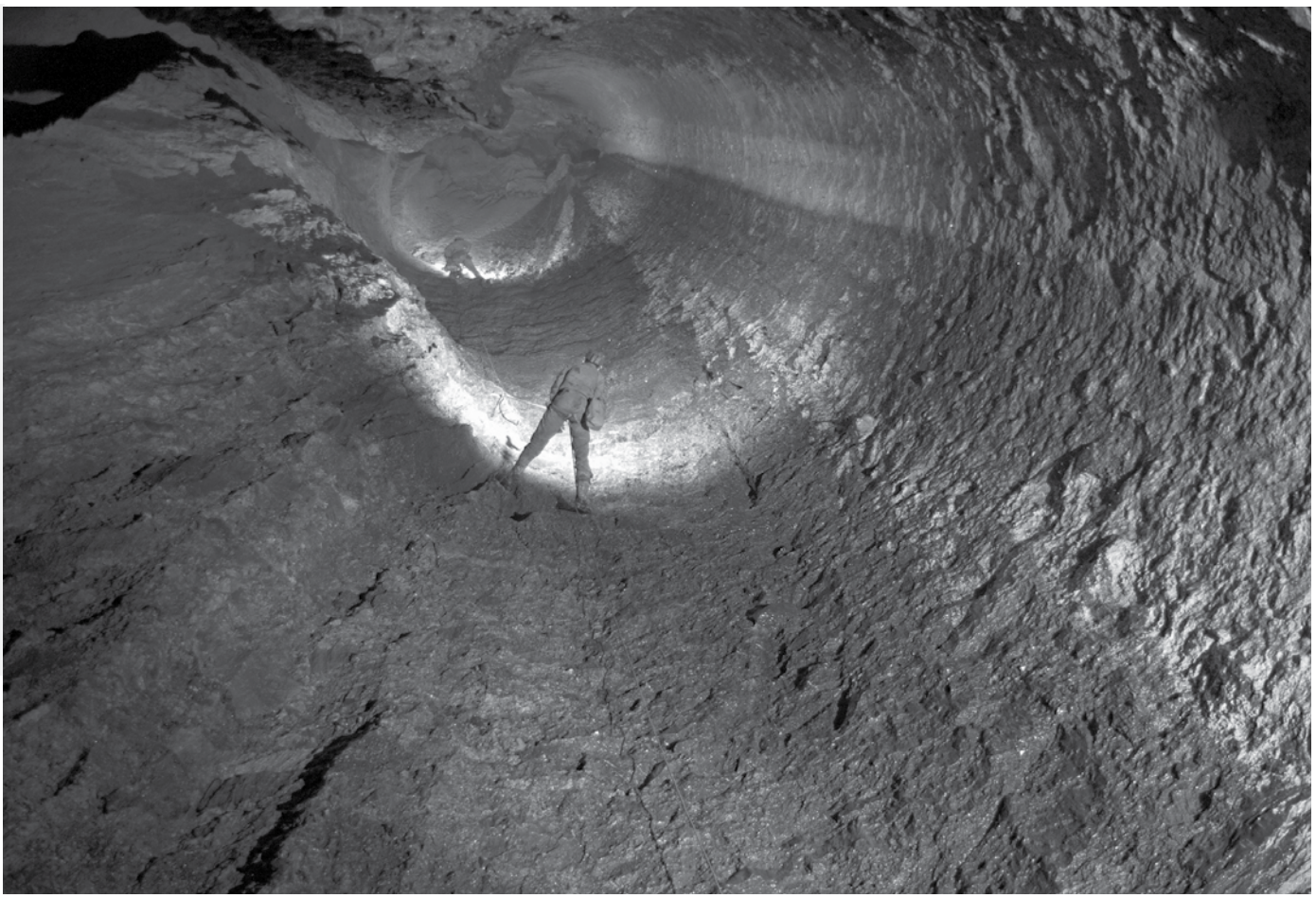
ZAPE

*Akemabis: not so nice with just a handline*

As usual, we combined our resources and put in equal amounts of rope and anchors as well as money, to pay for the main costs of food, petrol, caving equipment and renting mules to carry our gear up the two hour climb to base camp. In all we had a ton of gear and so needed a 'mule fund' to pay for our gear carry.

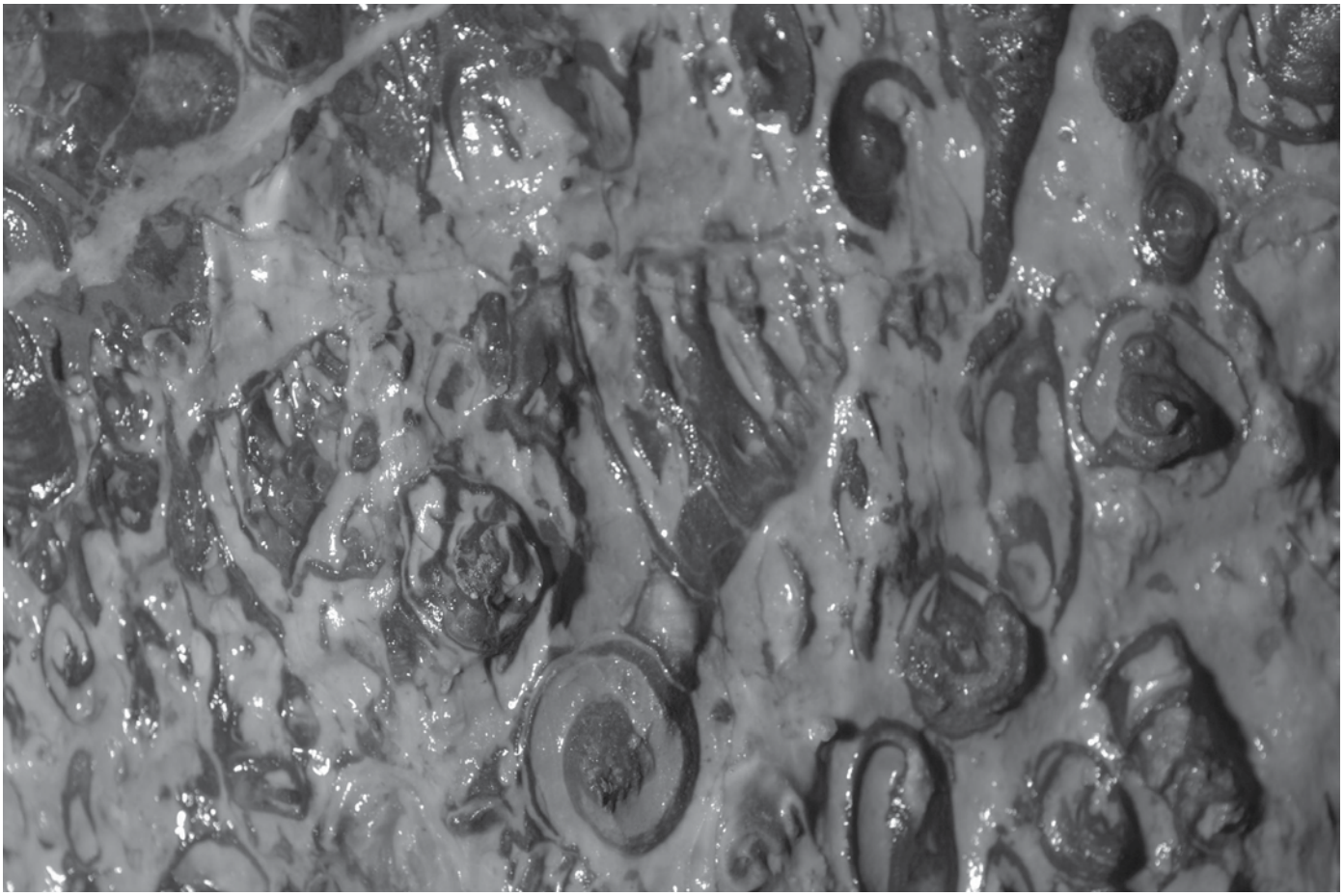
Once up the mountain we set up camp for all of March in our friend Doreteo Cuello's front yard. While some organised the camp and equipment, others did warm-up trips into the nearby caves. But the weather refused to cooperate and remained unstable, mist and rain making it less than ideal for cave exploration. We'd already managed two floods in two years. Perhaps we should have been getting used to it.

Even so, we started down El Santito, but with more care than usual, in order to rig further out of the water down to the deep point of -527 m that we had reached the



GUSTAVE VELA TURCOTT

*Santito: looking up the first big drop*



GUSTAVE VELA TURCOTT

*Santito: Fossils line most of the 'Acrobatic multi-pitch'*

*Akemabis: So just why did the Belgians stop here? Photo: Gustavo Vela Turcott*

year before. This would take us some five days, sharing the work between groups with a different group descending each day.

With the rope rigged to our deep point in El Santito, the exploration became deeper and more interesting. First to -620 m. At -500 m the water enters a small crack, so from there on, as the cave becomes drier and drier, the risk of a flood diminishes. Then -692 m. Typically we were in groups of three: one out front rigging and the other two surveying along behind and helping carry the gear.

The next day saw -805 m, the major part of which was a 70 m pitch with a lot of loose rock and huge blocks threatening to fall. The rigging became more technical (speleodiplomat speak for 'right sod of a bottomless traverse with no footholds and slippery wall') in order to avoid the hazards. The journey from the surface to the lead, explore, map and return to camp took some 20 hours to reach -918 m — and the cave continued.

By mid-expedition we'd almost reached a kilometre deep. The weather continued to be unstable, but without affecting our enthusiasm because we were about to reach -1000 m. It was only fitting then that, as it turned out, it was the 'all Mexican' team of Franco and Gustavo who pushed the exploration down from -918 m. They rigged six pitches and explored to -1005 m — without a bivouac — and became the first Mexican team to explore past -1000 m under Mexican soil. Of the nine 1000 m deep caves in Mexico, eight have been found and explored by expeditions from other countries with only minimal or no Mexican participation.

They also stopped with the going passage now covered in lovely sticky mud.

The next team didn't get so far and surfaced telling how caves in their native Pyrenees were never so dirty and they wouldn't be going back into such a horrible hole. Cavers the world over are never slow to 'take the piss' so we called that part Chancho limpio nunca explora (a clean pig never explores). A day later we skipped down the next pitch and beyond the slightest hint of mud, only to descend 'another ascending shaft with water cascading down it'. I remember looking down and thinking, 'Looks like we've beaten the Ocotempa Speleo Club to the connection.'

We'd dropped in just beyond Pinto's Guts in Akemabis, right on top of the 'connect here' survey tag I'd left the year before. Not a bad feeling, exploring two 1000 m deep caves in two years — just a pity that by joining them we still only had one cave.

We decided to call the cave Sistema Nogochl. ('Cuello' means 'neck' in Spanish and nogochl is cuello in the local language) and is the name of the families that live in the area around the cave entrances.

The final length of Sistema Nogochl (Akemabis + Santito) is 6308 m and the depth from the top of El Santito to the bottom of Akemabis is 1182 m. A connection with Santo Cavernario would make it close to 1300 m deep.

Just to make sure that we have plenty to do for a few lifetimes yet, we did some recce caving on Tzonzecuiculi, the limestone mountain that rises another 1000 m above our camp. There are caves up there, too, one already over 300 m deep, plus many more caves to be found around camp.

## ACKNOWLEDGMENTS

The members of the expedition wish to thank the mountaineering shop Limite X for their support; Ajalpan Protección Civil; the communities of Ocotempa and Huizmaloc for their help and support and for allowing us to explore their caves and Laurencio for allowing access to his land.

And a special thanks for Doreteo and Apolonia for allowing us to live in their front yard, for the handmade tortillas and for allowing us to explore their caves.

# Under the Top of Thailand

## Part One – Cave Lodge

**Paul Hosie**
*CEGWA*

PAUL HOSIE

*Mae Hongson*

**AN ADVENTURE holiday to Northern Thailand during April 2009 saw the author happily located in Chiang Mai for the Song Kram festival (Thai New Year), but also spending some quality speleological time in the spectacular limestone mountains and wilderness near the Thai-Burmese border.**

The scenery, the people and the caves are simply awesome. This adventure story is necessarily divided into two parts. This is Part One which focuses on the area surrounding Cave Lodge, whereas Part Two describes the canoeing, camping and caving adventure I participated in which was organised by Aussie expatriate John Spies and his beautiful wife Nung.

### JOURNEY TO CAVE LODGE

The trip from Chiang Mai to Soppong was spectacular and hair-raising. From the flat plains region in which Chiang Mai is located (approx 300 m ASL) the road leads up into the true highlands of the Thai-Burmese border (approx 1300 m ASL). The vistas along the way are vast and of seemingly endless rolling hills.

Dramatically steep terrain would be an apt description for this part of the world. The best part was of course the limestone and it isn't until you reach the district of Mae Hong Son where the scenery changes from massive rolling hills and mountains to the more abrupt and beautiful karst landscape.

After organising a local "taxi" to get from Soppong to Ban Tham (translation = Cave Village!) I found myself at the destination: Cave Lodge, overlooking the Nam Lang River, drinking cold beer and adjusting to the absolute tranquility of the place. Let me paint a picture as I sit here on the balcony of the main lodge.

The relative silence is the first thing that you notice — no traffic or other engine noises, no people talking, no humming of electric appliances or chatter of TV or radio, just a sort of silence we in modern cities aren't accustomed to. Silence, of course, is relative to what is 'normal' for you. The dominating sound at Cave Lodge is the burbling of the river some 50 m below the balcony, second to that are the birdcalls, cicada strumming and geckoes 'chucking'. So this is why I have travelled four hours by minibus and 15 minutes in a local's 4WD 'taxi' — well worth it.Tomorrow the caves!

PAUL HOSIE

*Log coffin at Soppong coffin cave*

The caves of the area have been well documented by Australian and local caving groups over the past 30 years. John Dunkley helped enormously by providing information, a copy of his early video *Beneath the Golden Triangle* and best of all, personal contact with John Spies, the man who built Cave Lodge and has dedicated his life to the area, its people and its caves.

The book *Caves of Northern Thailand**, together with John Spies' own book *Wild Times*† are absolutely essential pre-reading for speleos planning a visit. Addition-

* *Caves of Northern Thailand* by Pindar Sidisunthorn. River Books Press, 2007. ISBN 9749863135.

† *Wild Times — 30 Years on the Thai Border* by John Spies. Printed locally and available from John directly at Caves Lodge.
http://www.cavelodge.com/caving.htm
Email john@cavelodge.com

ally, the *Caves of Northern Thailand* book is without doubt the best and most beautifully illustrated caving reference book available — full stop.

## CAVE TOUR WITH A DIFFERENCE

**Tuesday 31 March** — A lazy day of catching up on sleep, reading and soaking up the tranquility. In order to combine a tour of Tham Lod with a viewing of the half-million swiftlets entering the cave at sunset, I set off about 5pm for the ten-minute walk to the park office.

The guide fee was paid and off I set into the cave, following the course of the Nam Lang River as it flows straight into (and through) the karst hillside. Three separate chambers ('caves') lead off from the main river passage and the guide shows you all three with her kerosene lantern blazing away the darkness of the vast passage and chambers.

The "First Cave" is really stunning – on a similar level to and as large as the main river passage, approx 50 m high and 50 m diameter, fully adorned with giant columns and large scale calcite decorations. The "Second Cave" is on the opposite, or eastern side of the river but on a high level up near the roof of the cave, accessed by several wooden staircases. The increased temperature and humidity this high in the cave was palpable, but the heavily decorated chamber there was worth the effort.

Back down to the main passage to board a bamboo raft for the journey through the cave, past thousands of roosting bats and to the very tall exit where the cave swiftlets were already starting to return to their roosts in the cave for the night. The "Third Cave" is again high up on the eastern side of the river passage, well beyond the daylight zone. Amongst the largely inactive formations lay a number of log coffins, for which this area of Thailand is notable.

When you see how large these coffins are and realise how long ago they were put in place (between 500 and 1,500 years ago), it really is a remarkable feat of human endeavour and an excellent reflection of the effort spent by the living to honour the dead.

Unfortunately, probably because of the high humidity in this part of the cave, most of the coffins are in a deteriorating condition.

The visit ended by quietly sitting at the cave's exit and watching for an hour as the sun disappeared and twilight progressed to night, hundreds of thousands of cave swiftlets stream into the cave to roost for the night.

Without doubt one of the finest spectacles in the natural world is the beautiful and tranquil setting of the grand archway of the cave's downstream entrance. It is hoped that the excellent custodianship of the cave by the local villagers should ensure the ongoing survival of this natural wonder. A one kilometre walk back around the karst to the entrance completed this first caving experience of the trip. A wonderful meal of local Shan-style delicacies washed down with a couple of icy cold Chang beers completed the day in great style.

PAUL HOSIE

*Downstream entrance, Tham Lod*

## LOCAL CAVES

**Wednesday 1st April** — Today I set off to find Christmas Cave, a few kilometers NW of the village amongst some beautiful and spectacular limestone scenery. The only trouble with spectacular scenery is that it usually involves hard walking and steep gradients! After a minor uphill detour I found the track and followed a short streamsink into Blindfish Cave (Tham Huet).

This cave has dangerously high levels of $CO_2$ and travel into it has to be carefully calculated to time with the diurnal cycle of inhalation and exhalation, if at all. I poked my head into the constricted entrance and could taste the foul air as it acidified my saliva. I continued up the valley towards Christmas Cave which was readily located from John's handy area map. The cave has some beautiful decoration and a climb down to the stream passage reveals even more lying in wait, but not for a solo adventurer.

**Thursday 2nd April** — Soppong Markets and Coffin Cave just West of the town. Three-quarters of the way up the 1000 ft high cliffs lie several caverns with a number of teak coffins in good condition. The views over the valley from the cave ledges are impressive.

## OUT OF TOWN CAVES

**Friday 3rd April** — John dropped the party of Pommie cavers and myself off in a nearby Karen Village where a local guide, Hun, was appropriated. We set off on a hike to a group of three caves in close proximity and passed the enchanting 'Fish Palace' along the way. The first cave was also the largest cave — Tham Long Yaow which is an outflow entrance at the base of a karst wall. The small entrance is crawled through and then 5-600 m of large walk-through passage is traversed.

Although the floor is generally flat, dry and sandy, the air is heavily laden with moisture which gives the appearance of a thick sea fog.

There are a lot of beautiful active calcite deposits throughout the cave, the pure white crystals contrasting starkly against the dark muddy walls and roof. About 500 m into the cave, some pools of water are encountered and then the soothing sounds of water gurgling along an active streamway are heard.

The cave terminates (?) in a large rockpile chamber and although airflow is noticeable, no way through has yet been found. The active streamway heads off a very low and small passageway to the NE approximately 70 m from the 'terminal' rockpile. We later noticed a possible corresponding resurgence of this waterflow two valleys away near the outflow of 'Dry Cave'. Another interesting feature noted was the heavily decorated 'shelf' approximately 5 m above the cave floor on the western side at about half way and three-quarters of the way into the cave. This could represent fossil or tributary passages at a higher level and may be worth investigating further.

PAUL HOSIE

*Main chamber, Christmas Cave*

Following our very pleasurable trip in Tham Long Yaow, we referred to John's mud map of the day and shifted our attention to Water Cave (Tham Huoy Rai). A small streamsink just 120 m north of the entrance to Tham Long Yaow leads down via a bamboo ladder into the entrance chamber of the cave. The passage heads straight through the limestone hill and exits after approximately 300 m to the north-east, joining the Nam Lang River on its meandering course to Tham Lod.

Most of the length of the cave has to be swum, except for the first 50 m and last 100 m. A large number of bats inhabit the central section. The cave exits into a large cavern overhang on the far side of the limestone hill. Paul Johnson and I were the only two willing to immerse ourselves for this through trip and it was an excellent adventure, given that neither of us had visited the cave before.

PAUL HOSIE

*Paul Johnson at the Water Cave exit*

## THROUGH TRIP

The last cave we located from John's map was 'Dry Cave' which was entered from a substantial stream flowing straight into a small arch-roofed cave at the base of the hillside only a few hundred metres SE of Tham Huoy Rai. This impressive looking entrance soon shut down to a log and bamboo blocked hole which was the obvious way into this cave which cuts straight through the hillside to join the Nam Lang River.

After we removed and pushed aside the mass of dry wood blocking the cave passage, we found ourselves in a beautiful canyon-like cave passage up to 15 m high and generally no more than 5 m wide. The volume of water carried by this cave in flood was clearly evidenced by the massive tree trunks and logs wedged along the passage and in some places up to 10 m above our heads. Only a few hundred metres long, but a really beautiful cave due to the redissolved flowstone, conglomerate walls and 30 m+ high canyon exit.

Upon exiting this cave, we noticed a small tributary creek joining from the right with a similar volume flow of water as that disappearing into the side wall near the end of Tham Long Yeow. Following this creek we found a small cave entrance and a collapse sinkhole above it along the base of the hill only 100 m south of the Dry Cave exit. If this is another flow path for water into the Nam Lang, it is currently an unexplored one and from a topographical perspective could have at least 700 m of additional cave passages.

Our last cave for the day was Chedi Cave — a small feature half way up the cliff face near the Fish Palace with a Buddhist chedi built into it.

A low set of passages at the end of the cavern lead off into darkness and true cave but was not examined due to a lack of time. The walk back to Cave Lodge via the Karen Village and along the course of the Nam Lang River was beautiful in the late afternoon, though exhausting!

## TO BE CONTINUED…

In Part 2 of this fabulous Thailand caving adventure in *Caves Australia* 183, we kayak for three days through a mountainous karst wilderness area with our expert guide John Spies to see some of Thailand's most awesome river caves and the incredible trogloditic waterfall climbing cave fish, *Cryptotora thamicola.*

# COMING EVENTS

*In particular, this list will cover events of special interest to cavers and others seriously interested in caves and karst. This list is just that: if you are interested in any listed events, Elery Hamilton-Smith: elery@alphalink.com.au or Nicholas White, (Chair of the International Commission) nicholaswhite@netspace.net.au may have further information. The relevant websites also are useful. Details of other regional/local overseas events can be found on the UIS/IUS website http://www.uis-speleo.org/. Although several things are planned for 2010 the detailed dates are not available.*

## 2010

**24—26 September**

**Hidden Earth,** the UK's annual caving conference, hosted by the British Cave Research Association and the British Caving Association for the benefit of all cavers. For 2010, the UK's national caving conference & exhibition will be in Staffordshire at Leek High School, in the market town of Leek, on the edge of the Peak District National Park. Details available on the website http://hidden-earth.org.uk/index2.html

**20—24 October**

**ISCA (International Show Cave Association) Congress,** Slovakia. Liptovský Mikuláš, Demänovská Dolina. Congress theme: "Complex approach in show caves management and protection". Information via www.ackma.org.au or directly to http://tinyurl.com/yeuzcs3

**23 October (Saturday)**

NSW cavers dinner. A great inter-club event and chance to catch up with cavers whilst being entertained by an informative guest speaker. Contact Joe Sydney-HCG for more information: jsydney@choice.com.au PW: 02 9577 3361/0405 039 398

**24 October (Sunday)**

NSW Speleological Council meeting, Bankstown, NSW. See www.caves.org.au/calendar or contact ctyrrell@pnc.com.au for details.

**31 October—4 November**

**National Groundwater Conference 2010 – the Challenge of Sustainable Management.** National Convention Centre, Canberra.
Email: groundwater@con-sol.com

**31 October—3 November**

**Annual Meeting of the Geological Society of America (GSA),** Denver USA. Karst-related topical sessions within the program include Karst Environments: Problems, Management, Human Impact, and Environmental Sustainability and Filling the Hole: Sedimentary Geology and Paleontology of Caves and Karst. Details of this meeting can be founs on the website http://www.geosociety.org/meetings/2010/

**13-14 November**

Basic caver surveyors course. A course run by Hills Speleological Club and Highland Caving Group at Bungonia, NSW. Two members from each NSW club are invited to attend. Contact Joe Sydney- HCG for more information: jsydney@choice.com.au PW: 02 9577 3361/0405 039 398

**16—20 November**

**International Scientific and Practical Conference: Speleology and Spelestology (artificial caves)** — Development and interaction of sciences Naberezhnye Chelny (Russia). The three conference themes are: Speleology (modern methods of researches using GIS, problems of speleogenesis, results of regional speleological researches, biospeleology, caves in mine workings, historical, archeological and paleozoological research of caves, cave mineralogy, ice caves), Spelestology (artificial caves) (methods of research and cave documentation, regional spelestological research results, secondary mineral formation, geoecologic research, natural and man-made formation factors of underground landscapes) and protection and use of caves (cave ecology; legal issues and practices of cave protection, recreation activities and safety). After the scientific discussions two days' excursion are planned: Kazan and speleological and spelestological objects of Tatarstan: Sarmanovsky and Aktashsky copper mines (XVIII cent.); gypsum caves; Kamsko-Ustyinsky gypsum mine, one of the largest in Europe. For details see the official page: http://pro-speleo.ru/index/english/0-26 and for correspondence Gunko Alexey (the executive secretary): gunko.a@mail.ru, prospeleo@mail.ru and Dolotov Yurii: dolotov@yandex.ru

## 2011

**10—14 January**

**The 12th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst,** St. Louis, Missouri, USA. Details of registration etc are available on the website http://www.pela.com/sinkhole2011.htm This highly successful interdisciplinary biennial conference series is one of the most important international meetings that concentrates on the practical application of karst science.

This is the twelfth in this series of highly successful interdisciplinary conferences which were first organized by the Florida Sinkhole Research Institute in 1984 as a means for geologists and geographers, who study how and where karst develops and how sinkholes form, to interact with engineers, planners and others, who must apply this information to build and maintain society's infrastructure and protect our environment. Since the first meeting in 1984, these biennial conferences have grown into the single most important international professional meeting concentrating on the practical application of karst science.

The goal of this conference is to share knowledge and experience among disciplines by emphasizing scientific and technological aspects of karst that have practical applications, together with case histories of those applications. There are a number of technical short courses associated with the conference.

**Easter 2011**

**Chillicon — ASF Biennial Conference.** Chillagoe, North Queensland.
28th Biennial Conference organised by Chillagoe Caving Club. CCC aims to make the Conference fun and interesting with lots of caving, speleosports etc. Some speakers already organised, including a couple international/eminent ones.

**May 2011**

**19th Australasian Conference on Cave and Karst Management,** hosted by ACKMA at Ulverstone, Tasmania
Details: contact Tony Culberg or see the website at www.ackma.org/conf_2011/index.html

**27—30 June**

**The 6th International Conference, Climate Change – The Karst Record,** will take place from the 2011 at the University of Birmingham. Three days of oral and poster presentations will be held on the University of Birmingham campus, with accommodation provided on the University Conference Park and in local hotels. Either side of the main meeting, one-day optional field-trips will be run to regional karst and tourist attractions. Some details are available on the website http://www.kr6conference.org/.

CHILLICON
2011 ASF Conference

**Register NOW for Chillicon 2011 — see page 42**

# What is Limestone?

**Susan White**

**BUNTY isn't the only caver with an interest in definitions and vocabulary.**

"What is limestone?" you say! That is the stuff caves are in! It's a rock! What more do you want? This question has been argued out at some length on Ozcavers in the past and a quick check of some dictionaries produces various definitions.

**1. Macquarie Dictionary:** *n.* a rock consisting wholly or chiefly of calcium carbonate, originating principally from the calcareous remains of organisms, and when heated yielding quicklime.

**2. Collins Dictionary of Geology:** *n.* a sedimentary rock composed almost entirely of calcium carbonate ($CaCO_3$) mainly as calcite. (The description then goes into a great deal of detail on different types of limestone)

**3. Textbook:** A sedimentary rock composed of chemical precipitates, fossil fragments and/or detrital fragments. It is mainly calcium carbonate.

Some questions that emerge form this includes: "What is dolomite?" "What is the relation of calcite and aragonite to limestone?" "Aren't they all calcium carbonate?" Then there are all those funny geological terms like calcilutite, calcarenite and marl—where do they fit in? Are stalactites limestone, or what? This all sounds like more questions than answers.

Victoria has several different limestones: some with extensive karst and others with only limited surface features. In age, they extend from the Palaeozoic to the present day as limestones are forming today as beach rock on the coast.

The two major groups are the Palaeozoic Silurian/Devonian limestones and the Cainozoic Tertiary and Pleistocene limestones. No limestones are known from the Pre–Cambrian or the Mesozoic in Victoria. Other states have also a range of different limestones; some with more karst features than others.

Specifically, limestone is a rock that is composed of at least 50% calcium carbonate. This may be in more than one mineral form, usually calcite ($CaCO_3$) but sometimes other calcium minerals (aragonite ($CaCO_3$) and dolomite ($CaMgCO_3$) are present. Aragonite and calcite are polymorphs of calcium carbonate; they have the same chemistry ($CaCO_3$), but different crystal and mineral structures. Aragonite is not a stable as calcite and reverts to calcite over time.

Limestones are sedimentary rocks, but sedimentation can come in three main types: physical, chemical and biological. Physical sedimentation is the deposition of fragments of other rocks and is often described as clastic or detrital, e.g. limestone dunes. Chemical deposition is usually by precipitation from water, e.g. stalactites and stalagmites. Biological is the formation of limestone by biological methods such as coral formation. Sometimes these three types are intermixed such as bioclastic dunes where fragments of biological material are deposited by physical means.

Not all limestones have fossils but many have. Also, the grain sizes vary—sand is really a grain size and not a mineral so that many limestones are calcareous sandstones e.g. Bridgewater Formation which are bioclastic calcarenites (Arenite = sandstone).

Clear, isn't it? Such fun !

# New South Wales Speleological Council and Club Event Report

## 24/25 October 2009 – Wombeyan Caves

**Joe Sydney**
*HCG*

### Report to the Wombeyan Caves Reserve and the ASF Environmental Fund

On 24/25 October 2009, the New South Wales Speleological Council (NSWSC) of the Australian Speleological Federation (ASF) held a meeting at Wombeyan Cave Reserve. Prior to this meeting, attendances were mainly by club representatives with the odd club caver attending; this meeting was to be… different.

During the January 2009 meeting held at Wee Jasper, the Highland Caving Group (HCG) proposed that they put on a social BBQ dinner for those attending, which was welcomed by clubs.

Some also suggested that attendees might also like to go caving before and after the meeting, as they usually do. This sounded very inviting at that time and it was assumed that only about 20 would attend. With invitations sent to NSW ASF clubs promoting the next NSWSC meeting, clubs replied that some of their members were also interested in attending, and from then numbers slowly grew.

In initial consultation, Mr Geoff Lang, acting manager of Wombeyan Caves Reserve, welcomed the idea of holding the meeting at Wombeyan and the inclusion of an offer of cavers to help clean caves or undertake miscellaneous tasks. Two cave cleaning tasks were proposed: the cleaning of Bouverie Cave (WY3) as it was muddied during the 2008 rescue of a trapped caver, and pulling out barbed wire embedded in the Fig Tree Cave arch streambed (both reports attached).

Both proposals received favourable responses with later approval. Clubs were informed of these projects along with an invitation from Wombeyan to just go caving and have fun. This must have excited club reps and cavers as several indicated their intention of attending upon hearing of the activity. Soon after, numbers jumped from several to 40.

PHOTOGRAPHER UNKNOWN

*Go caving and have fun*

Wombeyan management were very accommodating and accepted the fact that numbers might yet again increase even though the weekend was still some time off. The week before the event numbers crept up to 65 but I would not know final numbers until very close to the date.

During the process of organising the event, key cavers with local knowledge were consulted about the best caves to go caving. Twenty-four caves were finally selected with the help of ASF members and the Sydney Speleological Society. Credit must be given to John Wylie and Ross Ellis of SSS and Geoff McDonald of NHVSS for their area knowledge and expertise. Special thanks to SSS for permission to use their maps for this weekend. The list of 24 caves was then submitted and approved.

A marquee with large fly was erected at the SSS campsite and used as a base for activities. Having a large tarpaulin proved to be an asset on the hot Saturday.

Before the weekend's caving could commence, all participants were briefed with a special note from Wombeyan management: 'There are no small snakes at Wombeyan.'

Organisation for caving trips was done by trip sheet. Cavers were asked to add their names to the trip sheet and a club trip leader was selected. The trip leader was briefed and

provided with sufficient information about the cave and how to find it. Trip leaders logged their departure and return times on the trip sheet, which were adhered to. All trip leaders were asked to take a GPS to record their trip's main cave entrance and any other caves entrances passed. Location information was logged on to the trip report, compiled for this report and will be added to the ASF Karst Index. Sensitive location data will be kept confidential. Finally, trip leaders wrote a trip report on completion of their trip. As part of the brief, trip leaders and cavers were instructed not to enter any cave they found along the way and only permitted caves were to be entered.

## TRIPS

Nine caves were entered with 15 trips in total conducted. Trips included recreational, cleaning and self guided tourist caves. Two tours were made to the old quarry with one bushwalk to the waterfall. Caving trips were mainly recreational with a few diehards searching for that elusive 'new' find in a cave. Surprisingly, no new leads were found; however, one caver spotted a possible scaling pole lead with airflow.

Some of the more interesting comments from trips reports are:

**W121 Guineacor Cave:** A wombat lumbered out of the entrance and walked off! Skeletal remains of a wombat were found. One caver brought along a UV light which highlighted the graffiti.

**W312 Appleton Cave:** Alan was looking around and spotted a scaling pole lead (and airflow). Others found a few oolites and two small chambers.

**ML4:** The ML4 quarry is the largest of the quarries and still contains relics of the machinery used up till the 1980s. The machinery dates from the 1930s. The site is dominated by a large crane that was used to lift the blocks of marble that had been cut out of the rock. The crane was powered by compressed air and was, I am informed, used in the construction of the Spit Bridge in Sydney. Geological features that are most obvious are the cross sections of caves that were exposed as the marble blocks were cut from the quarry sides. These show stages in the development of caves from small fractures up to caves with speleothems growing inside.

GUY MCKANNA

*The crane at the ML4 quarry*

## CAVE CLEANING

### *Clean team 1*

Cavers wanting to help with the cleaning of Bouverie Cave were selected based on a submitted resume comprising of past cave cleaning experience. Eight cavers submitted their resumes with three being selected. This was a requirement the event organiser imposed owing to the sensitivity and pristine nature of the cave.

However, one place was kept open for a caver so that cave cleaning skills, techniques and experience could be passed on. A ballot was drawn on Saturday morning for the spare placing with a member of HSC being successful. Andrew Baker of NHVSS led this trip with guide David Smith as liaison and helper.

As basic cleaning equipment was needed for this project, a small amount of $100 was applied for from the ASF Environmental Gift Fund. The Fund approved the project and generously increased the amount to $120, if needed.

See the next article, 'Bouverie Cave Cleaning Project', page 27, for a full account of this operation.

### *Clean team 2*

Jill Rowling led the second clean team comprising six cavers into Fig Tree Cave streambed. Apart from pulling out bits of rubbish, they managed to cut or pull out a considerable amount of barbed wire.

## 'WHAT IF' RESCUE PLAN

With so many cavers attending, safety was paramount. Most teams took a portable UHF radio and remained in contact with base.

A cave rescue action plan was drafted, submitted to,and approved. by Wombeyan management. A comprehensive first aid/trauma kit was available on site along with oxygen, initial response rescue kit and Paraguard stretcher. Incident and first aid officers were also nominated.

Goulburn Police were informed of the activity and were on standby in the event of any mishap.

All attending participants were briefed on the action/accident plan and whereabouts of medical/rescue equipment. The good news is that no caver was injured at any time throughout the weekend except for one caver who hurt her pride (and her bum) after tripping on a tent rope.

DENIS MARSH

*Sandra Chrystall of OSS removing wire from Fig Tree Cave stream bed.*

## BRIEF AND BBQ

On the Thursday before the event, the final count was 72 attending the weekend comprising of ten clubs represented and five guests.

Logistically this was a challenge especially with feeding everyone on Saturday night. HCG provided a BBQ of stir-fry chicken or beef with vegetables and rice followed by apple or apricot crumble with ice cream.

On the return of cavers from caving in the early evening, the cooking commenced using gas BBQs and everyone was fed by 9pm.

An invitation was extended to the Wombeyan management and their families to attend any activity, including the BBQ. Both Geoff Lang and David Smith attended and we had time to catch up on old times and discuss ideas for the future.

This event gave an opportunity to brief cavers on some of the ASF and club projects, especially the forthcoming Timor Quarry legal challenge.

After the event, most of the rubbish was taken home by HCG and recycled.

On the Sunday, the weather changed for the worse; however, some cavers still went caving. The rest of the cavers and club representatives retired to the Barmah community room to hold the NSW Speleological Council meeting.

## WHY WAS THIS ACTIVITY SO SUCCESSFUL?

Wombeyan has always held a mystical charm over cavers but few have had the opportunity to visit it. With the opportunity of combining a State Council meeting with a visit to Wombeyan and the inclusion of a prepared meal, who could resist?

HCG and the NSWSC will continue to consult with Wombeyan management and hope that it can continue visiting Wombeyan with the prospects of holding more recreational activities, speleological projects and helping the Reserve area. This weekend was just one of many to come.

Our thanks to all who attended, and, to all those who made this a truly great event.

*Joe Sydney, Highland Caving Group*


### *ACKNOWLEDGMENT OF ASSISTANCE*

*Wombeyan Guides*:
Geoff Lang and David Smith
*ASF Environmental Gift Fund*
*Sydney Speleological Society:*
Ross Ellis
John Wylie
*Newcastle Hunter Valley Speleological Society*
Jodie Rutledge
Andrew Baker
Geoff McDonald
*HCG*
Ian Luthorburrow
Brian Race
Bruce Waddington
David Rothery
— and all other club individuals for their team spirit in helping with the many chores that made this event successful.


### *CAVE DATA*

Information on 24 caves was sourced and compiled from many speleological journals, books, individuals and the Sydney Speleological Society. This information has been compiled in one spreadsheet for future reference.

### *Information and data include:*

- Cave type: Horizontal easy, Vertical-easy or technical, Photographic, etc,
- Cave map number,

JOE SYDNEY

*Ian Luthorburrow of HCG cooks the stir-fry with Tina Wilmore anxiously waiting.*

- Surface map details,
- Gear required,
- Entrance co-ordinates, and more.

### *CAVES ACCESSED AND NUMBER OF TRIPS*

Bullio (1), Labyrinth (1), Bouverie (1), McDonald (1), Appleton (1), Basin (2), Grant (2), Fig Tree self guided/cleaning (3) and Guinearcor (3).

### *WASTE AND RECYCLING*

One HCG member took most of the refuse back to his home for recycling.

Twelve kg of glass bottles and jars were processed. Glass was the largest single component in terms of weight and volume. There were only two aluminium cans.

All bottles, cans, cartons, alfoil trays, and plastic marked for recycling were rinsed and placed in recycling. This made up about 1½ bags.

Plastic bags, bones and other material not suitable for composting were rebagged and went to landfill. This also made up about 1½ bags by volume, but much lighter. Meat products were separated for pets.

Vegetable waste (about one bag) was consigned into one of two compost tumblers held by HCG members. The 'goop' which drained from the waste during the sorting was hosed into the lawn to feed it.

# Bouverie Cave Cleaning Project
## (Wombeyan Caves) 23rd October 2009

*Reported by*
**Andrew Baker and Joe Sydney**

### BACKGROUND

On May 18 2008, a trapped caver was successfully rescued from Bouverie Cave (W3) at Wombeyan. One of the downsides of any such rescue is the damage that inevitably occurs to the cave; damage caused by extracting the casualty (e.g. enlargement of passages, rigging around formations et al.) and by rescuers who are less familiar with cave conservation ethics than experienced cavers and cave rescuers.

During the Wombeyan rescue, Andrew's role as a member of the NSW Cave Rescue Squad was to conduct an initial assessment of the cave (e.g. what gear would likely be needed) whilst making his way to a small group of rescuers who were with the casualty.

At this stage, very few people had entered the cave due to an awkward squeeze (which later had to be widened) that was very difficult for tall people. Consequently, Andrew saw one of the cave's most decorated chambers, the Elephants Rump Chamber in its 'pre-rescue' state (beautiful, clean formations and a narrow, marked track through the chamber) and its 'mid-rescue' state (substantial mud transfer across the formations and floor) after 'microshaving' of the squeeze had allowed many more rescue personnel into the cave and the casualty had been transported across this chamber.

While an able bodied caver can easily traverse Elephants Rump Chamber without any equipment, a short vertical lift and tyrolean were required to safely lift the casualty into, and across, the chamber. Unfortunately, the rigging and operation of these systems, combined with the sheer number of rescue personnel in the chamber (~20 people) resulted in a substantial transfer of mud across the formations.

The aim of this trip, therefore, was to clean as much mud as possible from the formations in Elephants Rump Chamber. Entering Bouverie Cave also gave the team an opportunity to assess the cave for any other signs of speleothem damage.

JOE SYDNEY

*The Bouverie Cave cleaning team (L-R) Andrew Baker, Eleanor Young, Rod Burton, Denis Marsh, Dave Smith and Joe Sydney (not in photo)*

### BOUVERIE CAVE CLEANING

Due to the sensitivity of the cave, Wombeyan management set a limit of six to enter the cave. Cave guide Dave Smith was to be one of these. Four skilled cavers with cave cleaning experience and one novice applicant were sought out. Andrew, Denis, Joe and Rod were selected as experienced cave cleaners with one space being allocated by ballot to a novice caver from amongst ten applicants. The lucky caver was Eleanor Young of Hills Speleological Club. The aim of balloting one novice team position was to transfer cave cleaning skills and knowledge.

**Project Co-ordinator**
Joe Sydney
**Trip leader**
Andrew Baker
**Participants**
Andrew Baker (NHVSS, UTSSS),
Dave Smith (NPWS Wombeyan),
Denis Marsh (OSS), Eleanor Young (HSC),
Joe Sydney (HCG), Rod Burton (HSC)

Dave drove the Parks' quad bike with the water drums and some of the heavier packs up the tourist track and met the rest of the team at the turnoff to the cave. We entered the cave just before 2pm with an assortment of brushes, spray bottles and two 10 L water drums to refill the spray bottles.

After arriving in Elephants Rump Chamber, our first task was to do an assessment of the areas which would benefit most from the resources we had. It was quickly established that the speleothems in the upper part the chamber were of highest priority and we commenced cleaning.

In most instances we found the best technique was to lightly spray an area with water, give it a scrub with a dishwashing brush (toothbrush for more delicate areas) and then spray the area with more water to wash the mud away. Care was needed to ensure that we did not wash mud onto clean areas.

Areas with a smooth calcite surface were generally easiest to clean, while areas of

flowstone (i.e. 'micro-gours') which easily trapped mud and muddy water were much harder to clean. Interestingly, occasionally we found a smooth patch of flowstone covered in mud, which we could not completely scrub clean. It appears that these patches had already become covered in a very thin 'skin' of calcite over a thin layer of mud. In time, such areas will hopefully completely cover with calcite and hide all traces of mud.

After we had used up the first of the 10 L water drums refilling the sprayers, Dave and Joe returned to the surface. On their way out they looked for signs of damaged formations and could not find anything significant enough to require repair. Dave soon came back in with another 10 L (the two drums we had on the surface didn't have lids, so we didn't take them underground), while Joe headed back to camp to help with the preparations for the NSW Cavers dinner.

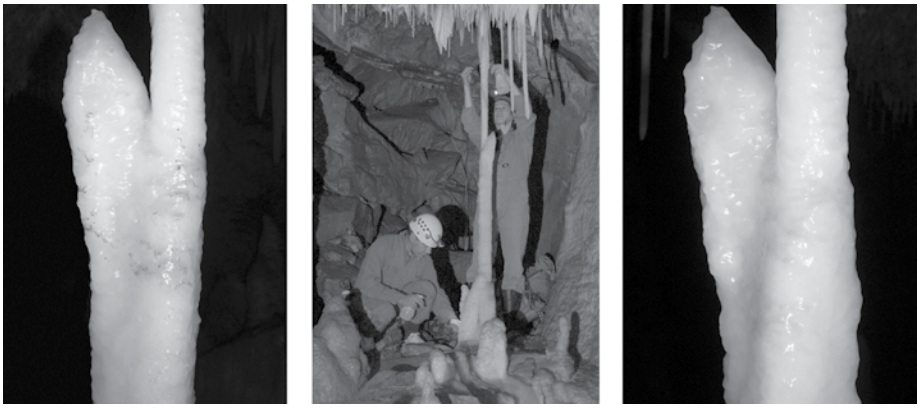
Since it is very difficult to describe the difference that cleaning made, a selection of pictures has been included to show formations before and after cleaning. Some water and a bit of scrubbing certainly made a difference and it was also quite enjoyable transforming a mud-covered formation back into something clean and sparkling.

As we finished cleaning, the team took the opportunity to photograph the chamber in its newly restored state. Andrew was particularly keen to have a look at (and photograph) a cluster of helictites seen during the rescue and was very pleased to find them undamaged. Some time was spent photographing Elephants Rump Chamber and it was soon time to pack the camera gear away and head back to camp!

Our final task before heading out was to replace the old, damaged track marking, using bright orange flagging tape to define the route through the chamber. This will hopefully encourage any future visitors to stick to the defined route, thereby minimising the spread of mud. The last of the ~ 35 L of water carried into the cave was then used to touch up a final section. Finished, we packed up and headed out, exiting the cave at 6:30pm.

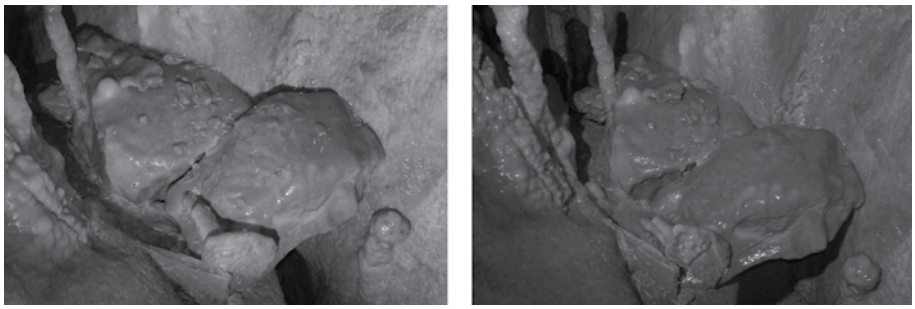
## ACKNOWLEDGMENTS

We wish to thank Wombeyan Caves for granting approval for this project and the NSW Speleological Council for supporting the project. Thanks to the Australian Speleological Federation Environmental Gift Fund for generously sponsoring the project and covering the costs associated with purchasing cave cleaning equipment. Thanks also to HSC for the use of additional cleaning gear. Our extreme thanks go to Geoff Lang and David Smith (NPWS, Wombeyan Caves) for their approval, assistance and support.



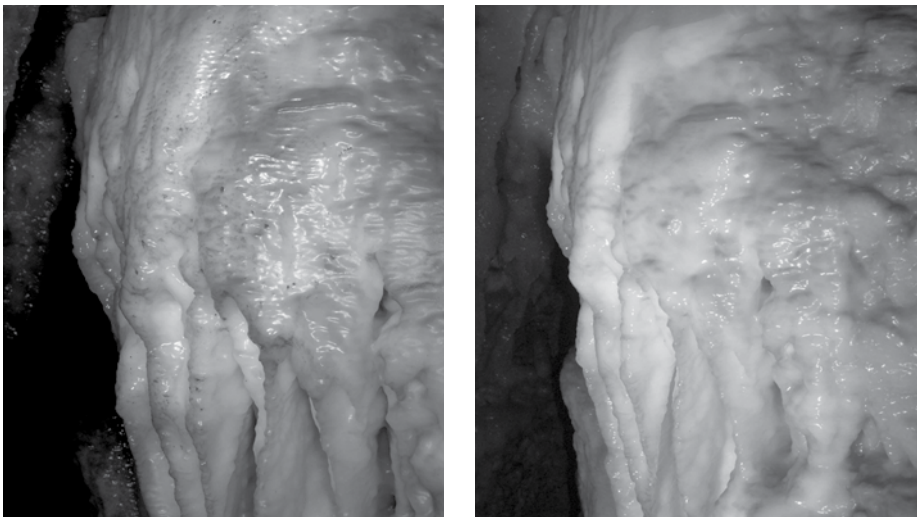
ANDREW BAKER

*Mud was removed from a tall white column. (left) a section of the column before being cleaned; (middle) Rod and Eleanor cleaning the column; (right) a section of the column after cleaning.*



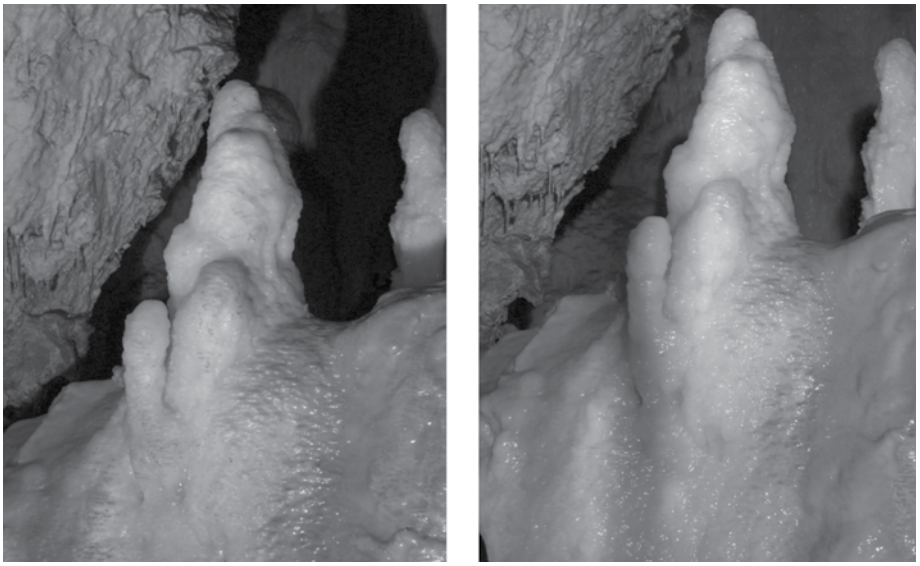
ANDREW BAKER

*Calcite covered boulders before (left) and after cleaning*



ANDREW BAKER

*Speleothems before cleaning (left) and after cleaning (right)*

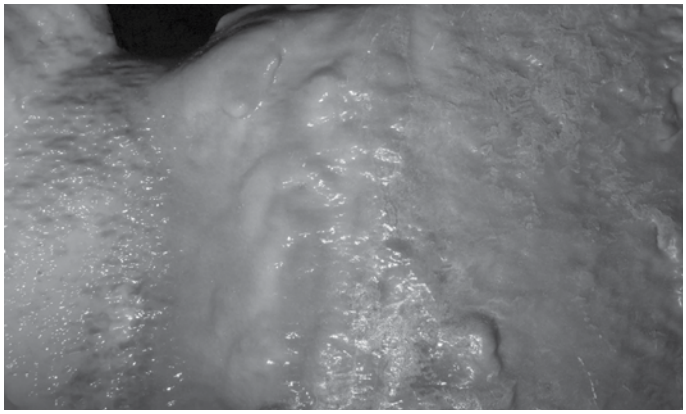


ANDREW BAKER

*A stalactite on a calcite covered boulder before (left) and after cleaning*

ANDREW BAKER

*Elephants Rump Chamber after considerable cleaning, but prior to track marking. The majority of the speleothems on the floor in this photo were cleaned*

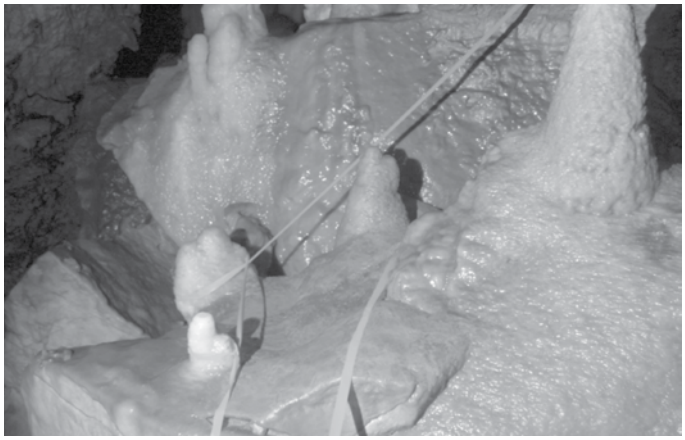


ANDREW BAKER

*Spot the difference! The left half of formation in this photo has been cleaned with a light application of water and a scrubbing brush, while the right half shows the state of the formation prior to cleaning*

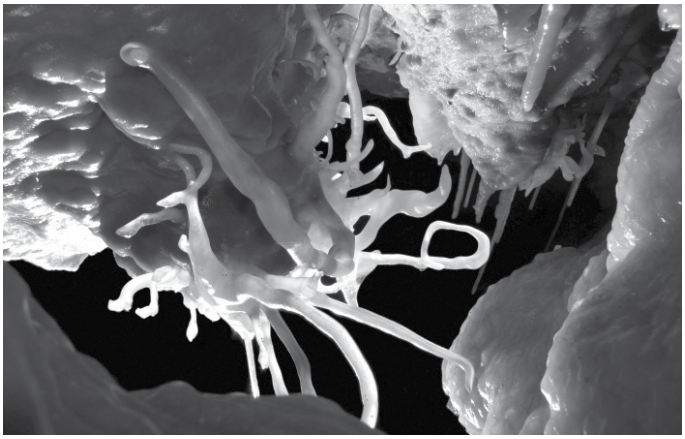
ANDREW BAKER

*Eleanor cleaning the surface of a calcite covered boulder using a spray bottle and a dishwashing brush*



ANDREW BAKER

*A section of track marking through Elephants Rump Chamber*



ANDREW BAKER

*Helictites in Elephants Rump Chamber*

# The One that Got Away

**Stephen Bunton**
*STC*

**IT'S GOOD to reflect on the fate of caves I once had a hand in exploring. Some caves grow incrementally, others are extended in quantum leaps. Recently there have been two newsworthy items that cast my memory back to the earliest days of my expedition caving in New Zealand.**

The recent diving trips into the Pearce Resurgence remind me of my days exploring Nettlebed Cave. This cave was explored uphill into Mount Arthur and I was lucky enough to be one of a number of Australians who spent part of their summers, January 1981 and 1982, involved in this quest. Eventually Blizzard Pot, on the slopes high above, connected into Nettlebed and made it New Zealand's deepest cave at 889 m. At the time it was the deepest cave in the Southern Hemisphere and the world's third deepest through-trip. I was lucky enough to do one of the earliest Nettlebed through trips in January 1987.

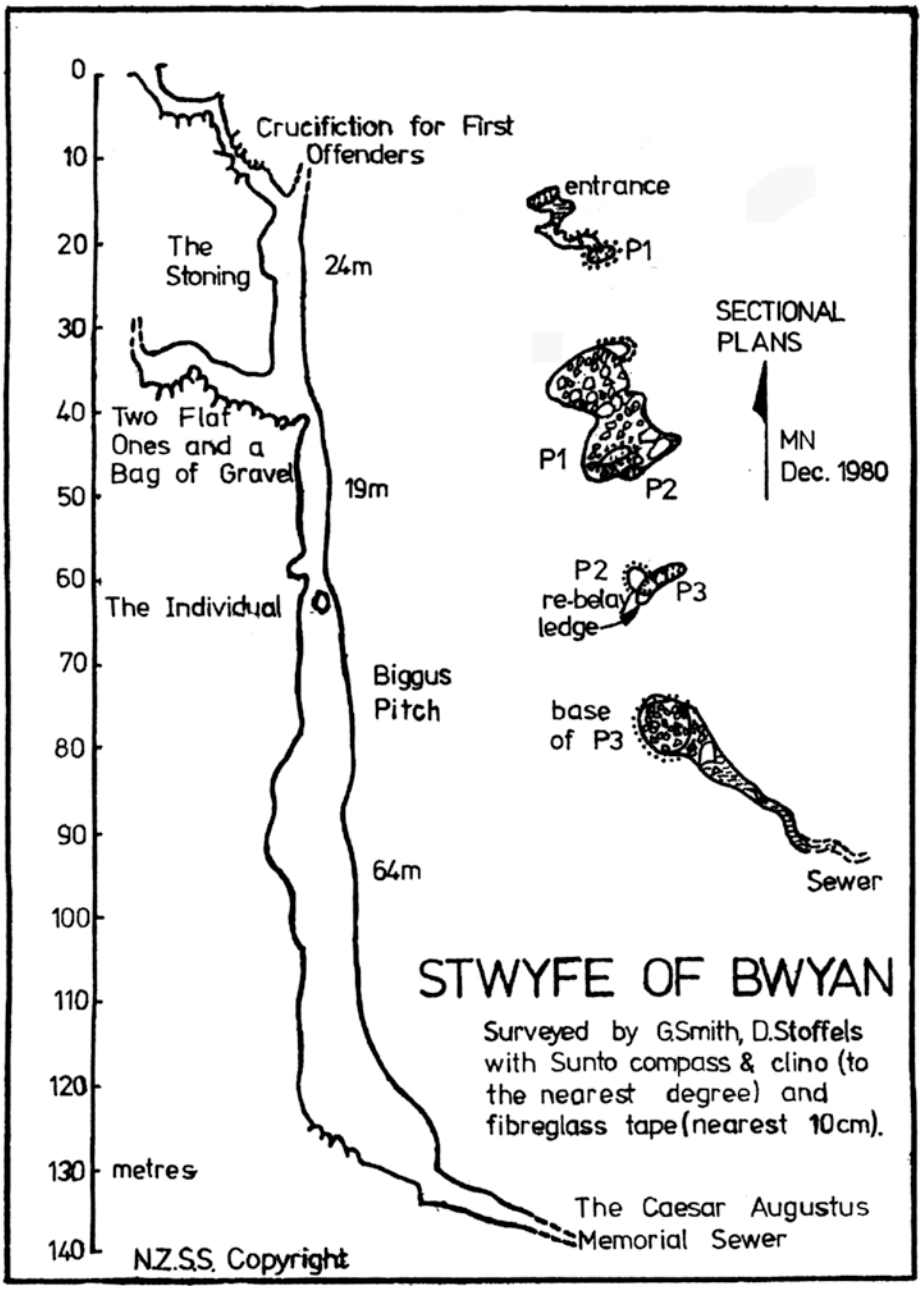
My first overseas trip and first mini-expedition was to Mount Owen in January 1978. Originally we planned to visit the South Owen karst field which was not even looked at then. Today it has been seen by millions as one of the locations featured in *Lord of the Rings* movies. In the end our leader, Dave Martin, opted for the more familiar option of return to finish off some leads in the East Owen area. As usual, with all mopping-up trips, I find that the easy pickings have already been taken. In 1985 cavers began visiting the South Owen and walked in Bulmer Cavern and took it to a depth of more than 400 m.

On my second trip to the spectacular limestone areas near glorious Nelson, at the top of New Zealand's South Island, I led a small party into the Ellis Basin on Mount Arthur. Here were a few known deep caves, some with going leads in their nether regions.

Ellis Basin recently hit the news with the discovery of an extension in EK3010 which joined it to Tomo Thyme, thus becoming New Zealand's deepest cave and at 1026 m — their first kilometre deep cave. Tomo Thyme was not even known when I visited the area!

Our small lightweight trip had two objectives: one was to push a lead in the bottom of Gorgoroth at 346 m deep, the second was to find a few deep caves of our own.

Initially we did a long day's rigging in Gogoroth and the next day we spent combing the surrounding countryside with just a "push rope" looking for something new. We found the usual collection of "no-goers". The two largest of these were Fiasco Tomo (-30 m) and Tobasco Tomo (-40 m).




The most promising lead for the trip was the focus of the keenest member of our group, Bryan Cleaver. He had found a small draughting hole in the bush about 15 minutes from the Ellis Basin Hut that was our basecamp.

Bryan spent two days digging away frost-shattered cobbles in the small sloping passage at the bottom of a 5 metre climb, before a larger aperture opened sufficiently to raise the enthusiasm levels of the rest of the team.

At this stage Mark Laurendet took a more primitive approach to the problem and whilst on belay he jumped up and down on

the keystone supporting the offending scree slope, sending most of it down the second pitch. The cave was now open and we had to decide whether to de-rig Gogoroth and concentrate solely on the new cave.

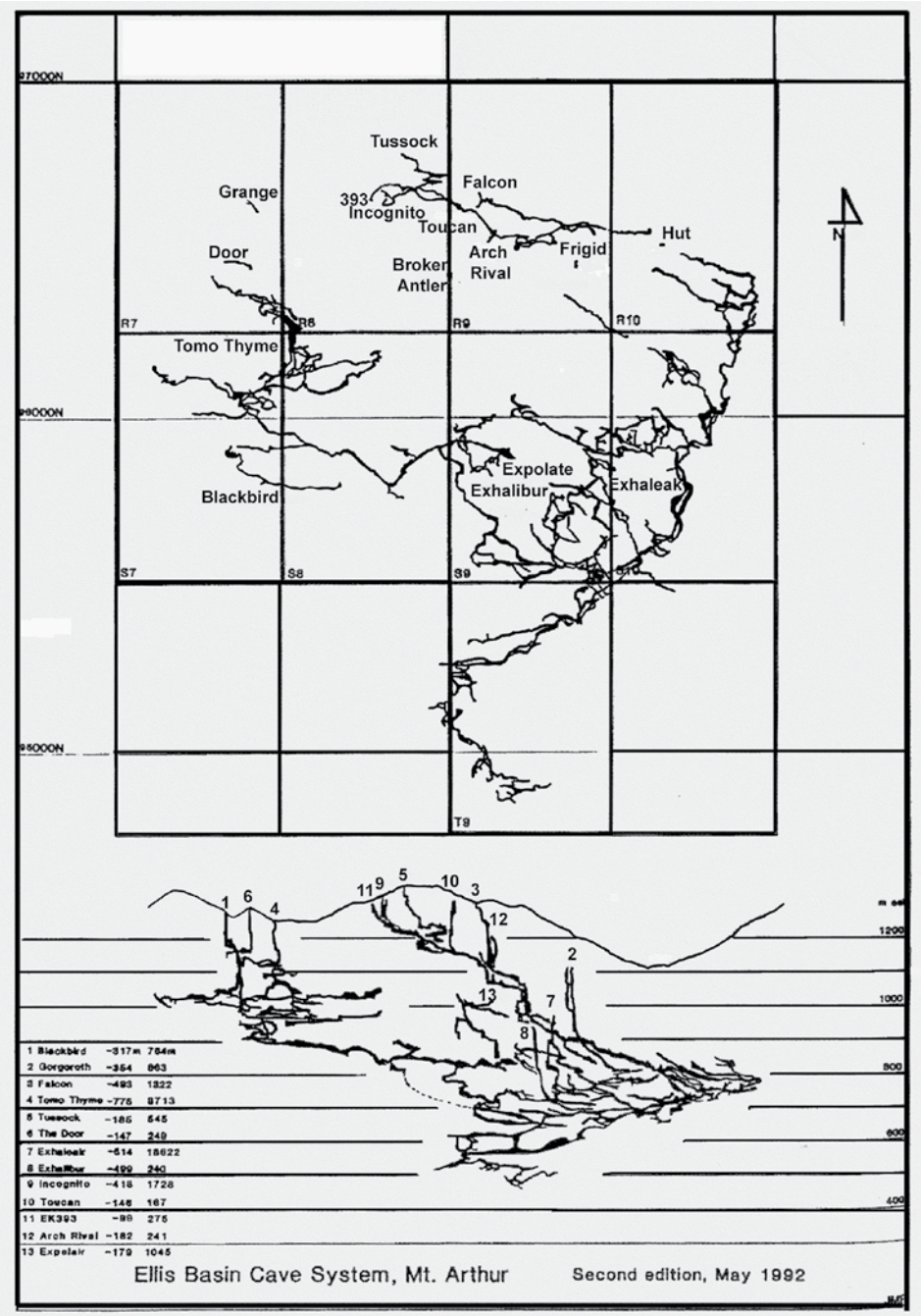
Given that we had to de-rig Gogoroth eventually, we decided to concentrate our efforts on what would hopefully turn into a worthy new cave. Our cave was above Gogoroth and if it connected then we would have achieved our objective of increasing the depth of Gogoroth. After numerous days of digging we had already christened the cave Stwyfe of Bwyan, a Welsh-caver-style take on the Monty Python movie that was taking the world by storm.

Right from the outset the nomenclature in the cave was easy, consistent with the themes in the movie. The dangerous dig, opened up by kicking out the keystone was called Crucifiction for First Offenders, the subsequent pitch was called The Stoning. It landed on a very unstable scree cone, Two Flat Ones and a Packet of Gravel. That horror show, which we only crossed one at a time, and not whilst anyone was below, sloped to the third pitch, an 83 m shaft we called Biggus Dickus.

Part way down the 10 m diameter shaft was a huge chockstone that became The Individual ("You are all individuals." — "I'm not!"). Unfortunately at the base of this pitch the nature of the cave turned horizontal and so we followed The Caesar Augustus Memorial Sewer for several hundred metres until it closed down to less than its already inconvenient dimensions. This point was called Freedom ("They said I hadn't done anything so I could go home.").

Twenty minutes of crawling on one elbow and a hip, down a sinuous passage studded with gnarly projections, demoralised me sufficiently to call it quits. I seemed more dejected when I got I back (see photo) mostly because of the damage I had inflicted upon my trogsuit. The cave was surveyed and a map published with our trip report in the *NZSS Bulletin* (Bunton, 1981). As far as we were concerned we documented our exploits properly.

In 2004 I borrowed the STC library copy of the recently acquired *Delving Deeper – Half a Century of Cave Discovery in New Zealand* (Wright, 2003). I looked first of all at the things with which I was familiar: Mount Owen, Mount Arthur and Nettlebed Cave. Certainly there had been a lot of activity in the Ellis Basin since our trip, as caves like Blizzard Pot, Falcon and Tomo Thyme attest. It was with some surprise then that I noticed there was no mention of Stwyfe of Bwyan and more significantly it was missing off the cross-sectional diagram of the Ellis Basin caves. How can you hide a 150 m deep cave most of which consists of an 83 m shaft? Did



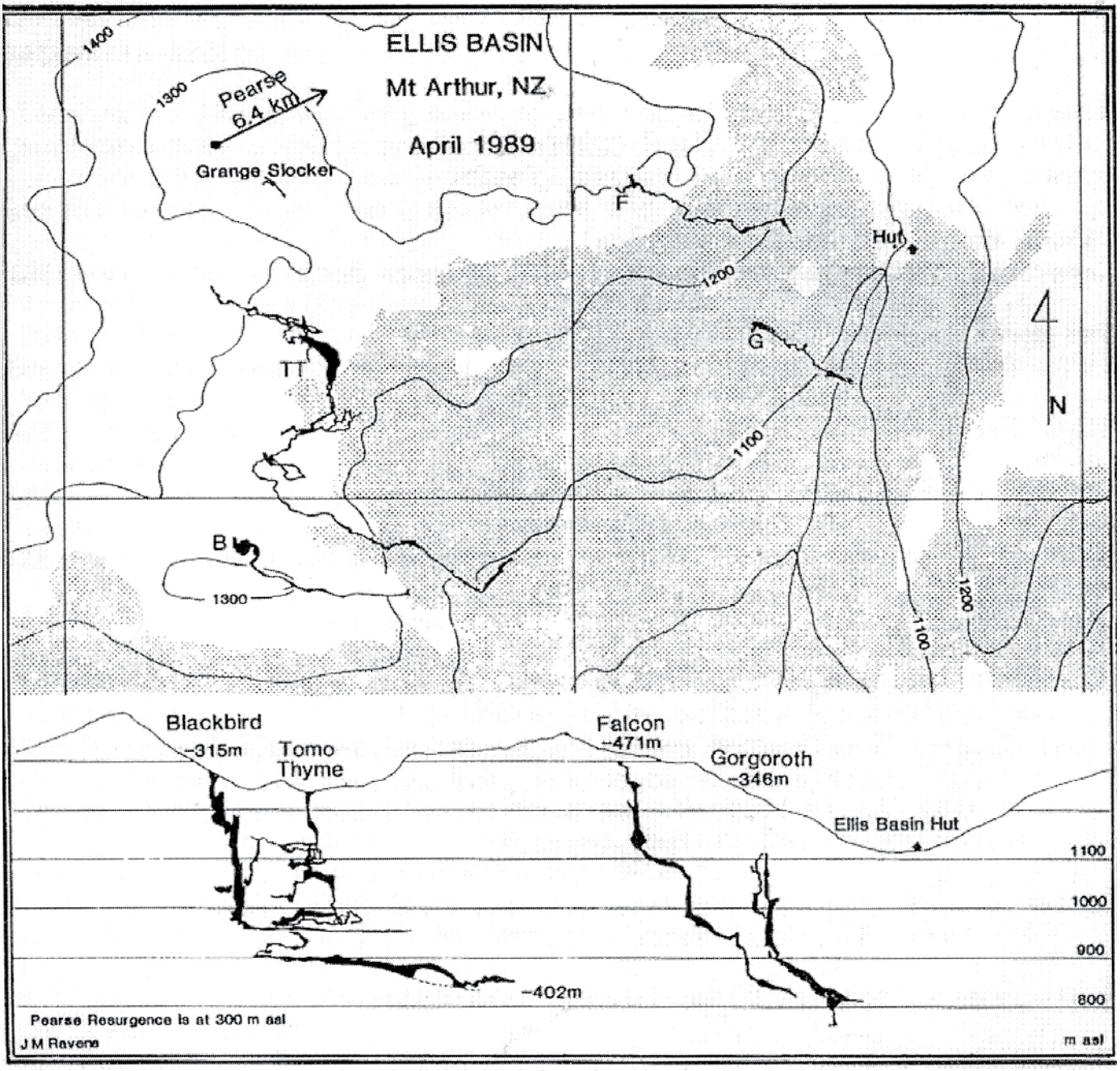

they not know of our cave? Was our trip report never published? I could not recall ever seeing a copy of it.

I started by asking Moira Lipyeat who compiled the book and she sent me a most pleasant reply. At first she had not heard of the cave but she would look into the matter. A second reply came back to say that NZSS did know of the existence of Stwyfe of Bwyan but they just could not relocate it. Had it filled in again with frost shatter and needed digging out a second time? Moira was good enough to send me the trip report, complete with the maps we prepared. Stwyfe of Bwyan had become my own Hairygoat Hole (JF-15), a cave from a bygone era now lost forever!

So what had gone wrong? For us the cave's location was obvious; we knew where it was, we went there every day. That was then, now I have no real idea as to its location. We had positioned it with a grid reference and written a description of how to get there but we had not surveyed its location into any known reference point and as such it has been lost.

This mini-expedition was in the days prior to GPS. Even with GPS, initially there was still the problem of selective availability. Also for many years the accuracy was limited where the antennae didn't work so well under a cover of beech forest. The other factor conspiring to keep the cave hidden from the current generation is the fact that NZ caves aren't tagged like we tag ours. One day someone will come across a small entrance to a short sloping passage full of cobbles, emanating a strong draught and wonder whether or not it goes.

I now know the value of surveying cave entrances into a grid and I make sure we do it for all our work in the Junee-Florentine. Yes,




we tag caves, GPS them and survey them into the grid. We also publish our stories so that they don't get lost.

Stan Flavel's editorial from *Caves Australia* #181 reminded me of my early overseas trips and the fact that they were only recorded in the *NZSS Bulletin* and not really told to an Australian audience. These NZ trips were significant because they were the lead-up to the successful caving expeditions to PNG and then to Mexico. Stan's right — we can't let the stories get away like the occasional cave that seems to have got away.

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# Can you help?

## Puzzle of a temperamental compass

**CAVING in 5N4671 this year on the Nullarbor my Silva compass reversed (I was carrying two identical compasses). It is the same compass I have been using there for the past four years.**

Three days later, at the same hole, the compass returned to normal. It had not been dropped nor stored near any object that might have caused these changes. It is still working properly today.

None of the caving party, all experienced, had observed this before, although John Taylor (KSS) had had compasses reverse, though never change back. One of his compasses had changed by 90 degrees.

Wags in the party suggested divine intervention by Ken Boland. Others suggested the Earth's magnetic field was long overdue for polar change, though were a bit waffly about why my compass alone had been chosen.

Does anyone have any suggestions?

*Ian Curtis (OSS)*

DIRK STOFFELS

*A disgruntled Stephen Bunton changing carbide at the base of the 83 m Biggus Dickus shaft. Note the amount of fresh rockfall.*

# Devils Den Rescue II

**Bob Woolhouse**

*Originally printed in* Troglodyte *17(1):18-20, July 2007*

***Bob Woolhouse, founder of the Northern Caverneers, passed away in 2008 after many decades of cave exploration. This article complements another on the Devils Den rescue, published in* Caves Australia *181, which was based on an ambulance officer's perspective.***

**I DID, of course, write an account of this rescue for the police, but it didn't give much idea of what it was like from a caver's point of view. It was suggested that an account ought to go in the Club archives while there's still someone around to write it. Perhaps I ought to stress that the following is what I think happened, and it was forty years ago, but they do say that a geriatric's distant memories are better than the more recent ones.**

In 1968 the Den was a dolerite rift above Glenorchy, loosely packed with an assorted rockfall of more dolerite. Dolerite is not water soluble, so it doesn't have any calcite crystals partly stabilising it, like limestone rockfalls such as those in Wet Cave. I almost said it was a place experienced cavers wouldn't be found dead in, but actually we had a very good try, and since it was blown in after the rescue, no more schoolboys or stupid cavers are going to get another chance to have a go.

Anyway, one Friday after school, four boys managed to pull the rockfall down around their ears, and the Hobart cavers were called in to get them out. By Saturday morning they'd freed three boys, but they themselves were buggered, and we got a call from the police in Launceston wanting our slimmest members to take over. They put us on a private plane and then drove us from the airport (Saturday midday, when it was interesting to find cars did not give way to a police car, even when it was driven by someone who fancied himself as a racing driver) to meet (Hobart's) Frank Brown's Land Rover at Glenorchy, and be taken right up to the Den.

The bush round the cave was inundated with people busy doing nothing in particular, and some of them took us to admire the entrance. The tightest place was just inside, so we were able to have a good look at it. On Southern Caving Club (SCC) advice, we removed all our clothes (luckily it was quite warm) and just put our boiler suits back on to protect our skin. I took my helmet in one hand and put my nose inside to find what I'd let myself in for. It started as a horizontal, smooth, flat rock perhaps 4m long. Another horizontal, smooth rock formed a ceiling to this, and my chest would only go between the two when I breathed right out. I wondered for a minute whether it was possible to diaphragm breathe, and have enough energy to wiggle your toes to force your body very slowly for what seems a very long way. I found it was, provided you took it very gently. The far side of this crawl felt like a commodious chamber, but it was probably because it was big enough to put my helmet on. Another helmet, pushed by a gasping Brian Duhig, appeared in a short time. We gathered that Brian was the end of the reinforcements, and the two of us might as well go on. We were near enough to be able to talk to the two SCC members who were waiting to show us how Tim Walters was trapped. They directed us to the top of an ordinary wooden ladder which lead down to where we met them in a comfortable rescue base the size of a small room. One of them (Titch) had been there since Friday night, and he started out straight away. The other (Bob Cockerill) said he'd join Brian and me to have one last go before he took a break.

Bob C. lead us downwards roughly underneath the way we'd come in, to where I was able to reach down vertically and touch the top of Tim Walter's head. It was too narrow to bring him out this way, and the idea was to move him sideways into another chamber if we could get the rock off his leg. A loaded hypodermic syringe and alcohol-soaked cotton wool appeared mysteriously in my right hand, though I wasn't very clear what I was supposed to do with them. Anyway, I stood on my head and burrowed downwards until I was able to lift Tim's arm in my left hand. It may be possible to give an intravenous in that position, but not for me it isn't, and finally I gave a token injection into the back of his hand. This wouldn't have had much painkilling effect, although he never uttered a sound, and I assumed he'd lost consciousness.

Bob C. then continued on downwards through an awkward wiggly crawl into a space just big enough for two of us, where we could see Tim's leg with a rock wedged on it, and a further rock stopping us moving this vital one. Bob had worked out exactly what to do, and started to lever this further rock. The rock started to move, and so did a lot of other things that were supported by it. There was a most demoralising rumbling and shaking, and I dived back into the squeeze behind me, only to discover it had to be tackled feet first. I'd forgotten about what happened next, but Bob C. tells me he was very amused, (probably not at the time). Apparently I reappeared and apologised profusely to him for having to waste our time by going back, and turning round. Thinking about it, it does make sense.

In hindsight I realise you have the choice of panicking, or of being studiously polite to reduce the chance of anybody else panicking. If anybody panics, the whole thing will inevitably be pulled down. Politeness means you take longer, but in fact you can't get out before it squashes or traps you however quickly you move, and you just have to hope the next time the rocks stop moving the crawls are still passable. I don't say I worked this out at the time, but I imagine it's part of my caving thought processes.

Rather to my surprise we eventually found ourselves back in the rescue base, which seemed to be intact, and Bob C. went off up the ladder to have some sleep, leaving Brian and me with not the faintest idea of what to do next. The word came down that the entrance crawl had shifted and become something like twice as high, so that now anyone could come in.

There seemed to be no volunteers eager to find what it was like inside, but why the two of us didn't get out and let someone else have a spell I shall never know. We just stood in there for hour-after-hour as though the right to shift rocks belonged to the group who'd loosened them, and the people outside also seemed very much in favour of this idea. Our hopes rose when we were told a mine rescue specialist was coming in to investigate timbering the whole area. Sure enough, a bod came down the ladder and had a quick look

No bones broken, but bearing scratches on his face, and under sedation, Timothy arrived at the Royal Hobart Hospital early this morning — the successful climax to a remarkable rescue feat from the cave-labyrinth pictured below.

# FIGHT FOR BOY ENDS IN VICTORY

93 Macquarie St., Hobart. 7000 Ph.
Registered at Hobart fo
115th year
No 30,554 HOBART: MO

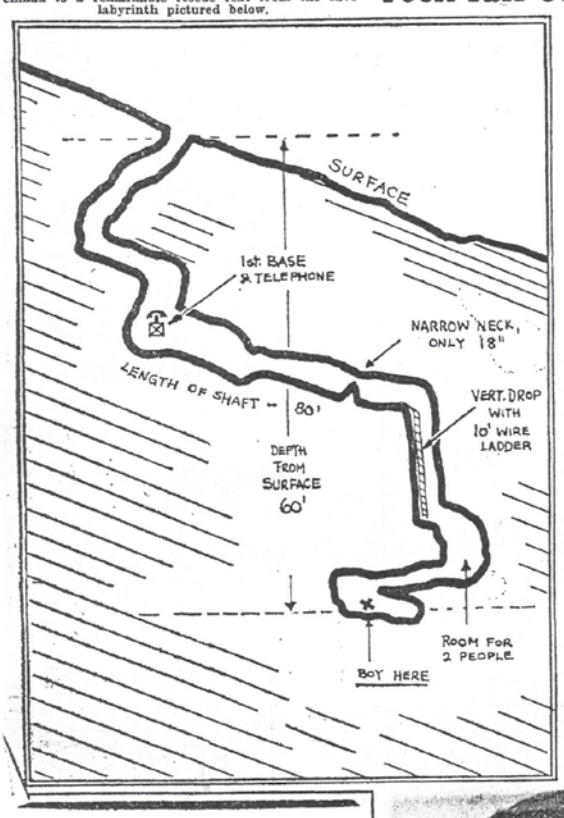
**A 15-YEAR-OLD schoolboy, pinned beneath a rock-fall 80ft underground for 32 hours, was freed at 11.10 last night.**

**Drugged with morphine, he was hauled to the mouth of the cave – known locally as Devil's Den – to end one of Hobart's most dramatic rescue operations.**

Timothy Walter, of Abbotsfield Rd, Claremont, had been trapped by the legs under a boulder in the cave, in rugged bush behind Claremont, since about 3.15 pm on Saturday.

More than 100 men had battled for nearly 30 hours — some of them without sleep or rest — to free "Tabs", as his mates call him.

A doctor and caverneers who were with him in the treacherous cave called him a hero. They said he had stayed in "remarkably good shape."




## Mother's ordeal

His parents, Mr and Mrs Jim Walter, stayed at the cave-mouth all Saturday night and yesterday. Mrs Walter, distressed but facing the situation well, left and went home a few hours before "Tabs" was freed.

Mr Walter stayed on to see his son taken from the cave to an ambulance, waiting at the top of Abbotsfield Rd.

## Made 80ft crawl to help Tim

Timothy was one of six boys exploring the cave, about 14 miles from Hobart, on Saturday afternoon.

**The rocks fell as they were crawling along the narrow, winding opening which snakes into a 1,400ft hill.**

Timothy was about 80ft in and about 60ft underground.

The others, including his elder brother Michael, were behind him.

The rocks and earth crashed down on them, pinning "Tabs" under heavy boulders and half-burying some of the others.

Fourteen-year-old William Fell, of Wyndham Rd, Claremont, was able to scramble out and run for help.

Police, ambulance-men, and cavers tramped nearly two miles into the scrub — about an hour's climb. Within five hours of the cave-in all but "Tabs" had either scrambled or been hauled out.

A mammoth rescue bid swung into action.

**Police, ambulance men, caverneers, Army men, HEC workmen, and members of the Salvation Army joined forces.**

Local caverneers headed by their controller, Mr Doug Turner, took over underground.

HEC men took equipment to the cave entrance and preparations were made to tunnel in.

Jacks were hauled into the cave as rescuers tried to force the boulder off "Tab's" crossed legs.

A doctor and a Church of England minister stood by.

By early yesterday morning all attempts to free the trapped boy had failed. No solid foundation could be found as a base for the jacks.

About 16 miners were flown in from the North-Eastern mining towns of Rossarden and Storeys Creek. They moved big quantities of rock out of the cave to give the rescuing caverneers more room to manoeuvre.

**More than 24 hours had passed when six cave rescue experts from the St John Ambulance rescue squad in Melbourne were flown into Hobart Airport.**

A helicopter picked them up and flew them direct to the cave.

Included in the Melbourne team were four "midgets" or "mini-miners."

The local caverneers knew the only way to operate efficiently in the cave was to send down small men.

The cave, narrow and winding, is only 18in across in places.

## "Midgets' dropped

The "midgets" were ped at the cave by a manian Helicopters P machine, piloted by Youl.

Earlier, axemen workmen with chai had cleared a "helip the bush.

The Melbourne went straight to planning the opera get Timothy out.

Meanwhile, unde "Tabs" was feeli strain of being down for more tha

To kill the p shock, rescuers him with morphi caverneers kept battle to free hi

**Once they m boulders and ha most free. "Tab cheerfully and h rette.**

But another m in pinned him c and rescuers we where they h from.

It was dec rather than ri slide the cave

## Weary hero tells

Mere 19.12.68

## Guided trip for cave boys

MEMBERS of the Tasmanian Caverneers Club will take the six boys involved in last weekend's Claremont drama on caverneering trips during the school Christmas break.

The caverneers' underground controller for the rescue operations, Mr Doug Turner, said yesterday that offers had been made to the boys at the scene of the rescue.

All had been keen to continue their exploration under trained supervision, and their parents had accepted the offer.

**Commenting on the proposal to form a permanent rescue body, Mr Turner said such an organisation must come under police control if it was to function efficiently and with authority.**

But he described the co-operation between organisations last weekend as "magnificent," and especially commended the Salvation

## Cave rescue

Sir, — Tribute should be paid to the three members of the Launceston-based Tasmanian Caverneering Club for their part in the cave rescue of Timothy Walter. Messrs Bob Woolhouse and Brian Duhig were specifically called by radio from the cave by the police. They and Frank Brown were flown to Hobart at a moment's notice.

Messrs Duhig and Woolhouse worked for eight hours in the cave, and all three helped for an hour in bringing out the boy.

Mr Woolhouse, one of the most experienced caverneers in Tasmania, and Mr Brown are members of the civil defence cave search and rescue organisation, on call at any time. — OBSERVER, Launceston.

Examiner 21.12.68

round. He announced 'BLOODY HELL!!' to no one in particular and disappeared back up the ladder.

Shortly afterwards the word came down that you had to find at least one piece of bedrock before it was possible to reinforce anything else. This hardly helped our morale, but we just went on staying there for no particular reason, except we had a shortage of the moral courage needed to get out.

The idea of a screw stemple may have come from the mine specialist. I had never seen one, but it sounded like our only chance of moving the rock without the whole place coming down about our ears. It consists of two steel bars held apart by an extensive threaded collar, so that the total length is controlled by twisting the collar. Apparently a cave rescue group from Victoria had been asked to bring one with them, which gave us a welcome excuse to just sit there without having to poke around the horribly loose rock in Tim's general vicinity. I just can't remember what we did, or what we talked about. We were probably very bored, but being bored is better than being scared stiff, which we were likely to be when the new group got here.

It must have been about midnight when these new people arrived. There were several cavers from the mainland plus some of the original rescuers, with a professional cliff rescuer apparently in charge. When I told this last bloke I'd show him where to fix the screw stemple he asked me what a screw stemple was. I asked him how often he had to free people by moving loose rocks where there was some danger of starting a lethal landslide, and gathered that he didn't seriously think about it. He would go on doing it as long as God wanted him to, because God wouldn't start anything until he decided he wanted our friend to join Him in Heaven, presumably accompanied by all the others in the group, including me.

At this point I should have got out and called for a crew of dedicated Christians, but it seemed to take more nerve than I'd got to do anything like that.

After the Christian was shown the vital rock the rest of us arranged ourselves on either side of a line of groundsheets on the assumption that if Tim were freed, he would have a mangled leg and have to be dragged out. I found myself a position as close to the entrance as I could get, where I hoped God might possibly overlook me, and settled down to wait for the crash.

In fact, there was hardly a sound as the rock was shifted off Tim's leg, with all the nasty rocks staying where they were. Apparently the previous slip had moved things into a sufficiently stable configuration for them to be able to take a further movement of the rock without another collapse, but unfortunately there seems no way of telling this by just looking at them.

Tim's leg turned out to not be as badly damaged as we'd thought, and he shot up the ladder and over the groundsheets partly under his own steam, with all the mainlanders pushing behind. By the time we'd dragged the gear outside, we found Tim and practically everyone else had disappeared, with deserted smouldering fires all around. It felt very much an anticlimax, although I can't really have expected a welcoming committee, but I imagine we were suffering nervous exhaustion by that time, and had more or less got to the state where we needed rescuing ourselves. That's it really, except that in fact we hadn't been deserted.

The usual support crew that always appears in sticky situations had decided that Tim was not the only one who would be feeling buggered after a spell in the rift, and we found some Salvos waiting for us by a fire with a billy of tea on it. After that Frank and his Land Rover took us to the floor of his place for the rest of the night, (never forget to take sleeping bags on a call-out), and next day the police were extremely helpful and ran us all home.

# A Letter to the Editor of *Wild* magazine

The Editor, *Wild* Magazine

**Re article in *Wild,* Edition 115, Jan – Feb 2010, titled 'Between a rock and hard place' by Elspeth Callendar.**

While we are always pleased to see caving articles in *Wild,* it was with alarm as many members of the speleological fraternity in Australia read the article, "Between a rock and hard place" in *Wild,* Edition 115, Jan – Feb 2010 about caving on the Nullarbor. We accept that *Wild* promotes 'wild' adventures in exotic places that often push the bounds of safety and commonsense but this article could have been rewritten by the author to remove the unsafe practices Australian cavers eschew. Many of our members have visited this remote area in Australia on recreational and other expeditions and understand the hazardous nature of caving on the Nullarbor.

The Australian Speleological Federation (ASF), the peak body of caving in Australia has published on its website, www.caves.org.au, various guidelines and codes that promote safety for not only cavers but for the caves themselves. As your author mentions 'wanting to do something I'd always been interested in and when the opportunity to go caving with an experienced spelunker…' is a commendable goal, and we all have those goals, but an experienced speleo or caver would never conduct such a trip with only two persons, one a novice!

There are other facets of this trip that call into question the integrity of the leader's experience and attitude towards safe caving.

- The lack of helmets as shown in the photographs in the cave — it is one of our basic requirements that each participant must wear to enter a cave.
- An experienced leader would ask his party, especially a novice, if they have any problems — like claustrophobia — and adjust their trip accordingly, that is, cave in a smaller cave first.
- The track markers in Mullamullang are not there as a 'safe path' but as she later presumes to 'protect the cave's threatened' species and fragile cave environment before providing a safe path for human visitors.
- The visitation to the 'Salt Cellars' and 'Coffee and Cream' section, whilst amazing in itself as speleothem formation and cave decoration, are destroyed each time a person enters this area. This destruction is compounded by novice cavers, led by so-called experienced party leaders, because the novice does not know the 'tricks of the trade' to move through areas such as these if required. In this case, these areas did not need to be visited.
- When visiting remote areas, visiting speleological groups notify local groups so that if necessary, the local groups can assist in the planning, and if anything does go wrong, the local group can provide assistance if required.

We often read or hear in the media of persons in Australia who have enjoyed themselves in outdoor pursuits, often to the detriment of the environment and injuring themselves working outside guidelines of recognised associations whether they be cavers, four-wheel drivers or fishers, to name a few. But these associations have been set up in the best interests of their members and the environment. The ASF has been promoting conservation and sustainable management of Australia's caves and karst resources for over 50 years and would suggest that future articles published by your contributors in your magazine on caving, reflect the guidelines of our peak body that protect the cave environment and the safety of the trip participants.

As a final note to Elspeth Callender: we suggest that you undertake future caving trips with recognised clubs or adventure organisations so that you can learn about caving information such as techniques, equipment use, and safety. We would also suggest that you visit our website and read our various codes and guidelines.

Yours in Speleology,
*Peter Downes*
Newcastle & Hunter Valley Speleological Society
*Bob Kershaw*
Illawarra Speleological Society and General Secretary,
Australian Speleological Federation



# Towards a protocol for comparing cave depths

**Rolan Eberhard**
*STC*

**THE SELECTION of the zero datum — the site-specific reference point for calculating the depth of a cave (as opposed to a formally defined height datum used by national mapping programs) — is partly responsible for the fact that Australia's current three deepest caves (Tachycardia, Niggly Cave and Anne-A-Kananda) are essentially equal in depth give or take a metre.**

In fact, in each case the choice of the zero datum is arguably quite arbitrary and open to criticism as being higher or lower than more appropriate alternatives. Various options are available in this regard, any one of which could be reasonable depending on your point of view (Figure 1). Many cavers would probably go for the lowest edge of a shaft or doline, because this is easy to defend against the suggestion that you've creatively bumped up the depth by starting higher up. Also, the lower edge may be fairly easy to locate in a consistent way. Some cavers employ the mental tool of imagining the cave entrance filled with water — the point where the water would spill over being taken as the critical marker. This 'lower edge rule' is a conservative approach which, in places like Tasmania, has come to assume the status of a de facto standard. This article puts forward a more logical alternative, which follows common practice in some parts of Europe and elsewhere. The aim of this article is to promote discussion and ultimately perhaps an agreed protocol.

Intuitively, the depth of a cave is the vertical difference between the highest and the lowest points in the cave, irrespective of whether these are entrances or passages within the system. More formally, we could say that the surveyed depth of a cave is a quantitative measure of the dimensions of the cave in the vertical plane, from its highest mapped point in space to its lowest mapped point in space.

The suggestion here is that object of interest is the explorable extent of a cave as a geomorphic entity; therefore, we should not ignore any accessible part of it when we carry out a survey, the aim of which is to quantify the dimensions of the cave and accurately depict it in map form. This proposition underpins the remainder of this article.

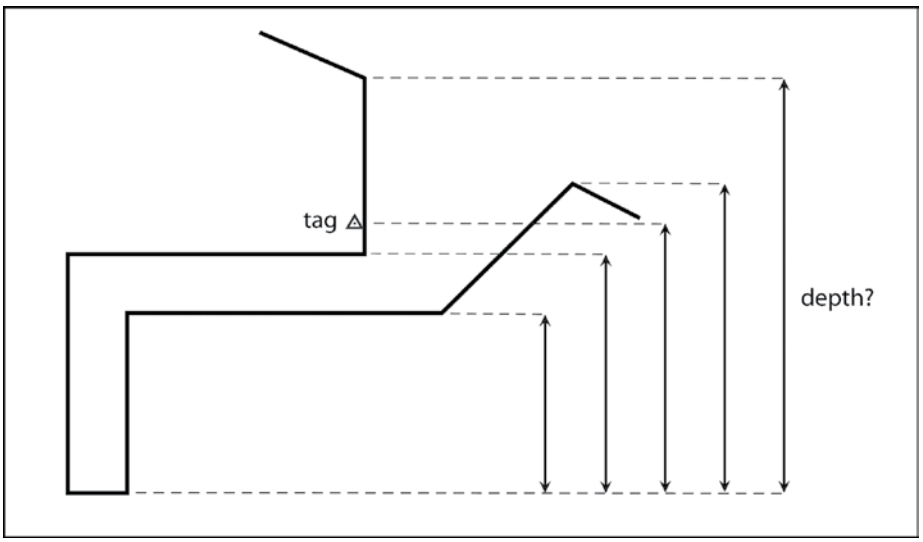



*Figure 1: Choices in zero datum for a hypothetical cave.*

The simplest possible scenario is a cave that descends vertically below a single entrance on perfectly flat land — represented by Cave A (Figure 2). The zero datum in this case would clearly be level with the land surface, and the height difference between this and deepest point in the cave would be the cave's depth (i.e. depth = 0 – X in the figure). No argument expected.

In reality, caves are not located on perfectly flat ground. Where the land surface is inclined, one side of the entrance will be higher than the other, as at Cave B. A choice must now be made as to whether the zero datum will be taken as level with the upper or lower side of the entrance. In this case the upper edge is the appropriate choice, for the simple reason that it is the highest point in the cave.

In the case of a perfectly horizontal cave (Cave C), the vertical extent can be defined with reference to the height difference between the floor and the ceiling (i.e. the depth of the cave is equal to the height of the entrance). To say that the cave has a depth of zero because the passages within it are flat would be unsatisfactory, because a cave is a humanly-enterable cavity in rock and by definition occupies space, which is always quantifiable horizontally and vertically. It would be equally absurd to talk about a cave with a length of zero metres.

Rotating the hypothetical cave further results in a cave that trends upwards (Cave D) — the original deepest point is now the highest point and the lowest point is at the entrance.

The depth of the cave must now be calculated with reference to the height difference between the entrance and the highest point of the passages within it. In this case it would be appropriate to measure from the bottom edge of the entrance, the lowest point in the system.

In all the above examples, a single cave entrance is the critical reference point for measuring the depth. Where there are multiple entrances, and these constitute high or low points in the system, then the depth should be calculated with respect to the highest point of the highest entrance for a descending system (Cave E), or the lowest point of the lowest entrance for an ascending system (Cave F). Entrances can be disregarded where the passages within the cave are both higher and lower than the entrance (Cave G). In this situation some

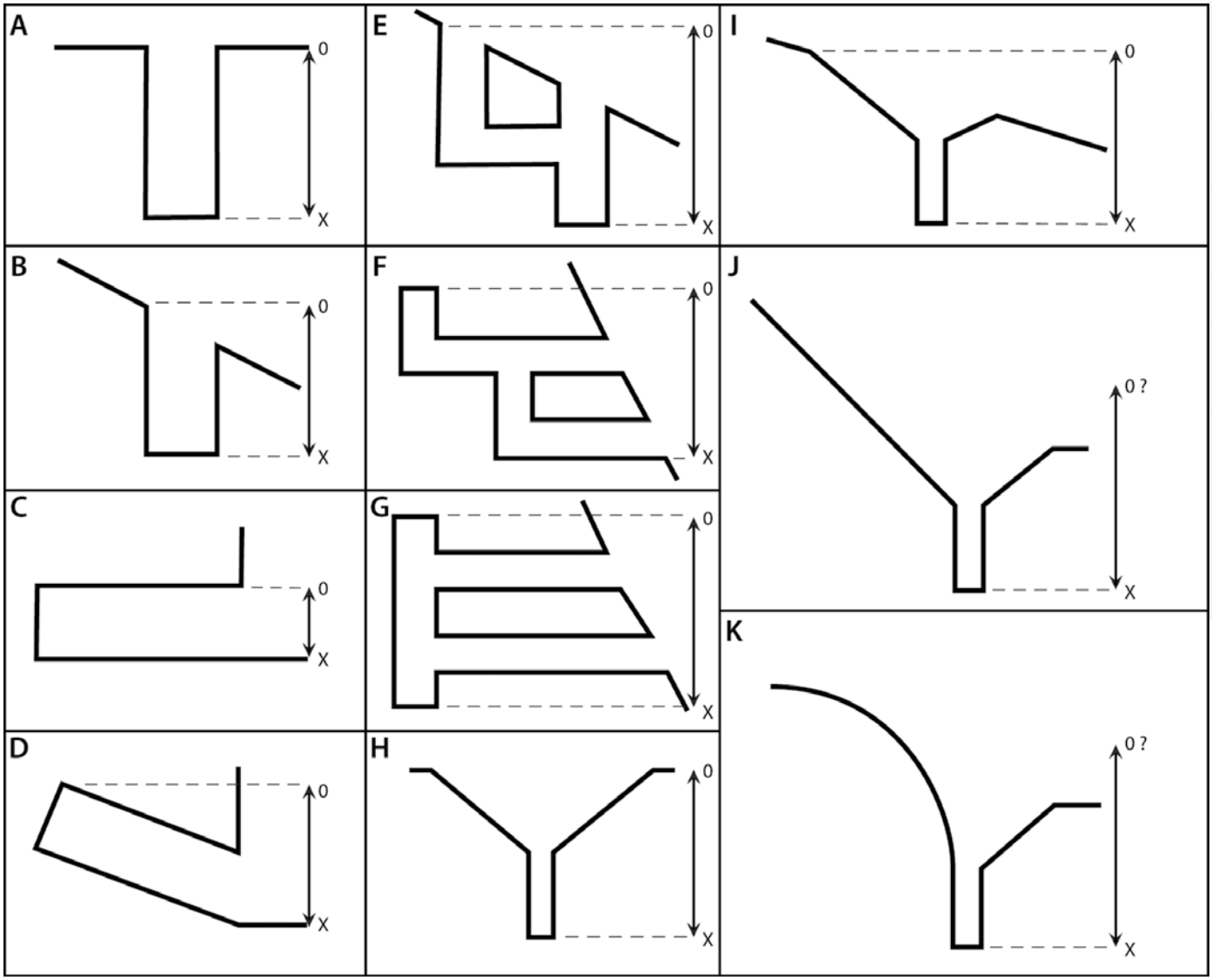



*Figure 2: Application of the "upper edge rule" to measuring the depth of a variety of hypothetical cave forms. In all cases depth = 0 – X*

authors report both the depth of passages below the entrance and the height of passages above, but this is irrelevant in terms of the overall vertical extent of the cave.

Practically, applying this 'upper edge rule' to mapping caves with doline entrances should not be problematic where the doline is a classical conically-shaped depression with slopes that exceed the gradient of adjacent contiguous slopes (Cave H). Even on sloping ground there will often be a break of slope at the edge of the doline, which can be used to establish the zero datum (Cave I). On the other hand, consider a cave where the gradient of the slopes within the doline is equal to that of an adjacent contiguous slope on the uphill side (Cave J). In this situation, a line of uniform gradient could be projected from the base of the doline for a potentially indefinite distance upslope, well beyond any reasonable definition of where the cave starts.

A variation of this occurs where the gradient of the slope above the doline progressively increases as it approaches the doline and eventually plunges into it (Cave L). Again, there will be no clear break of slope marking the upper edge of the doline.

In these and other less-than-straightforward scenarios where the topography does not provide an obvious upper edge zero datum, then an interpretation of the boundaries of the cave as a geomorphic entity is required. It could be argued that this makes the 'upper edge rule' impractical, because it requires specialist geomorphic skills.

On the other hand, the basic principle that the object of interest is the cave as a landform should underpin the discussion. Interpretations may differ but the temptation to resort to a lowest common denominator approach to thinking about the question, as implied by 'lower edge rule', should be resisted.

In summary, caves are landforms that can and should be defined objectively through a mapping process that allows their relative depths (and other spatial parameters) to be compared in a systematic way.

Current practice in defining the zero datum, the reference height for calculating the relative depth of a cave, is inconsistent and often subjective. Specifically, the tendency to take the lowest point of the entrance of a descending cave system as the zero datum, or an arbitrary point such as the height of a number tag at the entrance, confounds objective comparison of surveyed cave depths. In order to address this issue, it is suggested here that the entire vertical extent of the cave, including the entrance and the passages within it, should be considered.

The main practicable implication of this 'upper edge rule' is that descending caves should be surveyed from the highest point of the entrance, and ascending caves should be surveyed from the lowest point of the entrance.

## ACKNOWLEDGEMENTS

A number of people contributed to discussions that led to this article: Stephen Bunton, Matt Cracknell, Anthony Day, Stefan Eberhard, Alan Jackson, Chris Sharples, Andy Waddington and Al Warild.

# Terlingua: an adventure with dogs!

## Big Bend Travels, September 2001

**Nicholas White**

*Originally printed in* Nargun *34(9) May 2002*

**BIG BEND National Park is in far West Texas bounded on the South by the Rio Grande River and the Mexican Border. It was a part of Texas I had never been to and it is arid with lots of cacti.**

The lower geological sequence was limestone but not at all cavernous, but there were interesting Indian paintings and petroglyphs on the walls of a canyon. We stayed overnight with Javelinas, roadrunners and buzzards.

Leaving the park we headed to Terlingua where we were told the Open Air Restaurant was a must. The restaurant is an old open-air theatre but now roofed in with an excellent menu.

We arrived mid afternoon and met Jim in the General Store, which had everything including many tourist things and books. We noticed he had a book we had purchased some days before: *Texas Caves* by Blair Pittman. We got talking as one does and explained our travels. Jim said that Blair lived just out of town and had a cave that he was happy to show people through. A quick phone call and we were on our way after a beer on the veranda with a lot of local inhabitants.

Blair's place was a stone hut in an old cinnabar (mercury) mining village with him and three dogs. We quickly made friends, had some coffee and talked about caves.

We then drove through the village past the remains of a smelter and walked to a big collapse doline and then the other way to a mine adit. This adit lead to the cave/mine. It was a mixture of the two. The first room past the gate was used to store home-made wine of various sorts; we were later to sample it. All three dogs accompanied us; two were sheepdogs and one was a small terrier named Dalai but pronounced "Dolly". We then emerged into a large natural cavern with enlargements from mining.

NICHOLAS WHITE

*Ruins of the Terlingua mining village*

The mining was for cinnabar — mercury sulphide. This was intermixed in layers with calcite. The deposit must have been quite rich when mined and the smelter burned 26 tonnes of fuel an hour. Mercury commanded a good price up until the early fifties when its use for detonators was phased out.

The mining village, although deserted, was in good condition due to the stone construction and desert environment. The cave had several passages and a 10-metre pit, which we walked around.

Having spent some time examining the cinnabar and the passages we exited the cave and returned to the car to discover that Dolly was missing; back to the cave where we eventually found the dog yapping at the bottom of the 35-foot (10 m) pit. We went back to Blair's hut to get some vertical gear to rescue the dog.

Back in the cave, we quickly rigged the pitch and Blair descended the pitch. Dolly was put in a pack and quickly hauled up using a sisal line. The dog had landed in 50 cm of water and apart from being wet, was quite undamaged. I tied the dog to the spare line to prevent it falling in again.

The fun now started. Blair seemed unable to rig the ascenders. He had a Jumar and a Gibbs with a chest roller etc but could not make the Gibbs work! Despite encouragement and instruction, nothing would work for him.

I cut some sisal and sent this down - even prusiks couldn't be made to work. He thought there was a ledge he could rest on about three metres up the pitch. I went back to the house, left Dolly inside, got a 3 m aluminium ladder and dropped this down to him. He climbed this but it wasn't a ledge and so he retreated. By this stage it was well and truly dark, about 8pm.

Once again back to the house to discover the place was almost destroyed by Dolly, who had trodden on CD's, spilled them everywhere and knocked over other things This trip was to phone for Davy Jones, a local caver, but there was no answer. I then phoned Jim at the store, explained Blair's predicament and asked if Davy was at the

restaurant. The answer was yes, but he had to go home for equipment. At this stage I went back to the cave to await Davy but took some food — 'squashed fly' sandwiches — and a drink because Blair was in water to his knees and had been there for two hours. Davy arrived about 10pm to discover he was also short of vertical gear. What to do now? Davy was a big strong welder with a dry sense of humour and a very strong Texan drawl. In the end, we hauled Blair out in an exhausting exercise with little safety margin. However, Blair could not have fallen and he was in a good harness. We quickly exited the cave, leaving gear to be recovered in the morning.

In retrospect, I should have insisted on going down myself but Blair initially would not have this. At a later stage I probably should have pulled the rope up and attached the prusik devices myself and sent these all set up back down to Blair. Hindsight is a wonderful thing! We then had a Mexican meal together with beer, wine and whisky and ended up swapping yarns for much of the night.

Blair was 66 years old and had been a caver from his teenage years but had only just got back into caving. He had been a journalist and in particular, a photojournalist for many years with *National Geographic* as well as the author of a number of books.

After this episode we were not to escape Terlingua easily, so the next day we drove the river road to Presidio and visited several well known film sets, a wonderful museum in one of the early forts. We returned in time for the gathering of locals on the veranda in town.

Several beers, and tastes of strange homebrew (wormwood) later we had one of the best meals of our stay in the US at the Open Air Restaurant. Blair had to appear to prove he was still alive as of course the story had been broadcast to the whole community.

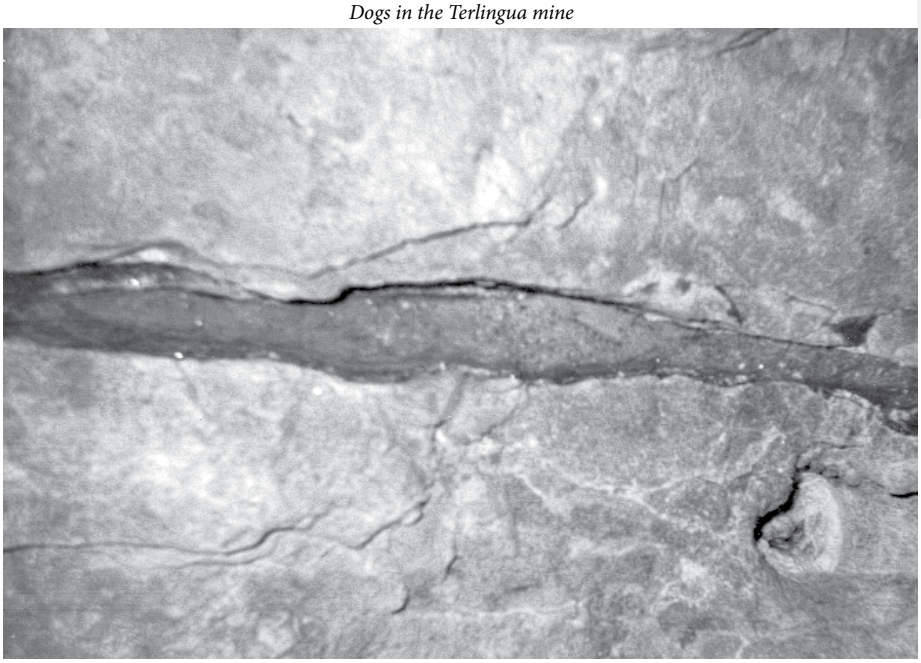
The whole town is full of amazing eccentrics: an alcoholic runs a pirate radio station in a covered in lane between two buildings; the homebrew was made by a guy who runs around in a rustbucket convertible labelled Geronimo's Cadillac. The next day we went to Miss Tracey's for breakfast. I had a fiery Mexican dish of eggs, beans and tortillas.

Miss Tracey was sort of out of place but fitted in well with the locals. She had retreated to the desert from a life in the British navy.

All in all, a fascinating few days before we were able to go on to Hueco Tanks to see some paintings and petroglyphs.

NICHOLAS WHITE

*Dogs in the Terlingua mine*



NICHOLAS WHITE

*Cinnabar vein*

# Publication News

## Elery Hamilton-Smith

1 The book *Beneath the Surface* by Brian Finlayson and myself has been out of print for some time and it is not easy to find secondhand. I have had a number of questions about it, and I can now say that the publishers (University of NSW Press) have digitized it and it will soon be available on a print-on-order basis.

2 The Rev Julian Tenison-Woods' great 1862 text, *Geological Observations in South Australia, principally in the district South East of Adelaide,* was the first major karst cave study in Australia. Since the 1970s, it has become clear that a lot of his ideas about the Limestone Coast geology which were generally dismissed were in fact right 100 years ahead of his time. It has long been in the Rare Books category and hence incredibly costly. But a low cost paperback reprint has just come on the market in the US. Go to the Abebooks website (http://www.abebooks.com/) and you'll find a whole horde of low-cost dealers offering it, some postage-free. Too good to miss!

CHILLICON

2011 ASF Conference

# 17th–22nd April 2010




**The 28th ASF Biennial Conference, to be held over Easter 2011, is being organised by Chillagoe Caving Club, North Queensland. CCC aims to make the conference fun and interesting with lots of caving, speleosports etc. Some speakers are already organised, including a couple of internationally eminent ones. Register now — don't wait until it's too late.**

## Tentative Programme

**Every day at 6.30 am and 5.00 pm**
Cost sharing scenic flights (by courtesy John, who owns a plane)

**Saturday 16th**
Caving, sightseeing.

**Sunday 17th**
Caving, sightseeing.
12 noon to 5.00 pm: Registrations in town hall.
6.00 pm: BBQ Social (Chillagoe SES)

**Monday 18th**
8.00 am: Registrations
8.45 am: Welcome & housekeeping (Alan Cummins)
Official opening by Tom Gilmore
9.30 am: Opening speaker
10.30 am: Morning tea (provided in hall)
11.00 am: Speakers
12.30 am: Lunch (provided in hall)
2.00 pm: Workshops, cave tours, historical or fossil tours
3.30 pm: Afternoon tea (provided in hall)
4.00 pm: Speaker
5.00 pm: Break for dinner
7.00 pm: DVD/Slide show in hall

**Tuesday 19th**
8.00 am: Registrations
9.00 am: Speaker
10.15 am: Morning tea (provided in hall)
10.45 am: Speakers
12.30 pm: Lunch (provided in hall)
2.00 pm: Workshops, cave tours, historical or fossil tours
3.30 pm: Afternoon tea in hall
4.00 pm: Speaker
5.00 pm: Break for dinner
7.00 pm: Evening event, walk, observatory

**Wednesday 20th**
8.00 am: Registrations
9.00 am: Speaker
10.15 am: Morning tea in hall
10.45 am: Speakers
12.30 pm: Lunch in hall
2.00 pm: Speleo sports at Clubhouse, Equipment demonstration, SRT challenges
3.30 pm: Afternoon tea at Clubhouse
7.30 pm: Caveman's Dinner by the Karst

**Thursday 21st**
9.00 am: Registrations
10.00 am: Morning tea in hall
10.30 am: Speaker
12.30 am: Lunch in hall
2.00 pm: Workshops, cave tours, historical or fossil tours
3.30 pm: Afternoon tea in hall
5.00pm: Dinner
7.00 pm: Photo judging, auction, trivia, social

**Friday 22nd**
9.00 am: Registrations
9.30 am: Speaker
10.30 am: Morning tea
10.45 am: Closing
11.30 am: ASF Council meetings / Caving
During the conference there will be shops/displays in the school.

**Saturday 23rd**
FREE!

# Hang Son Doong

## Cave of the Mountain River

**Trevor Wailes**
*STC*

**THIS IS a brief account of my part in the joint British-University of Hanoi expedition of 2010 to the truly remarkable Hang Son Doong (cave of the mountain river) in Vietnam.**

The British-Hanoi University expeditions are usually every two years, but with the excitement of the Khe Son Doong discovery a return trip in 2010 was planned.

In April 2009 an entrance 3 km downstream of Hang En was first entered. Our guide, Mr Khanh, had discovered it many years ago when foraging to supplement his family's food supply; this was around the close of what the Vietnamese call the American War. Our group of five was one of four groups that had left our village base at Son Track on a reconnaissance of the Khe Bang massif, a deeply incised limestone block with a general height of 850m but with enclosed river valleys often only 100m above sea level.

Our first night was at Hang En, a massive river cave 1.6 km in length, one of the best camp sites anywhere. It was explored and surveyed by the joint British-University of Hanoi expedition of 1994. The river had been followed through the cave and down an enclosed valley to another entrance choked with logs (Log Jam Cave). Subsequent trips to this entrance had failed to overcome the blockage but the feeling was that it could be a significant piece of the jigsaw puzzle — that is, part of the Hang Khe Ry to Hang Toi/Phong Na system.

Mr Khanh led us to Log Jam Cave and we then climbed up the steep valley side to a relatively small entrance that dropped steeply down to where we could hear the distant thunder of running water. In the subsequent days, we surveyed 5 km of extraordinarily large cave passage. Along the way were river crossings and two large sky light collapses, then mud and finally the great wall of Vietnam. Which looked like a 20m vertical climb. High above was a distant vague glimmer of daylight. From camp at Hang En to this point and back to camp with some surveying of about 1.3km took 14 hours.

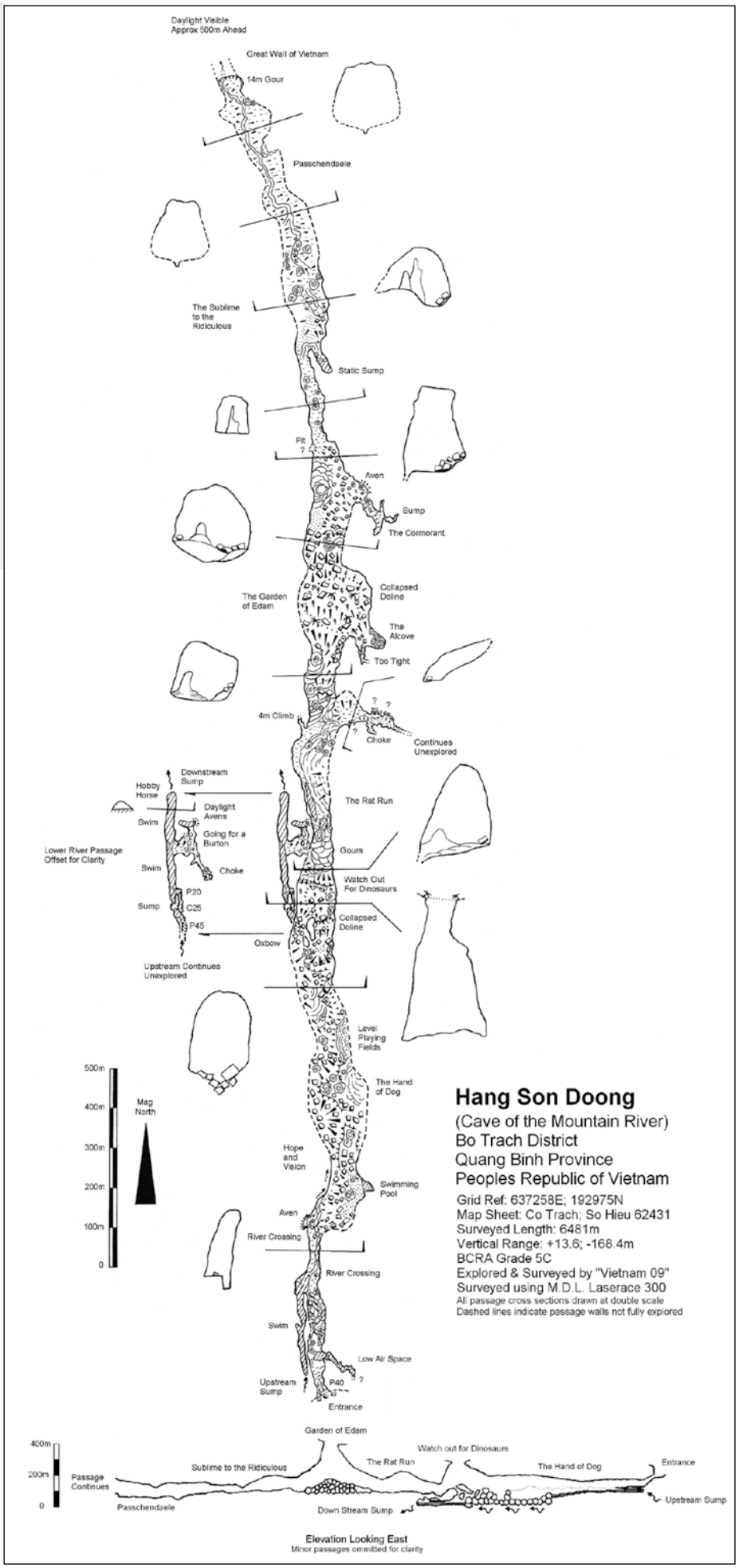
EXPEDITION ARCHIVE

*In the Rat Run*

Howard and Deb Limbert, who run the expeditions, were very busy planning some sponsorship and tried to sell the idea of a film or video documentary. *National Geographic* finally came to the party and pretty well financed the entire 2010 expedition. I fortunately got the invitation to join them post filming and was possibly lucky in not having to endure six days of filming with a cast of thousands in the squalor of the cave and the surrounding jungle. This episode is probably best forgotten but it will be screened in January 2011 on the National Geographic channel. The one plus that came from this enterprise was Sweeny's (Gareth Sewell's) bolt climb up almost 90 m of the great wall of Vietnam. This magnificent effort afforded another 700 m of passage to the entrance that had been suspected from below. At one point, as he was drilling bolts into 8mm of flowstone with underlaying mud — sheets were plating off when loaded — a film producer asked if this was normal. Sweeny's language crescendoed into a suggestion that they "F**k off and have a cup of tea."

I joined the expedition at the end of this venture and had a fairly lacklustre month of jungle reconnaissance to distant caves up to four days' walk away over some of the most inhospitable terrain I have ever crossed. Water was a prime concern with Vietnam in the grip of an El Niño year, the porters and guides had to be very resourceful to get water from vines and banana trunks. One such trip took our group to a massive vertical-sided collapse over an acre of jungle-floored shaft over 100 m deep. This turned out to be the Garden Of Edam, one of the two collapses into Hang Son Doong. With hornbills flying noisily around at first light and bats silently at dusk, it was a memorable excursion. We did not descend Edam, but we were shown a shaft nearby which was surveyed to 100 m deep and some stunning photos were taken prusiking a shaft of sunlight. This cave was on a side fault which should have connected with the major fault that created Hang En and Hang Son Doong. Maybe another trip to this area will confirm it.

Strangely, Howard wanted to have a personal photo trip through Hang Son Doong, despite having spent six days filming there. It was the end of the expedition and I thought many of the members who hadn't been there would have been keen. But it was Howard Limbert, Martin Colledge and I who prepared for a lightweight three-day




trip through the newly discovered entrance to the Hang En end. Our main problem was that no one had ever been to the new entrance and the guides were sceptical about its existence. We had a GPS fix on it — how hard could it be?

After an early start with Mr Khanh and another guide who knew the area, we were dropped off on the new Ho Chi Minh South Road at the start of the same track I had followed up to the Edam collapse. As traffic on the road could be heard from the entrance, I thought it would be a short walk there, but the track went up the hill to about a third of the way to Edam before turning right along a cliff line and then started to descend through rough pinnacle karst back into the same valley. Watching our GPS, we could see ourselves nearing the entrance and then apparently being there! We were in fact 50 m above it. We had to hand-climb down a wall and then there it was — a huge entrance 50 m by 50 m with cliffs below, left and right. This was why we had spiralled around the ravines in the jungle. Contrary to what we thought, our guides were not lost. This jungle bashing had taken four hours and the road was 2.5 km away across the valley below.

The long slope down to a dry lake was rock-strewn with vegetation, mostly ferns, becoming sparser as we descended. The dry bed was pitted and compacted by the hoofprints of jungle deer; across the lake in the half-light rose a rimstone tier about 40 m high. Atop this was a shallow gour pool with cave pearls (oolites) formed from the unseen drip line above our heads, with the jungle outside so dry that only an occasional drop spattered down. In the pool were the calcified remains of an animal long deceased. Sweeny and his party, the first in here, had noted these remains and thought they were bear or jungle cattle. Mr Khanh thought they were almost certainly tiger and I can imagine a tiger lounging on this high point waiting for deer to come to drink in the lake below, but if it was in an El Niño year like this with no water and hence no deer, it would have starved to death. The lower jaw was missing and the skull too ill-defined to make out any dental features. We left it disturbed only by the occasional splash of water.

The cave opened outward and upward as if it were a chamber rather than passage. The way on lay over rimstone and gour dams, all dry, the fine calcite crystal facets shining like ice crystals in our reflected light. Huge stalagmites tens of metres high broke the monotony of striding over the gours. After 500 m from the entrance, accompanied by Mr Khanh and the guide, we reached the top of the Great Wall of Vietnam. Sweeny

EXPEDITION ARCHIVE

*Looking out to The Garden of Edam and the Dogs Bollocks*

and Howard's group had used climbing rope to scale the pitch (for the aid climb) and this had to be exchanged for a more suitable caving rope. Mr Kanh would take the climbing rope back out to Son Track. There were three re-belays down the 90 m pitch, two of them on a 75º slope and the other vertical with a foot loop, so the whole pitch could be dropped with descender and cowstail. In the monsoon period the lower 15 m would be under water and was marked with a 'tide' mark around the lower passage. We refreshed Khanh's light from our supplies before he left, and we descended into the mud at the base of the pitch we had named Passchendaele. The ceiling of the passage at this point was about 200 m!

We regrouped, shared out gear and cut off 12 m of the climbing rope as a travelling line. Martin had carried in the replacement Bluewater rope and Howard and I shared the photographic gear. Last year this was the end of our surveyed cave and the trip out to Hang En had taken six hours.

Passchendaele was well named after the trenches of World War I. A mud trench led from a squalid mud tunnel under the Great Wall of Vietnam; the solid cave walls, 40 m apart, widened as we followed mud walls a metre wide lining the trench. Underfoot was knee-deep mud which sucked tiringly at our boots.

The vertical mud walls, 10 m high, continue for about 300 m until the rise in the passage floor, followed by another 100 m of slick mud slopes — not easy to climb with wet boots. Eventually, with the passage widening and rising, the mud subsides into gour dams, some with water. We washed off the mud and found a gour to fill water bladders — the first potable water available since we left Son Track. On our exploration of this area we had named this transition from gours and flowstone to mud The Sublime to the Ridiculous.

The water bladders added considerably to the weight we carried, but fortunately the campsite used by the film crew and extras was only 200 m away through some narrow rifts incised in the floor. This gave way to more flowstone and compacted dirt, and finally a wall which had shed gypsum flakes to make a soft floor on which we could camp. The width of the passage here in semi-daylight was over 100 m. The Cormorant extension was to our far left; this had been missed on our inward exploration a year earlier but we picked it up as we headed out. At 60 m wide and dropping down steeply to a static sump, it indicates just how vast are the dimensions of this passage.

The daylight was streaming in from the large entrance which framed the jungle-covered talus pile created by the collapse of the Garden Of Edam. The talus cone was maybe two acres and possibly 150 m high; the jungle green assaulted our senses and the scale of the collapse and sheer walls added to the mental confusion. A week earlier, Martin and I had camped in the jungle 350 m above where we now were. One of our other groups was up there now; we could hear them and they could hear our calls, but meaningful conversation was lost in the distance and echoes.

One of the mega-stalagmite formations in this daylight zone is called the Dog's Bollocks. This first through trip was to give Howard the opportunity to take photos at a more leisurely artistic pace and he took many shots in the campsite area. Models Martin and I headed out towards the talus cone across the soft gypsum. From where Howard was the track looked flat but the strain on our calves told us we were climbing quite steeply and on turning round, Howard appeared to be well below us. This was another optical illusion caused by the vastness of this feature. The film crew, porters, an entomologist and a geologist had spent four nights at this camp. A generator and 60 litres of fuel had been brought in to charge batteries; over 50 litres remained. Everything else had been removed.

Early the following morning, we packed and set off up the gypsum track into the Garden Of Edam. The vast jungle-covered talus cone was rough underfoot and the route lay around to the left rather than over its peak. The Alcove could have been mistaken for the way on, but previous exploration had shown it to be a rather extensive deep blind. Further round the cone the Rat Run came into view, a steep descent with vegetation thinning as we dropped into the continuation of the cave.

We took photos beyond the dripline of a rather novel speleothem — a form of stromatolite, like a bundle of narrow pencils growing on rocks toward the light. Bacteria change the composition of calcite to form the rod-like structure. These forms can also be seen in Deer Cave and other entrances around the Mulu area of Sarawak. We took more photos through the Rat Run, a straight, level passage totally floored and walled with broad gour dams, mostly dry. The smaller daylit shaft of Watch Out for Dinosaurs seen from Garden of Edam marks the termination of the 300 m Rat Run and also the end of easy caving. This shaft appears to be a more recent feature, with less vegetation and a steep rubble slope marked with cairns, leading to a steeper descent over rotten gours and more loose talus into the dark zone.

A 3 m climb down to a step ledge overlooking a 45 m pitch above the thunderous sound of water had had a handline on it with maillons and bolt. Now only some tatty webbing and a bolt were left — just enough to descend with. We passed down our packs and found that the ledge followed over some black voids and climbed back into the daylight zone. This is the other side of the Watch Out for Dinosaurs talus cone, a sheer wall of rubble treacherous to climb or descend. It is fortunate that the handline bypass exists. The view presents itself as a valley of utter destruction; unstable blocks and rubble stretch out into the continuation of Son Doong. The river we could hear so clearly in the bypass is nowhere to be seen. It is about 30 m to the base of the enclosed daylight valley, but our route heads steeply up the right-hand side over hand climbs and dubious rocking blocks. Howard says that some of the "track" is different; cairns have collapsed and recent falls have changed our route. Guides and porters from the film crew have seen fit to take up caving to re-

EXPEDITION ARCHIVE

*The guano-covered outflow entrance of Hang En*

trieve our necessary rigging handlines and gear, probably for profit. We still had two river crossings and a near-vertical entrance to negotiate. We took great care in crossing this destruction to the Level Playing Fields, an area of perched gours and rimstone on the far wall. This had also been a transit camp and is sheltered out of the ever-present draught. The route onward is over loose talus piles, several of them over 40 m high. This was my fifth crossing, each time by a different route.

As the light fades into the dark zone, the passage widens to about 200 m. Below the scree slope the river can be heard and the route leads to huge stalagmite bosses, one of which, the Hand of Dog, soars into the distance above us. A wrong turn and you're cliffbound, retrace your steps and you're into more loose talus. 500 m on the talus gives way to sand. Last year an extensive pool — the Swimming Pool — had been full; now it was almost dried up. It marked the point at which we had to head for the river crossing.

The sand subsides at the river trench. In this area there are only two safe crossing points, and yes, the handline is missing. A 4 m climb to the water's edge and then to the far bank, 4 m across the fast-flowing river that has sculpted sharp blades beneath the surface. We used the 12 m cut-off rope and cross the river, Martin leading the way. On our first trip into this area we were plagued with insects buzzing our lamps and faces, so it was aptly called the Fly Zone. Further back, towards the Hand of Dog, they had dispersed and the place was named No Fly Zone. After a 4 m climb on to a flat shelf we could see the distant glimmer of daylight. The river in its trench often floods this shelf. There are no loose rocks, sand or pebbles; a short 2 m waterfall or cataract marks the beginning of the trench and is the source of the thunderous water sounds we heard at the entrance slope. A short climb down into the pool that issues into the trench and a short wade/swim across to a sandy bank had us at base camp. A rope had been left on this crossing — vital when the water level is up. Again, the rope and maillons were missing. 150 m upstream the river flows from a sump close to the surface sink of Log Jam Cave. The base camp had housed a generator and fuel, along with two large boxes of huge screw-in photographic flash bulbs resembling light globes and some were missing. My imagination saw them being used in village huts with traumatic results. Our outward journey was through, over and under a confusing pile of truck-sized boulders, past large stalactites and a pool of water mysteriously fed by a perched sump.

We were now in the daylight zone below the 50 m climb out. The route crosses from one side of the slope to the other, under overhangs to a greasy climb on flowstone. Again Martin led and dropped the travelling line we had with us. We found a maillon, one of a dozen that were missing. We climbed with our own packs, Howard mindful of the worth of his camera and gear. After a final climb in a stalactite-lined slot we stood at the exit of Hang Son Doong. Last year, on one of our survey trips in, a gale-blown cloud had issued from this entrance, cutting visibility to 10 m — very eerie, although 20 m down the climb it cleared to normal. The cave was creating its own weather. Signs of the film crew's porters' camp were evident but it was still a 20-minute slog down a rough steep jungle track to the river and easier going. An hour later, wading up the river brought us to the huge back entrance to Hang En. We had a quick trip through with river crossings and two 30 m mud-coated rubble piles liberally pasted with guano. We passed some hunting/fishing natives and we looked about surreptitiously but unsuccessfully for our missing rope before we finally came through to the guano-free east-facing entrance.

Mr Khanh handed us a cold beer. He and his offsider had carried in a slab of mixed beers for Martin and me and Coke for Howard. The fire was lit and there was rice and pork for our evening meal.

## NOTES

- Without the cooperation of the people of Vietnam at both government and village level, these explorations would not be possible.
- Satellite imagery shows that Son Doong and Hang En are on the same faultline. A lesser fault connects from the south-west and intersects at The Alcove at the Garden of Edam. It also shows there are larger faults in the Khe Bang massif to the east.
- Both the Garden of Edam and Watch Out for Dinosaurs collapses are caused in part by the thinning of the deposits of the limestone beds.
- What will happen to Son Doong and the jungle immediately surrounding it? The Mulu National Park has managed its resource very successfully. Rumours in Son Track involve cable cars through Son Doong or part of it. People will want to go there and resources like this will certainly be developed.
- Son Doong is a major piece of the massif's drainage pattern, but many mysteries remain. The river that sinks near the Hand of Dog and is accessed at Watch Out for Dinosaurs bypass was explored to a sump and it is assumed that in heavy flow it backs up to flood Passchendaele and in turn may flow through to Nuoc Nut. The main flow almost certainly goes through to Hang Thung, about 3 km distant.
- Son Doong has been described as the biggest cave on the planet in dimensional volume — up to 200 m in height and width. Deer Cave in Sarawak has a massive entrance but it closes down. The Hang En outflow entrance is similarly large. The largest section of Son Doong is around the Hand of Dog scree slopes — 200 m wide and more than 100 m high.
- I feel very lucky to have had a part in this and other explorations in the Khe Bang massif. If this is geriatric caving, it suits me well. Thanks, Howard and Deb.

EXPEDITION ARCHIVE

*The first river crossing of Son Doong at base camp with the upstream sump in the distance*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