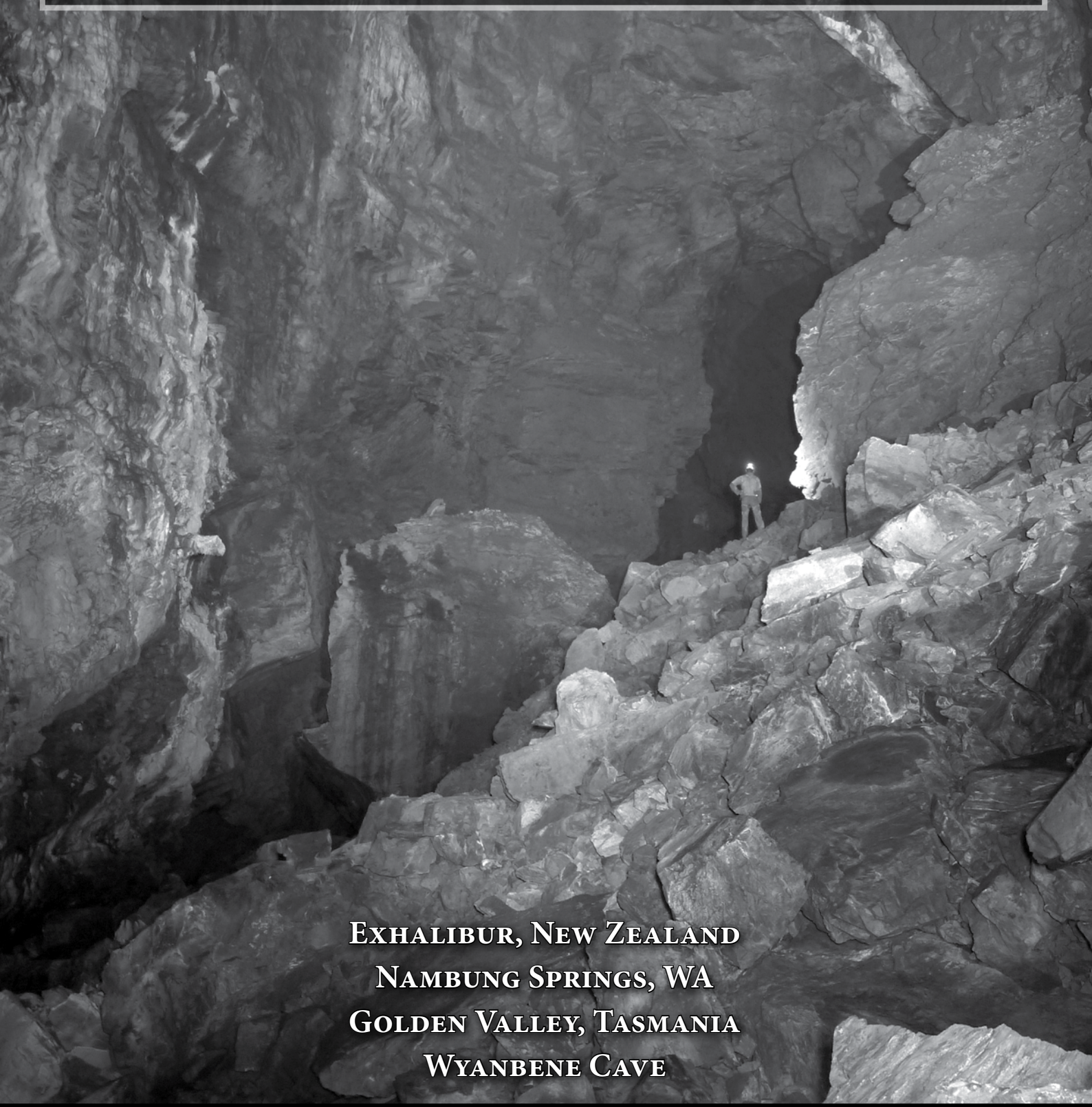
CAVES AUSTRALIA

The Journal of the Australian Speleological Federation



Exhalibur, New Zealand
Nambung Springs, WA
Golden Valley, Tasmania
Wyanbene Cave

No. 191 • DECEMBER 2012

COMING EVENTS

This list covers events of interest to anyone seriously interested in caves and karst. The list is just that: if you want further information the contact details for each event are included in the list for you to contact directly. A more extensive list was published in ESpeleo *earlier this year. The relevant websites and details of other international and regional events may be listed on the UIS/IUS website http:///www.uis-speleo.org/ or on the ASF website http://www.caves.org.au. For international events, the Chair of International Commission (Nicholas White, nicholaswhite@netspace.net.au) may have extra information.*

2013 looks very busy with the next ASF Conference TroGalong in January at Galong NSW, the ACKMA Conference in May at Waitomo Caves, NZ , the Jenolan science symposium in May and the International (UIS) congress in July at Brno, Czech Republic.

We'll keep you posted on these events in future Caves Australia *issues.*

2013

January 6 -11

Trogalong 29th Biennial ASF Conference, Galong. NSW. Australia Hosted by the New South Wales Speleological Council. Registration is now open and details are available on the Trogalong website http://www.asfconference.org.au/2013/Default.aspx. You will need to book your accommodation immediately. Pre and post conference trips are planned.

March 28

Closing date for ASF grant applications. For details see ASF website. Enquiries Fiona Beckwith fbeckwith@yahoo.com

April 6- 7

The ASF/Australian Cave Rescue Commission's cave rescue orientation program (CROP) is coming to NSW after successfully implementing a series of workshops in four other states. More details will be provided soon Contact Joe Sydney jsydney@choice.com.au, w: (02 9577 3361 0405 039 398

May 12 - 18

ACKMA Conference, Waitomo Caves NZ. 20th Cave Management conference. For details see the ACKMA website www.ackma.org where there is a lot of information on the dedicated conference page, or contact conference convenor Libby Chandler: conference.convenor@ackma.org

May 23–24

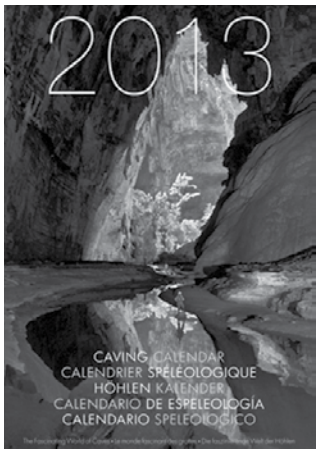
Symposium on the Science of Jenolan Joint symposium with the Linnean Society of NSW at Cave House. Details published in *ESpeleo* #5 2012. Enquiries to Bruce Welch bruce@bookproduction.org (02) 9569 9928 OR John Dunkley jrdunkley@gmail.com (02) 6286 1783.

July 21 - 28

16th International Congress of Speleology, Brno, Czech Republic. For details see the website http://www.speleo2013.com/ The second circular is now available for download and online registration has been available since 1st August 2012. The circular has lots of information. For personal registration, booking accommodation and making reservations for excursions and field trips, register online or use the paper form which can be downloaded from the website, filled in and returned by fax or as an email attachment. For interest, Ryanair (www.ryanair.com) has cheap flights from Stansted airport north of London direct to Brno. The ICS is a spectacular event that occurs every four years and it is also a function of the International Union of Speleology (IUS). You can find detailed information about fees, accommodation and excursions on the Congress website www.speleo2013.com and also in the recently published second circular.

ASF Announcements

SPELEO PROJECTS CALENDAR



A NUMBER of these spectacular calendars are available without having to deal with international money transfers.

This year the donation is to the ASF Karst Conservation Fund. Make a tax-deductible donation of $40 or more to ASF Karst Conservation Fund and receive a gift calendar for your enjoyment.

Twelve stunning images take you on an enchanting subterranean journey to caves around the world — Brazil, France, Iceland, Malaysia, Mexico, Puerto Rico, Slovenia, Spain, the United States and Wales. Make your donation soon and don't miss out on this great gift

Send your cheque to Grace Matts, ASF Karst Conservation Fund, 176 William St, Bankstown, NSW, 2200.

ASF GRANTS 2013 – CALL FOR APPLICATIONS

ASF has a range of grants in support of speleological work, including projects related to conservation, education, research, exploration and conference attendance. Details of these grants can be found in *Caves Australia* 182.

Applications are now invited for the 2013 round of grants. The closing date is 28 March, 2013 (just before Easter).

The maximum grant amount is included in the details of each grant. There is no quota for the number of grants per category but the total amount budgeted for each year will not be exceeded.

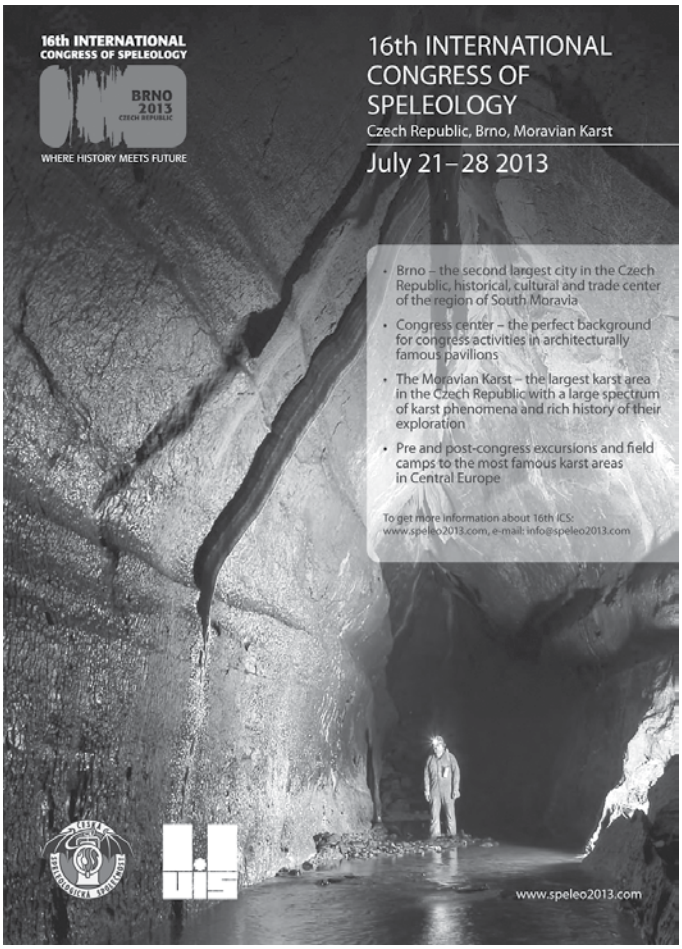
The grants are made on merit; if no application of sufficient merit is received in a category, no grant will be made in that category. The total grant budget for 2013 will be $2000.

There is NO formal application form and details of the information needed are listed in the grants section of the ASF website www.caves.org.au For enquiries and advice contact any of the following:

Nicholas White nicholaswhite@netspace.net.au for conservation and research projects and those likely to involve the ASF Karst Conservation Fund

Susan White susanqwhite@netspace.net.au for research proposals and general enquiries, or

Fiona Beckwith fbeckwith@yahoo.com for enquiries relating to administration of the grants scheme.



WANTED
ARTICLES FOR *CAVES AUSTRALIA!*

Whether caving, cave diving or generally just caving, *Caves Australia* readers are interested in YOUR story. It is only with YOUR contribution that we can produce a quality magazine for all to enjoy. For writing and style guidelines, contact the Editor or Production Manager for further information.

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ASF

Contents

Cover: The Dark Side, Exhalibur, New Zealand. Photo by David Taberner and Grant Rees.

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EDITORIAL

My last editorial was written while watching the London Olympics and I was fortunate enough to get to London in early October to catch a day of Paralympic events there. Just inspiring.

This editorial is being written while listening to the third cricket test against South Africa in Perth. Disheartening, though I remain hopeful.

❖

Luckily, I have Trogalong in early January to lift my spirits.

It's been two years since Chillicon, which I did enjoy and I'm looking forward to meeting and catching up with friends I haven't seen since then.

I've been looking through the field trips and advertising and promotional material and there is certainly plenty to see and do. Well done to the workers!

❖

This issue continues the series on areas reachable from the conference. Bob Kershaw writes on Wyanbene and those who go there will enjoy the cave and the nearby Big Hole. The cool (freezing in winter) river crossing will be enjoyed as well.

❖

My gloom is lifting as I write and think about the magazine articles this past year.

So many people are active in so many areas. And active too, over such a wide land.

We have articles in this issue on Western Australia, Tasmania, Victoria, NSW and New Zealand.

Thanks, contributors, for taking the time to forward articles.

To everyone else keen to write but uncertain, have a go.

Readers are interested in what you are doing and Caves Australia caters for all corners of the caving diaspora.

❖

Enjoy Christmas and New Year. See you at Trogalong.

President's Report

GREETINGS, ALL. It seems like I have been running on Central Geological Time (CGT) this year as it has passed in the blink of an eye and it is now December to remind me I am a year older and a little bit wiser.

So what has everyone been doing this year, I wonder? Has it been as challenging and fruitful for each of us alike? The answer must be NO, as each of us seek different goals and aspirations and deal with different circumstance and consequence.

As *Homo sapiens* we have evolved from our cave-dwelling ancestors to become town-dwellers abiding in temporary structures of wood, baked clay, concrete and glass.

We, the chosen, have not yet lost our yearning to return to our beloved caves and explore deep into the dark zone with our reliable glowing beams to open up the way.

This year some of our fellow cavemen and cavewomen have passed on as the complications of life have overtaken them. We remember them for what they did and said, what they wrote down and the way they changed our own lives with their energy and passion for what we shared together.

What has been happening with ASF this year represents a number of works in progress in the following areas:

- We are developing a new website that is more encompassing, higher profile and easier to navigate through.
- We are working towards a higher public profile and identity with a commitment to professional and continuous improvement.
- We are looking at the feasibility of becoming an international destination for cavers if we are selected to host the 2017 IUS congress.
- We continue to seek ways of increasing funding for cave conservation and raising public awareness of issues that are counter to cave protection.
- We work closely with land managers to provide input into caves and their resource management by assisting where we can.
- We encourage the promotion, training and use of best practice in caving-related activities.
- We actively support and encourage the publication of speleological literature as well as collect and archive existing documentation.
- We seek to make caving and speleology a relevant and vibrant activity and promote and encourage clubs to nurture new members.

Whilst we have lost some active cavers this year and the projects they were working on remain unfinished, we now have a challenge to step up to the mark and be inspired to continue where they finished, much like receiving the baton in a relay. There is no one ideal or typical caver in Australia to be like. We are all individuals with a common goal; to promote speleology.

Appreciate the diversity and harmony that can exist between us as we work towards understanding and studying our rich and diverse heritage of caves.

Let us continue to get down and dirty, and catch up at Trogalong!

In Caving
Stan Flavel

Exhalibur, New Zealand

David Taberner
HCC & RSS

I LOOKED DOWN; just a metre from my feet the rocky floor dropped away into the inky blackness. It was the start of another pitch.

Normally the sight of a pitch fills me with delight. Vertical caving was what got me hooked on caving 14 years ago. This case was different—the pitch would mark the end of my adventure. Sadly, we simply had no rope left to continue our exploration and this pitch couldn't be free-climbed. We took our last survey shot to a marker wrapped around a rock before turning back for the long trip out.

Just over two weeks before had seen the contingent of six Aussies and three Kiwis helicopter into Ellis Basin, an extensive limestone belt in the Mt Arthur National Park, around 60 km west of Nelson on the South Island of New Zealand.

The planning for this trip had started close to 10 months prior, in April of 2011. I and another Sydney-based caver, Grant Rees, were lucky enough to be invited on the trip by some of the keen members of the Chillagoe Caving Club, who over the past few years have run several trips to New Zealand.

There were two main aims of the expedition: to push and investigate several leads in the extensive Ellis Basin Cave System; and investigate several smaller systems located on a previous expedition in an attempt to connect those into the Ellis System.

Grant and I both left Sydney airport on Christmas Day. Destination: Christchurch. In true backpacker style we slept at the airport that night and on the following day caught a bus for the day trip up to Nelson. Once in Nelson we met up with another two members of our team from Chillagoe and some members of the Nelson Speleological Group (NSG).

Ellis Basin isn't the simplest place to get to. The only land-based way into the Ellis is a several hour walk with some considerable elevation change. For a two-week caving expedition the only practicable option is to helicopter in. We'd had some unstable weather leading up to our planned fly-in date. But on the day the weather cleared enough to allow us to fly in.

Two members of the team flew in with a load of equipment from the helicopter base. The rest of us travelled to the closest point accessible by road and were ferried in with the remaining gear from there.

As the chopper swung into the valley, I was taken aback by the spectacular limestone mountains. It's a kind of karst unlike anything we have in Australia. The clouds closing in gave the whole area a slightly foreboding look.

Once we unloaded the chopper it took off and flew away into the distance. We were finally alone in what would be our home for the next two weeks. It was New Year's Eve and I couldn't think of any other place I'd rather be to see in the New Year.

The first day of 2012 came and we were keen to get started. We broke into three teams. The Kiwis went off to start the rigging of the Tomo Thyme entrance to the Ellis System. Three of the Chillagoe cavers went down the valley to look at two holes seen from the helicopter. Grant, Paul Osborne and I took two 200 m rolls of rope over to the Exhalibur entrance to rig it as far as we could.

Exhalibur is almost like a sword straight down—pitch after pitch, with very little horizontal movement in between but more than a few rebelays. We rigged until the first 200 m roll of rope ran out and then on until we reached the bottom of the entrance series, having used a total of around 280 m of rope.

The last pitch of the entrance series was spectacular, taking us out and down a wall

GRANT REES

The helicopter departs Ellis Basin

DAVID TABERNER AND GRANT REES

Grant, Paul and me at the top of the first pitch of Exhalibur, still nice and clean

DAVID TABERNER AND GRANT REES

One corner of the Dark Side with caver in the centre

that led into the start of a perpendicular running chamber. This chamber went much further than the beams of our strongest lights.

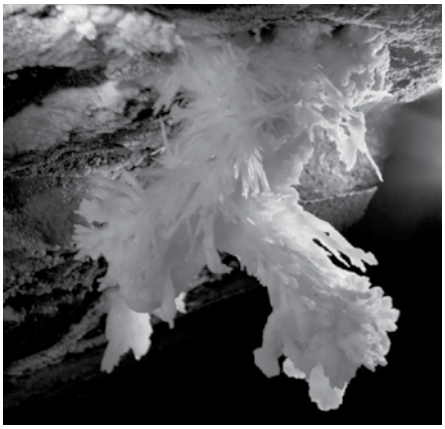
The following days were spent familiarising ourselves with the system, visiting several amazing sections of cave such as the aptly named Phallic Room and Candlestick Room. One of my favourite spots was a section called the Dark Side. It involved dropping down another two pitches and following the breeze through a short rock pile. As I climbed out of the rock pile, I knew I was in something huge. I could hear the sound of the river in the distance. My Scurion was unable to cut the darkness to show the walls. This chamber was so large it was difficult to comprehend just how big it really was. The Dark Side was certainly an appropriate name.

Eventually, after a considerable walk, we came to the Thunderchild River that runs through the lowest section of the chamber; a truly fitting name. The vibration could be felt before it could be heard, then a low hum, followed by increasing noise until the river itself was reached.

Our other leads on the hill were pushed and all found to either stop or become too tight for even the finest-boned members of the expedition. So we continued our rigging of the Exhalibur side, heading deeper into the system.

We rigged across the 60 m traverse named Christmas, which was friendly in name only. It was a hair-raising traverse to rig with the knowledge that it fell away for over 60 m to the river below. Precious few footholds and not many more handholds didn't increase confidence levels any. Needless to say, we were very pleased with ourselves when we had it successfully rigged without having scared ourselves silly.

The next challenge was the 1001 Bucket Sump, apparently named after originally requiring 1001 buckets to lower. The sump provided a short cut to get to the lowest sections of the cave; however, there was a catch.



PACO MURRAY AND DAVID TABERNER

One of the many delicates to be found in the depths

GRANT REES

The view I awoke to every morning

To lower the sump enough to make it passable required setting up a siphon from the other side. To get there, we had to take the long way around down into the river and then back up into a section called Black Detour.

The trip down the river was a blast! Noisy, wet, windy, cold and more fun than one could hope for. I attempted to make this trip even more exciting by falling into the water. In my mind I was going to take a small leap over the river and grab the large handhold on the other side. Unfortunately, I hadn't taken into consideration my heavy pack and gumboots that were already half full of water. The end result was me simply jumping into the centre of the river for a full body dunking. If I wasn't already awake, the 4ºC water certainly woke me up! I surfaced to hear uncontrollable laugher from my caving partner Paco. At least I was a cheap source of entertainment.

The power of the river was very much apparent in the lower sections of the cave. All the rock was polished black and would soak up the light from our headlights like a piece of black felt. Rope from an old handline could be seen wrapped around a chockstone high in the roof, completely stripped. At around 70 m below the high water mark flood level, this was definitely not a place to be when it rains.

Once out of the river we went up into Black Detour which, by all signs, is a flood tunnel that fills when the river below floods. We continued up, regaining most of the height we lost going down to the river until we reached the back of the 1001 Bucket Sump.

We then set about using the hoses that had been dragged down on a previous expedition to set up a siphon to lower the sump. Then we left to continue into the cave, hoping that the sump would have lowered enough for us to return via the shortcut instead of back through the river, saving us a couple of hours on the trip out. We had hoped to reach the next sump and set up the siphon there to lower it. Sadly, we got a little lost in the massive maze of cave. Tired and wet, we called it off after 12 hours of caving and started our return trip to the surface. Thankfully, the 1001 Bucket Sump had lowered enough for us to return via it, instead of back down to the river. The following day another team reached the second sump and set up the siphon.

The stage was now set. One of the Kiwis, Kieran McKay, planned to dive a third sump in the hope of continuing the exploration of the cave towards the resurgence 6 km away. Unfortunately this plan was dealt a blow that afternoon when the weather report crackled in over our radio. The low sections past the sumps were no place to be with bad weather forecast.

Due to the weather, we switched our focus over to the Tomo Thyme entrance to explore a lead Kieran had found and was keen to explore. The lead started around the -250 m mark and straight away we could feel a strong draught as the passage continued up. We surveyed into the new section that continued for approximately 300 m before choking in a small rock pile. A strong draught was coming from a hole between the rocks. Tossing rocks through the hole confirmed a pitch of probably about 30 m lay beyond. Unfortunately no-one could go even close to fitting through something so small.

The following day was the last day we had available before we would need to start de-rigging. We returned, this time armed with capping gear to make the hole larger. While Kieran set about enlarging the hole, I went a short way back down the main passage and investigated a side branch. This ended up with a loose downward sloping dirt floor that dropped away into a pitch. A few large rocks and a bit of shouting confirmed that this was another pitch separate from the one where Kieran was. Yet another lead! When I returned, Kieran had made the hole large enough to get through. We knew the remaining 8 mm rope we had left simply wasn't long enough to bottom the pitch. So instead, we used it as a belay and climbed up the pitch to about 5 m to where a horizontal rift cut in. We then started to survey along the rift passage. After a few hundred metres, the rift turned a little and started to drop slightly. I edged further down the rift to get a better view. We took our last survey shot to a marker wrapped around a rock before turning back for the long trip out.

DAVID TABERNER

Kieran with our final survey marker at the top of the pitch

On our exit we derigged Tomo Thyme, quickly running out of pack space and having to resort to hanging ropes from our harnesses. The following day we made an assault in two teams to completely de-rig the Exhalibur side of the system.

Two days later Kieran, Grant and I left the two remaining group members at the hut waiting for the helicopter while we made the walk out over the mountain ranges to the road. I couldn't help but have a touch of sadness to leave such an amazing place. I felt I'd been truly lucky to be involved in this expedition, and even luckier to have the thrill of finding a new section of such an amazing cave.

I would like to thank the various members of the Nelson Speleological Group (NSG) who made our trip possible. Without their help before, during and after, our trip wouldn't have been the success it was.

Last but not least, my thanks go to Paco Murray from Chillagoe Caving Club for inviting me and taking on the difficult role of expedition organiser.

For me, this was my first large overseas caving expedition, but it certainly won't be my last. If you haven't experienced deep vertical caving or joined in an expedition such as this, I would strongly recommend trying to get on to a trip. It's a massive amount of fun and you'll come home wanting more.

Nambung Springs, WA

Paul Hosie
CEGWA

IN ITS PURSUIT of new cave diving sites in WA, the cunning crew from CEGWA has been exploring new ground and researching old legends.

Here we provide the results of our efforts in locating springs on the coastal plains within Nambung National Park, which is part of an amazing section of coastal limestone, some 200 km north of Perth. The karst area is designated South Hill River, where I am the ASF's designated karst co-ordinator.

The legend of SH25 Scoop Spring is that when the land on the coast near Cervantes was private property, the farmer tried excavating a spring so he could use it to pump water and make it more accessible to his stock.

He used his tractor to pull a scoop through the shallow pool and in the middle the scoop and tractor disappeared holus-bolus into a bottomless chasm. Given that all this occurs in limestone, you can imagine the excitement of cave divers to locate and explore this hole.

Some divers did apparently find and dive this hole but it was found to be a muddy, shallow pool, with no sign of the caverns measureless to man they were hoping for.

In 1974 a remarkable thing happened. The Nambung River flooded, backed up and hydraulically pressured its way through the choked conduits under the limestone hills to gush out of the coastal springs.

One was in fact dye traced to emerge 13 km from where the river disappeared into a cave.

Bob Shoosmith was a keen caver who was fortunate enough to witness this event and the water geysering up out of solution tubes on the coastal plains. There is little doubt that the springs would have been flowing handsomely at that time as well.

Roll on 37 years and the location of SH25 Scoop Spring was a bit vague, but may be somewhere now inside the boundary of the current Nambung National Park.

The roads and tracks had been changed,

MIKE NEWTON

Missing Spring SH150

PAUL HOSIE

Nambung Spring SH 147

which made relocating karst features that little bit more difficult. After doing our research and with the invaluable help of Bob Shoosmith, Barry Loveday and Google Earth, we vectored in on the springs. An old map was unearthed which gave the position of Scoop Spring, but it also identified several others, so it was finally time to do some ground-truthing.

Roger Howlett and I did a bushwalking reconnaissance of three of the springs in late 2010 and then Mike Newton, Kim Halliday and I headed out on 23rd January to document them and check diving potential.

Four springs were documented: SH25 Scoop Spring, SH146, SH147 and SH149. Springs SH147 and SH25 are located close together and are similar in structure—shallow, 15 m diameter pools of clear fresh water with plenty of long-necked turtles and reeds. Mostly knee-deep, there are deeper points in the middle of them, probably mud-choked solution tubes, but no obvious flow sources.

SH146 was a different thing—a 'larger', 5 m diameter flooded sinkhole surrounded by shallower water with lots of reeds and frogs. This is also a favoured site of the local wallaby population.

Kim Halliday free-dived this hole to several metres depth and confirmed that it is also blocked with mud and sand. We discovered and documented SH149, a small spring pool under some bushes not too far from SH146.

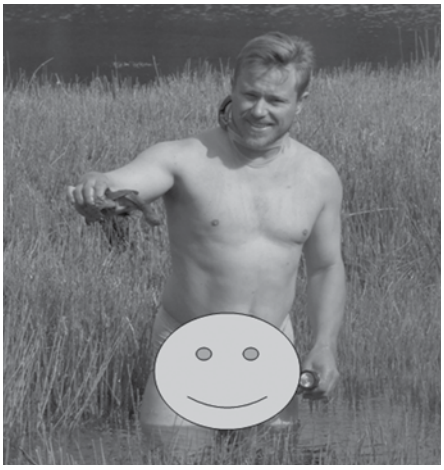
A week later, Mike Newton was in a light plane flying over this area when he spotted and photographed another very promising spring in the same area, designated SH150. Christie Allen and I walked to this a few days later and found that it was similar in structure, but smaller and shallower than SH146. It is strongly suspected that when the Nambung River next floods, these springs will once again get flushed out.

When they become accessible, the cave diving should begin.

There is potential for many kilometres of diveable passages, but if our experience cave diving a little further north at Eneabba is anything to go by, it won't be easy.

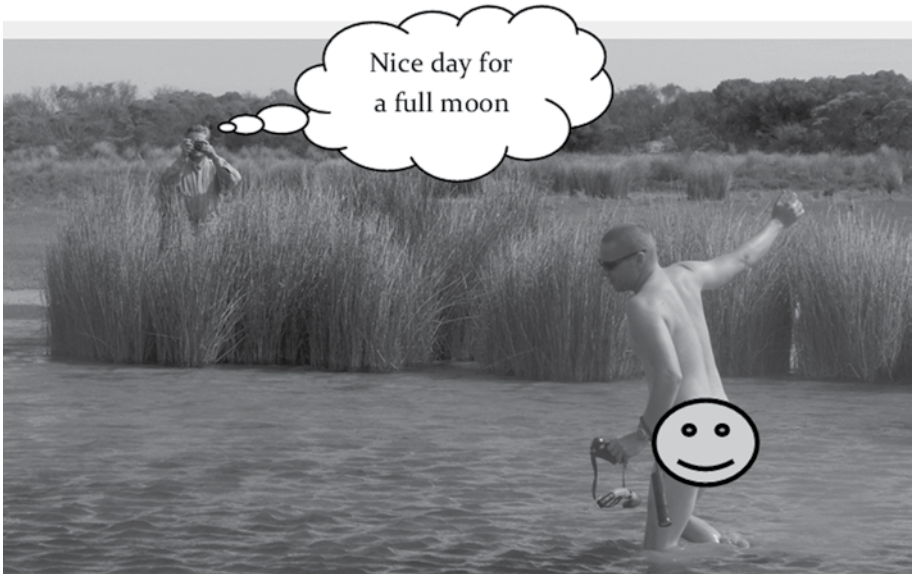
PAUL HOSIE

Mike Newton (left) and Kim Halliday at SH 25 Scoop Spring



MIKE NEWTON

The author with a long-necked turtle in SH25 Scoop Spring



MIKE NEWTON

Kim Halliday happily exploring SH146

A Known Karst Area with New Beginnings

Golden Valley, Northern Tasmania

John Wylie
SRCC & SSS

INTRODUCTION

Although karst in Permian limestones exists in some Australian states, with some of the best development at Yessabah, Moparrabah, Willi Willi and Stockyard Creek west of Kempsey in NSW, (Matthews 1985), in Tasmania karst is not as well represented in Permian rocks.

Those caves and features that have developed in the Permian limestones of Tasmania are mainly restricted to the north-east of the state with a limited number of caves documented at Mt Nicholas (Slee 2011), Mt Gray (Kiernan 1995; Sharples 1995) and a number of sea caves on Maria Island (Matthews 1985). To these can now be added Golden Valley on the lower slopes of Quamby Bluff.

Kevin Kiernan's *An Atlas of Tasmanian Karst* (Kiernan 1995), a speleo bible for locating karst areas (including those in Permian carbonates), provides many opportunities for discovery by those prepared to do some study of the Atlas, followed by some field work.

The Golden Valley limestone deposits were first described in 1954 (Wells 1957 p8) and since then a number of excellent geological reports have provided a greater understanding of this period, with one referencing all previous reports (Clarke 1968). In 2011 Simon Bland and the author found the first caves in the Golden Valley limestones, within the Glencoe Formation.

While this is one of the first speleological reports of caves in the Golden Valley, the local residents have known of the caves for well over fifty years (L. Whatley pers. comm.).

Because there are relatively few cavers in Tasmania and because they are so well provided for in terms of large challenging karst areas relatively close at hand, there is little incentive to go poking around the many lesser-known areas which may have been mentioned by Hughes (1957) and elaborated and expanded by Kiernan (Kiernan 1995).

JOHN WYLIE

Golden Valley on the lower slopes of Quamby Bluff

Hughes' summary of the Golden Valley limestones (Hughes 1957) is hardly glowing in terms of karst (though he does mention a couple of sinkholes and even some "solution weathering" and "small stalagmites" in the Ordovician.) Also, Kiernan considers "The limited extent and purity of carbonate rocks in the Golden Valley Group greatly diminishes the likelihood of karst being present in this area." However, he also notes that "the possibility of localised karstic phenomena cannot be discounted entirely" (Kiernan 1995, Vol. 2, p. 195). Although the Department of Mines 1:63,360 geological map (Barton *et al.* 1970) helps to further define the location of the limestone deposits, this lack of positive comment may have deterred others from actually getting out there and looking for karst features. The area is worthy of exploring at least a couple of times.

Actually getting out in the field and looking has paid dividends to those who have; a good example being Stephen Blanden who, over a number of years, has documented karst where Kiernan (1995, Vol. 1) noted the possibility of karst features and caves.

N.B. The caves reported here are on private property, and access can only be gained with the owners' permission. Advance contact should also be made with the area coordinators, Northern Caverneers, in Launceston (contact details can be obtained through the ASF web site: www.caves.org.au).

PHYSIOGRAPHY

The landscape of Golden Valley and the surrounding areas has changed since the first lands were selected there in 1825, when pastoral grazing was the principal reason for settlement. This grazing was followed by more intensive agriculture and timber production, which to the present day remain a major part of the area's economy (Berne 1991; Whitworth 1877). An early industrial undertaking was the building of a limekiln west of Deloraine, producing hundreds of tonnes of lime for the local market including the Launceston

area. Other kilns were to open as demand grew, with the first limekilns operating in the Golden Valley area in 1857 and another starting in 1867 (Skemp 1964; Cassidy 1986; Hughes 1957). Commercial quarrying of limestone continues at Mole Creek and dolomite at Cressy.

GEOLOGY

In the Permian Period the numerous peaty swamps were preserved as coal seams, which with associated sediments formed the sequence known as the Parmeener Supergroup (Bradbury 1995). The Parmeener Supergroup has been divided into two major sequences: the Upper Parmeener Supergroup (Upper Carboniferous—Permian) and the Lower Parmeener Supergroup, (Upper Permian—Triassic) (Clarke 1989). It is within the limestones of the Lower Parmeener Supergroup that the caves are found in the Permian limestone sequence of the Golden Valley Group.

On the lower northern slopes of Quamby Bluff, some 11 km south of Deloraine and west of the main Permian limestone deposits, lies an isolated limestone deposit within the Golden Valley Group named the Glencoe Formation (Pike 1973). The Golden Valley Group was first documented in 1954, a fossiliferous limestone with shales and quartz sandstone, six to seven metres thick, lying conformably between the Quamby Mudstone and Liffey Sandstones (Wells 1957). Additional geological work was carried out in the '90s to the south of the Quamby area, in the Lake River region, which resulted in the Lower Permian limestones being documented. These limestone deposits had previously been quarried and burnt in a kiln on site. There at was also a small deposit of dolomite in the region that was burnt for local use on site (Mathews et al. 1996).

REWARDS OF EXPLORATION AND LOOKING FOR A KARST AREA

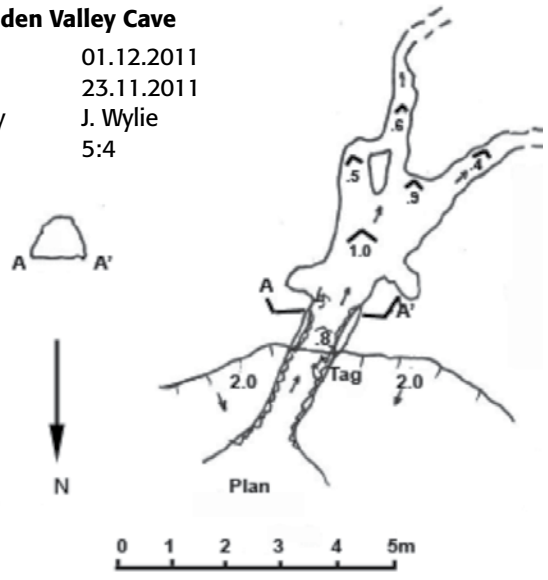
As I travel to Tasmania regularly to go caving, and was getting a bit bored with caving in the same old areas, I decided to look for somewhere to go caving where the knowledge of the karst was limited. I have come to enjoy this type of exploration since taking on documenting all the karst areas coordinated by SSS within the Kanangra-Boyd National Park, NSW, in 1999 (Wylie 2003).

I was further encouraged in this line of thinking when talking to Henry Shannon, as Henry was looking for someone to go and look at an area of karst noted by Ken Grimes in the Upper Mackintosh (Grimes 1999). This lies between the Vale of Belvoir and Mt Cripps in NW Tasmania, in an area that has been looked at previously by members of the Savage River Caving Club (Heap 1996; Gray 2000). A trip was organised with Henry and by the day's end, Henry and I had found a new cave worthy of documenting (Wylie 2009) and so the hunt was on to find another little-known karst area where I could usefully enhance the records.

Simon Bland, having retired to Tasmania, has on numerous occasions participated in my cave hunting in Tasmania (Wylie 2005). However, on this occasion I wanted to find a karst area that other speleos have not explored or documented; and it had to be in the north of the state. Looking in *Limestones in Tasmania* (Hughes 1957) and Kiernan's 1995 *An Atlas of Tasmanian Karst,* one finds plenty of karst areas with a minimal amount of documentation, and some with no real knowledge as to whether any karst features exist—a great place to go caving. It was Simon who I once again asked to do the initial search for an obscure outcrop

GV 1 Golden Valley Cave

Tagged	01.12.2011
Surveyed	23.11.2011
Drawn by	J. Wylie
Grade	5:4

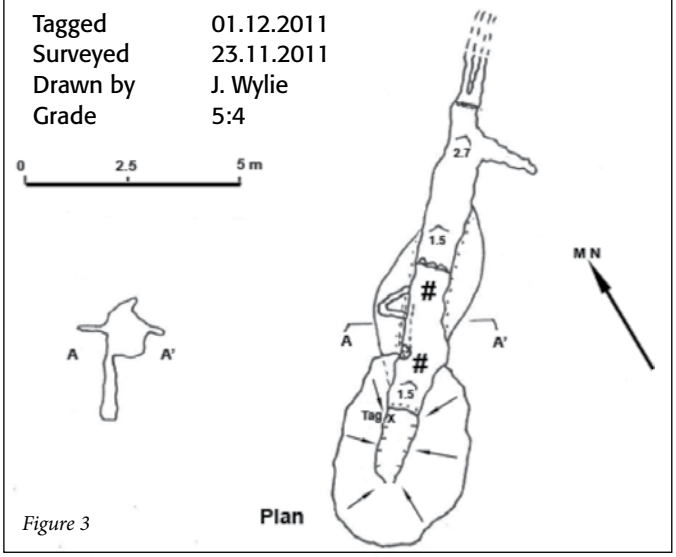


JOHN WYLIE

Figure 1

GV 3 Whatleys Hole

Tagged	01.12.2011
Surveyed	23.11.2011
Drawn by	J. Wylie
Grade	5:4

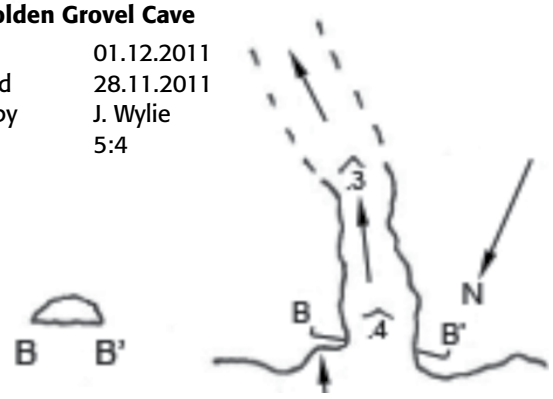


JOHN WYLIE

Figure 3

GV 2 Golden Grovel Cave

Tagged	01.12.2011
Surveyed	28.11.2011
Drawn by	J. Wylie
Grade	5:4

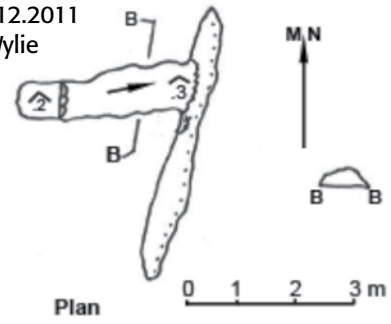


JOHN WYLIE

Figure 2

GV 4 Trickle Cave

Tagged	01.12.2011
Surveyed	01.12.2011
Drawn by	J. Wylie
Grade	5:4



JOHN WYLIE

Figure 4

of Permian limestone in the Golden Valley to the south of Deloraine, with the aim of subsequently documenting our findings.

A preliminary report of our discovery was written up in *Speleopod* (Wylie 2012), along with Henry Shannon writing an article on the geology for the Northern Caverneers *Troglodyte* (Shannon 2011), noting some differences between Clarke's 1989 geological report and what is actually on the ground.

THE HISTORY OF DISCOVERY:

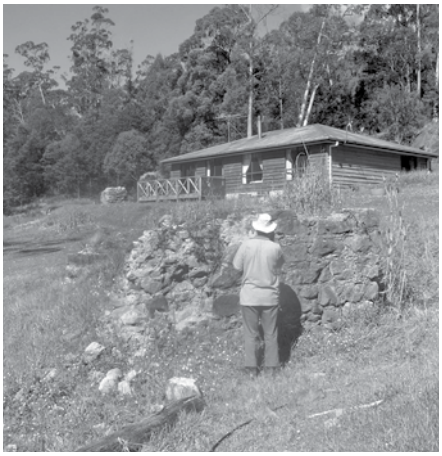
Initiating the search

Simon set about checking the area and it was not long before he had found where to start our search. In the meantime I set about searching for any geological reports and local history on the area. With some history of the area (Cassidy 1986) and a number of geological reports, we were able to roughly locate on a map (Barton *et al.* 1970) the various carbonate beds that we wanted to visit in the Golden Valley area.

With the initial information from Hughes (1957) I first set about locating the old quarry at Cameron's old property at Quamby Brook.

Eventually I ended up on the right property and was pointed in the right direction. What appears to be a dam is in fact the old limestone quarry (Cassidy 1986). Our next plan was to locate the old quarry on the eastern extremity of Stockers Plain where a limekiln operated. After driving around a bit and some door knocking we located it.

Both these old quarrying operations



The ruined lime kiln at Stockers Plain

are in the Ordovician limestone, and the importance of locating these was to take some photos for the records, as very few exist. Since my last visit to the Quamby Brook area, the old quarry and limekilns no longer exist, as this low-lying area has been excavated and made into an extremely large dam for a large dairy operation. The Permian limestone deposits we were seeking are on the northern lower slopes of Quamby Bluff, surprisingly only a short distance from the Lakes Highway some 11 km south of Deloraine.

JOHN WYLIE

Quamby Bluff near Deloraine

13—14 February 2009—Looking for the Karst

While driving around we eventually found what looked like a small band of the Permian limestone on one property. Unfortunately the owners were not home, preventing us from gaining permission to have a look.

I returned on my own in the late afternoon to find one of the owners home. I explained that I was interested in seeing if there were any caves in the limestone band only a short distance down the hill from the house. Permission was granted, so I went for a bit of a stroll, locating a narrow band of fossiliferous limestone. In the short time I was there, I was not able to find any notable karst features.

JOHN WYLIE

Fossiliferous limestone

27 March 2011—Discovering Karst features

Time had got away since our last visit, but researching of the area continued and we had found some additional geological reports. In the mean time I had invited Greg Middleton along to assist Simon and me to further explore for any karst features.

After Simon and Greg were introduced to Larry and Judy Whatley, the property owners, Larry told us of a few caves he had known about for over fifty years. Larry had

JOHN WYLIE

Larry and Judy Whatley

played in them as a child and his grandchildren now play in them. With the general directions provided by Larry, Simon had within ten or fifteen minutes of setting out found the first cave. This cave, although small compared to what one finds at Mole Creek, is significant as there were limited possibilities of finding any karst features in such a small limestone lens—though the possibility could not be dismissed (Kiernan 1995). At the entrance to the cave was a strange looking calcite or biological growth, somewhat like stromatolites as noted by Henry in his report (Shannon 2011).

As the day progressed we were to find another cave and a number of karst features. A decision needed to be made as to whether these features were worthy of tagging.

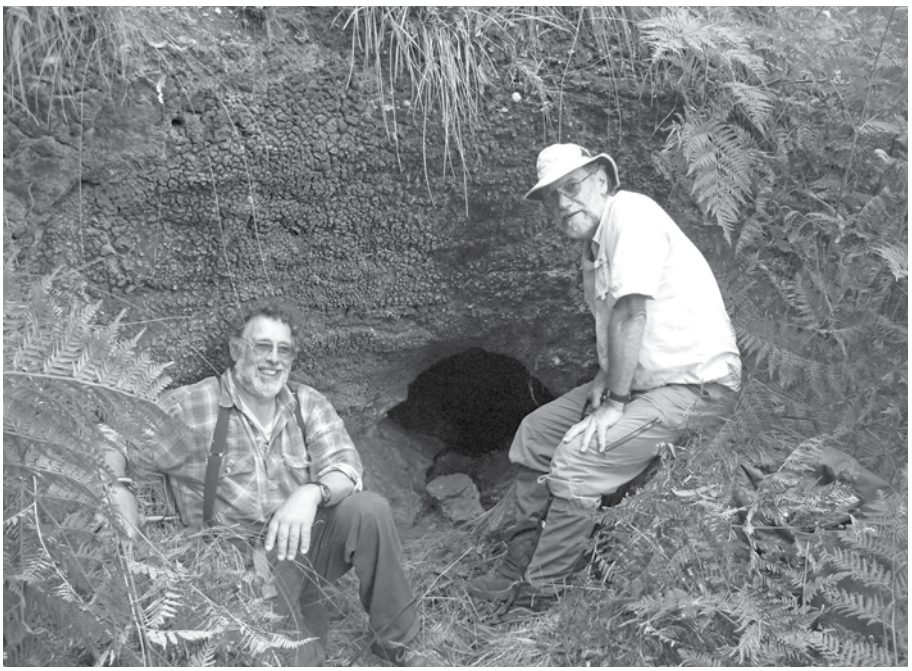
Henry's observation that the limestone could be more than a metre thick was an encouraging point as it differed significantly from Clarke (1968), who found no beds thicker than 23 cm in bores (Shannon 2011).

After a delightful few hours of searching, we eventually made our way back to the car and on our return Larry and Judy told us of another cave down the bottom of the hill – the cave their grandchildren play in.

We made our way down the hill to the location indicated by Larry and Judy, and it was not long before we found the cave, which contained a number of cave spiders and interesting exposures of the geology. This cave is not in the Permian sequence but at the top of the Ordovician beds, with conglomerate exposed in the roof. Henry got quite excited by the exposure, describing it as "unexpected and truly remarkable" (Shannon 2011 p. 12).

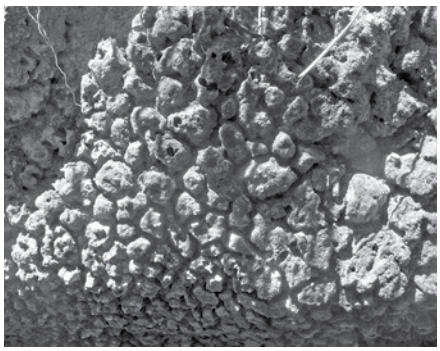
We had found three caves in the day, two in Permian and one in Ordovician limestone!

To have caves from two different



JOHN WYLIE

Discovery of the first cave



JOHN WYLIE

Calcite or biological growth at the entrance

geological eras in such close proximity to one another is unusual; I certainly have not come across this before.

DOCUMENTING OF THE DISCOVERY AND A NEW KARST AREA CODE (GV)

Having checked pretty well all the state's speleological and geological records, and finding no mention of any karst features in the Golden Valley group, I asked Greg Middleton to check with Kevin Kiernan as to whether he had any unpublished material on the area.

At the same time Greg asked the then State Karst Index Coordinator, Arthur Clarke, if he had any knowledge of or unpublished literature on this particular karst area and whether he had any problem with assigning to it a new Area Code (GV).

At the same time I notified the speleological groups of Northern Tasmania, Northern Caverneers (NC) and Mole Creek Caving Club (MCCC) that members of SRCC had discovered some new caves in Permian limestones in the Golden Valley, and asked them to check their records to see if they had any documentation or knowledge within their group of this as a karst area.

Late in 2011 Northern Caverneers and Mole Creek Caving Club informed me they had nothing in their records relating to karst features in the Golden Valley. Greg also advised that neither Kevin nor Arthur had any additional information on the area, and that Arthur as State Karst Index Co-ordinator had agreed to the new area code GV, allowing us to go ahead and complete documentation of the newly discovered caves.

SURVEYING AND TAGGING THE CAVES

23 November 2011

This turned out to be a suitable date to show local cavers, Jill Bennett and Henry Shannon (NC), the new caves. I particularly wanted Henry to come along to confirm that the limestone beds we had found the caves in is part of the Glencoe Formation. Simon, Greg and I had a most pleasant day introducing Jill and Henry to the property owners, showing them the new caves and surveying the caves.

Henry was quite impressed with these new caves, particularly as they were in Permian limestone, confirmed they were within the Glencoe Formation and worthy of tagging and being documented.

1 December 2011

I returned with six tags (allowing for additional caves to be found) provided by Paul Darby of SRCC, with Simon, Jill and Henry, the three caves were tagged. The first and largest of the caves in the Permian limestone was tagged GV-1 and called Golden Valley Cave, because it was the first cave we located in this area (Figure 1). There is one notable group of speleothems in the cave. Next tagged was GV-2, called Golden Grovel; the second cave in the Permian limestone, which is a very low grovel for a few metres and continues the 'gold' theme (Figure 2).

We then made our way down to the third cave and tagged it GV-3 (Figure 3). This cave is in Gordon Limestone, and has been called Whatleys Hole, after the property owners, Larry and Judy Whatley.

After some lunch and with a bit of time to spare, we decided to see if we could pick up the limestone lens on the eastern side of the hill. Within a short period of time Simon, the faithful old Cave Hound, once again produced the goods, finding another small cave with a low overhang with a trickle of water running out of it. This was duly tagged GV-4 and named Trickle Cave (Figure 4). As I had invited Henry along to

JOHN WYLIE

On the way to Trickle Cave

JOHN WYLIE

Speleothems in GV-1

JOHN WYLIE

GV-3 Whatleys Hole

JOHN WYLIE

At GV-2 Golden Grovel

JOHN WYLIE

Excellent fossils were found

give his ideas on the geology, he also carried out the survey of the caves, and wrote up his thoughts on the area in the Northern Caverneers' magazine (Shannon 2011). Other members of NC recorded the event (Bennett 2012; Butler 2012).

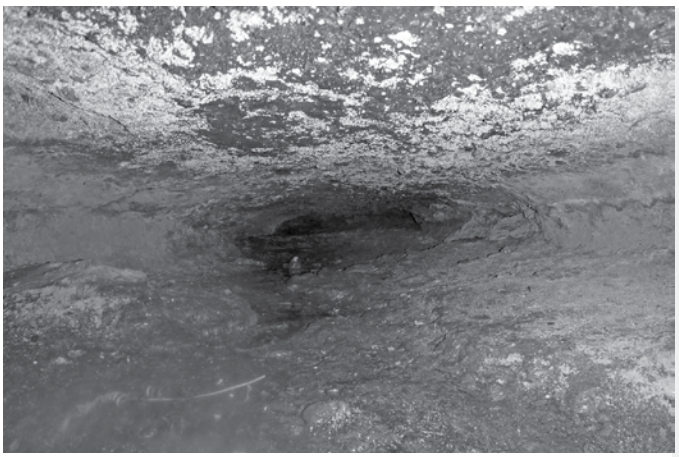
The Golden Valley area will now be coordinated by Northern Caverneers, and Simon and I will continue to work towards completing documentation of another cave we have been visiting and researching for a few years. We hope to see further articles about the Golden Valley limestones gracing the pages of some speleological publication in the foreseeable future.

ACKNOWLEDGEMENTS

I would like to thank Simon Bland once again for the initial leads and homework he did to make this project a success and for joining the field trips. We are most appreciative of property owners Larry and Judy Whatley's granting us access to the caves they have long known about. We appreciate that Greg Middleton participated in field trips, helped with administrative work and contributed to this article. We thank Caroline Webster and family for telling us about karst features (including some yet to be looked at), Paul Darby of SRCC for stamping the cave tags, Henry Shannon for verifying and explaining in greater detail the geology and local groups Northern Caverneers and Mole Creek Caving Club for letting us share a bit of their karst country with the rest of the world.

JOHN WYLIE

Documenting Trickle Cave



JOHN WYLIE

Low overhang, Trickle Cave

REFERENCES

Bennett, Jill. 2012 Sandstone Caves, Liffey Falls Area and Golden Valley limestones. *Troglodyte,* 22(1): 10-11.

Barton, C.M., Bravo, A.P., Gulline, A.B., Longman, M.J., Marshall, B., Mathews, W.L., Moore, W.R., Naqvi, I.H. & Pike, G.P. 1970 *Quamby.* Geological Atlas 1 Mile Series. Sheet 46 (8214N). Department of Mines, Tasmania.

Bradbury, J. 1995 Continuation of preliminary inventory of sites of geoconservation significance in Tasmania: Central, northern and western Tasmania. Parks and Wildlife Service, Tasmania: 5.

Butler, David. 2012 Golden Valley. *Troglodyte*, 22(1): 11.

Cassidy, Jill. 1986 *Deloraine Industrial Heritage: a survey.* Jointly funded by the Australian Heritage Commission and the Queen Victoria Museum: 55-59.

Clarke, M.J. 1968 A reappraisal of a Lower Permian section Golden Valley, Tasmania. *Geological Survey Report, No 7.* Tasmania Department of Mines. 32 pp.

Clarke, M.J. 1989 Chapter 8. Late Carboniferous-Triassic. [In] Burrett, C. F. & Martin, E.L. (Eds.) *Geology and Mineral Resources of Tasmania.* Special Publication 15. Geological Society of Australia Inc: 293-338.

Gray, Lyndsey 2000 Trip reports, Mt Cripps 18 February 2000. *Speleopod,* 37:13.

Grimes, K.G. 1999 Mt Cripps Karst Area, implications of karst for proposed limestone quarry sites .Unpub. report to Western Metal Resources Ltd. 60 pp.

Heap, Dave 1996 Trip Reports for Mt Cripps Monday 6/11/95 *Speleopod*, 19:10.

Hughes, Terence D. 1957 *Limestones in Tasmania.* Geological Survey Mineral Resources, 10: 291.

Kiernan, Kevin. 1995 *An Atlas of Tasmanian Karst.* Tasmanian Forest Council, Research Report 10, Vols 1 & 2: 256 & 351.

Matthews, Peter G. 1985 *Australian Karst Index.* Australian Speleological Federation Inc. Broadway, NSW.

Mathews, W.L., Everard, J.L. & Clarke, M.J. 1996 Geological atlas 1:50 000 series. Sheet 54 (8314S). Lake River. Explanatory Report. Mineral Resources Tasmania: 64 & 76.

Pike, G.P. 1973 Geological Atlas 1 Mile Series. Zone 7 Sheet No 46 (8219N). Quamby. Geological Survey Explanatory Report. Tasmania Department of Mines: 25-27.

Shannon, Henry 2011 Trip reports. *Troglodyte*, 21(2): 11-16.

Sharples, Chris 1995 Geoconservation in forest management—principles and procedures. *Tasforests* 7: 42.

Skemp, J.R. 1964 *A History of Deloraine.* Foot & Playsted: Launceston: 8 & 40-41.

Slee, A. 2010 Mt Nicholas—Permian limestone karst of North-East Tasmania. *ACKMA J.* 78: 22-23.

Wells, A.T. 1957 Geology of the Deloraine—Golden Valley area. *Rec. Q. Vict. Mus.,* N.S., 8: 8.

Whitworth, Robt. P. 1877 *Bailliere's Tasmanian Gazetteer and Road Guide.* F.F. Bailliere: Hobart and Melbourne: 88.

Wylie, John 2003. Billys Creek Caves, NSW. *J. Syd. Speleol. Soc.* 47(7): 206-210.

Wylie, John 2005 The Four Bradys caves of Tasmania, or armchair caving at its best No. 4. *J. Syd. Speleol. Soc.*, 52 (11): 320-330.

Wylie, John 2009. Mackintosh Creek. *Speleopod*. 66: 11.

Wylie, John 2012. A preliminary report on the Permian Limestones, Golden Valley, Northern Tasmania. *Speleopod*. 70: 10-12.

Golden Valley

Henry Shannon
NC

THIS ARTICLE is based on articles in the December 2011 Northern Caverneers magazine, *Troglodyte,* and is a description of two trips to the Golden Valley area in Northern Tasmania on 23 November and 1 December 2011.

The first trip was a party consisting of Jill Bennett, Greg Middleton, Henry Shannon and John Wylie and the second trip had Jill Bennett, Simon Bland, Henry Shannon and John Wylie present.

TRIP 1

John Wylie from Sydney Speleological Society (SSS) periodically visits Tasmania and has a project going to check out the minor karst areas and other cave features in Tasmania, and he has the necessary patience to follow up the local landowners and chase up any leads.

The idea for this trip was to check out a story of limestone caves in the Permian age rocks at Golden Valley. Reading the geological literature is not encouraging for the area as a caving prospect. The possible, though rather unlikely, limestone is in the Glencoe Formation of the Golden Valley Group.

This Group is locally famous for containing abundant fossils, both brachiopods and bivalves, which can often be got out as whole specimens from a silty matrix, but mostly it is pushing it to call the rock limestone.

Sometimes, however, the matrix does grade into lime-mud or lime sand so there is some real limestone, but typically in very thin beds. John had arranged for us to visit the Whatley property at Golden Valley where he had prevously located two small caves. At the entrance of the more convincing of the caves, GV-1, a small cliff was coated with an algal growth reminiscent of stromatolites but soft with fissures cutting the surface into 2 cm chunks.

JOHN WYLIE

Jill Bennett at the entrance to GV-1 Golden Valley Cave

The entrance was about 1 m high and a bit wider than that and the cave went straight into the hill as a comfortable crawlway for maybe six metres, before splitting into three at the end.

The cross-section is a flat oval form and although the wall rock is obscured with tough weathering residue it looks like it is a limestone.

Outside, shelly fossils are abundant in the immediately overlying rock.

It is conceivable that the cave might continue if the floor sediment were dug out at the end before trying to go in further. It looks overall more like a fragment of a water conduit than just a local weathering effect.

I am interested in caves in these thin limestones in the flat-lying rocks because it is just possible they contain caves related to ancient basin-scale water circulation rather than local drainage or weathering effects, and, if so, they may just keep going once the entrance sediment blockage is passed.

The other cave (GV-2) was around 100 m eastward following the contour of the hill. It was a flattener also going straight into the hill about five metres.

It is too hard to see clearly if it is also in limestone, though the outcrop above is maybe 20 per cent carbonate in the form of shelly fossils in muddy sandstone with abundant drop-stones from passing icebergs. The caves were mapped and GPS located by other members of the party.

There is another known cave (GV-3) on the property more or less at the bottom of the hill with a sinkhole entrance not far from a quarry in mudstone, typical of the Quamby Mudstone unit (now thought to be of latest Carboniferous age rather than Permian) and with a second sinkhole about 20 metres away. This cave has a bit of mess around it, mainly corrugated iron sheets.

JOHN WYLIE

Jill Bennett at the entrance to GV2

JILL BENNETT

Greg Middleton in GV3 Whatleys Hole entrance

The cave is on the actual unconformity between the Ordovician Gordon Limestone and the Tasmania Basin sequence and is controlled by a joint in the Gordon Limestone for about six metres, with a short branch along another joint to a low point with wet vegetable debris which appears to contain a pool at times.

The limestone is very slaty-looking for the most part, unlike what is typical at Mole Creek, and is dipping at about 50°.

Because you can stand up in it, you can see the unconformity easily but the top cut-off of the Gordon Limestone is corroded to the point where no glacial striae (scratch marks) can be seen and there is a wide bench cut out of a flat-lying limestone (going by the surface etching on a floor relict) which I think originated as a rock flour of ground-up Gordon limestone—both tillite and limestone at the same time.

Above the gap more typical glacial outwash conglomerate takes over with about a metre exposed in the arched ceiling. This exposure is unexpected and truly remarkable. The other sinkhole would likely give access to another cave like it, if dug out.

An origin from basin-scale artesian flow is a possibility for these features as well.

Next stop was on the neighbouring property, visited with the idea of seeing the quarry and lime burning relics from the pioneering days.

There were some small but genuine disused quarries and the ruins of a stone-built kiln.

Rather more interesting was the worked example of why a dam built on limestone is not a good idea if it is a visible water storage you actually want.

It has achieved instead a kind of duck-pond which overflows into a group of shafty sinkholes in gravel. It was said that fluorescein tracing has been done, showing the water got out into the Meander River, and the logical place for a spring would be Cubits Sugarloaf some seven kilometres west-north-west.

Of course, the water lost recharges a big underground storage in the limestone but Tasmania is not groundwater-conscious.

We were well received at the house and in conversation it turned out that a family that John Wylie had visited some 20 years ago was still living locally and was a contact for some sandstone caves up the Lake Highway.

There was enough time, so we went to visit the Staak family who have built a round house out of limestone from Flowery Gully.

We were then guided to a sandstone tower, made climbable by a local by drilling holes for a ladder of spikes and from there

JILL BENNETT?

Serious cave discussion at GV3

we aimed off to a mesa feature where the caves were.

These caves were, as sandstone caves go, pretty remarkable. For something like 100 m there is a complex with a gallery inside of the cliff with frequent passages out to the open and occasional verticals to the top. Never truly dark, but with parts where a light was more than just useful, some was crawly, most was upright walking or stooping.

The passages follow a joint system and the typical styles of rock-shelter formation, in which the insides of joint blocks are hollowed out by granular disintegration of the rock were nearly absent.

TRIP 2

The idea for the second trip was to map and photograph the limestone caves seen the previous week and GPS fix and tag the entrances, then do a bit more surface exploration.

On the way in we accidentally took the turn-off in to Caroline Webster's place and noted that the leaking dam was nearly half full from the recent rain.

There was no-one at home, so off we set

JOHN WYLIE

Simon Bland and Jill at Bullocks Cave

to check a quarry on the road in to the cave on the Gordon Limestone–Stockers Tillite unconformity.

This quarry is mostly in Gordon Limestone with near-vertical dip and at the high point the unconformity occurs with exposure of about a metre of the tillite.

From there we moved on to the convenient quarry where fragmenting mudstone of the Quamby Mudstone is extracted for road surfacing. Here Simon parked the van and we headed to the cave named Whatleys Hole, tagged now as GV-3.

There is an entrance drop of about 2 m with the main passage going north for 10 m about 2 m high with the bottom two-thirds in Gordon Limestone and the top one-third in the Stockers Tillite. There is a low shelf cut out along the unconformity.

Near the end, a short (2 m) side passage goes off south-east controlled by the dip of the limestone 50º north-east strike 140º. The cave was dripping wet, with mud and sticks on the floor sloping down from the entrance and levelling out towards the end. There are some floor holes in the earth, one near the entrance.

Then it was up the hill to the house. Larry and Judy Whatley were not at home but John (Wylie) had been told beforehand to expect this.

We went down to the easy cave, down from the white gum, to do the documentation, tagging it GV-1.

From my map its passage length is 8 m, counting a side branch of two metres. The ceiling half is in rough-weathering rock full of fossils, the bottom half relatively smooth-weathering limestone.

The cave is widest at the contact; the limestone part slopes inward evenly to a rudimentary floor canyon up to 30 cm deep with semi-vertical sides, a reasonably typical limestone cave cross-section.

Since going over Clarke (1968), in which there is a log for a stratigraphic borehole 750 east-south-east of the cave I have become convinced that the cave is exposing (a) the base of the Billop Sandstone and (b) a limestone bed at the very top of the Glencoe Formation that is not present in the bore section, (but described as reaching 7 to 8 m in the Quamby Brook outcrop). At something over one metre thickness, it is substantially thicker than any of the six limestone beds recorded in the bore, the thickest of these being 23 cm.

With regard to (a) I can recognise a brachiopod of the Spiriferid family in what I am now calling the Billop Sandstone and the only Spiriferid recorded in the fauna list is Spiriferella and it is recorded only for the Billop Sandstone where it is abundant.

For me it was intriguing to come across the kind of fossils you deal with in first year palaeontology practicals in a situation where the knowledge proves useful.

We then went round the hill to the second of the Whatley's house caves, tagging it GV-2. It is a flattener at the base of a steep outcrop of Spiriferid-bearing Billop Sandstone even if it looks more like a calcareous siltstone than a sandstone.

It is hard to make out what is inside because there is not enough room to look around, but while in the cave it seemed there was at least an intermittent draught.

This reminds me that on the previous trip I had brought out a sheet of newspaper that seems to have blown in to the cave. The page was about a year old.

The cave was documented before we moved on. It trends at 140º, getting too low to get your boots in.

The surface exploration effort was successful in turning up another cave, thanks to Simon who took on the wet blackberries. The cave consists of a cliff overhang and a flattener going into the hill at 265º with a bedrock floor rising slightly and wet, with a trickle running out. It is cut out of what is likely to be the same limestone bed but here reduced to about 30 cm. At 3 m in, it effectively ends in a mud cliff though the cave technically continues as a dig for the wetness tolerant. It was given the tag GV-4 and called Trickle Cave.

After this effort there was a scouting effort over to the next gully but the bench edge of the Billop Sandstone lost its identity, so the horizon where entrances can exist was not traceable.

This ended our Golden Valley effort, but there was enough time to check out the Bullock Cave, a well-known local feature on a pioneering era track down to Jackeys Marsh, so-called from the story that bullockies used to stable their teams in there overnight.

It is 700 m south-south-east of the cave complex on the Staaks' place and rather lower, probably in a lower sandstone bed.

The access track connects to the Lake Highway. The cave turned out to be a true rock shelter type; hollowed out from the inside of a large joint block by granular disintegration of the rock depositing loose sand on the floor, and its subsequent removal by sticking to the feet of passing animals, ant lion activity and the like.

Such caves are often called wind-eroded but this is a fallacy, since wind movement features are not seen on even the loose sand.

REFERENCE

Clarke, MJ, 1968, A reappraisal of a Lower Permian Type Section Golden Valley, *Tas. Geological Survey Record* No 7, Tasmania

Wyanbene Cave

Bob Kershaw
ISS

LOCATION

Wyanbene Cave is located 70 km south east of Canberra, 250 km south-west of Sydney and 40 km south of Braidwood in the Southern Tablelands of NSW. The cave is within the Deua National Park of south-east NSW and the Big Hole is nearby. These short distances make it an accessible location for cavers attending Trogalong.

SOME HISTORICAL SNIPPETS

During the mining of silver near the cave, the water from the cave was used to supply water to the activity (Anon. 1889).

Trickett (1900) reported that an iron gate and ladders were installed at the entrance for the protection of the cave. The gate and ladders cost £27.12s.7d in 1889.

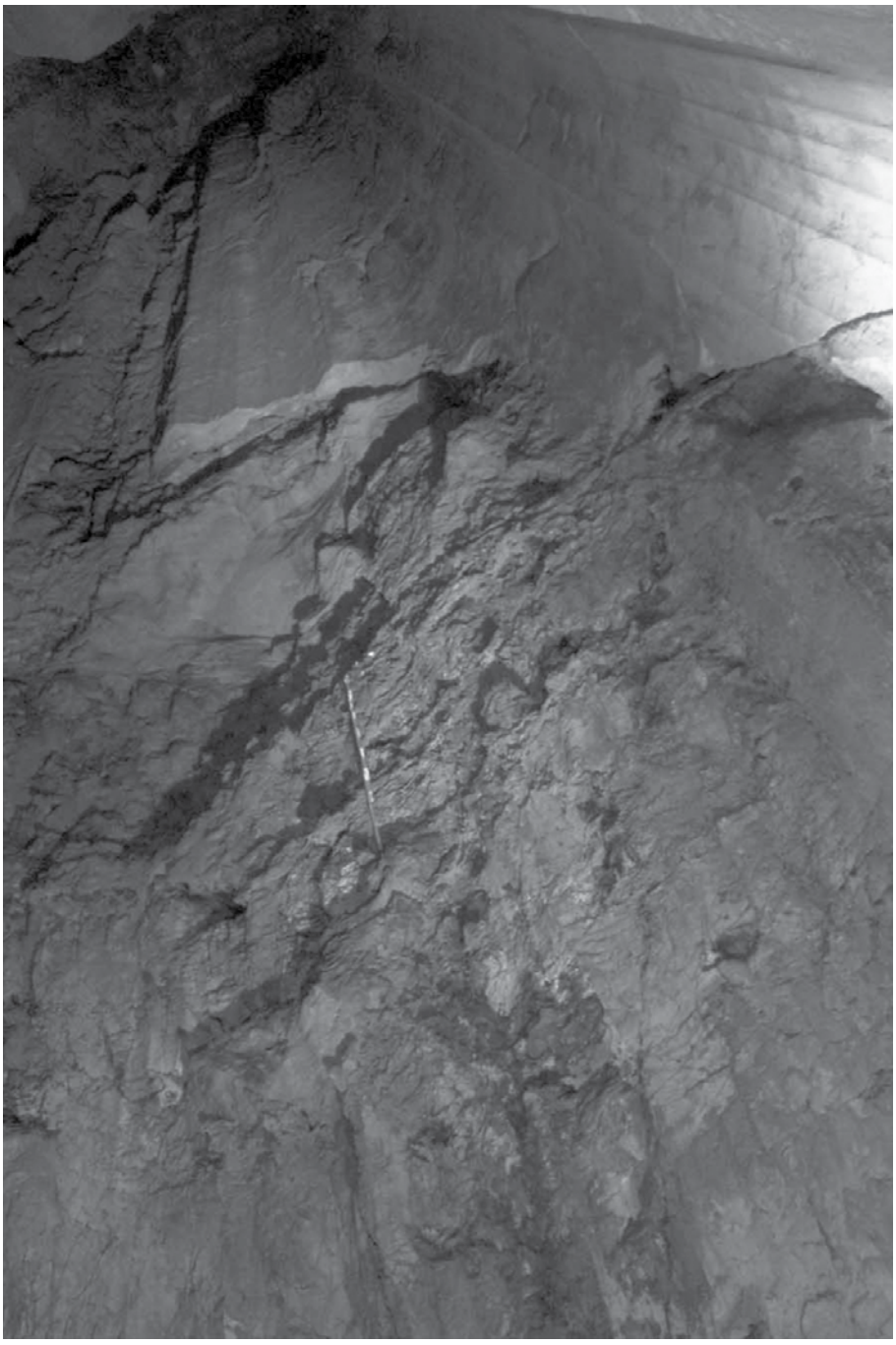
These ladders are still used today to enable tourists and cavers to reach the Bat Chamber and are in good condition.

From the late 1890s to the early 20th century the entrance streamway and the tourist section were open to the public. Electric lights were used in the late 1920s to show tourists around the cave.

Halbert (1966) reported that his party found, surveyed and named Chamber Pot and found a way to Frustration Lake and that Perkins swam the lake trying to find an exit, albeit unsuccessfully.

From 1973 the invasion of ISS members started helium balloon exercises to take photographs of the Gunbarrel Aven and roof. In 1975 they confirmed the height as 118.8 m and took many photographs. In April of that year Wilton (1975) described another RDF attempt and cairns being constructed on the surface to locate underground positions. In 1976 ISS again sent balloons aloft in the Gunbarrel, noticing a severe cross current 61 m above the bottom of the aven.

Warild (1977) reported that he spent several hours attempting to climb the



BRIAN EVENS

Gunbarrel Aven

JOHN BRUSH

Tony Baxter, NPWS Manager Deua Region (right) on an inspection tour of tourist ladders in Wyanbene Cave February 2012

Gunbarrel Aven but had to give up at 63 m as he could climb no further. The cave and surrounding karst areas are now subject to a karst area management plan that restricts entry to six trips per year.

A BRIEF DESCRIPTION

Upon climbing down the first ladder at the entrance the caver is wet for the remainder of the trip.

Walking through the streamway of the entrance section one encounters some broken speleothems from times past. A great deal of mud now covers some formations from natural and human factors. Many of these are being cleaned by CSS and ISS under the cave-cleaning project in conjunction with NPWS.

The next section of the cave is the old tourist section with the ladders in place and many trodden rimstone pools and muddy features.

But one feature that you see upon arrival is a large column. Later you manipulate your body through the Keyhole Squeeze, descend a 10 m ladder pitch and again enter water and the cave opens and you pass through many features including the Jail House and Triangular Squeeze, areas named Cleopatras Bath, the Helictite Chamber and later the Helictite Wall.

Through various water crawls and mud slides you reach the Gunbarrel Aven. Further into the cave you climb Far Caesars Chamber and head into the main passage and walls to climb some mud, eventually reaching Frustration Lake and the aragonite flowers in the ceiling.

The party's return trip is through the mud and water to reach the outside many hours later to the often wet and cold weather of the Southern tablelands or the clear night skies.

PERSONAL GEAR

Overalls and T-shirt are fine while you are on the move, but bring thermal shirts and bottoms as it does become very cold if you stop for a prolonged period. Wetsuit bootees in old leaky boots are best or the bootees inside gumboots—plus the usual caving gear.

If you are from interstate then this is an iconic cave to visit and a walk to the nearby Big Hole is a must as well.

REFERENCES

Anon. 1889. *The Maitland and Hunter River General Advertiser,* 29th January.

Anon. 1966 *Stop Press,* Sydney Speleological Society January pp 5-7

Anon. 1975 I*llawarra Speleological Society Journal* Vol. 1. No. 11. December.

Booth, K. 1968 *Stop Press* [Sydney Speleological Society] Vol. 12 no 1 pp 7-8

Call, N. 1970 *Speleografitti* National University Caving Club vol 7 no 3 May page 35

Coggan, M. 1974 *Speleografitti* National University Caving Club Vol 11 no 4-5 Aug-Oct page 34

Davey, A. 1978 *Stop Press* Sydney Speleological Society Journal vol 22 no 6 June pp 133-142

Dean, P 1967 Metropolitan Speleological Society *Journal* no 1 issue 4 June pp14-19

Dew, B. and Pemble, H. 1957 *Journal of Sydney University Speleological Society* Vol 4 no 1 June. p9

Dicker, D. 1979 Unpublished Illawarra Speleological Society Trip Report 20-21 January

Garrington, B. 1966 *Stop Press* Sydney Speleological Society May pp 13,14

Halbert, E. 1966 *Stop Press* Sydney Speleological Society June pp11-12

Halbert, E. 1982 Sydney Speleological Society *Journal* vol 26 no 2 Feb pp 30 -33

Hust, G. 1973 *SPAR* no 26 University New South Wales Speleological Society June p 16-17.

Pavey, A. 1972 *SPAR* no 21 University New South Wales Speleological Society December p 27

Rowling, J. 1995 SUSS *Bulletin* Sydney University Speleological Society vol 35 no 1 July sept p 22

Trickett, O. 1900 Report on the Wyanbene Cave. NSW Dept of Mines and Agriculture Annual Report for 1899. p. 213.

Warild, A. 1977 *SPAR* no 66, University New South Wales Speleological Society August page 3 -4

Wilton, W. 1978 Illawarra Speleological Society *Newsletter* Vol.1 No.12 June pp5-6

Answers to Hungarian Cave Exam Part 3

Sue White
VSA

This is the last set of answers for the Hungarian Cave Exam. As stated in both *Caves Australia* 189 and 190, the answers to this quiz/exam are not easy to give in an Australian context.

Some of our systems are different but the answers are therefore given in a general sense rather than specific for each question.

In particular, the biology in Australia is very different from the rest of the world although the principles of cave fauna and flora are universal.

If you know some of the answers here that are not specifically answered please let the editor know and we can publish updated information in later editions of *Caves Australia* or in *ESpeleo.*

Some of this information will vary according to particular trips and particular areas of Australia.

Nevertheless, it is useful to see the European perspective.

This section does not include cave geology, which will be in the next issue.

X. SCIENTIFIC KNOWLEDGE

Biology of caves

1. Describe the flora of caves. What groups do you know?

Plants can't grow in caves as there is no sunlight. However, some seeds do find their way into caves.

They are either taken in with water, especially in times of flood, or else they are deposited in the bat or bird droppings.

Fungi, algae and microflora are the most common but lower plants such as ferns and mosses can be found in cave entrances and where there are artificial lights.

2. What is lampenflora? What causes it?

Lampenflora is where plants grow at sites where, under natural circumstances, it would not appear.

The presence of artificial light, as in tourist caves, enables photosynthesis and plants grow near lights that are left on for tourist access.

3. How can we group the animals of caves?

Trogloxene, troglophile and troglobite for terrestrial animals.

For aquatic examples the terms have become stygobite, stygophile and stygoxene (generally called stygofauna).

4. Describe trogloxene animals. Give examples.

A cavernicole which spends only part of its life cycle in caves and returns periodically to the epigean domain for food, e.g. cave swallows, swiftlets, rats, bats, snakes.

5. Describe troglophile animals. Give examples.

A cavernicole frequently completes its life cycle in caves but is not confined to this habitat e.g. cave crickets, Tasmanian cave spider *(Hickmania troglodytes),* glowworms.

6. What are the characteristics of troglobiont animals? Give examples.

We tend to use the term troglobite; an animal that lives in a cave and is unable to live outside of it as it has adapted to the cave environment.

Troglobites usually have troglomorphic adaptions such as reduced or absent eyes, long antennae and limbs and loss of pigmentation.

Examples include a wide range of invertebrates e.g. spiders, cockroaches, silverfish. Australia does not have salamanders.

XI. SCIENTIFIC KNOWLEDGE

Climate of caves

This section is difficult to answer as I cannot find information for many of the questions, including checking the *Encyclopedia of Caves and Karst.*

Caves are usually closed environments, because the energy exchanges with outside are generally small and only become important when a watercourse flows through a cave.

Cave climate tends to be rather constant, though it is influenced both by the outside seasonal variation (in the vicinity of the entrance) and by heat exchange from inner parts.

Roughly speaking, the average air temperature of a cave is very close to the outside average temperature.

A cave's climate is characterised mainly by temperature, relative humidity, and airflow but air quality is also important, for example carbon dioxide and radon.

A cave can be divided into three sections: Sunlight (entrance) zone, twilight zone and midnight (dark) zone.

These all relate to the closeness to the entrance and the ability for interchange of air mass, and therefore its characteristics of temperature, moisture etc.

The entrance section is closest to the environment above ground. It receives sunlight and has variable temperatures and green plants. Animals utilise this space to eat their food, sleep or nest and a range of biota such as moss, ferns, owls and snails can be found there.

Elements of climate are temperature, moisture, air mass, atmospheric pressure, and topography (i.e. cave shape etc). However, the definition of climate is that it is the AVERAGE of weather for at least 30 years and so we may be confusing cave climate with cave 'weather.' *

An ice cave is any type of natural cave that contains significant amounts of year-round ice.

At least a portion of the cave must have a temperature below 0°C (32°F) all year round, and water must have traveled into the cave's cold zone. The term ice cave is often used to describe a cavity formed within ice, which is properly called a glacier cave.

XII. SCIENTIFIC KNOWLEDGE

Cave protection

Much of this section is common sense and is covered in the ASF minimum impact caving code.

The main issues in regard to lights are intensity and the amount of time lights are left on in caves, especially tourist caves. This is related to the issues of lampenflora growth.

Leaving food scraps, even very small crumbs, can upset the balance of the food chain for cave biota.

All rubbish, including food scraps and excreta, must be taken out of the cave.

The issue of excreta in caves is important for bivouac trips. Those of us who are old enough to remember camping in Mullamaulang on long trips can also remember the toilet issues.

Issues regarding bats involve minimum disturbance at all times. Australian bats are now not thought to go into complete torpor (hibernation) but still should not be disturbed.

However, in winter they need to conserve their stored fat so that they do not die before the weather warms up and they can forage again.

In the northern hemisphere, bats feed on insects and are faced with the problem of surviving the winter, when the number of flying insects is greatly reduced.

Bats therefore hibernate, seeking out undisturbed sites with low temperatures.

Lowering their body temperature, heart, breathing and metabolic rates greatly reduces their energy requirements and allows them to exist on the body fat reserves laid down prior to hibernation.

Many bats also require a humid environment to avoid dehydration; thus, underground sites provide ideal conditions for hibernation.

Hibernating bats are unable to move quickly; it may take up to an hour for a bat to become warm enough to be fully active, and once the arousal process is started it is often irreversible.

Bats have limited fat reserves to survive the winter period and each arousal uses a considerable amount of energy—possibly enough for ten days' hibernation.

Awakenings scheduled by their own internal rhythms or stimulated by natural conditions can be accommodated, but it is not easy to make up weight lost in winter.

Any unplanned awakenings, for example by human disturbance, increase the risk of fat reserves running out before the winter is over.

With little prospect of replenishing these reserves, the bat may die through starvation or at least fail to recover sufficiently from hibernation to breed successfully.

XIII. SCIENTIFIC KNOWLEDGE

Mapping caves

Details regarding mapping of caves can be found in *On Station* by George Dasher. Many clubs have this in their library and it is available from Speleobooks and the NSS Bookstore.

▮ Section XIV answers will be in the next issue of *Caves Australia* (192).

* A short article on cave 'climate' for *Caves Australia* would be much appreciated if someone could put together a simple paper.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