

# CAVES

No. 164  
December 2004

The Journal of the Australian Speleological Federation

# AUSTRALIA



## EXPLORING LECHUGUILLA

*Silent Caves of Wellington  
Barralong  
Sailing to Misima  
Ning Bing Pt 2*



## Coming Events

In particular, this list will cover events of special interest to cavers and others seriously interested in caves and karst. A similar list in the ACKMA Journal will give more attention to meetings of specialist scientific interest. Both of these lists will be just that: if you are interested in any listed events, contact Elery Hamilton-Smith on: elery@alphalink.com.au. If you plan to visit North America or Europe, we can probably provide details of the many local-regional meetings which take place there.

### 2005:

Jan 2-9	The 25 <sup>th</sup> Biennial Conference of the Australian Speleological Federation see page 13.
Feb 2-6	7 <sup>th</sup> Mexican National Speleological Congress, Monterrey, Mexico.
Feb 8-12	65 <sup>th</sup> Anniversary Congress, Speleological Society of Cuba, Havana.
Mar 29-Apr 2	CAVEPS: 10 <sup>th</sup> Conference on Australasian Vertebrate Evolution, Palaeontology and Systematics, Naracoorte, S. Aust
Apr 10-17	ACKMA Conference, Westport, New Zealand.
Apr 24-29	Natural and Anthropogenic hazards in Karst, Vienna, Austria.
Aug 21-28	14 <sup>th</sup> International Congress of Speleology, Athens, Greece
Sept 14-19	Water Resources and Environment in Karst, Belgrade (Serbia) and Kotor (Montenegro)
Oct	3 <sup>rd</sup> Symposium on Cave Archaeology and Palaeontology, Athens, Greece.
Oct 31-Nov 4	National Cave and Karst Management Symposium, Albany, NY.

Do you know?

On which mountain caps are the highest known deposits of limestone in the world?

See page 26

## And Looking Ahead

### 2006

Late January ASF Council Meeting – venue TBA

### 2007

Late January ASF Conference, South Australia, celebrating 50 years of the Australian Speleological Federation. Start planning now.

2007 ACKMA Conference, Buchan. This will be part of the celebration to mark the centenary of the discovery of Fairy Cave.



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## CAVES AUSTRALIA

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Bings  
David Woods

**COVER:** Jenny Whitby dwarfed by The Leaning Tower of Lechuguilla. A speleothem that started as a raft cone, now encrusted with aragonite and cave coral.

Photo: Gary Whitby.

LAYOUT AND DESIGN: Jacqui Fry

## HELP SUPPORT ASF

The Federation is run solely by subscription to ASF. Your donation or bequest will assist our work in lobbying to save karst, ensure continued scientific projects and more. To make a contribution or receive an information pack, contact The Secretary or visit [www.caves.org.au](http://www.caves.org.au)



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## AUSTRALIAN CAVER FIRE SALE

ONLY 22c. EACH for a set!!

Once only offer for delivery at AFS Conference  
— see inside back cover.

## Insurance update!

ASF insurance is up for renewal as of mid November. Our Broker has advised us that a new insurer has offered us insurance on Public Liability and Officers Insurance. The Executive are working hard on negotiating a better deal and coverage for all. More information will be presented at the conference.

## Is YOUR CLUB about to LOSE its VOTE?

Missed the last two council meetings? If your club cannot send a representative to Cavemania, don't forget to nominate a proxy! Clubs that do not send a representative or nominate a Proxy for two consecutive meetings may lose their right to Vote until the next meeting! Contact the ASF Secretary NOW if you cannot send or nominate a Proxy!

## NSW Roadworks:

Jenolan Caves Road between Five Mile Hill & Grand Arch

From: 4.00pm 10 October 2004 to 10.00am 16 December 2004

The NSW Roads and Traffic Authority advise that due to maintenance and improvement works, the closure of the Five Mile Hill section of Jenolan Caves Road (Top of Five Mile Hill to Grand Arch) is required between the hours of 4pm and 10am from Sunday to Thursday each night for 10 weeks.

Please note that access to Jenolan Caves will still be available via Oberon and the Two Mile Hill from the South.



## Mole Creek caves hit by earthquake!

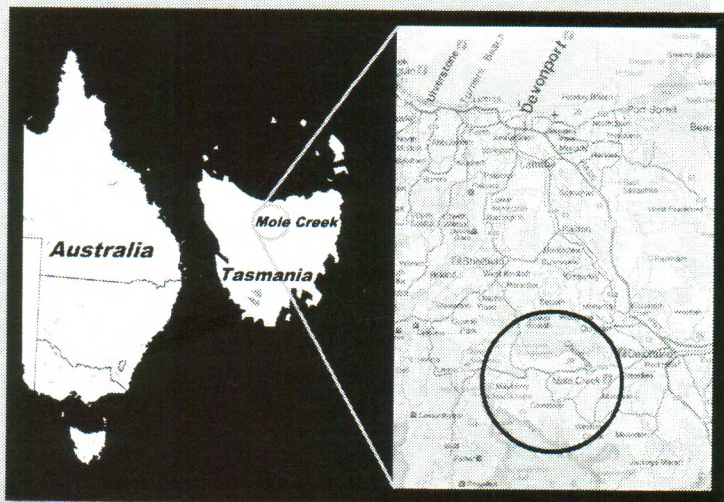
19 November, 2004 10:30 (AEST)

Geoscience Australia reported an earthquake measuring 4.7 on the Richter scale with its epicentre recorded just south of Mole Creek, Tasmania. It is also reported that the tremor was felt across the state.

A seismologist at Geoscience Australia, Cvetan Sinadinovski, says it is unlikely the tremor caused any structural damage. It is the first earthquake in Tasmania since 1998. Duty seismologist Geoscience Australia said it had been an "interplate earthquake".

Most interestingly, Ms Dawn Hay guide from Mole Creek in northern Tasmania says she was 130 metres underground when the area was shaken by an earth tremor this morning.

Ms Dawn says she was halfway through taking a tour group down an old railway tunnel when they heard the tremor. "It sounded like thunder and it really wasn't much vibration in the cave," she said. "I was thinking, 'what is happening'. I was expecting a whole lot of water to come down the corridor because there wasn't a lot of movement in the cave. "It lasted for about 30 to 60 seconds,



something like that, and all the people with me said 'what's that' and I said, 'oh it's a tremor' and I was trying not to look nervous."

This was the largest earthquake within Tasmania since the Queenstown event of magnitude ML 5.3 on 1958 January 1. Earthquakes of magnitude ML 4.5 occurred offshore from Port Davey in 1963 November, and in Bass Strait near King Island in 1964 November.

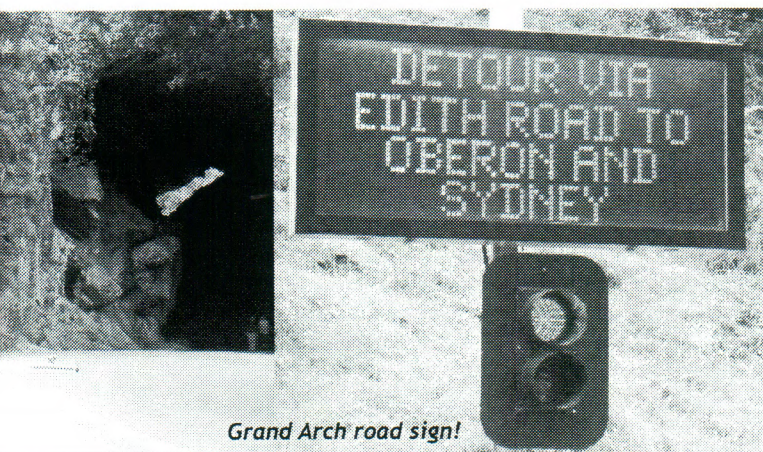


## Ningaloo Reef-North West Cape misses World Heritage listing!

Following our recent article on Cape Range, it was announced on 1 December 2004 by The Hon. Judy Edwards MLA, Minister for Environment in WA, the State Government has extended the consultation process for parts of the Ningaloo Reef-North West Cape to be nominated for World Heritage listing.

The Government will undertake further consultation with stakeholders and the community early in 2005, and will circulate additional information material to assist in that consultation.

WA cavers such as Jay Anderson, member of WASG, SRGWA and ASF Executive, has been following this and will continue the push for World Heritage listing.



Grand Arch road sign!

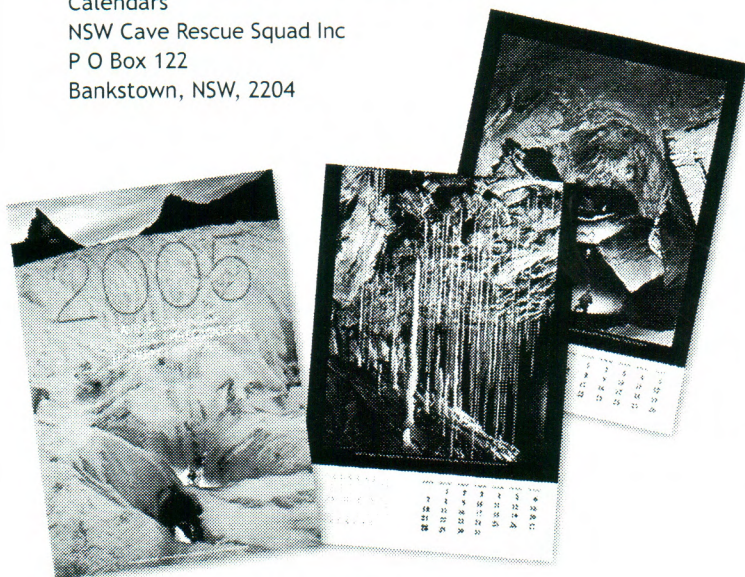
## 2005 Caving Calendars

2005 caving calendars will soon be available.

A new selection of 12 stunning images plus the title page once again takes you on an enchanting subterranean journey to caves around the world. This year's destinations include Austria, Switzerland, Germany, USA, France, Slovenia, Mexico, Spain and Borneo.

Makes a great gift. Get your copies now, for you and your friends! Donations of \$35 or more and we'll give you a 2005 calendar! Order yours now! Send cheque/money order (with name and address) to:

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Calendars will be available at Cavemania!  
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## ASF eGroups

ASF has set up three eGroups for its clubs, members and Executive.

- ASF Members: <http://groups.yahoo.com/group/asf-members/>

This eGroup is for Clubs and their nominated club representative. Club nominated representatives receive and exchange information between ASF Executive and clubs. Formal files can also be found or uploaded to this site. Clubs are asked to maintain current club representatives to ensure that urgent information can reach clubs and their members quickly.

- ASF Members Forum: [http://groups.yahoo.com/group/ASF\\_Members\\_Forum/](http://groups.yahoo.com/group/ASF_Members_Forum/)

ASF Members Forum is a forum for all members of ASF. ASF members can chat, exchange ideas, seek information from other members, upload pics, files and more. Only ASF members are invited to join this eGroup.

- ASF Executive: <http://groups.yahoo.com/group/asf-executive/?yguid=21264095>

ASF Executives correspond daily on this Group on day to day ASF issues.

## ASF wins QORF award!

In the last issue we mentioned that ASF was a finalist for an award from the Queensland Outdoor Recreation Federation.

We're delighted to announce that ASF won the Brisbane City Council Award for an organisation that "set themselves apart through their dedication to best practice and high standards in the delivery of outdoor recreation." The citation read:

"Winner: Australian Speleological Federation

The Australian Speleological Federation (ASF) is a national environmental organisation, with the primary objective of protecting the cave and karst environment of Australia. Formed in 1956, it is a national organisation consisting of about 30 clubs and 850 individuals. In Queensland, member clubs of the ASF consist of the Central Queensland Speleological Society and the Chillagoe Caving Club. ASF is one of the longest running and most successful outdoor recreation related non-government organisations in Australia as a consequence of their comprehensive range of services and the success of their programs. The success of the ASF is based on their organisational stability, self management and their ability to play an advocacy role. ASF actively engage with the relevant government authorities and balance this with managing the resource (ie. caves) and encourage thoughtful, competent participation. The ASF is so successful that the various natural resource management agencies and search and rescue authorities throughout Australia recognise the organisation as an, if not the, authoritative source of advice on caving safety risk management, rescue and cave management."

That says it all, and it's a fine tribute to years of work by ASF Members, particularly our two Queensland member clubs, Chillagoe CC and Central Queensland SS. ASF President John Dunkley was on hand to accept the Award at the Gabba Stadium, along with long-time ASF Secretary Chris Dunne.



# Locating Barralong

29<sup>th</sup> November 7<sup>th</sup> December 2003

By Keir Vaughan-Taylor

SUSS usually runs a Christmas trip in December. The trip often coincides with my son's birthday on the 10<sup>th</sup> of December. Can't forget that date! This year, SUSS started the trip a week early with an opportunity to solve the Barralong mystery. I needed someone to give me a ride up to Jenolan from Sydney. I would stay until Thursday but just in case I couldn't get a ride back I took my bicycle. Someone was sure to be going back to Sydney. Although I didn't want to ride all that way I also thought riding along the Six-Foot Track would be a great trip. Sue looked seriously at me and said it seemed a little dangerous to travel out along the Black Range without company but I assured her that riding a bicycle was something people do all the time on their own as well as in groups.

Rod was keen to explore the potential of the upstream Barralong but I was at this time interested in the downstream. All the hard years of exploration and diving since the 1960s avoided the downstream sump. I suppose some people went the full way up to their armpits in water into the sump but I imagine that when they returned very cold they gave it bad reviews.

The tunnel is just too small to crawl on all fours and prior to the downstream sump the crawl-ways enforce getting very wet. The last fifteen-metre stretch before the sink into the sump gets to be a half a metre deep and a half metre above the water to the roof. I don't think our pioneer explorers wanted the cold and wet up and beyond their derrieres. In fairness, they did have a lot to do without such an unlikely lead.

A day was available just before the Christmas trip and with some juggling of calendars over the telephone, an eager team assembled to survey what



*Keir, embarking on ASF politics! A keen caver from SUSS who is often seen and found defending the rights of cavers and caving at Ministerial level.*



we have of the downstream. It didn't really take much to convince Phil, Greg, Rod and Matt to do a pre-Christmas trip. We started off with a team of five this time. The extra person makes a big difference, a difference between being totally stuffed late into the evening or recovering with an afternoon break at the Hampton pub. These guys are very fit and that is a big help. Matt had done Carra Beanga canyon the day before which is a difficult trip. Usually after I do one of the Kanangra canyons I need a day's rest to recover and then a day to talk about it. You would have thought Matt would be a little tired but he didn't seem at all slowed down.

The cave decorations are elegant, inexplicable, beautiful and everywhere. We lay out plastic mats over rimstone dams and nag each other to be careful of this formation or that. This can be irritating but everyone understands and silently complies. Nothing gets broken. On the first few trips we tried taking sections of 100mm foam sheet to protect some rimstone areas. Greg was unimpressed by the ease with which it didn't come out of its pack and further unimpressed with the ease at which it compressed back in. As a protection it works really well over the rimstone areas on the track but its bulk in transport is impractical. One guiding policy is that all gear that



PAUL NELSON

**Group Photo — Glenn Smith, Rod O'Brien Jodie Rutledge, Paul Nelson, Phil Maynard, Ian Cooper, Michael Collins, Damian Grindley, Keir Vaughan-Taylor.**



goes in on a trip comes out on the same trip. This makes sure nothing ever gets left "just for a little while" and ends up being there indefinitely. We changed to using tarpaulins instead of the foam. It still takes up a pack but we can protect more ground area.

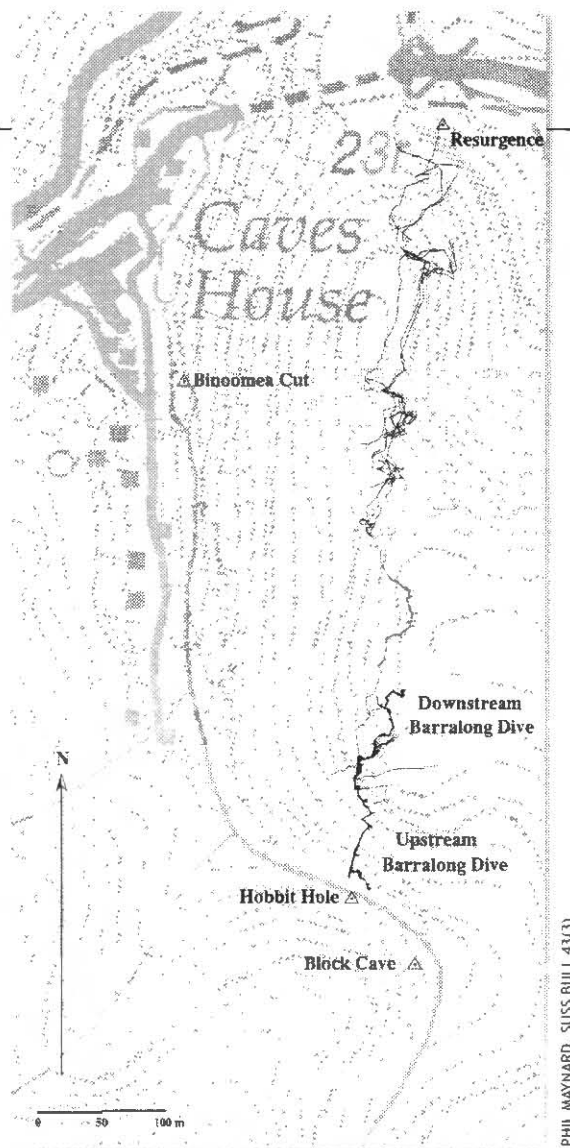
My dry suit has a short tear in the outer covering just over my tummy. I stitched it up with a speedy stitcher. It must have been a good repair because it was now tearing somewhere else. It would be okay for a few more dives but the time for a new dry suit is approaching.

Because it is hard to stretch bend and crouch in a bulky dry suit, it reduces a person's repertoire of climbing moves. I needed stiff, hands-out-to-the-side, penguin-like moves to shinny into the downstream fissure. If only that weight belt wasn't necessary. Tanks have to be clipped on once down for the stream passage where crawling on all fours is the only way to get ahead. Sort of like middle management I guess.

You can stand up in a few places along the way but it's not actually worth the effort to lift all that steel and lead just to straighten your back and then get down to get down on all fours again for the next bit. In the stand up places there are avens and fissures that can be seen to reach into upper levels of the cave. The rest of the group was going to push up there in the roof. I slogged my way down on to the sump. Phil and Greg waited part way back to avoid silting up the water more than necessary. I would use what visibility there was to rig the guideline and then return to signal them through.

I laid line in each of the sumps and then returned to usher Greg and Phil through the watery bits. We explored all the dry leads. Phil managed to climb a slippery mud wall into a shaft passage that cuts in the waterway on the left side. It choked out but high in the roof possibly accessible with scaling poles we could see a portion of a room with many stalactites and straws coated with mud but only just discernible in the spot of my light. It would be a long and difficult trip to ever get scaling poles into this place and pushed all the way up there. It is unlikely to ever happen. This is one to keep for future generations of cavers.

A survey done by Graham Kates years ago showed a high level passage that comes near to the point in the upper chamber. The entrance to the surveyed passage is accessed from near the Barralong Lake but requires scaling poles to reach an entrance high in the wall. There are shown substantial lengths of passage. At first we thought there was a mistake but it all seems too be correct. One passage shows a great deal of passage straying from the main trend of the caves heading back to the north again and passing so close to this upper chamber that there might be a way to access this part of the cave without diving. While worth investigating a way to this place it will not lure most cavers since there are only twenty metres of streamway to experience until another



Map silhouette

sump dives 3m down and then up again into what is presently the furthest northern extent of the river. It seems to terminate in a dangerous and collapsing cavern.

The cavern at the end is delicately balanced, motivating a very careful Phil to squeeze ever so gently into the room perched just above the water. In that room there are ways between the rocks with antechambers that can be seen; just! No person was prepared to risk squeezing further through the inter-balanced rockery. Perhaps another day we might be more gung ho and maybe without the hindrance of clumsy diving apparel.

Along one wall of the chamber trending to the south is a shallow pool of water. By lying head down on the rockpile with a mask dipped under the water you can see a bedding plane trending almost straight down with rocks wedged between the roof and the floor and a nice sizeable square passage at the bottom. We spent an hour pulling rocks out of the bedding plane and hauling them out of the water and placing them on the rocks cascading out of the unstable chamber.

Eventually the rocks to be removed were deep underwater and reattached the scuba tanks and began floating down to an obstacle and manoeuvring any movable stones to the surface, passing them to





**Gearing up!**  
**Rod O'Brien.**

helping hands raising them into another dimension and stacking them out of the way in that other dimension.

A more or less straight route down the bedding plane cleared and the main drain passage leading on was found. It was found in the sense that a dive down through a tight bit would gradually increase in size until a larger space opens up but everything is invisible. The rift is a multi-obstacle line-trap and moving away from direct line back up the excavated route seemed risky. The way on was left to be explored another time.

December came. Ron and I drove up together talking about caves, caves, women and caves and particle physics. We agreed to complete the survey of all the new passages on the downstream Barralong before any more exploratory work but the temptation to push on was ever present. Well it was on my mind anyway. The question that really needs answering is how far have we progressed to the south under the Southern Limestone Valley and where in that valley is this southern river located. The tourist caves are situated under Lucas Rocks which is a mountainous ridge that stretches the full distance into the remote Southern Limestone. On the other side of the valley mountainous ridges abut the valley. The first major ridge appears to have been chopped by the valley and right at its base in right in the creek is a vertical cave called Block Cave. The mountain rises straight up from Block and on the pinnacle where it would never be expected is a subsidence and the wind blows allusively, whispering of the mysteries below. This mountain contains the cave called Bottomless Pit. None of these intriguing karst features connect to the prize deep below. Barralong will either cross into the mountain on the other side revealing the true secret of Bottomless Pit, or continue southward in the underlying limestone beneath the shales on the main Lucas Rocks range

We wanted to find out the location of the furthest extent of Barralong within the mountain and to accomplish this we needed a survey. We started diving Barralong one day after another after another to get the survey legs to the furthest extent of the underground stream.

The Graham Kates survey connected the dry parts of Barralong into the River Cave. Our survey of River Cave connected to the outside world at the Blue Lake Resurgence. I took some time out to play with my GPS and recorded positions at the Southern Resurgence, Caves House, the Guides Hut, Hobbitt Hole, Block Cave, and the major cave feature in the south, Bottomless Pit. We would then be able to place the cave survey in relation to these points and maybe even work out a good place to go hunting for caves. The big question to be answered is whether the stream crosses to the right side of the valley or stays on the left.

Visiting Barralong is always a pleasure but there came a time that I felt a need for a change and we joined the parties in Mammoth. The group was pushing scaling poles into high avens in and around Hell Hole. We climbed into small alcoves that roosted on the tops of scary drops. We would clear people out of the way underneath climbers. Once a fair to middling sized rock, rocketed down out of the roof and turned Ian Cooper's water bottle that was left on the floor into a short lived spring. Alas! There are no major connections in any of these avens that lead to the cavernous presence we could all sense somewhere up there.

It was on this trip that Rod saw Ice Pick Lake for the first time. It's quite a long way to Ice Pick Lake. You would think that the climbs, the squirms and narrow ascending passages would moderate the enthusiasm of the group. Instead Rod's eyes gleamed in the light of that hypnotic azure blue water. The twinkling light is put there by Sirens to torture cavers for the rest of their lives wanting to know the mystery of what lies beyond. The Sirens are not technology literate and don't know about scuba gear. The curse can be broken by cave divers. Ian Cooper would carry gear. In fact everyone wanted to know for sure what was in that water. And a trip was agreed upon. Mike Lake the eternal physicist wasn't there that day. He would have told the group that the colour in the water is "light scattering" caused by the water saturated with dissolved limestone. Some of us however realise that that Skeptic magazine can blind a sensible person to the more rational explanations of Sirens in the water.

The water level had fallen. You could walk on mud where on previous trips we were swimming.

The trip to Ice Pick would however be made after the survey to the furthest exploration point in Barralong was completed. The next day we were assisted by the noble NUCC (National University Caving Club) team from Canberra. Ably assisted by Iain McCulloch, the team was motivated, energised and galvanised along the route by left wing rhetoric and bullshit about geological formations in the cave.

It is always dangerous to get complacent, even working with the best cavers. We were to be embarrassed. At Bluetongue Lake we bypassed the ladder pitch. There is a scramble up around boulders stacked in a corkscrew where, at the top, a squeeze through a rock-pile finds its way just atop the Bluetongue pitch. The squeeze is too small for passing gear, but the caving group can travel this way and then the gear is hauled up the pitch. I dislike this squeeze's chest-crushing rock protrusions. Curiously it seems harder to me, to slip through downwards on the return journey than to push up on the way in. The



rest of the group eases through without a problem and so for the whole team, it is much faster than going up the Bluetongue pitch climb.

On the first day Michael Collins fell behind, examining some wondrous formation. It is said that the delicate crystals can hypnotise people and without others to break the spell you may never wake up. Maybe I have that confused with the Sirens story. Michael was at the other end of a rockpile pushing foam packs into narrow fissures through to the forward group. It took him a while to get himself through rockpile jigsaw by which time the group had powered off trying to catch Ian Cooper's never ending stamina. Ian tells me he is getting old but I think that bald patch on top is a sign of too much testosterone.

When Michael reached the Bluetongue Squeeze he couldn't get through. "Nobody in their right mind would go that way", he said to himself and he started looking for the correct way on. The rest of the group did continue on unaware that one of the dark faces under a helmet was missing. It is of course completely unacceptable that our missing comrade was noticed only after Rod had trogged up in his dive kit and noticed that his dive partner was missing.

Jodie and I traced back through the cave and found our irate comrade. "What took you so long?" he said.

Michael and Rod spent two hours in the water surveying. When the divers returned Michael came out shivering and blue. He wasn't talking much at first which is unusual. I resolved to myself that the next day I in my dry suit I would wear all my available thermals under my furry suit.

Transporting the packs from rock-piles and tunnels and dragging through squeezes and pulling up and down pitches. The consideration given by the helping

team to the contents of the packs diminishes towards the end of long trips. Despite protecting tanks in modified cave packs the paint is chipping. I shall soon strip the paint and re-spray them. Its time to do hydrostatic testing just to make sure the steel isn't succumbing to metal fatigue.

After the dive the regulators and other gear are dismantled, often by helping hands. We usually carry a small set of tools kept in the casing of defunct diving light. It sometimes gets left behind and that's the time the tools are needed. None in the group were strong enough to unscrew the thread joining the regulator and the tank to separate them for the trip out. I usually pack my regulators between my dry suit and some other clothing in the middle of a pack to protect them. The battering zones of the outer skin of the pack get absorbed by clothing. This time the thread couldn't be unscrewed so the regulator had to go out nestled next to the neck the tank in the tank bag.

After we reached the car park and started packing the gear into the car another attempt at removing the regulator found that unscrewing the thread was easy. The thumps and bumps must have loosened it but unfortunately, the regulator was smashed.

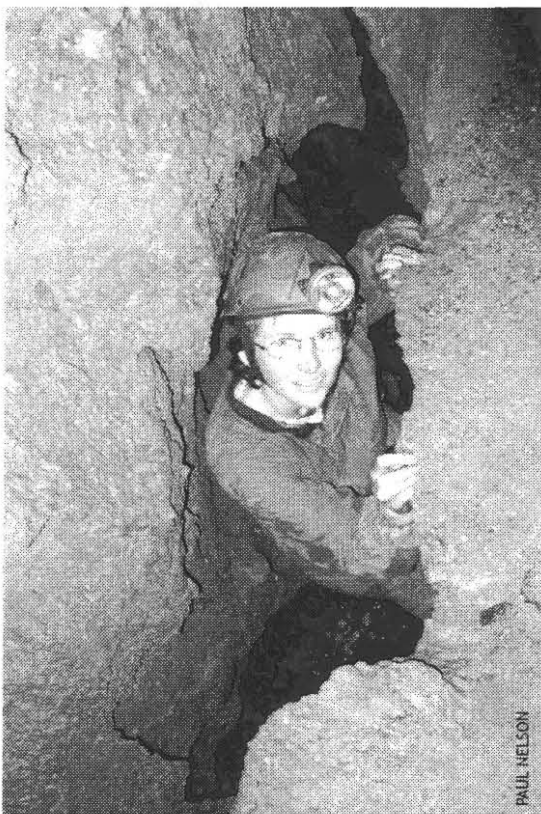
Hmmm. The dive suit was looking pretty beaten about too. I was able to piece the regulator together again from spare parts at home. The cost of servicing regulators is out of control these days. You can almost buy new regulators for the cost of a couple of services. It's all just a plot to sell more regulators. For the average consumer it is not so bad a situation. My problem is cause by taking my equipment and smashing it relentlessly against rocks for eight hours at a time once a month.

The packs get speedy-stitched every now and again but really in the end you have to throw money at them and buy more. I need a rich movie producer to give our group money to make a fabulous documentary. Curiously the world is more interested in dopey pop singing blondes than a bunch of loonies pushing themselves through mud over and over again.

It rained all night before the next dive. I dismantled the regs, reassembled and checked everything, made sure I had the handy dive-light tool kit packed along with as many thermals. These are useful to protect gear in transit. I knew that I would appreciate my thermals a great deal since our dive time was likely to be two hours. At the end I wasn't cold at all but I'd had enough of drifting weightless holding the end of a tape measure while Rod pencilled reading on a plastic slate.

There is one place on the dive where a vertical rift surfaces in a small bath sized lake. The water runs out of the lake and along a low 10 metre long passage. We are obliged to crawl along this tube to another sump at the other end. In full dive kit this is a bit of a struggle. The limestone rocks in the floor are a bit like axe blades and it is necessary to blunder over this and cause as little damage to your gear and hands as possible. It's hard though and I succeeded in slicing apart the outer zip of my dry suit. Fortunately this doesn't affect the water proof properties of the suit but is another expense.

After this trip the survey was finished and now we needed to make an effort at exploring Rod's lead down the shaft bypass. I had taken a look down the shaft but thought it looked very small and unlikely.



Jodie Rutledge of NHVSS.



Rod squeezed through a vertical bypass of the dig but it just came back to where it started again, back at the dig. The water had been clear but it was changing. The gradual intrusion of silted water being brought in by the rains was silting the visibility in the sumps. The way on was blank. We had completed the survey and it was nearly three hours since we left. The group may be getting concerned. I wasn't cold though because that rotten little ten meter passage contains many push-ups to get you warmed up.

The week had passed by all too quickly and as one might have expected no-one was going home on the day I needed to return. I savoured a number of cups of coffee sitting outside the Cavers' Hut garage contemplating the beauty of gum trees. After desultory packing I mounted my bicycle and set off on a late morning start along the six-foot track heading for Katoomba. At first I was considering riding all the way back to Sydney but it would depend how long it would take.

I know now that I underestimated the trip. I only took a single can of spaghetti for lunch since this was the last of my packed food for the trip. It takes a lot of energy just to get up the 5 mile hill. I remember thinking how much I would like a few jelly snakes. I don't usually like jelly snakes.

The ride down Black Range to the Cox's River is exhilarating, and perhaps too much so because any red blooded Australian lad is enticed to go faster and faster. As I was nearing the end of the severe downhill section a rainstorm opened up and the road, awash with run-off streams, became very slippery. The best of the steep fast road sections are passed after reaching the sandy slopes at the bottom of the range. It's still a down-hill run and pretty good. You know that Cox's River isn't far away.

It was slippery on the sand and my bike's braking started to lock the rear wheel and I became too dependent on the front wheel to slow down. My bicycle's front wheel dropped into an erosion gully and stuck something hard in the trench. After some short flight time over the front wheel I fell, hard, upside down upon the sandy road. I managed to right myself for a good slide along the sandy road. I had smashed my helmet, put a deep gash above my left eye, chopped hole in my elbow and covered my

arms and shoulder with blood from gravel rash. Blood weeping down my head ran into my eyes making it difficult to see. I had a broken pedal and a broken brake but the bike was basically still mobile.

At the bottom of the hill there was a stream to wash my wounds and compose myself. The small creek had probably only recently started flowing in the recent rains. It was humid and hot and the cicadas sang. I crouched at the creek's edge and splashed water over my injuries. I tore my tee shirt into strips to make bandages with which I was able to stop the bleeding. I was surprised to find as I crouched next to the creek that I was accompanied by a red belly black snake. There were other snakes nearby, apparently attracted by the waters now flowing in the previously dry creek. The snakes were completely uncaring about my presence and we got on fine but the flies were horrible.

Eventually I got back on my bike rode to the campsite down by the Cox's River. A skinny-dipping couple took a look at my wounds. The bloke was not a first aider but his words "You not gonna die from it" was comforting and so I swam my bike across the Cox's River in order to start up the range on the other side towards Katoomba. The road disappears at the river. On the other side there is a walking track and it can be ridden in places but there is much getting on and getting off of your bike.

The final ascent to the Explorers Tree at Katoomba is up Nellies' Glen, in the rain. The canyon once had old convict track used to haul coal from the bottom. It is the site of much revegetation by National Parks after an ill conceived effort to build a road down the canyon in the 1960s. The regeneration is a wonderful success story, however on this occasion Parks had decided to add in many extra flights of stairs and also increase the distance to the top.

The chocolate milk in Katoomba is orgasmic. I decided to take the train back to Sydney much to the consternation of the security guards on the train.

(Present: randomly ordered: Ian Cooper, Phil Maynard, Rod O'Brien, Jodie Rutledge, Glenn Smith, Simon Goddard, Mark Staraj, Damian Grindly, Paul Nelson, Michael Collins, Iain McCulloch, Andrew Wall, Stephen Peachy, Olaf Thedan, Mel and Peta Stamwell, Keir Vaughan-Taylor).

**Pack hauling**  
— Kier Vaughan-Taylor, Glenn Smith, Rod O'Brien.

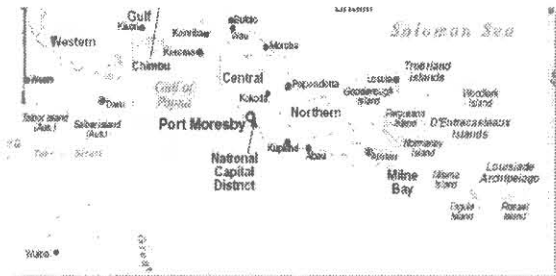




# CCC visits Misima Caves — New Guinea

*Chillagoe Caving Club invites us on a sailing caving adventure to the rocky shores of Misima, PNG in search of its mysterious caves and local history!*

We haven't done a lot of caving while away sailing since early September 2003 but when the opportunity arose, Mick Karen and I jumped at it. Before we knew it, we were off by sail and anchored at Bwagga Bwagga, a remote village on Misima Island in the Louisiade Group, Milne Bay, Papua — New Guinea.



Region map

Milne Bay Province takes in the land at the extreme eastern end of Papua New Guinea together with seven groups of islands, the Trobriand, Woodlark, Laughlan, Louisiade Archipelago, the Conflict Group, the Samarai Group and the D'Entrecasteaux Group. The names come from a variety of explorers from as early as 1660 when D'Entrecasteaux sailed through and left his name behind.

Over the years, Milne Bay Province has been visited by missionaries, miners, traders in pearls, scientists and Japanese and American warships. During the war Milne Bay became a huge naval base through which hundreds of thousands of servicemen passed.

Today thousands of tourists arrive to enjoy diving around the wreckage left behind from the war. There are 160 named islands and 500 cays and atolls scattered over 250,000 square kilometres of ocean. In many parts of Milne Bay, the reefs are characterised by dramatic drop-offs, clefths and overhangs which are great for diving.

Our trip to Bwagga Bwagga is a highlight as it is at the base of some quite spectacular limestone bluffs. Over the years we have visited this village often for its beautiful water from the Creek that runs directly into the sea behind where we anchor.

We set off with 4 barefoot local guides along the rugged shoreline at first and then upwards on a steadily increasing slope until we were clinging to plants to continue the climb.

There were steep gorges to cross where we had to make bridges to facilitate the path and some exposed root climbing around some fairly sheer cliffs before we arrived at the mouth of the cave.

Not really planning to go caving the equipment inventory was a bit short and limited to my petzl head torch and 2 diving torches. Mick had also forgotten to check his battery level before coming. No helmets and only tevas for footwear we entered the cave expecting our guides to remain at the mouth. Not so, they insisted on accompanying us without shoes or



*Paul lives in sunny far north Queensland. His passion for caving often leads him to other regions in his trusty catamaran! What better way to go caving!*



any lights at all. Three sources of light between 7 of us was probably a bit light on but this is PNG where the general rules for living and dying are different to those we are familiar with. One of these guys only had one eye anyway.

The main cavern was quite large and meandered upward into a daylight which broke off in several directions and one that continued on. There was quite a colony of large bats in here as well. By this time the tevas were doffed as being unsuitable for climbing, leaving me the only person to still have shoes of any kind.

Walls were negotiated and further passages explored. I gave a run down on how caves were formed and the importance of minimal impact to the locals who seemed to listen politely.

Eventually the cave exited at a high level into bushland quite high up on the mountain. Retracing our steps, I explored some of the off shooting passages. Coming out of one I could hear rocks falling and called out to ask what was happening. It seemed the locals had forgotten my lesson on



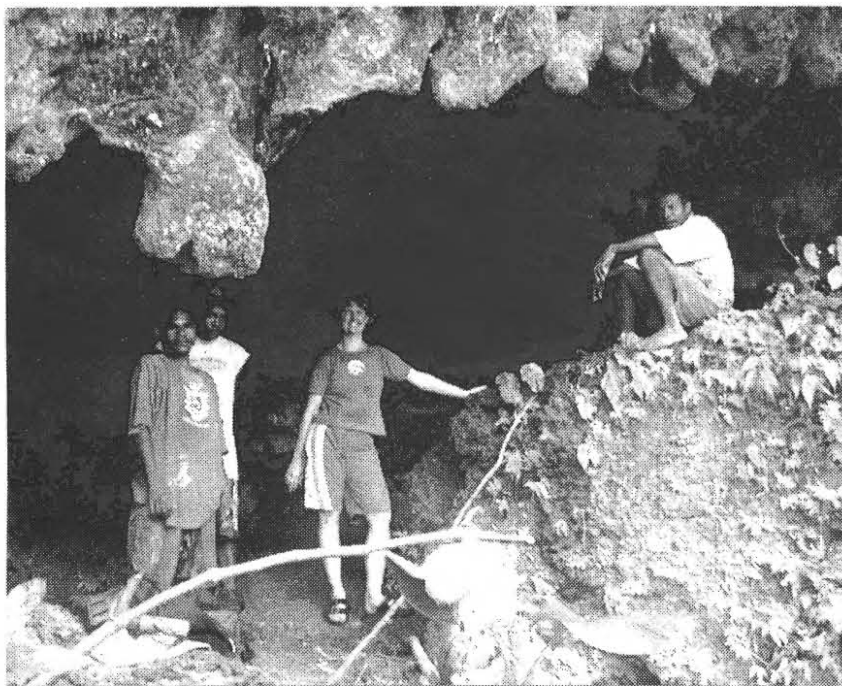
Misima Island

MISIMA CAVES, PNG

ALAN PRYKE

PAUL OSBORNE





**Misima cave entrance**

minimal impact and were throwing rocks at the bats on the roof. When I asked them what they were doing that for they came back with the classic reply like I was stupid or something "We eat them". Seems nothing is sacred in PNG.

So I put a stop to that and we retraced our path to the mouth of the cave where someone had climbed a coconut tree to provide us with a welcome supply of drinking coconuts.

## Caves and Karst On Misima Island, Papua New Guinea

Authors: Ollier, C.D. ; Pain, C.F

Published: 1978, *Helictite* 16(1):40-49 Abstract by authors: 27 caves were examined on Misima Island. Most are sea caves, but some have clear phreatic origins and some result from vadose solution along joints. One cave is formed by washing out of fragments in fault-shattered gneiss. Karst development in the raised coral appears to have been limited by the absence of streams flowing through the limestone. This results from the geomorphic development of the area, which has isolated the coral into discontinuous patches. Many caves have human burials, with associated pottery and one cave contains at least 100 skulls. Includes: 4 figures, 1 table, 2 photos, 6 refs.

We slowly descended the mountain via the same path all the time collecting various fruits and betel nut etc as we went. These guys are amazing the way they can travel through the bush collecting stuff to eat and drink along the way.

I should have mentioned earlier that the temperature was stinking hot and humid for the entire trip which made a dip in the mountain water very welcome on our return to the anchorage.

## Are there caves on Mars?

We will be looking at collapse pits for the next two weeks. Collapse pits on Mars are formed in several ways. In volcanic areas, channelized lava flows can form roofs which insulate the flowing lava. These features are termed lava tubes on Earth and are common features in basaltic flows. After the lava has drained, parts of the roof of the tube will collapse under its own weight. These collapse pits will only be as deep as the bottom of the original lava tube. Another type of collapse feature associated with volcanic areas arises when very large eruptions completely evacuate the magma chamber beneath the volcano. The weight of the volcano will cause the entire edifice to subside into the void space below it. Structural features including fractures and graben will form during the subsidence. Many times collapse pits will form within the graben. In addition to volcanic collapse pits, Mars has many collapse pits formed when volatiles (such as subsurface ice) are released from the surface layers. As the volatiles leave, the weight of the surrounding rock causes collapse pits to form.

These collapse pits are found within graben surrounding Alba Patera. Alba Patera is an old volcano that has subsided after its magma chamber was evacuated.



[Source: ASU THEMIS Science Team]

## Bat quiz!

### Facts about Bats

By Jodie Rutledge

### Did you know...

- Bats moult once a year from late spring to late summer.
- Large Bentwing Bats have a usual territorial range of 300km, but have been recorded travelling 1300km!
- Bats in torpor can shut off the circulation to their wings to conserve heat and energy.
- A roosting bat grips its perch automatically via a specially arranged tendon in the foot and a muscle has to be used to let go!
- In many Cultures such as in China and Macedonia, bats are considered very good luck.
- Some species also use their wings to catch insects in flight.
- Bats are placental mammals like us.
- They aren't blind!



# CaveMania

Full conference and trip details can be found at: <http://www.tesa.com.au/stc/cavemania/>

## Conference opened by Tasmanian Governor, Mr. W.J.E. Cox

CaveMania, The 25th Biennial Conference of The Australian Speleological Federation, will be located in Dover in Tasmania's Far South to be closer to the caves of Hastings and Ida Bay. Most of the sessions will be held in the Auditorium of Dover District High School and most people will be staying at and enjoying the hospitality of Far South Wilderness. By locating in this delightful country town CaveMania has taken the opportunity to involve the local and wider Tasmanian community in our activities.

The most significant of these involvements will be the official opening at 10am Monday 3rd January 2005, by the Tasmanian Governor, Mr W.J.E. Cox. Following this we will all be privileged to hear Alan Warild, Australia's most significant sporting caver, deliver the Keynote Address. Monday's activities will conclude with the opening of the 4th International Speleological Art Exhibitions which will be open until Saturday 8th January.

The most significant part of the whole CaveMania conference is the involvement of local businesses in the conference so at this stage we would like to acknowledge the contributions of our Sponsors.

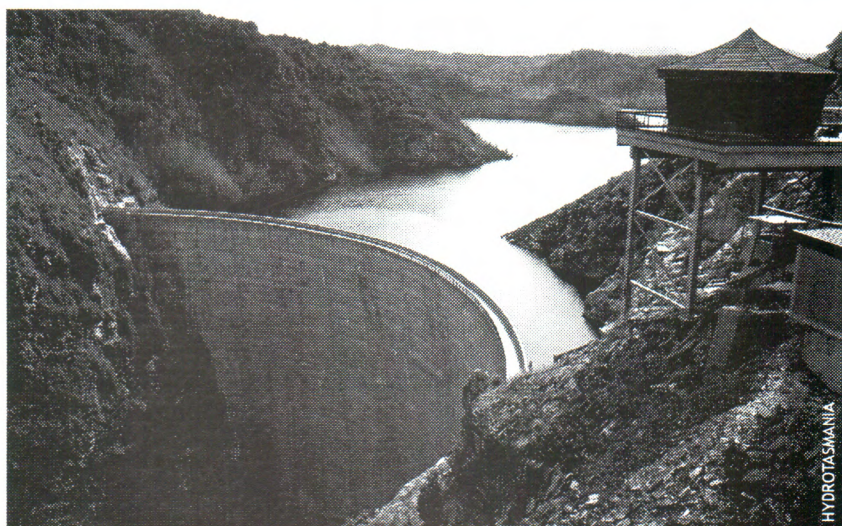
QANTAS, Australia's national carrier has been and continues to be one of the main lifelines into Tasmania bringing hundreds and thousands of tourists and business commuters each year. It also provides a vital role in the export of high quality Tasmania produce to mainland and overseas markets.

Cadbury Schweppes is one of Tasmania's icon businesses. Cavers all over the world are familiar with their superior chocolate products. Visitors to the state make a tour of the Cadbury factory a must do as part of their holiday. CaveMania participants can do likewise. Cadbury have supplied a major prize for the raffle at the CaveManiac's Dinner and a taster in everyone's showbag.

Cascade would be the other Tasmanian icon business. Cavers visiting Tasmania have known about and appreciated the taste of Cascade for decades. Over recent years Cascade has made big steps towards infiltrating markets in other states with its high quality produce. Cascade Premium and Cascade Premium light are familiar to all Australians but they would like us to sample the more traditional flavor of Cascade Pale Ale and have supplied drinks for the Art Exhibition Opening and the Fieldtrips BBQ at Hastings Thermal Pool.

Lark Distillery is owned and operated by Bill Lark a former caver from NSW he was involved in trips to Colong Caves when they were at the centre of a conservation campaign. Since moving to Tasmania he has been on trips to local caving areas but prefers to engage in his interests in his business of distilling fine spirits using Tasmanian produce. The Lark Distillery is a fine place to have a beer, a coffee, a snack, spend an evening or buy a unique Tasmanian souvenir.

Anvers Confectionary makes D'Anvers Truffles, the pick of up-market Tasmanian confectionary. Sold in



**Dam abseil! 15 January 05 with Ardvark Expeditions. At 142m this is the world's highest commercial abseil!**

most specialty delicatessens again these make a wonderful Tasmanian souvenir. The love and abiding interest of Belgian chocolatier Igor van Gerwen his hand made truffles surpass anything made in more traditional high quality chocolate manufacturing nations.

Mountain Designs is known throughout the country it is one of Australia's leading brands of outdoor equipment. Visitors to Tasmania can easily resupply blown out caving and other outdoor gear. They are sponsoring prizes for the Photographic and Map competitions.

Snowgum is now operated by CEGSA member Simon Kendrick who has now joined STC. Their business has provided stationery for CaveMania and prizes for Speleosports.

Walsh Opticals have repaired caver's cameras and sold them surveying equipment for decades. They have donated the major cash prize for the 2005 ASF Photographer of the Year.

Hastings Caves Experience, Adventure Cave Tours will be running the majority of conference fieldtrips on Wednesday 5th January for a minimal charge to recover staffing costs. They run commercial trips to Mystery Creek Cave (Ida Bay) and King George V (Hastings) and will show us the caves of which they are so proud. All participants can also gain free access to Newdegate (Hastings Tourist) Cave during the conference.

Ardvark Expeditions is run by local outdoor adventure personality Phil Harris. Phil has the only license to abseil the Gordon Dam at Strathgordon. On Saturday 15th January CaveMania participants can partake of this challenge for a minimal charge to recover costs.

Events Tasmania is charged with encouraging organisations to hold their major functions in Tasmania. CaveMania Fieldtrips is supported by the Tasmanian Government through Events Tasmania.

Please show your appreciation of this generosity by supporting our sponsors whenever you can.



## Conference accommodation.

CaveMania would like to thank the following sponsors for their support!

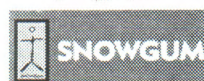


Events  
Tasmania  
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Ardvark Adventures



HOUSE  
ANVERS





# Exploration and surveying in Lechuguilla New Mexico USA.

*Over the past two years, two Aussies have had the opportunity to join annual expeditions to Lechuguilla Cave. To survey and explore virgin passage is an exciting prospect for any speleo, but to be able to enter the cave is something one has to pinch oneself to believe it is true.*



By Jenny & Gary Whitby.

Lechuguilla Cave (C05) is located in the Carlsbad Caverns National Park in the south eastern corner of New Mexico, USA. The nearest major airport is El Paso in Texas, which is approximately a three hour drive. The cave is named after a small agave plant called a Lechuguilla, which means "little lettuce" in Spanish. The cave was originally known as Misery Hole to the guano miners who lodged a lease in 1914.

This is the first historical record of the cave, but it is thought that the local Indians also knew of its existence long before. The miners scratched out an existence selling guano to citrus growers in California and surely they must have noticed the air hissing up through the rubble-strewn floor in the entrance chamber. Through the years the cave was visited on occasions by curious cavers, many who did notice the air. "If it blows, it goes" is the saying amongst cavers. Various intermittent groups were digging through the breakdown and silt, looking for the promised passages beyond. In 1984, the National Park Service gave a group of cavers from Colorado permission to dig in the cave. In May of 1986 the dig broke through into the vast labyrinth of wonder filled passages of Lechuguilla Cave. At the end of the first week, they had mapped an incredible 1070metres of passage to a depth of 215 metres.



*The journey begins*

**Jenny & Gary Whitby are members of Illawarra & Sydney University Speleological Societies, and have been ASF cavers for 10 years. They have caved in 7 states of the USA, and have participated in survey trips in the lava tubes of Hawaii, and the world's longest cave, Mammoth Cave, Kentucky. They are about to embark on their third week long trip into Lechuguilla Cave in November 2004.**



This cave is different to most as it was carved by highly corrosive sulfuric acid, created when hydrogen sulfide gas rose from deep underground pools of oil to mix with surface water leeching downward. This is known as a hypogenic cave. The unique conditions of Lechuguilla have been ideal for the growth of extraordinarily large and well developed speleothems. The result is one of the most aesthetically beautiful, mineralogically diverse, and geologically and exploration challenging cave systems in the world. The known length of this cave today is now over 182km, and at a depth of 489metres, it is the deepest cave in mainland USA, and is the 5<sup>th</sup> longest cave in the world.

The days are long, with a typical day surveying being a minimum 12 hour trip from camp. No time off for touring or photo taking, it's all work! If you just want to see all the pretties then buy the Lechuguilla book, as most areas are now off limits for sightseeing. The scenery is at times truly amazing, and you do get a bit blasé with gypsum and aragonite. You get to live, work and cave with the same 12 people with no other distractions for a week, totally cut off from the outside world. To cave wearing shorts and t-shirts in a constant temperature of 20 degrees in very high humidity is weird, but this is what we did for 7 days in September 2002, and 8 days in November 2003.

For every trip there is a 2 hour orientation safety meeting with the Cave Specialists at Carlsbad Caverns National Park. A presentation runs through the "rules" of Lechuguilla, and then you sign up as volunteers for the Department of the Interior, which covers you under workers compensation. By signing entry permits you are acknowledging your understanding of and agreeing to the guidelines for entry, and cave survey standards for the cave. Each of these documents is 8 pages long, and forms part of the Management Plan. One condition is that you must not disclose the location of the cave, however the



# Cave,

continue to push this world famous cave.  
do this in Lechuguilla

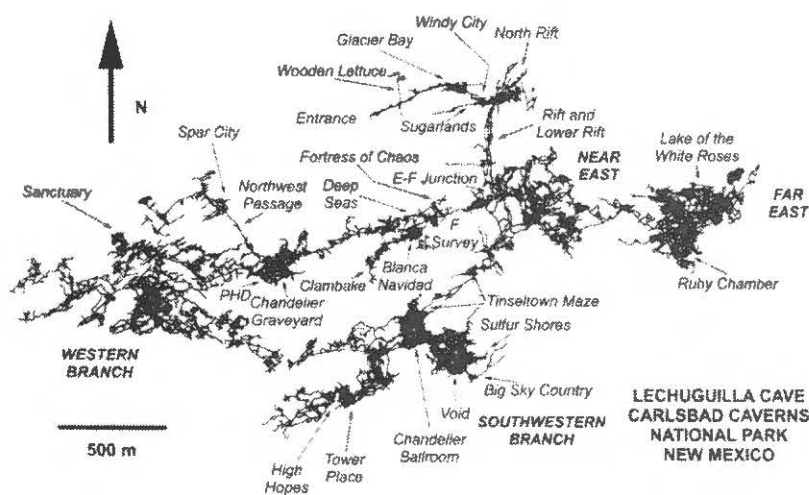
entrance is marked on topographical maps! The drive is a slow rough 40 minutes from the Carlsbad Visitor Centre along a road which has a locked gate. Then its about a 30 minute walk from where you leave the cars to the entrance. For entry our expeditions have split into groups of four for the trip into the cave, and entry is staggered by one hour to avoid bottlenecks on the trip in. It was stressed during the Parks presentation that there are 4 important things to remember whilst in the cave: (1) The conservation of the cave, (2) Your personal safety, (3) The goals of the expedition and (4) and to have fun!

## The journey into Lechuguilla.

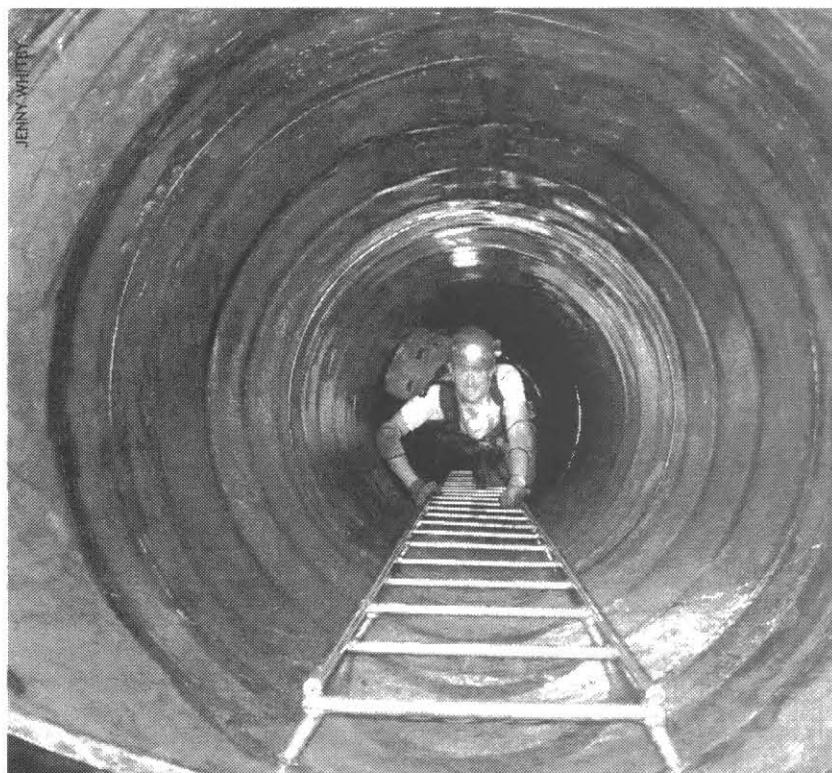
Most of the entry and access to the Western Branch would not be considered technically difficult, however there are many ropes to negotiate. All ropes, bar the entrance pitch, are permanently rigged and ropes are inspected every trip and a rope log completed. Additional ropes are taken into the cave either for replacement of worn ropes, or if needed in any new areas you may find. The entrance is vertical with the first pitch into the cave being 25m with rebelay, then followed by a small 3 metre pitch. Here you say farewell to daylight and the sun as you head into the new man-made entry. This replaced the ageing corroding galvanised 24 inch road culvert that was placed when the dig broke through in 1986.

The new entry is a stainless-steel airlock and culvert 36 inches in diameter. The airlock's two doors, one for entry into the airlock and one that seals the culvert, have virtually eliminated barometric air exchange through the access structure. There are a few small air gaps around the culvert, and one can still hear the wind howl. Wind has been measured up to 80kmph in this part of the cave, and the cave breathes in and out daily. You head into the airlock chamber, close the door behind you, open the other door into the cave then head down a 10 metre, 60-degree-angle stainless steel tube and fixed ladder. The cave was closed to all trips during the installation of the culvert which took two years to complete and cost around USD\$79000.

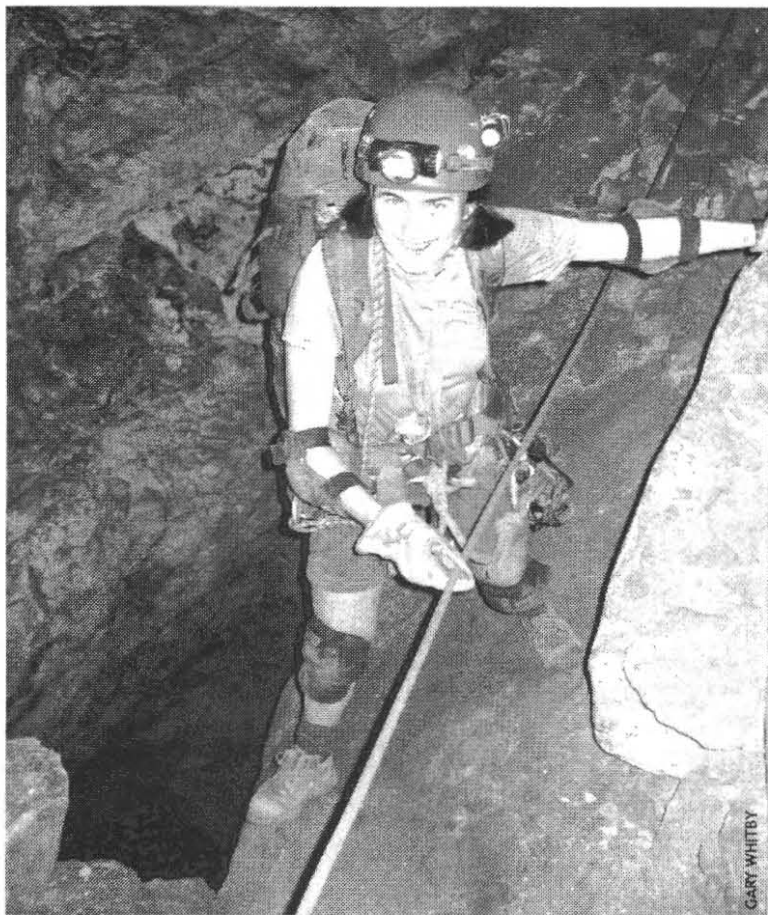
The cave is track marked, with the trail marked with flagging tape on both sides. It is almost impossible to get lost on the route to camp. You are not permitted to step outside the taped trail unless surveying. Two small lakes are passed on the 5 hour hike to camp however, no water collecting is allowed from these sites, and all water required for the trip to camp must be carried in. The first major pitch is *Boulder Falls*, named after the loose stones it shed when first descended. This 50 metre mostly free hanging pitch takes you down into the *Colorado Room* which is a huge cavern, and to see cavers



at the bottom of the pitch is like looking down on ants. Next on the way was *Glacier Bay*, a large room full of gypsum. The floor has many very deep drip holes, revealing the fact that you are walking on a huge layer of gypsum up to 10 metres thick in parts. Lechuguilla contains more gypsum than any other known limestone cave in the world. As one reaches the end of the room, the gypsum layer completely dissolves away and one climbs down through the remains of drip holes. Looking back at the room justifies its name as it very much resembles the end of a glacier. More gypsum was encountered in *Windy City*, then comes *The Rift* where the large walking passage abruptly stops. Perpendicular to the passage lay a great fissure. The route begins with a 3 metre climb down, to a large chockstone, then back up the opposite side. Along a bit further is a place called *Freak Out Traverse* which is appropriately named. It has a permanently rigged safety line to clip into, as this was named in 1989 after a large boulder moved 4-6 inches, as someone was climbing around it. Later,







**Freak Out Traverse.**

for safety reasons, the rock was relocated to the bottom of the rift, some 30 metres below.

Continuing through then comes *E-F Junction* which is an important survey station in Lechuguilla, as the cave splits to three distinct sections. The Entrance, Eastern, and South Western branches all meet here. On both our expeditions we have been surveying in the Western Branch of the cave. After that, *The Great White Way* is encountered which is an area that drops 90 metres or so of elevation using a series of five ropes. The chamber was named because of the white gypsum that coats every surface, then this gradually gives way to stark limestone boulders again. You then enter an area profusely decorated with very colourful formations for 100 metres called *Deep Secrets*. This section of the trail is marked Restoration Area gloves off. Shield formations and straws adorn the ceiling, some up to 4.5 metres long. The centrepiece of this chamber is a huge caramel coloured column 9 metres high, surrounded by coloured flowstone. On the final leg of the journey, you pass the camp toilet area, before arriving at the only designated campsite in the western part of the cave called Deep Seas Camp.

### The Work.

Both expeditions we have been on were survey exploration trips, and we have had the privilege of discovering and surveying virgin passage. Due to the large numbers of cavers that have surveyed in Lechuguilla over the years, there were extreme variations in the quality and accuracy of notes, maps and even survey methodologies. So now, a set of standards exist. All participants get evaluated

on their work, and substandard or poor work, may result in no further permit access for the individual. Maximum number of cavers per expedition is 12, with maximum numbers per survey party are 4, being made up of Sketcher, Lead Tape, Instruments and Inventory. The expeditions we have been on prefer to run 4 teams of 3 to get more done, so someone gets an extra job of inventory. Each member is given several Cave Inventory Forms to use to document the cave. The data provided gives a great database of the cave, as it gives a complete snapshot of the cave from one survey point to the next. Inventory forms are 8 pages long, and consist of notes for water, airflow, conservation comments, obstacles, formations, geology, biology and cultural. You just have to note the survey station number against what you see.

There are 61 items listed under formations alone to identify. Calcite has 37 types of formation to choose from, aragonite 5, gypsum 14 and hydromagnesite 5. For example under aragonite there was anthrodite, bush, frostwork, rim, or stalagmite. Try thinking of 37 different types of calcite formations? In the geology section there were 52 types to choose from. The topics in this category were bedrock, fossils, clays, corrosion residue, iron, karren, manganese, silica, sulfates, sulfur, phosphates and uranium. Biology was easy with only 29 categories under vertebrates and invertebrates, and cultural had an area for any artefacts, graffiti, pictographs and other to be commented on. Sounds a piece of cake! If only there was a miniaturised copy of Cave Minerals of the World provided for reference.

The sketcher is the key person of the survey team. In Lechuguilla you can't just rock up and want to sketch. You must be approved by the Park. Anyone wishing to be a sketcher submits a resume, with copies of their work. If you are good, you may be lucky enough to be approved. Detailed sketches are done in the cave, which does slow it down a bit, but then that's why they have such high standards for the sketchers. The inventory at times can take just as long as the sketching. For the surveying, foresights & backsights are done for every station, and errors greater than 1 degree are not accepted.

Trips to the known extremes of the Western branch can be very long days from Deep Seas Camp. In some cases it can be over 5 hours before you get to the point where you start to survey. There is a policy of survey as you go. This way the cave is fully surveyed and documented as it is found. There is a term used which we were unfamiliar with, "No scooping" which means no running ahead to look what's beyond. I recall my first day of surveying in virgin passage, having to call it a day, with a going lead 3 by 4 metres and not knowing what was around the corner.

### Life in Lechuguilla.

Any week long expedition needs a whole lot of planning and preparation but there are a few extra things to consider when the whole time is spent underground. How much food will you eat, will the constant temperature and humidity affect you, how many pee bags and how much toilet paper will you need? Everything you take in, must come out with one exception. Trips over 3 days duration do not have to



carry out liquid bodily waste, just solids. Trying to get the balance of everything right is the trick, you want to keep the weight of your pack to a minimum, but need to take adequate supplies to last.

On both trips I have taken a thermometer with me and took readings daily at camp. In 2002 it was 20 degrees Celsius, 92% humidity for 7 days straight, and in 2003 it was 20 degrees Celsius, 99% humidity for 8 days straight, no variations at all, despite some major weather changes in the outside world. Firstly getting your head around the concept of caving in t-shirts and shorts is weird, but once in the cave, one can not imagine wearing anything but. Non marking soled boots must also be worn. Many of the photos that you may have seen of Lechuguilla with models in them, took overalls in just for the photos. On both trips, some members of the expedition have suffered heat exhaustion on the journey in, and one participant was physically sick in the cave, which required major cleaning up and delays to their trip to camp.

Cave lighting for a whole week is also a new thing to consider. Lechuguilla is generally a light cave, with a lot of gypsum coated walls. The most popular choice for the expeditions is LEDs due to their long lasting power, on minimal batteries. We have used a high low beam 8 LED which runs on 4 AA batteries, and only needs one change for the week. A small dive torch is taken for a stronger light, which is attached to the helmet. Around camp a small 3 LED headlamp is used. A backup main light is also carried along with Photon Microlights which come in handy for marking survey points. Camp life has strict rules. Your personal camp space is a plastic groundsheet which is your kitchen and bedroom for the week. All food

must be consumed over it so if you are a messy eater, you end up sleeping in it! Then when out of camp, all food must be eaten over plastic bags and no crumbs are allowed in the cave. When departing on the last day, your camp groundsheet must be carefully folded up, collecting everything such as hair, skin cells, crumbs, and usually lots of gypsum particles, that have fallen on it. This limits the human impact on the area so no nasty funguses grow. Deep Seas camp has a floor of crushed calcite rafts, and the roof is covered with mammillaries and it is not very far from the only water collection site in the Western Branch of the cave named Lake Louise.

Enough water had to be carried in to reach camp on the first day. As water can only be collected from designated areas of the cave, there are very strict rules regarding the collection of water, to avoid contamination. Many of you may have seen pictures of Lake Louise, a beautiful part of the cave. You head down off the main trail into what was once the lake, but now is a floor covered with calcite raft crusts. Looking above you, the ancient water line is so distinct. The roof is covered with huge white mammillaries. The basin you are standing in is coloured soft yellow pumpkin looking as if it has been painted, the colours are so surreal, then there is the lake.

To collect water, a pitcher is in a marked area, about 10 metres from the lake edge. You take this down to the water, and fill it. Nothing is allowed to touch the water except the pitcher but not the handle. Your hands or feet must not touch the water. You then walk back 30 metres to the marked out square, and carefully pour the water into



GARY WHITBY

*Water collecting at Lake Louise.*





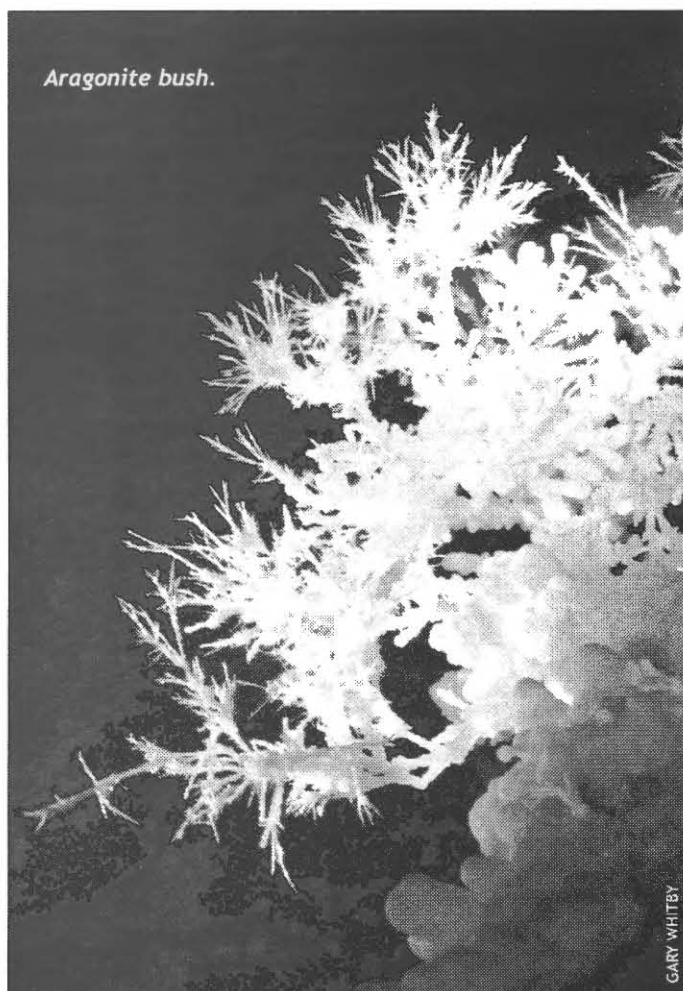
GARY WHITBY

**Hollow gypsum stalagmites named The Three Amigos.**

your container, without touching the pitcher onto the container you are filling, as this would then contaminate the pitcher. Each day we would leave camp, fill our water bottles for the day, then on the way back home also fill up an empty wine bladder that we would use for dinner and breakfast. Most people purified their water with iodine tablets just to be safe. Lechuguilla is not the place to get a tummy bug. Without a safe drinking supply, trips to the end of known explored passages in Lechuguilla would be virtually impossible. Although we only saw 2 other water areas, there are numerous pools and lakes in Lechuguilla. Many of these are designated Resource Protection Zones due to their sensitive nature. Some have straws dipping down into the lake levels, others have subaqueous helictites. There are unique micro organisms in this cave that have been found no-where else in the world and some pools contain microbes that have been used in cancer research. Swimming or entering the water is now not permitted anywhere in the cave, unlike years gone by. If you discover an area with water, you must leave it pristine for microbiological research, as contamination could compromise undiscovered microbes. Strict hygiene rules apply to the only toilet area in the Western Branch, and special over shoes are worn to the toilet to help contain the possible contamination. On your daily survey trips from camp, you must take toilet supplies with you, and return all collections to the toilet area for storage. We also took sanitising hand gel, and now after hearing about us taking it, the Park recommends participants on expeditions use it.

In 2003, there were 9 survey and exploration permits granted and a total of 64 cavers entered the cave. That year the cave yielded 4.34km of new passage, and 4.5km of resurvey was completed. Many loop closures, blunder fixing and much resketching was done. There was one accident in the cave, when a caver fell and injured an elbow suspecting a broken bone. A self rescue was performed, and the trip cut short. In 2004, 8 permits were issued with around 50 people participating on expeditions. As at August 2004 the cave is 182km and still going. The expeditions we participated in, during 2002 & 2003, discovered and surveyed 1.9km of new cave, and resurveyed 1.5km in areas including Paris-Texas, Chandelier Graveyard, Keel Haul, Widowmaker, Frostworks, Needlepark Maze, Jackpot and Western Borehole. Fifteen days of our lives have been spent in this cave, an amazing place, aptly known as the Jewel of the Underground.

When one returns to the surface your senses seem sharper. The first glimpse of the soft glow of the afternoon sunlight bouncing off the cave walls is so colourful and radiates warmth. After the final prussik, the crispness of the autumn air greets you along with the gentle touch of the wind on your skin. The desert vegetation has flowers you didn't notice and it seems so much greener than you recall from the walk in. You hear the birds, and the fresh air, I'm sure, smells much better than the group of 12 who all emerge after spending a week underground!!



*Aragonite bush.*

GARY WHITBY



# CAVES AND KARST OF WOMBEYAN.

*Edited by Ross Ellis.*

Sydney Speleological Society Occasional Paper No. 13, 2004. 212 pp. Paperback — A4 size. ISBN 0-646 44063-2.

Sydney Speleological Society  
P. O. Box 198 Broadway NSW 2007.

This book has been published to celebrate the Sydney Speleological Society's recent 50th Anniversary (see the separate article herein), and is something of a follow up to SSS's Wombeyan Caves book (Occasional Paper No 8, 1982). The latest book is a monumental effort, with eighteen contributing authors, a number of which of also ACKMA members, including Ben Nurse, John & Glenda Wylie, Julia James, Armstrong Osborne, Jill Rowling, Russell Drysdale and Mia Thurgate.

The first chapter is an updated *History of the Wombeyan Caves Area*, which is extremely comprehensive, and details cave discoveries and events from 1863 till 2004. In Chapter Two, John and Glenda Wylie detail the *Guides at Wombeyan* over the years, while in Chapter Three Geoffrey McDonnell delves into the *History of Thomas Lambert Fox*, an early explorer at Wombeyan. Professor Julia James et al, in Chapter 4 discuss *The Magic of Marble* and gives a scientific and historical perspective on Wombeyan's geology, focusing on the current show caves.

In Chapter 5, Dr. Armstrong Osborne provides an extensive treatise on *The Geology and geomorphology of Wombeyan* which, expectedly, is wide-ranging and very readable. Jill Rowling briefly covers the fascinating topic of *Aragonite at Wombeyan* in Chapter Six, while in Chapter Seven Janece McDonald and Russell Drysdale comprehensively covers *Palaeoclimate Research in Wollondilly and Korrunga Caves*.

Todd Dennis extensively covers *Wombeyan Hydrology* in Chapter Eight. In Chapter Nine Mia Thurgate dilates on *Wombeyan Cave Fauna*, while Cindy Mann follows up in Chapter Ten with *Microbial Life*.

Clearly, the book seeks to cover virtually every conceivable aspect of Wombeyan — and to my mind it eminently succeeds! In Chapter Eleven, Rodney

Falconer deals with *Plants in the Wombeyan Caves Reserve* (which concludes with a comprehensive listing of species), and in Chapter Twelve Ted Edwards deals with *Butterflies and Moths*.

Chapter Thirteen finishes the book with John and Glenda Wylie providing a complete *Annotated Listing* of all known caves at Wombeyan, followed by a thorough index of the whole work. The book features a full colour cover, over seventy colour photographs, plus many black and white images, maps and diagrams. What can one say? — if one has but only a minor interest in Wombeyan, this book is an absolute must. It is as good as it gets! — the result of many, many years of comprehensive research; and it is very readable to boot! Get it!

Re-printed from ACKMA Journal No.  
56 (December 2004), with permission.  
**Special Offer to ASF/ACKMA Members!**  
Ends January 2005

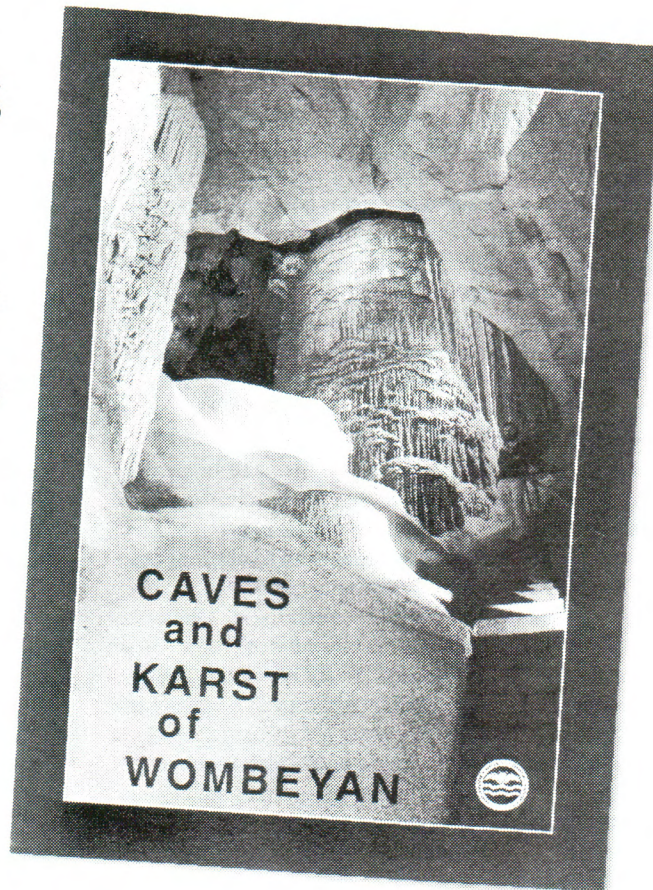
Cheque or money order made out to the Sydney Speleological Society and posted to Ross Ellis, 11 Arkana Street, Teleopa, NSW 2117. On receiving the payment in full Ross will package and post the article. Please ensure a note is included indicating what you are requesting, and that the person's mailing address is included. Cost: \$53.50 + \$9.00 for postage and packaging = \$62.50, until the end of January 2005 (It then becomes \$59.50+ \$9.00 for postage & packaging).

Kent Henderson, ACKMA

## What's happening in your state?

Has your state or club recently organized a social or caving event? Caves Australia readers are eager to know about happenings in all states. Send details of your states event to the Editor or Production Manager.

BOOK REVIEW





## Silent Caves

*Having had the chance to dive on a re-breather in the Nullarbor Plain, I knew cave diving on any Closed Circuit Re-breather had its challenges, and rewards, in such a harsh environment.*

By Samir Alhafth

My first experience diving an 'Inspiration' re-breather in a cave came during our Cocklebidy expedition in September 2003. This cave is huge, with some sections of the cave boasting big passages big enough for two buses to fit side by side with room to spare! But what was to come this time was totally different; hard work like at Cocklebidy, but very different.

It all started when Dave Apperley (NHVSS) asked Paul Garske (ASF member) to do a training run in Wellington's McCavity Cave, located 5 hours west of Sydney. This was to be a preparation for a bigger expedition in the future. With both of them using Twin Re-breathers, the challenge was how to get a square re-breather through a round hole. The advantage with these two units is that they are modular and can be taken apart into smaller pieces! This was to be tested in McCavity.

When Dave asked me if I wanted to be involved as support, I didn't need to be asked twice! Having been to McCavity once before with Paul diving on Open Circuit, I was getting ready to put my Sidemount rig together. I asked Dave how he was planning to get the units to the water; his answer was through a different, larger entry point! Those that are familiar with McCavity cave will know this is a delicate part of the cave, and not normally used by divers, due to the cave life in the water and tree roots that penetrate from the surface to the water. This was going to be delicate operation getting in and out of the water, wearing such heavy units.

Since I hadn't been to this entry on our previous trip, I asked Dave for his opinion on whether a standard 'Inspiration' re-breather would fit through

**Samir lives in Sydney and has been cave diving\ diving since early 2000. His use of various diving methods such as rebreather and mixed gases has led him to many interesting wreck sites, sink holes and caves around Australia. Read about his most recent challenge to dive McCavity Cave at Wellington, NSW.**



the restricted tight sections of the dry cave to get to the entry point? His response was promising but we had to wait and see when we got there.

When we packed we had enough gear to get 6 divers to dive! Our reasoning was that as we didn't know if any of the units would fit through the restrictions we would either dive the cave on Open Circuit, or go and dive the Gold Mine which Dave discovered a year back. Of course our main objective was to dive McCavity on re-breather.

Friday afternoon arrived. Paul and I pack the car; a very interesting exercise every time we do this as somehow the amount of stuff we take just grows and grows! My poor Vectra was packed with so much stuff; I couldn't see the back window! When Dave rang us as we were on our way to stop and buy a pack of beer, Paul and I just looked at each and laughed. We had no room in the car for anything! However, we were able to fit a bag of ice in to chill what we already had!! These caving trips are just too tough!

Next morning it was time to put the re-breather together, make sure all lights for diving and caving had fresh batteries, and gather ropes for hauling the gear into the cave. Greg Ryan arrived to give us a hand.

Before we started carrying all the gear inside the cave we had to finally check the restriction and see how small it really was. Dave went for a quick look and came back with not so good news. The section he was looking at was way too small to fit any piece of a re-breather, but Greg knew of another little tunnel lower that should fit the gear through. He was correct, but it didn't look much bigger to me.

The main concern for me was whether the body of the Inspiration re-breather would fit through. It was not such a problem for Dave's and Paul's units, since they break down into smaller pieces, but not with a standard Inspiration!

We started hauling the gear through and once we got everything to Central Station, we started to take the units through the lower restriction to the reach the water. To my delight, with a bit of shoving,

PHOTOS: SAMIR ALHAFTH



**Samir ready to submerge and dive! Wellington.**







## Deeper Under the Ning Bings

*David Woods and WA cavers continue their exploration of the remote West Australian Ning Bing karst in this exciting second part of "Southern Ning Bings"*

David Woods

4th August 2002

I had been thinking about getting back out to the Southern Ningbing to have a better look at the caves that I had found previously. I got in contact with Paul Cornish on the Saturday and asked if he would like to join me on my trip tomorrow. He was keen so we set a time for early Sunday to depart Kununurra.

We arrived at the Southern Ningbing area at about 6am. We parked the car and headed towards the first cave. After gearing up and tagging the entrance (KNI 63), we entered into a belly crawling phreatic tube. After 20 metres we were up on our hands and knees and moving more comfortably over a now sandy floor. About 50 metres in, it cracked into a chamber that broke into daylight through the roof. As we stood in the chamber we estimated it was 8 metres high and about 6 metres round. One could also enter the cave here, however there was a short vertical section that would require care.

Much to my relief we discovered that the other side of the daylight chamber continued phreatically on and into the darkness. This required more hands and knees crawling on exposed limestone for about 20 metres before we hit more sand. Whilst crawling we encountered a large mertens water monitor (*Varanus mertensi*) in a sandy passage about 4 metres wide. It totalled about 1 metre in length and luckily for us it remained close to one wall. So we crawled as closely as possible to the opposite wall and made tracks before any unpleasant altercations.

There were quite a few inactive stalactites, columns and gour pools in this area. The passage became much larger as did the formations. It then made a 90-degree turn before descending down a sandy slope about 5 metres long. More crawling followed a low flattener, and then we hit water.

Seeing the water disappearing around the corner about three metres in, we decided to get wet. We unclipped our underduds, donned our helmets and entered into the cool water. There was eel tailed catfish (*Neosilurus hyrtlui*) and freshwater crabs (*Holthuisana transversa*) present as well as the purple spotted gudgeon (*Mogurnda mogurnda*), only a metre from dry passage! After rounding the corner I could see no end to the water passage, so Paul and I continued on. The water at its deepest point was only 0.5m and covered in floating guano, the roof about 0.75m from the surface of the water. About 10m into the swim we could see a water-filled passage with its roof covered in roosting bats. This was one of the larger populations of leaf nose bats I had seen (pop. of about 2000+). A proper identification and survey would be necessary. For the

last 40m of this area we used dim lights and stayed as low and quiet as we could, so as not to disturb the roosting bats. Where the water ends a muddy passage runs for about 8m before a small shallow pool meets a limestone block in the middle of the path onwards with a gap only large enough to see through. We looked around to see if there was another way to continue, but found nowhere. We thought of the small hole leading off the main passage, but it's a gnarly little hole, so we decided to save that one for later.

There was a plentiful supply of food and water in this cave to support survival, and now appeared a good home for the water monitor. Even though it was about 100 metres from the entrance and pitch black, I certainly doubt that he was stuck.

We crawled our way out of the cave after drying off a little and gearing back up. It was roughly 150 metres in length and we spent roughly 1 hour underground. As it was brimming with life, both terrestrial and aquatic, we were both stoked and were excited about what the next cave may hold.

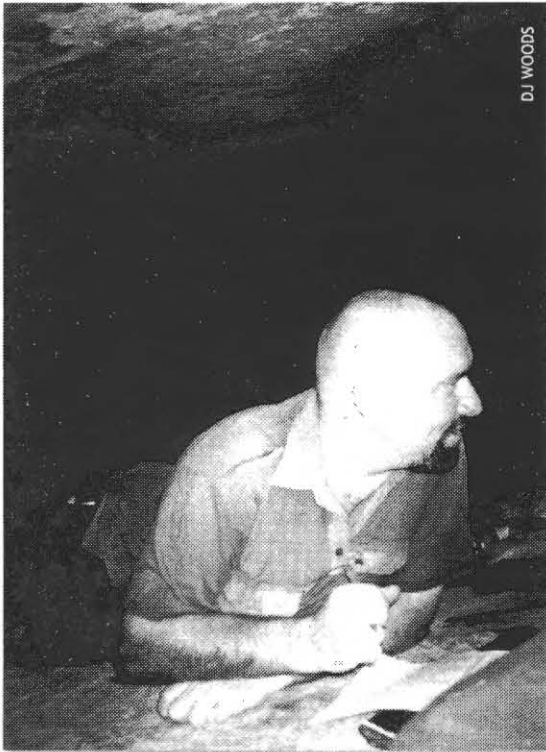
After a short break, we made the short walk to the collapse under the fig (we tagged this one KNI 64). We then made our way down the entrance chamber to the dry streambed. We crawled off through an easy phreatic tube that bored into the range. Well occupied with Banded cat snakes (*Boiga fusca*), a total of 5 in the one cave. This cave was similar in decoration to the first cave we'd looked at today, with quiet a few stals, columns and shawls. After about 140 metres in we both looked with astonishment as we had arrived at a sump of beautiful clear water. Having not anticipated this sump we came without a mask, so Paul had just a quick look for about 1 metre in. He reported that it was a good size body of water. I immediately thought of Paul Hosie, who would be stoked to explore a possible cave dive!

Although we could go no further I was still bloody happy!



KNI 52 — John, Mick and Andy.





DJ WOODS

*Johnno Lying Down on the Job in KNI 64.*

After spending roughly one hour in this second cave we retreated to the daylight, extremely chuffed with these very uncharacteristic Ningbing caves.

By afternoon we made it back to Kununurra, and it's true what they say about news travelling fast in country towns. Early that evening Paul Hosie called on the blower wanting to know more and when he could come and have a look at the sump!

## 18th August 2002

The next Sunday came quickly and Paul Cornish and I had decided to explore this area a little more.

Another early start and by 6.30am we were walking in the Southern Ningbing again. Paul walked about 50 metres up the limestone hill, parallel to me, as I travelled along the base of the hill. We headed due north, searching for any signs of a cave. About 2kms into our search I rounded a small limestone ridge and to began to walk east. Before long, I dropped from the waist high grass into a dry dusty creek bed. I followed it downstream only a short distance before it vanished under a small limestone wall. Paul ended up on top of this wall shortly afterwards. We had a closer look at our options of getting into this cave, as there was not all that much room. After pulling out leaves and sticks, Paul pushed his way past the rocky entrance and belly crawled in. I followed him in and off we crawled down a phreatic inflow, no higher than a meter and only 2 metres wide, about 20 metres in a daylight fissure, just large enough to squeeze through. Roughly another 800 metres later in this high humidity passage we broke into a large walking passage 6-8 metres high and 4-5 metres wide.

The cave is still very humid at this point.

We were not prepared for the cave to go for this long, but curiosity had got the better of us. We hadn't brought any water into the cave with us and I could feel my strength was beginning to run low and dehydration was being to take hold. I rested to

catch my breath and Paul went roughly another 60m in through this larger passageway we had cracked into. Paul found no end and he returned to find me no more rested than when he left 10 minutes before. We decided to start the arduous crawl back to daylight. We kept close together as we headed out. I needed 4 or 5 stops from the exhaustion I was feeling. After nearly 3½ hours in this low, humid crawl we squeezed out and gulped back the icy cool water waiting for us in our packs. We felt we'd both learnt a valuable lesson and felt completely knackered. By then the temp was pushing past 38oC and we decided to call it a day. We decide to temporarily name the cave, "Sphincter Buster", for it nearly busted ours!

It was what I would call good potential, but definitely hardcore to the max! I look forwards to surveying this bugger and pushing it further. There is the possibility of CO2 in the main/large passage as rotting leaf litter mixed with mud, covers the floor and walls. The humidity in that passage wasn't far off 100%.

Walking back to the car we passed a suspicious looking depression and upon inspection we confirmed it as another small cave entrance 2m wide and 0.5m high, covered by a small tree. It looked bloody good! Although we were both exhausted, we couldn't help ourselves. We geared up, grabbed our water bottles and crawled in. We were pleasantly surprised when after about 10m we were walking upright again, down a decorated passage. This broke into a large chamber also decorated with columns, stals, straws and gour pools. All I can say is that for 500 metres or more Paul, and I walked through amazing passages and a few more large chambers.

Deep into the cave there lies a fully active chamber with stals, columns, helictites, straws, a pendulite and more. This is a sight not often seen in the Ningbing, where here every formation was dripping.

This cave blew our minds with its sheer size, decoration, phreatic sculpturing and the fact that it showed little sign of stopping. We exited the cave to



*Leaf Nose Bat.*

MICK'S





*Good Column in KNI 51 – Smilin Woodsy.*

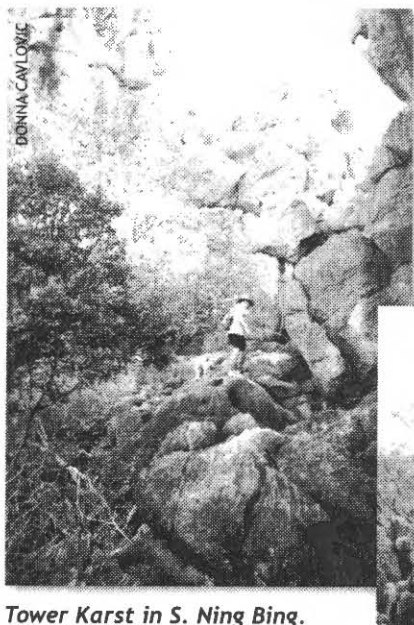
immediately GPS its location and give it some sort of name. We decided on the temporary name B.F.C. This cave will need to be given a more appropriate name once fully explored and surveyed.

This find had put the icing on the cake for Paul and I, and we were again raving with excitement after another unbelievable day. When driving back into town I was thinking about the phreatic caves in this area as compared to the vast majority of grike-controlled systems in the Ningbing Ranges. There seemed to be uniqueness about the development and formation of these cave. I began to wonder how many more caves like these ones were still hiding in the labyrinth?

### 29th August 2002

Paul Hosie was keen to check the sump out that we discovered in KNI64. Paul Cornish and I had explored this cave 2 weekends earlier. A day was organized mid week for this adventure as Paul H

### *S. Ning Bing Range.*



*Tower Karst in S. Ning Bing.*



DAVID WOODS

had plans of romancing that weekend, and he had no intention of cancelling that! He also had a tight schedule and was off to Queensland for a while.

We drove out to the range early on Thursday morning and walked past KNI63 our way up to KNI64, our cave with a sump at the end of it. Paul was most keen to explore this sump for the potential of it continuing into a cave dive. We crawled into KNI64 and made out way down to the water, Paul donned his mask and disappeared into the depths of this sump. I could hear him taking a breath about every 45 seconds in between his pushes for another air pocket. After about 4 free dives he came back to me on the bank of the sump advised me that it "was worth a look with tanks and he would come back with gear again at some stage".

After exiting KNI64, and seeing 4 banded cat snakes in the main passage, we pushed on to tag B.F.C from the previous weekend (KNI51). Paul H was keen to have a look at this cave, especially after hearing me rave on about it all morning. He too was blown away, and it can certainly be said that this cave indeed leaves a strong impression on the caver.

Our next stop was Sphincter Buster, we tagged this cave KNI 65. Neither Paul nor I wanted to push this cave today so we explored the surrounding area for holes before heading back to the car for lunch.

The last weekend Paul H had been exploring an area east from our current lunch spot. He found a vertical entrance that he was keen to throw a rope down. So after lunch that's exactly what we did. The walk to the hole takes you over vast expanses of limestone pavement, looking a bit like a trippy lunar landscape. We relocated. We Descended. We conquered. Paul sketched his find and put the last tag on for the day, KNI68.

Our deliciously cold, home brew beer was waiting for us in the car so we made haste back to the vehicle. A slow drive back to town, dodging the cattle at twilight saw the end to another successful day in the beautiful Kimberley outback.

### 1st September 2002

John and Andy rolled up after being in the West Kimberley on a surveying trip to Ball Gown. I let them both know what delights the Southern Ningbing had produced and John and I excitedly organized a trip for the next weekend. The crew assembled on a crisp Sunday morning and made tracks out to our designated location.

We walked to the unexplored area and fanned out to begin searching a larger area. We used CB's to make this easier and ensure that we didn't miss anything. Over an hour later John and I simultaneously found features. John's cave was very large, its first chamber being very impressive. There was also a large population of orange leaf nose bats (*Rhinonycteris aurantis*) in a lower, more humid passage, below the big entrance chamber. This was a phreatic tunnel and only hands and knees crawling size, and will receive more attention on a P.M trip when the bats aren't home. Also in this large chamber below a rock pile is a tight sump. It is easy to climb down to the water and we wondered what the extent of it would be?

As John called on the CB to tell me of his find, I was walking along a shallow, dry creek bed towards



the base of the range and in my view was a patch of dense green vegetation. I hit a stream with water shallow but clear. I followed it upstream to its source and it was a small spring gently oozing a constant flow of freshwater, which sustained a lovely little eco system. I was then somewhat surprised to spy a familiar looking yellow reflector tag numbered KNI18. This had been the number designated to "Siggins Spring". This will still require more investigation, but this is the spring that John and Clive tried to find near KNI19 without luck. Either the map has the spring incorrectly positioned or this is another spring entirely, and someone has assumed otherwise and associated the name and number incorrectly.

Another small cave was located by John, in the same doline but at the other end. The main lead crapped out as Mick found out. The other lead, known as the double sphincter buster was avoided by all. (A couple of weeks later even Paul H baulked at the sight of it). The karst features were tagged KNI52 and KNI53.

Another small cave was found by John. Mick and Donna squeezed through to find some water in a rather small and squashy chamber with no leads. This was tagged KNI55.

Well another successful day and we headed back to the car. We decided no more exploring as we now had plenty of surveying to do.

## 15th September 2002

### The Surveying Begins

Today was a designated surveying day and we began with KNI63. It was completed with no major dramas in 2 ½ hours. Our resident water monitor was still lurking around after almost 6 weeks since we first sighted him. So I'd feel happy to say this would be his home for the dry season.

Surveying the water passage was a little tricky but we managed quiet well. There was also still a healthy bat population in the wet section of the cave.

We moved after lunch to survey KNI64. We completed the main passageway up to the water where we left some survey tape for the cave divers to continue on and beyond the sump. We knew Paul H would be back in town soon to check out

the dive and to further push KNI 19 with Paul Boler (diver/cameraman).

Whilst on tapeworm, Paul C spotted a small creature scampering across the passageway in front of him. He quickly followed it under a small ledge where it stopped and looked out at us. Paul and I both got a good eye on it for a couple of minutes. We weren't sure what we were looking at, but it was some sort of furry mammal with pinkish feet. Its body length was about 250mm and a tail of about 200mm that had a white tip. Later that week Paul found it in a book and it was a water rat (*Hydromys chrysogaster*). This mostly nocturnal rat was probably quite at home in this cave. Excellent discovery!

We have yet to survey an upper level towards the entrance. It follows the same direction as the main passage.

## What a year

Over the next couple of weeks John, myself, Leonie and Paul C began surveying BFC (KNI 51). We have made it past the 500 metre mark and with a little further exploration we soon realized that it would easily go over a kilometre.

2002 opened up a unique collection of caves, all water formed (phreatic), in the Southern area. A more detailed understanding of this area will be collated in the years to come. This was one wicked season of caving for all involved and next year looks to be even more exciting.

"The Far North Caving Crew" are all eager to survey and explore this area further. With anticipation and excitement we wait for the rains of the wet to cease, so as to ensure our safe and bog free access to the caves for this years season... and, hopefully we'll be seeing those cave divers in 2003!

David and crew have endured weeks of isolation, disappointment and then exhilaration of new finds in this most remote region of north Western Australia. Part 3 will see David et al. return for another push into and under the "Ningbing".

## The Players:

Donna Cavlovic, Paul Cornish, John Cugley, Paul Hosie, Andy Lambert, Michael Schmidt, David Woods, Leonie Turrer.

### KARST



## Cave Surveying Software Update

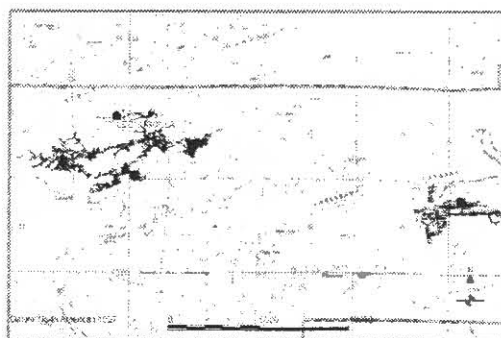
Getting the plot! Winkarst Version 12 now available

WinKarst has been around for a long time and is one of the many cave surveying programs available. This program is "shareware" with a 30-day trial period and runs on Windows '95 through to XP operating systems. At US\$25.00 it's worth checking out!

After loading your survey data and GPS co-ordinates, Winkarst can draw your cave or landscape in many formats from three dimensional models, morph sketches, digital elevation models, digital line graphs and overlays on maps!

For more detailed information on Winkarst, visit their home page which also lists many other cave surveying programs such as Compass, Cyber Topo, Walls, Surverx and more.

<http://www.resurgentsoftware.com/winkarst.html>





## HELP SAVE AUSTRALIAN CAVES & KARST

The ASF Environmental Fund is completely funded by donations from cavers, caving clubs and public. Your donation or bequest to AEF will assist our work of informing Australians, and conserving Australian caves and karst. To make a contribution or receive an information pack, contact The Secretary or visit [www.caves.org.au](http://www.caves.org.au). Registered as an environmental body by 'Environment Australia'.



## Bat Origami!

Interested in bat origami! Here are a few good sites:

Sara McCabe Bat Origami with Video Instructions  
<http://www.batcon.org/batsmag/v18n1-5.html>

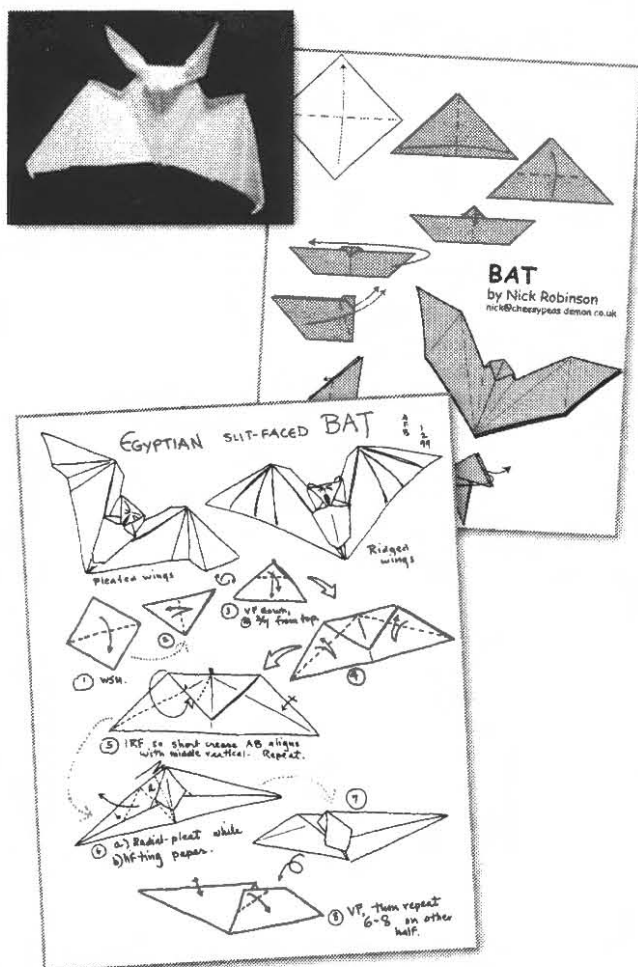
Nick Robinson's Bat Origami  
<http://www.12testing.co.uk/origami/diagrams/bat.htm>

Andrea's Bat Origami  
[http://www.cs.unc.edu/~mantler/misc/fun\\_stuff/art/origami/](http://www.cs.unc.edu/~mantler/misc/fun_stuff/art/origami/)

Anita's Bat Origami  
 Source: <http://www.ulster.net/~spider/egybat1.htm>

<http://www.catteacorn.com/batfold.htm>

<http://art-smart.ci.manchester.ct.us/easy-bat/easy-bat-resources.html>



Answer from page 2

## Mt Everest & Himalayas.

*"The presence of limestone and ocean marine fossils at the top of these mountains is one of the key pieces of evidence cited that advanced the idea of plate tectonics (large chunks of the Earth's surface moving over molten rock in the Earth's core) when it was first proposed as a theory in 1915."*

Source: [http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img\\_id=15300](http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=15300)

## What's in ...

### ACKMA Journal September 2004



*Another great issue of serious cave reading has been published. The September issue includes:*

- A Gathering in Rockhampton – Kent Henderson
- Cave Project Management? – Neil Kell & Elery Hamilton-Smith
- The Fire Clay Caverns of Mount Morgan – Kent Henderson
- Cave Guides Workshop 2004 – Cathie Plowman & Scott Melton
- A Retirement at Waitomo – Kevan Wilde
- Visitor Effects, West Coast, New Zealand – Deborah Carden
- Launch of Friends of Wellington Caves – Andy Spate
- History of Cammoo Caves – Theodore Olsen
- New Tasmanian Cave History Book – Nic Haygarth
- ANDYSEZ 50: *Lampenflora*, Part Three – Andy Spate
- Karst Science – Ian Houshold
- Tasmanian Karst Update – Ian Houshold
- Palaeontological & Archaeological Resources in BC – Carol Ramsey
- Camooweal – how many caves are really here? – Dennis Rebbechi
- Cave Pals – Andy Spate
- A Brilliant Caving Light! – Steve Bourne
- Book Review – Elery Hamilton-Smith

Are you interested in next year's West Coast NZ Conference? This issue also includes an insert program and booking form.

For more information about ACKMA, please visit:

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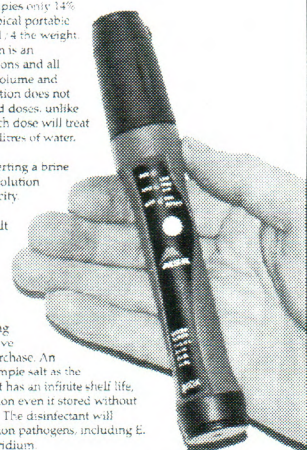
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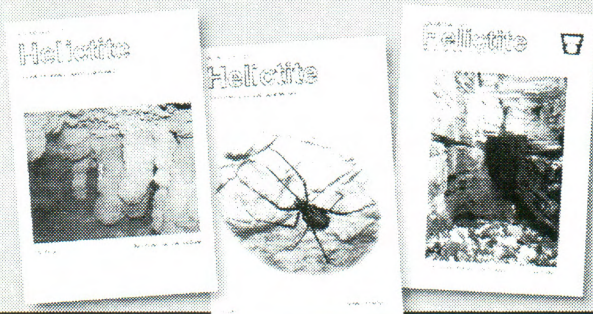
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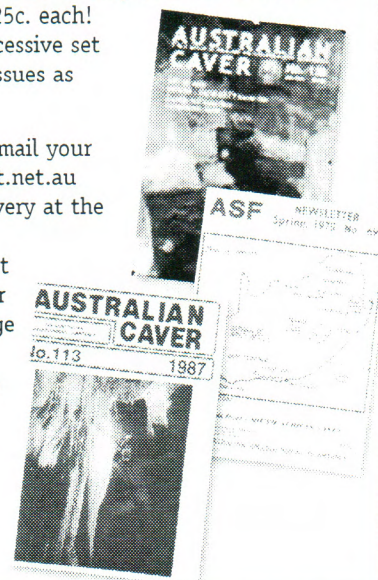
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