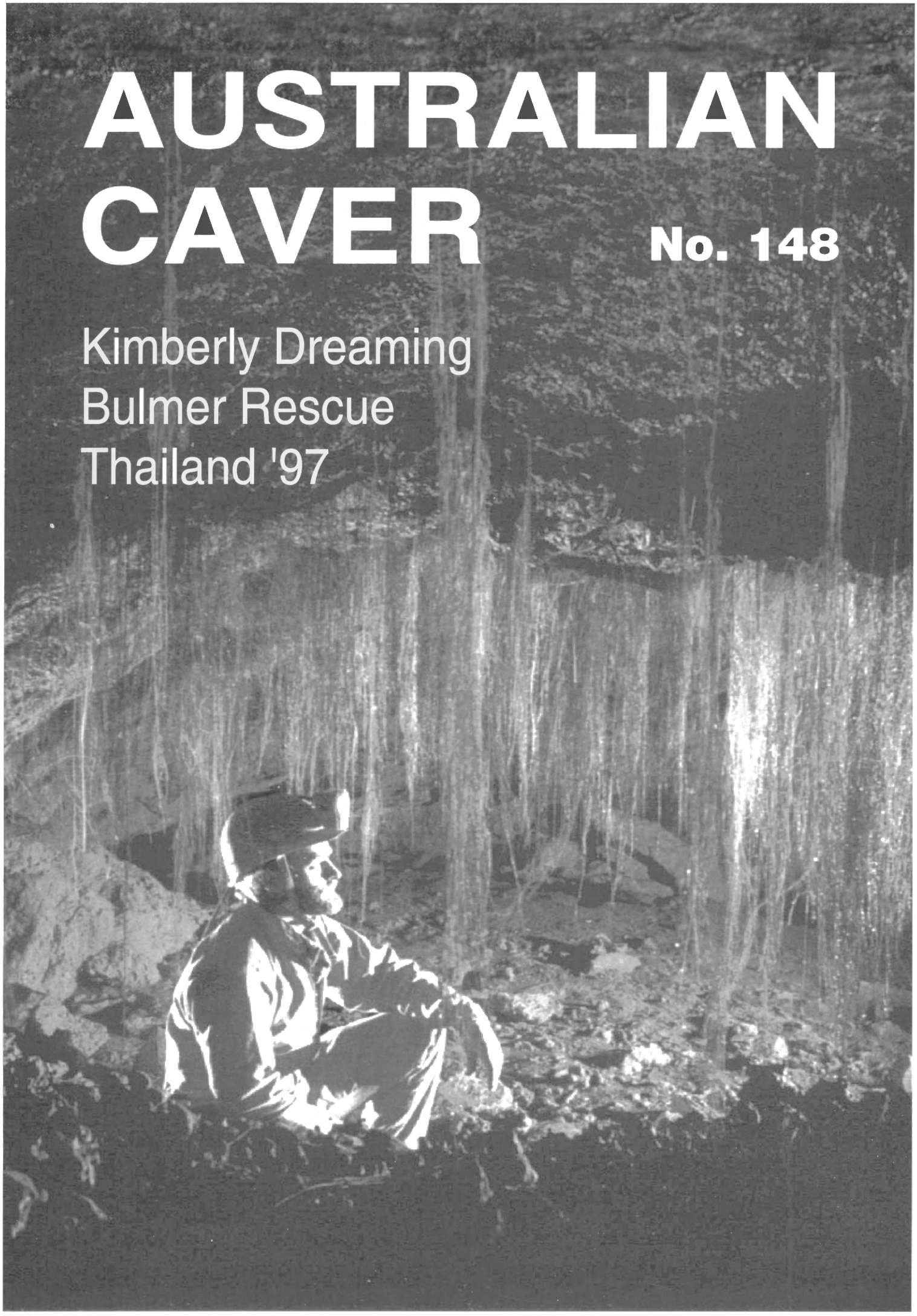
AUSTRALIAN CAVER

No. 148

Kimberly Dreaming
Bulmer Rescue
Thailand '97



Australian Caver Issue No 148 - Aug 1999

Editor

[redacted]

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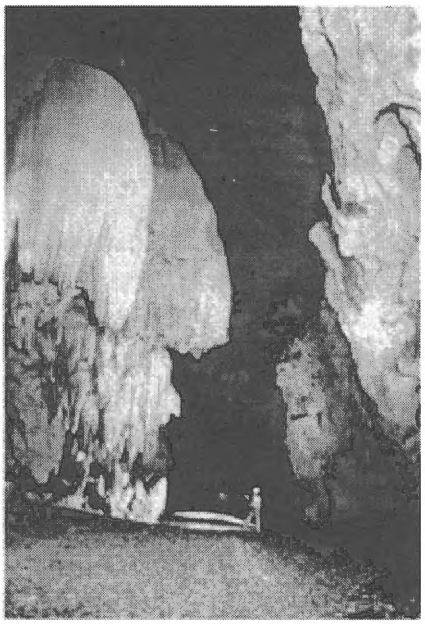
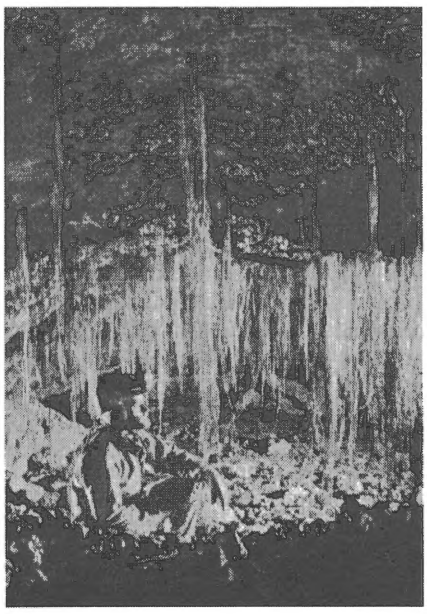
Mimbi cave - Kimberly



Caving in Thailand



Front Cover: Reto Zollinger in Root Chamber, North Pole Cave (3H-51), Mt Eccles.
Photo by Ken Grimes and Reto Zollinger.

Back Cover: Evening bat flight at Tham Chaoram near Sukhothai. (photo Linda Fellows)

Editorial

Welcome to an edition of Australian Caver with a strong exploration and rescue flavour. Both topics are dear to my heart so it has been a pleasure putting this issue together.

On another note, one of our readers has suggested that future issues might usefully include some equipment reviews. If anyone would like to share their experiences (good and bad) of the latest in underground gear, we'd love to hear from you.

Errata and apology

A couple of errors have come to my attention in the last issue of Australian Caver. First the name of the Author of the article "Safety Tip - SRT Ropes" was accidentally omitted. The mystery author was Peter Ackroyd. Secondly the first sentence of Al Warild's article "Nakani 98" was unfortunately truncated and should have read "We went into the travel agents to see if we could get a few days extension on our less expensive air-fare and came out with a free ticket". Apologies to Peter, Al and our readers.

NEWS & NOTICES

Speleological Abstract

Speleological Abstracts for 1998. Covering the major speleo publications is straightforward but finding more obscure material is more difficult. If you published, or know of, any speleologically significant articles in 1998 (or even '97) that we may not have come across and you think should be included in Speleological Abstracts, here is your chance to let us know about them. You can write an abstract, send the reference or send a copy of the paper - but please check with me first as to whether we have picked it up.

A note to newsletter editors: Failing other contributors we have to rely on the Southern Tasmanian Caverneers library to pick up material from the smaller or less-regular society publications. STC didn't receive any issues of the following in 1998 so they won't be included in the abstracts unless they are received at [redacted] by 1 August:

Calcite, Cave Divers Assoc. Nl., Chillagoe Caving Club Nl./Tower Karst?, ISS Nl., MSS Nl./J.?, MUCG-Raker, Oolite, Spar, Speleograffiti.

Australian work has been underrepresented in Speleological Abstracts in the past. Now we have a chance to rectify this.

Greg Middleton

Assistant to the Director Parks and Wildlife Service,

Department of Primary Industries, Water & Environment

[redacted]

23rd A.S.F. Bi-ennial Conference

The 23rd Bi-ennial Conference of the A.S.F. will be held at Bathurst from 28th December 2000 to 2nd January 2001. These dates will allow people to attend during the Christmas-New Year break that many companies have. It will also allow members who are Scouts to attend both the Conference and the 19th Australian Jamboree which follows.

The Conference will be practical as well as embracing modern technology with lots of caving and most of all, FUN!! The cost will be under$300.00 which will include everything.

If anyone has any ideas about presentations or workshops, please contact Keir Vauhan-Taylor at <keir@ee.usyd.edu.au>.

Any offers of assistance are appreciated. There will be a meeting inSydney on Sunday 6th June. Please contact the Conference Convenor,Angus Macoun on (02) 9416-2588 or at <amacoun@eagles.com.au

ASF Members Handbook

The Members Handbook is currently being produced. This will have information about the Federation and its functions; the functions of the Commissions and Committees; a brief history of caving in Australia; the Code of Ethics and Conservation; the Minimal Impact Caving Code; the Cave Safety Guidelines; and a current list of contacts for Executive, Convenors, Corporate Members and Associates.If anyone has any other ideas about what should be included or any contributions, please forward them to the Executive Secretary, Heather Jeffries at [redacted]

Codes & Guidelines Review

The Code of Ethics and Conservation, the Minimal Impact Caving Code and the Cave Safety Guidelines are all currently under review. Please forward any contributions to the Convenor of the Codes and Guidelines Commission, Evalt Crabb at [redacted]

Sinkholes and fossils explained in new information signs at Blue Waterholes.

Six new information signs installed this week at the scenic Blue Waterholes area of Kosciuszko National Park provide information for visitors about the fascinating landforms and cultural history of the Cooleman Plain area.

The signs are in the Nicole and Clarke gorges, along the Jennings Walks. The walks commemorate the work of Dr Joseph N Jennings, a geographer from the Australian National University who spent 30 years studying the Cooleman Plain.

Blue Waterholes lies at the eastern edge of an extensive limestone area which includes Cooleman Plain. Much of the rainfall on the plain disappears underground to rise again at the spring at Blue Waterholes. There are many sinkholes, gorges and small caves.

NPWS assistant district manager for Tumut District, Russell Knutson, said the signs will complement existing information displays at the popular Blue Waterholes picnic and camping ground.

"The Jennings Walks begin at the

camping area where Cave Creek reappears from the plains and these new signs will help visitors gain a better understanding of the natural and cultural history of the limestone or karst area," said Mr Knutson.

"The two kilometre return 1 km one-way Clarke Gorge walk is particularly scenic, as it takes visitors into the steep-sided canyon cut by Caves Creek on its way to the Goodradigbee River."

he 15 kilometre return Nicole Gorge Walk takes visitors through a dry river gorge beds to limestone canyons and caves before returning across limestone plains dotted with sinkholes.

The signs describe the native vegetation of the area, including black sallies and snow gums, as well as the rare and distinctive weeping snow gum. They also describe fossil plants and animals which can be seen in the rocks.

The interesting history of the Murray Cave is also described. This cave has been known to Europeans since 1834 when Aboriginal people showed it to T. A. Murray of Yarralumla. In 1968, members of the Canberra Speleological Society discovered inscriptions dated 1903 which included the names of members of the Southwell family who then lived at nearby Coolamine Homestead.

Access to Cooleman Plain and Blue Waterholes is via Cooleman Homestead from the Long Plain Road, off the Snowy Mountains Highway.

NHVSS News

On 24 Jun 99 the Newcastle and Hunter Valley Speleological Society held its AGM. The following people were elected to fill positions. Newcastle and Hunter Valley Speleological Society (P.O. Box 15 Broadmeadow, N.S.W. 2292. AUSTRALIA.)

President Jenny Whitby
Vice President Garry Smith
Secretary Jodie Shoobert
Treasurer Michael Rutledge
Equipment Officer Ken Turner
Training Officer Gary Whitby
Librarian Garry Smith
Editor (Chronicles) Garry Smith
Publicity Officer Gary Whitby

The only position to change hands from the previous year, was that of Treasurer. Congratulations to Michael Rutledge who now takes up the reigns and a special thankyou to Dave Burnard for his dedication to the club as the past treasurer, a position which he held for many years.

The NHVSS web site is now up and running, thanks to the tireless efforts of Gary Whitby and Michael Rutledge. It is very good and a credit to Gary and Michael. As well as the text, if one stay on the pages with pictures for a little while, they will scroll through a slide show. It is certainly worth a browse and can be found at [redacted]

Wanted

Advertising Co-ordinator to join the team that produces "Australian Caver".

It involves:
Seeking out advertisers;
Liaising with the Editor and advertisers to ensure correct advertising copy and position in the Journal;
Liaising with the Publisher and advertisers to ensure correct billing.

This position will inject funds which will allow for:
Better quality Journal with better paper, print quality, size and colour;
Less funds required from the Federation's budget which will keep our fees low.

This important position is available now!

If you wish to make a positive contribution without much time outlay, please contact:

Angus Macoun
[redacted]

David Jackson Scholarship Fund

David Jackson, a member of SUSS, died last year in Denmark. David made many friends in caving societies throughout Australia and his genuine good-natured enthusiasm for caves and caving are missed by many.

David was also a talented mathematician as well as a keen caver. To remember David and his life a scholarship in mathematics is being set up at the University of Sydney in his honour. David's many friends are encouraged to make a donation towards the scholarship.

Details of the scholarship fund can be found at [redacted]

Cave Survey `99

Wombeyan Caves, 6/7th November 1999

Cave Survey `99' will be held over two days at Wombeyan Caves and is open to all ASF cavers. This is the second year the course has run and it is intended for:

* people who are already surveying caves and producing maps but wish to find out about further aspects of surveying that they may not know about

* those new to cave surveying who want a rapid path from using the instruments to drafting the final map.

Course instructors are Mike Lake, Phil Maynard & Jill Rowling.

Saturday will begin with short lectures on cave maps, then cover the use of surveying instruments and other materials followed by a short surface survey.

The course will concentrate on using hand held surveying instruments such as Suuntos etc. We'll look at types of instruments and their accuracy and uses, errors in using them, and tips/tricks in their use, cave ethics, party organisation and welfare. After lunch we go underground to start surveying and sketching plans and cross sections.

After dinner we will discuss what we need to do to the survey data and why. We'll reduce a few legs manually, then use a computer cave surveying package to do the work for us. At the end of the evening we should have a plot of the day's survey legs on paper. We then play with some other cave surveying and visualisation packages.

Sunday starts with map standards, then underground again to touch up all those nice wall and floor details. After lunch we retire to the cottage to start learning about drafting the final map. Then you can all compare maps! Yes it's a lot to cover and the weekend will be intensive but most enjoyable. Expect to finish around 5.00pm Sunday.

The underground section of the course will use part of a large tourist cave which is only a few minutes away from the cottage. No vertical gear is needed. Participants will work in teams of three or so surveying a small section so come along as a group from your club or join with some other cavers on the weekend.

What we provide: Full course notes, morning/afternoon tea and use of the Cottage for the weekend. The Cottage has beds for 6 persons and floor space for more, full kitchen facilities, and an outside BBQ. We will be using the cottage for lectures and map drawing.

What you need to bring:

*survey gear! Each group needs their own compass, clinometer, 30m measuring tape and pocket calculator

* breakfast, lunch and dinners for the weekend

* caving gear for easy horizontal caving and sleeping bag for the evening.

Cost for the weekend course is $50.00 per person Places on this course are limited to 15 persons on a first-come basis. A deposit of $10.00 is required to secure a place and full payment is required before the end of September. Send a cheque, payable to Speleonics, to the address below.

No refunds will be made if you cancel after September.

Ring or email for further information and to confirm place availability.

Speleonics

[redacted]

ACKMA NEWS

13th Conference on Cave and Karst Management a Huge Success!

by Kent Henderson, ACKMA Publication Officer.

The 13th Australasian Conference on Cave and Karst Management, held at Mt. Gambier (18 – 26 April) was a stunning success. Over its seven days, 35 papers were presented, all of which were of very high quality. The most significant part of the Conference was the Water Below Symposium (The Management of Karst Aquifers) which ran over two half days, and attracted a superb range of papers around the topic. Several local quest speakers involved in groundwater management in the Lower South East also added greatly to the event. The Conference, and Symposium, attracted a good deal of press and television coverage, which hopefully added to community awareness of the important issues involved.

Conference Field trips were many. These included visited most significant surface karst features in the Region, all its tourist caves, and many wild caves. The focus of the field trips was largely on Naracoorte, and included a paper session in the First Chamber of Blanche Cave (followed by a tour of the cave lit only with hundreds of sandflies!) And visits to the Victoria Fossil Cave, the Bat Cave Teleview Centre, and the wonderful new Womambi Fossil Centre.

83 Delegates from Australia, New Zealand and elsewhere attended the Conference, including eight Americans,a Canadian, and two from Mulu Caves in Borneo. The Conference Proceedings will be published later this year.

The ACKMA Inc. Committee meet during the Conference, and invited ASF Inc. Vice President, Arthur Clarke, to attend. This facilitated discussion in improving further the long-standing good relations between ACKMA and ASF, and I understand that, upon the ASF's invitation, members of both Committees will be meeting jointly to discuss issues of mutual interest later this year. At the subsequent ACKMA Inc. AGM, Brian Clark (of Naracoorte Caves) was elected as the new ACKMA President, and very largely most other Committee members were re-elected. Ernst Holland was re-appointed as ACKMA's Liaison Officer with ASF Inc.

The 2000 ACKMA Inc. AGM will be held at Buchan Caves, Victoria, on the Sunday of the Queens Birthday Long Weekend in June. The 2001 ACKMA Conference will be at Wombeyan Caves, NSW; and the 2003 Conference at Chillagoe & Undara in North Queensland. The 2005 Conference will probably see ACKMA return to New Zealand.

Australian Speleological Federation Inc.
Annual Report 1998

Presented by the President, Peter Berrill, Yeppoon, Qld, January 1999

At the last ASF Conference in Quorn in 1997, members demanded a more proactive, responsive, entrepreneurial and strategically-oriented organisation, and charged the new Executive with achieving this. We have to thank Alan Jevons again for his foresight in bringing about this sea change in attitude. I have been blessed with a hard-working Executive containing a sound mix of experience and ability. At Quorn we budgeted for 650 members. We now have 1,024 with more applying at this meeting. We believe that the considerable increase in membership, and particularly in involvement in ASF activities, indicates a high degree of satisfaction with the direction set by the Council at the last two meetings.

By any standards this has been a highly productive year. The NSW members have been particularly active and it is pleasing to report the active support from management authorities there. We received grants totalling

$32,330 for conservation and documentation-related work in NSW thanks to hard work by Peter Dykes and Chris Dunne. We are ready to put in place constitutional changes which will enable us to be recognised by the Department of the Environment and the Australian Taxation Office as a registered conservation organisation, so that some of our activities can receive tax-deductible status. The Membership Handbook only awaits these constitutional changes, and membership cards are ready to go. Dean Morgan has set new standards of excellence with the Newsletter. New procedures have been implemented to streamline our administrative functioning, evidenced by the fact that we were able to get almost all reports to clubs well in advance of this meeting. Accounting procedures and terms of reference of Commissions and Committees were strengthened to comply with tougher auditing requirements. Through Alan Jevons we have been represented on the peak national recreation body and have had a direct influence on setting realistic national standards for caving leadership. A joint proposal by ASF and ACKMA resulted in the listing of the Cape Range karst as one of the ten mpost endangered karst aquifers in the world. The aftermath of the Mt Etna dispute has been very time-consuming, and I expect to be able to make an announcement about progress on that issue shortly.

During my term it became evident that if we were to achieve the demands made by members at the Quorn Conference, we were going to have to change some of our organisational practices. This would mean being administratively more efficient, with improved accountability and communication, and we would have to cast off some entrenched institutional practices inherited from a time when ASF was smaller, the demands of its members less, and the scope of club activities more restricted.

We are trying to strike a balance between a rule-bound bureaucratic institution, which would be anathema to most members, and the kind of dysfunctional decision-making which characterises an organisation with little corporate memory or properly instituted procedures. And there is little doubt that the expectations both of members and of the law make increasing demands on the functioning both of ASF and of member clubs. For example, legal requirements relating to our incorporated status, modern auditing practice and the reporting demands of bodies from whom we obtain funds simply don't allow us to operate the way we did 10 or 20 years ago.

While this report highlights some of ASF's more significant activities in the last year or so, I don't want to omit mention of the many people who as Convenors of Commissions or Committees, or as Executive members, continue to maintain on-going programs of the Federation. Some of these have filled a role for as long as 10 or even 20 years and they seldom get a guernsey, for example Peter Matthews, Ken Grimes, Cathy Brown and Evalt Crabbe. There are others who have always been a willing source of advice although they hold no official position, and I would particularly like to thank Chris Norton, Patrick Larkin, Tony Culberg, Miles Pierce, Nick White and Elery Hamilton-Smith. In several cases a few minutes of their time has saved us hours of work.

I also want to make special acknowledgement of our Public Officer, Peter Nicholson, whose timely interventions saved us a great deal of bureaucratic hassle about our incorporated status.

Some highlights of 1998

I have organised these under several headings, but they are in no particular order of significance. The respective Presidents of the NSW and SA Speleological Councils will report in more detail on their states so have been omitted here except for one or two outstanding achievements.

Executive meetings

Two meetings were held during the year, one in Sydney attended by all the Executive and one by telephone. There is no doubt that these meetings and the fact that all executive members now have access to e-mail has vastly improved communication and the quality of decision-making. Other key personnel including Alan Jevons, Dean Morgan, Chris Norton and Mike Lake were also able to attend the Sydney meeting, and we should thank Jill Rowling for again making available her home as a venue.

1. ASF Administration

The increasing complexity of the Federation's activities became evident at the Melbourne meeting where 42 reports and documents were tabled for the meeting's consideration, including 28 reports of ASF officers. Many of these related to on-going functions of ASF and did not call for action. The Executive resolved to streamline the process by gathering reports and circulating them in advance. The Council Meeting could then spend more time on significant issues, longer-term policy and strategic issues, codes of practice etc.

Finance

During the year we were obliged on the advice of our auditor to institute new accountability procedures for ASF funds. The Auditor's Report advised that both prudent practice and our obligations under the Incorporated Associations Act required us to change our accounting procedures so that the Executive clearly had control of all Federation funds, and that funds were expended only in accordance with the Budget. As the steps necessary to achieve this met were resisted in some quarters we were obliged to seek a further opinion from two accountants and a lawyer, which all confirmed both the need for and method of action we had to take. Chris Riley has refined the accounting software so that there is a link between membership fees paid, the membership list, and newsletter distribution.

Directions from last Council Meeting to review Terms of Reference

A complete review of the terms of reference of Commissions and Committees was undertaken by an ad hoc Committee in Sydney in consultation with all Convenors affected.

2. Member Services

Australian Caver

This has vastly improved under Dean Morgan's capable editorship. Although considerations of cost obliged us to rein in the number of pages, Dean has actually been able to increase the content by judicious changes in layout, and more timely news can now be incorporated because articles, news and even photographs can be electronically delivered to the Editor, and from the Editor to Publisher. To speed distribution we transferred production to Sydney where Angus Macoun's skills have been invaluable in reducing production costs. There were some distribution hiccups which we hope have now been dealt with. As the newsletter is the main image of ASF to its members it is essential that we support it strongly.

Membership Handbook

A draft has been completed and will be available for perusal and comment at the Yeppoon Conference. We decided to defer distribution until 1999 so as to incorporate the many administrative changes referred to above. Angus Macoun is seeking advertising to defray the whole cost of the venture.

Insurance

The changes made at the Melbourne meeting have worked well, and we thank Alan Jevons for making the necessary

Caving Leadership Standards

Copies of the standards have been issued, but the contents are for member club use only. Alan Jevons reminds us that the contents are copyright to ASF and the authors.

There is enormous intellectual property invested in this and we have been approached by outside providers. The copyright must be safeguarded.

3. Public Relations and Public Recognition

NHT grants

A great deal of hard work by Peter Dykes and Chris Dunne in particular resulted in grants to the Federation (represented by the NSW Speleological Council) totalling over $32,000 under the National Heritage Trust program. While these had to focus on karst vegetation to comply with the grant criteria, a considerable portion is available for documentation and conservation oriented projects. Each project is managed by a sub-committee of the NSWSC. Funded in full for $27,330 during 1999, the largest of these will allow us to fully document 22 cave-bearing karsts in central-western NSW, and a November meeting in Lithgow of interested clubs and individuals set up a project reporting structure, timeframe and budget. We thank BMSC, CWCG, ECRC, HCG, MSS, OSS and RSS for their commitment to this excellent project.

Awards

The ASF Awards for 1998 will be announced at the Conference. At the last Conference we made awards to two prominent speleologists in Thailand who had greatly facilitated the image of Australian speleology as well as promoting cave conservation in Thailand. John Dunkley was able to make presentations for them at a well-attended press conference in Bangkok. As well as providing recognition of outstanding contributions, the public relations value of the awards is immeasurable.

Representation on other bodies

Patrick Larkin continues to be our statutory representative on the Jenolan Caves Reserve Trust. Alan Jevons unfortunately lost his position with ORCA in an election. Through the NSW Speleology Council we also have a position on the Speleological Advisory Committee for areas managed by Jenolan Caves Reserve Trust. This is being reviewed by senior management but I have to record that they have actively sought dialogue with speleologists, including travelling down to Sydney for a NSWSC meeting.

Cape Range

A number of development proposals and other activities are impacting on the caves and karst at Cape Range in Western Australia. During the year ASF submitted a nomination jointly with ACKMA for the karst at Cape Range to be entered as one of the ten most endangered karsta quifers in the world. The nomination has been accepted.

Some important issues

There are some important projects and issues which we see as absolutely integral to bringing about the improved, more professional ASF which members demanded at the last two meetings.

Registration as conservation organisation, tax deductible status etc.

For some years the Federation has been discussing the notion of a Foundation or similar structure which would enhance the long-term aims of ASF and perhaps enable and encourage donations to be made and administered prudently.

The Constitutional changes proposed at this meeting have been prepared by our legal advisers and are essential both to being recognised by the Department of Environment and Australian Taxation Office as a conservation organisation, and to obtaining tax-deductible status for conservation oriented activities.

Progress on the Karst Data Base

The last Council meeting directed the Executive to negotiate future directions for the operation of the Documentation Commission and for future use of its funds and of the Karst Data Base itself. This proved to be a very difficult and time-consuming task, there has been a measure of resistance, and it cannot be said that discussions are yet complete. The project itself is indisputably complex and may well be a world leader when complete, and the Convenor deserves acclaim for persevering. The value of intellectual property invested in this is incalculable, but it is of no value until finished. Yet it has consumed us on and off for 13 years. An inability to deliver appears to have cost us several marketing opportunities and greatly reduced ASF's ability, and the ability of member clubs to deliver timely, accurate data to support conservation and management issues. It is clear that the membership is unhappy about progress and essential that a workable solution be found without further delay.

Tribute to Joe Jennings

The Executive is not satisfied with progress on this project, which was envisaged as the Federation's tribute to one of its founding fathers, a former President and distinguished academic leader who was our trustee until his death. On the one hand this was never going to be an easy task, and recent cutbacks in funding of tertiary education along with changes in market trends have certainly not boosted its financial viability. On the other hand it is now 6 years since it began, and although much of the writing is complete or well advanced, the editors have not been able to deliver any of the 4 key elements in the proposal endorsed by ASF in 1993. The Executive believes that the original proposal was sound in principle and that its completion is integral to our strategy for the long-term image of the Federation.

Intellectual property and products

Alan Jevons presented a discussion paper on this at an Executive Meeting and a committee headed by Chris Dunne is preparing a draft policy. A meeting held in Sydney identified a number of areas of ASF's operations where this is of great significance, and Chris Norton raised many questions which need to be addressed. We are particularly concerned about information on the data-base, the data-base structure itself, and training materials related to caving leadership standards. The commercial value of these properties is many tens of thousands of dollars, while the value of unpaid work which has gone into preparation is incalculable. Contributing individuals and clubs and ASF itself each have rights to be safeguarded. The Council needs to discuss some of the issues.

Conclusion

As prefaced above, the last two Council Meetings demanded a more proactive, responsive, entrepreneurial and strategically-oriented Federation, and charged the new Executive with achieving this. Organisational change is never straightforward and I will not pretend that the last two years have been easy. However the resolve, support and overall unanimity of the Executive and Membership has been most heartening. There are still problems to be solved but it is clear that we are over the hill.

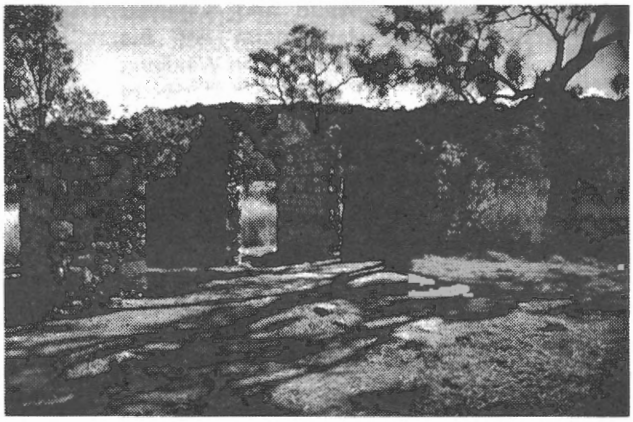
Kimberley Dreaming

Text and photos by Stefan Eberhard

This is a collection of stories and pictures inspired by a 1998 expedition to the Limestone Ranges in the Kimberley. Parts of the stories are based on my personal experiences, but also included is some of the local history and folklore, which I've read about or heard from other people. The expedition was organised by the Western Australian Speleological Group (WASG). The official report and maps will appear later in The Western Caver. The expedition was supported by a grant from the Gordon Reid Foundation for Conservation.

JANDAMARRA

Jandamarra was an aboriginal resistance fighter who almost single-handedly held up for a period of years, the advance of white settlers into the Limestone Ranges. His story is fascinating, made more so by the crucial role which the rugged karst ranges and caves played in prolonging the resistance.



Lillimoolora Police Station

By the 1890's white settlers were pushing into the fertile country of the Limestone Ranges. For nearly 10 years the Bunuba people had presented a strong resistance to the white incursion. They carried out hit and run attacks on settler's sheep and huts. In retaliation the whites captured Bunuba men, chained and transported them to Fremantle prison. Other Bunuba people, especially the women, were offered security if they came and worked on the settlers stations.

Jandamarra had been brought up with the whites (where he was known as Pigeon) and because of this his own tribe had never accepted him. He was a superb horseman and a crack shot with a rifle. He developed a friendship with Constable William Richardson and worked with him as a tracker, helping him to capture Bunuba warriors. At Lillimooloora Police Station the Bunuba captives pleaded with Jandamarra to release them from their chains. As Richardson slept on 31st October 1894 Jandamarra took his rifle and shot him, then fled with the released captives to nearby Windjana Gorge.

Unaware of Richardson's murder, a party of cattlemen entered Windjana Gorge where they were surprised and two were killed but one escaped to raise the alarm. The natives captured their wagon, which contained a good supply of arms and ammunition. Jandamarra was now accepted as the leader of the rebellion as he prepared for the approaching show down by arming and hiding his people in a cave in the side of the gorge. When the party of whites bent on revenge rode into Windjana Gorge they were surprised by the blacks firing onto them from above. There followed a protracted siege where Jandamarra was seriously wounded but kept firing from the mouth of the cave as his people escaped into the limestone ranges via a back entrance. The whites returned to Derby claiming that he had been killed, but Jandamarra had escaped to Tunnel Creek Cave where he spent many months in hiding as he recovered from his wounds.

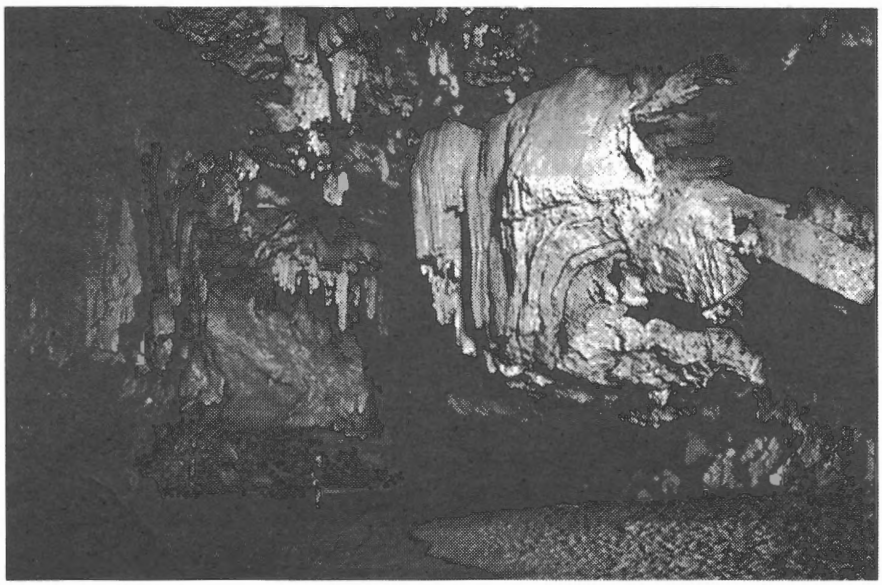
During this period there was uproar in the frontier settlements demanding bloody retribution. A newspaper report in 1894 said,

"It would be a good time for the WA government to shut its eyes for say 3 months and let the settlers up here have a little time to teach the nigger the difference between mine and thine....it would only have to be done once, and once done, could easily be forgotten".

Accordingly in 1895 the police and special 'constable-settlers' were granted so-called 'discretionary powers' which amounted to a license to kill aborigines. Hundreds were massacred.

Realising that continuing violent resistance would only amount to further bloodshed Jandamarra changed his tactics into a psychological war of attrition. For two years Jandamarra harassed and taunted the settlers and police. He was a cunning bushman and strategist who quickly gained a reputation, with both the blacks and the whites, for possessing magical powers. Reputedly he could, "fly like a bird, and disappear like a ghost".

On one occasion he was tracked to his hide out in Tunnel Creek Cave, a massive tunnel some 700 metres long which passes right through the middle of the Oscar Range. The whites believed they had him finally trapped when they staked out the entrances at either end, but unknown to them Jandamarra had escaped via a third entrance located in the middle of the



Tunnel Creek Cave

tunnel.

Jandamarra's guerilla campaign of non-violent resistance infuriated and humiliated his persecutors. He would taunt them from the limestone ramparts of the Napier Range, then disappear into the safety of the rugged karst where he could not be followed. He would lay false trails, then turn up somewhere else miles away. On one occasion Richard Pilmer rode his horse into a narrow gorge to find himself trapped in the sights of Jandamarra's rifle. Jandamarra demanded repeatedly of Pilmer, "Do you want your life?", then shot his hat off.

It became apparent that the only way Jandamarra could be killed was by another black man possessing similar magical powers, so the whites got the tracker, Mingo Mick. After leading the police party on a 'merry dance' over many miles of rugged country, Jandamarra found himself being pursued by Micki, the two exchanging shots as they ran. Micki hit Jandamarra and brought him face down just before he reached the safety of the long cane grass at the foot of the Napier Range. Joe Blythe stepped forward and aiming his revolver at point blank range, paused as if to savour the moment. In the same instant Jandamarra playing dead spun around and fired his Winchester, blowing off Blythe's thumb. Hit in the groin, Jandamarra propelled himself into the grass and disappeared leaving a trail of blood in his wake.

The police party set up camp, carefully guarding their remaining Bunuba prisoners. At dawn the man harnessing the horses was shot dead by Jandamarra and the horses stampeded. The besieged police formed a human shield with their prisoners and searched for the horses. Jandamarra followed them but failed to release his comrades before reinforcements arrived. The hunter now became the hunted as Jandamarra clawed his way south along the Napier Range, with Micki following his blood trail and police patrols on either side of the range. After three days he reached the sanctuary of Tunnel Creek Cave. On the morning of April 1st 1897 Jandamarra walked outside to meet Micki. He fired at Micki and missed, who then brought Jandamarra down. The story goes that Micki had shot Jandamarra in the thumb and that inside his thumb was a little heart, like a fish. They then cut off his head and sent it to Perth.

Whilst caving in the Napier Range I felt the Bunuba presence strongly. We came across caves containing hand stencils and artwork. There was a camping cave containing grinding hollows and spear sharpening grooves, which was perfectly situated next to a clear pool with permanent spring. In one cave was found a spearhead, whilst others were burial sites. Sitting quietly in these special places I would sometimes feel the hair on the nape of my neck stand up inexplicably, and at these times I never felt completely alone. We explored and surveyed caves which Jandamarra and his people must have visited, in Windjana Gorge and behind the ruins of Lillimooloora Police Station. Perhaps one day someone might uncover a forgotten cache of weapons from the rebellion?

LULLANGARRA

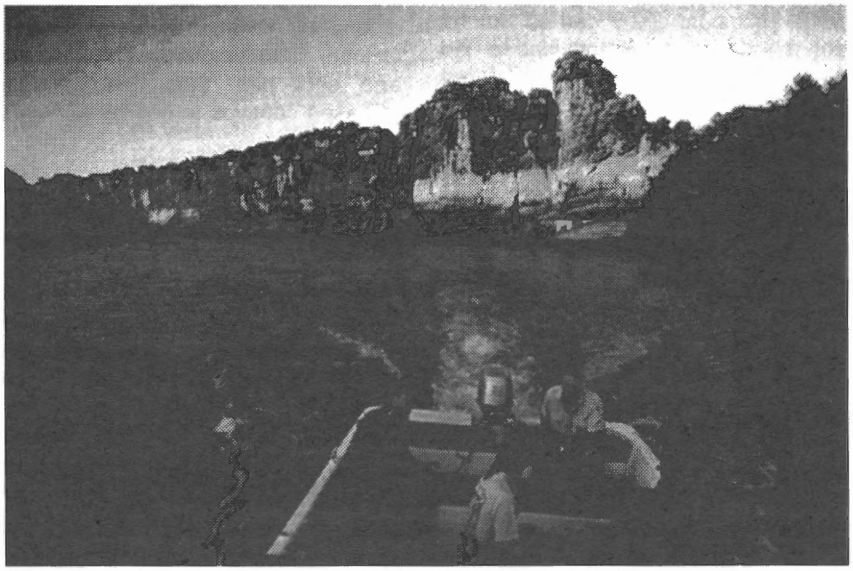
There are plenty of freshwater crocodiles in the Fitzroy River near Geikie Gorge. These reptiles grow up to 2m in length and whilst they are not considered a threat to human life like the saltwater variety, they do possess a formidable set of very sharp teeth. They can be seen basking on the riverbank, or lurking in the water with just their eyes protruding. Seen in a torch beam their eyes are a sinister red colour. The rangers which run the boat cruises through Geikie Gorge tell tourists not to stick their fingers in the water. Ranger Paul Udinga told us the story of Lullangarra one day as he took us up river for a day of cave exploration.

Lullangarra the warrior lived in a cave somewhere atop the cliffs of the gorge. Lullangarra had many sharp spear points which he kept by sticking them into his thick and frizzy head of hair. One day he jumped from his cave into the river below whereupon his spear points became the teeth of Lullangarra the crocodile.

Paul also told us another story about Lullangarra, which I recall, went something like: Lullangarra was the crocodile/man who lived in the cave by the river. Lullangarra had the use of fire but he cruelly kept it from the other people. So one day the people diverted Lullangarra's attention from his fire, and an eagle flew down and snatched the fire away then dropped the burning embers over the landscape so the rest of the people had fire thereafter.

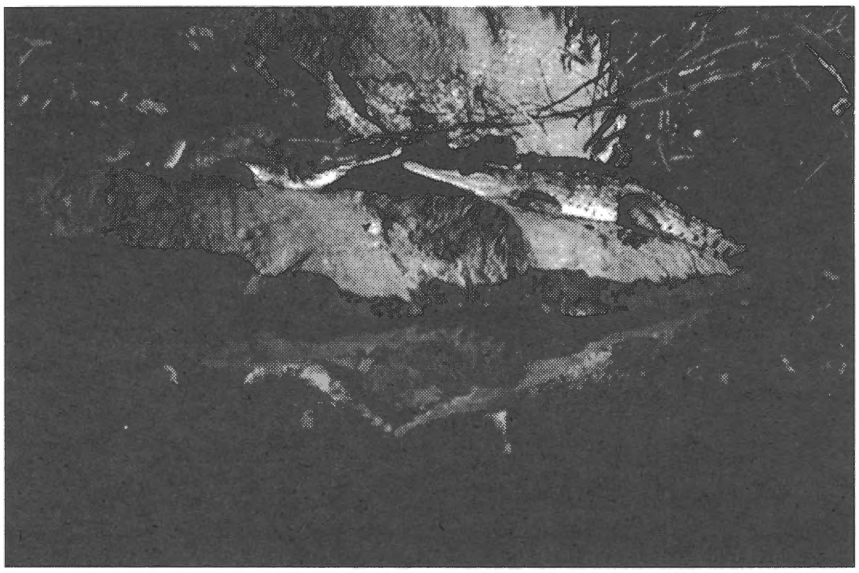
In Geikie Gorge there are sheer limestone cliffs dropping into the Fitzroy River. There are cave entrances in the cliffs with passages extending back underneath the plateau.

To access one of the entrances I had to swim the river, alongside the cliff face for a distance. I reluctantly immersed myself in the cold and murky water, weighed down by boots and battery. I reached the entrance breathless and shivering, caused as much by an irrational apprehension of crocodiles as from cold and exertion. The cave entrance was uninviting, a muddy crawl with the odour of decay emanating from within.



Geikie Gorge near Lullangara's Cave.Paul Udinga at the helm. Paul Cornish, Adam Minchin, John Cugley L to R.

Crawling forward, I noted boot prints in the mud left by Brian Vine when he had visited the site a couple weeks earlier. Then I saw another set of prints, which clearly belonged to a large reptile. The fresh set of tracks went into the cave but there were none coming back out. I hesitated to go further in but I also didn't relish another swim in the river. I crawled cautiously



Lullangarra

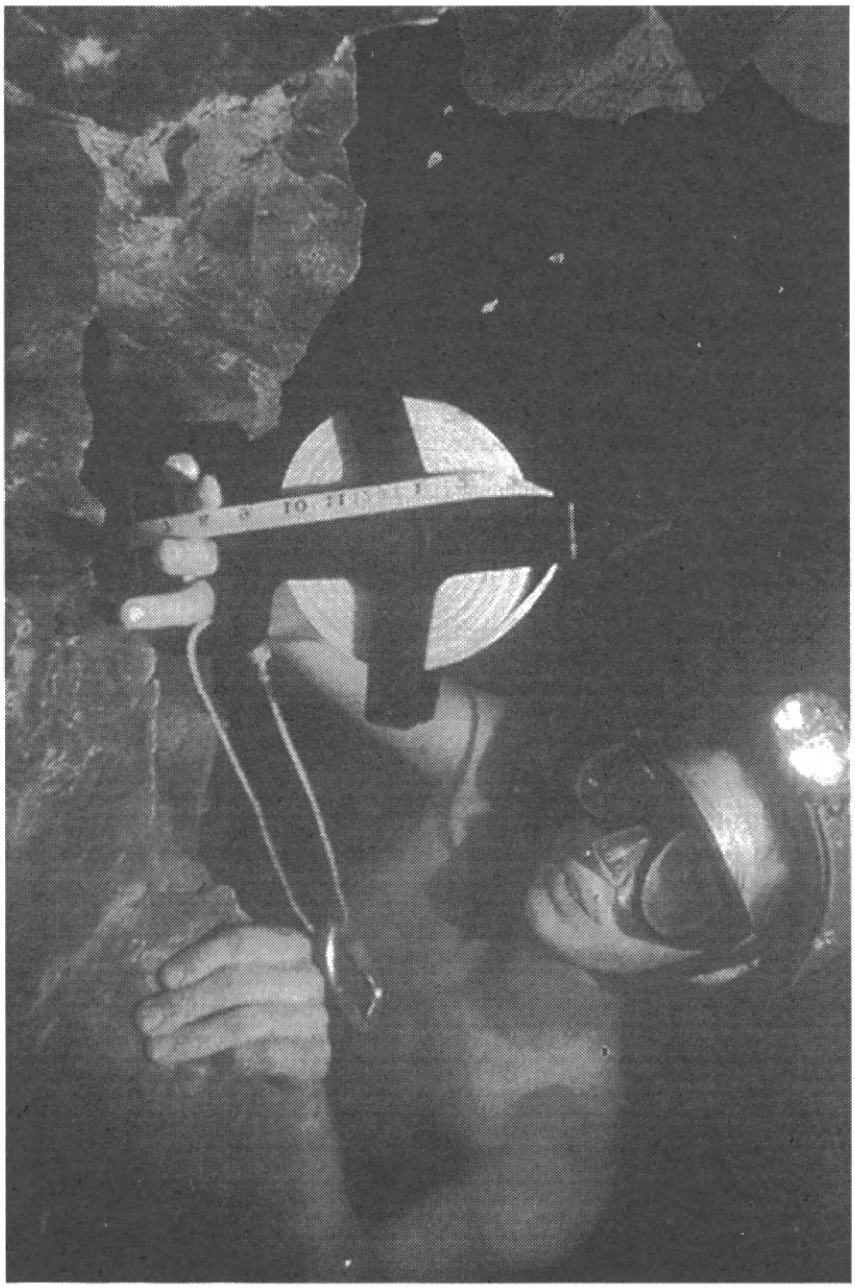
inwards, ready to jump to the side if the occupier of the den bolted out. There were stranded logs in the mudbanks, each one of which I imagined to be a crocodile lurking. At the end of the muddy crawl way was a sump with something dead and rotten in it, the remains of the crocs last meal, a Barrumundi. The silt in the sump had been stirred up, but the croc was nowhere to be seen.

I searched around for an alternative exit to avoid swimming in the river again. Climbing upwards I entered a passage which hadn't been noticed previously, and explored several hundred metres. Climbing further upwards I found myself back on the surface of the limestone plateau behind the river. Nearby was nother entrance with a striking apeaarance, an ancient phreatic tube that looked a bit like an eye socket - it seemed to be watching me. The other and of the walk-through tube directly overlooked the river some 50m below, where it commanded a magnificent vista both up and down river. The tunnel had a smooth flat floor, with a cool breeze blowing through it, a much more comfortable environment than the hot, razor sharp karst outside. A more suitably designed natural shelter and vantage point was hard to imagine. There were grinding hollows and spear sharpening grooves in the rock, and a painting of a crocodile. This place might have been Lullangarra's cave.

CLOUD CAVE

I had gotten into the habit of carrying a dive mask and waterproof torch with me, to check out underwater leads as there was good potential for finding new passages by breath hold diving of short ducks. The water in Kimberley caves is frequently crystal clear and offers a refreshing respite from the hot climate. Accordingly, John Cugley and I went to look at the sump in Cloud Cave. With one foot hooked firmly against the sump headwall to ensure my safe return I poked my head under and could see airspace only 3m away. Checking for silt and other hazards I could see that passing the duck was straightforward and a safe return was guaranteed. On the other side I found myself inside a sealed chamber half full of water - the top part of a phreatic loop. On the other side was another sump leading into the downward leg of the next loop. The acoustics in this chamber were quite spectacular, with noises magnified and reverberating. Waiting on the other side of the siphon John became quite alarmed by the eerie sounds being transmitted through the water, sounds that he imagined to be cries for help!

I did a recce dive into the next

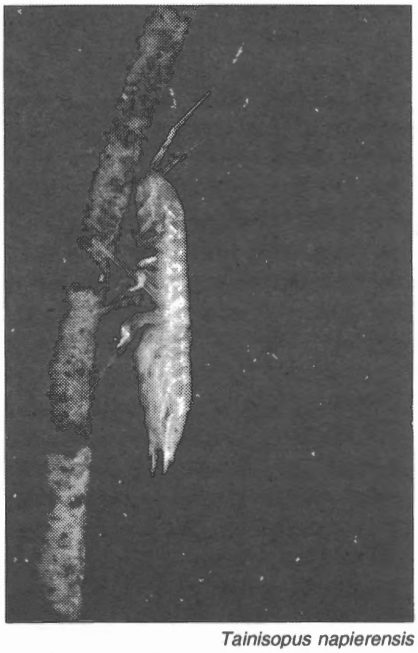


Adam Minchin surveying sump in Cloud Cave.

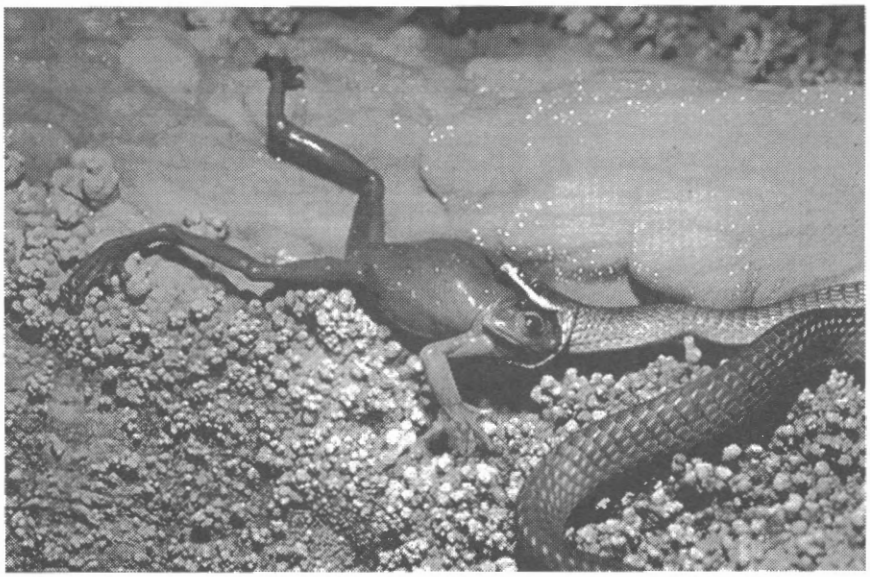
sump before reporting back to John. This sump was evidently more than a simple short duck, descending to a depth of 4m then travelling horizontally a distance before appearing to trend upwards beyond my turn around point. I found that pulling myself along by grabbing rock projections consumed less oxygen than frog kicking, and stirred up less silt.

Next we went to another cave located at the base of the bluff, the presumed resurgence point for Cloud Cave. John and Michael Playford had surveyed this cave a few weeks previously, claiming that they had never had so much fun, per metre of cave passage, ever before. The cave consisted of a narrow maze of passages mostly full of cool, clear water. On the map of the cave were several passage ends marked with the initials "FNG". I took these initials to stand for "Effing No Go" or something similar, but went in to have a look anyway. I passed through a number of short and shallow ducks less than 3m in length before arriving at a deep circular pool. Taking a big breath I went down and along and to my utter astonishment suddenly realised that I had come into the other end of the siphon I had explored from Cloud Cave a short while before. The temptation to complete the connection and through trip was irresistible, so I swam onwards knowing that I could comfortably make the distance.

Barefoot and buck naked I climbed out of Cloud Cave and tip toed through the spinifex back down the hill to the resurgence. I called to John who was still waiting vigilantly at the entrance pool. It took him a while to realise I was calling to him from outside the cave. He asked me where I had come from?



Tainisopus napierensis



I told him, "Cloud Cave".

"Bullshit" he replied.

The veracity of the connection needed to be established, and it also needed to be surveyed, but John was unwilling to accompany me, and quite reasonably so I thought when I asked him what the initials "FNG" on the cave survey actually stood for?

"For the Next Generation", he told me.

Fortunately we had on the team two gung-ho young males belonging to the next generation , Adam Minchin and Paul Cornish. These cocky lads survived exclusively on a diet of beer and cigarettes and considered themselves to be invincible, so I took them back to survey theconnection. The long siphon was measured at 20m in length, a fair distance but not dangerously so given the ideal conditions. Paul and Adam reckoned it was easy, after they had surfaced on the other side. I would rank this free diving through trip as an absolute classic sport caving experience. It is still a serious proposition nonetheless, but can be safely undertaken with suitable experience and preparation.

WHACKED-OUT CRAZY MAZE

John Cugley, Paul Cornish and Adam Minchin were surveying a cave unofficially dubbed "Whacked-Out Crazy Maze". So named because more than a kilometre of anastomosing passage had been crammed into a small block of limestone. I joined them on this day to carry out a biological survey. As it turned out, we encountered some spectacular biology, and Adam got quite a fright. He had gone to explore a side passage but then we heard a scream and he came rushing back to us exclaiming, "I need to change my jocks, I NEED to change my jocks!"

According to Adam, as he was exploring he looked up to see a Green Tree Frog on a wall of the narrow passage. At the same instant as Adam saw the frog, so did a large snake sitting on the opposite wall. The hungry snake leapt off the wall and onto Adam, and thence to the other wall where it seized the frog. We were sceptical of Adam's story so went to investigate. Indeed there was a snake and frog engaged in a real life and death struggle.

We watched in fascination as the frog refused to give in, clinging grimly to the rock and inflating its body to hinder the snakes swallowing. We waited for the poison to quickly take effect, wishing for this seemingly cruel and gruesome spectacle to end, but the frog refused to yield. Finally, after a battle lasting nearly an hour, the snake had failed to swallow the frog. Spitting out the bleeding but still breathing amphibian, the snake slithered away and the frog limped slowly back into the darkness.

The moral to this story is, "Never give up, ever".

OLD NAPIER DOWNS CAVE

Old Napier Downs Cave is one of the most splendid caves in the Kimberley. It has a grand entrance passage way which leads about 100m to a sump pool. It's a shallow 4m duck through to the other side, where there exists more than 600m of wide passages which are mostly filled with deep clear water. The swim through this cave is a classic trip). The cave is home to a rich and unusual troglobitic fauna, including an ancient and extraordinary isopod

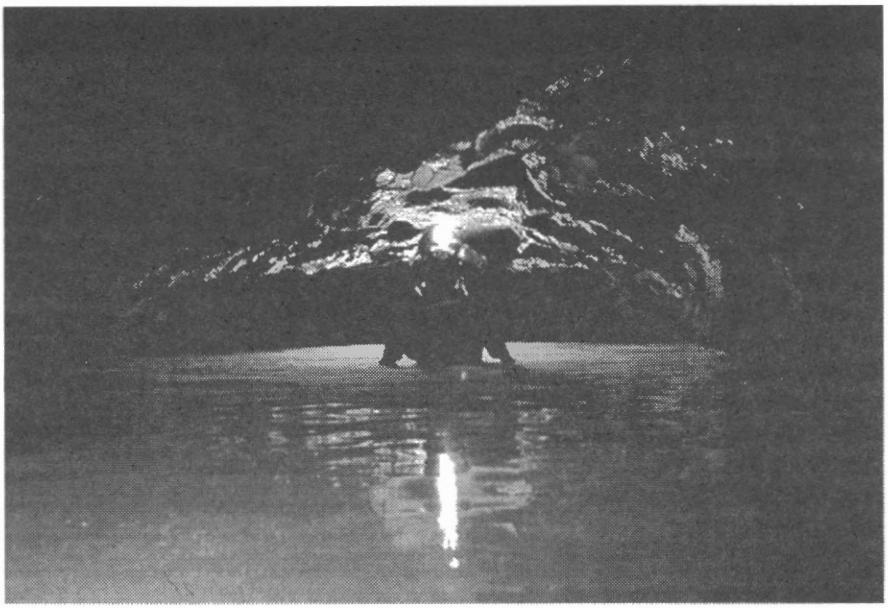
crustacean, Tainisopus napierensis. Several kilometres further north along the Napier Range is Wagon Pass, where there is a deep ore mining prospect. If the mine is developed then there will be de-watering impacts to the karst aquifer.

The sump is quite wide with sections of low air space at the exit and entry points. Visibility is reduced by silt stirred up. A guideline is essential.

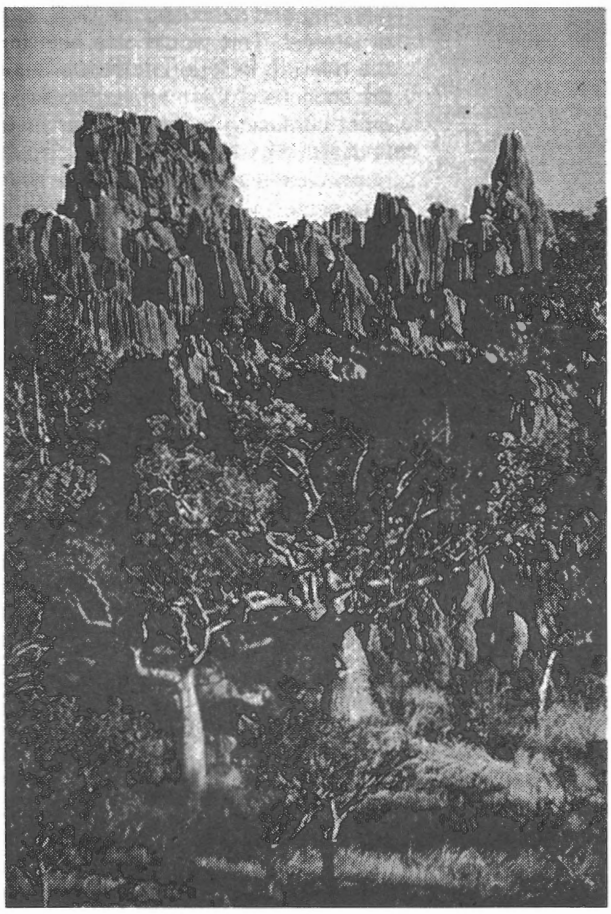
A large group of us entered the cave for a tourist trip beyond the duck, but a near drowning experience for one member of our group taught everyone a lesson. One person in our group was evidently feeling quite apprehensive about the dive so we practised pulling along a line in the pool before the duck. The practise session went OK but did nothing to quell her anxiety. However, everyone else was psyched up for the dive and impatient to push on I went through the duck first and waited on the other side, communicating with Brian on the other side via a series of tugs on the rope as he sent each person through one at a time. So far so good, until the persons partner came through and yelled, "Where is she, where is she?" The water was still and silent.

Her partner explained that she had hung onto him as he attempted to pull them both through on the rope, but somewhere along the way they had become separated. Suddenly she burst to the surface and gasped, bumped her head on the roof and went under again. She was caught in a section of low air space, several metres away from us and the guideline. The next time she came up I grabbed her.

Free diving in caves can be a stressful and potentially hazardous activity given that you have only one lung full of air with which to get it right. With scuba gear there is more leeway for sorting out problems. Anyone can drown, even in a bathtub sized sump, but free diving can still be done relatively safely with adequate experience and preparation. The incident was a close call with some valuable lessons in it for everyone. Firstly, don't push anyone to do something beyond his or her experience and capabilities. The second lesson, never let go of the guideline. Thirdly, wearing a dive mask so you can see where you're going makes the experience more comfortable and less intimidating. During the previous WASG expedition in 1996, about 600m of large swimming passage had been surveyed beyond the duck in Old Napier Downs Cave. At the known limit the passage sumped out, but with masks, fins and underwater torches Doug Fitzgerald and I found it was possible to continue on by ducking from one air pocket to the next. The air pockets got progressively smaller and further apart as we continued, whilst the water-filled passages beneath us got deeper and more complex. I returned to explore further with Paul Cornish, Adam Minchin and Brian Vine, and over several trips we surveyed an additional 400m or so of wild roof-sniffing adventure.



Paul Cornish in Old Napier Downs Cave



Wagon Pass, Napier Range

CONCLUSION

The Kimberley is a magic place to go caving. The karst is extraordinary. he surface has barely been scratched.

ACKNOWLEDGEMENTS

Gordon Reid Foundation for Conservation; Western Australian Museum; CALM at Fitzroy Crossing, especially Paul Udinga; Landholders at Old Napier Downs, Brooking Springs, and Osmond Range stations; Mimbi Cave traditional owners; Brian Vine (expedition leader); John Cugley (chief cook and caterer); David Woods, Donna, and Joe Cavlovic at Kununnurra.

1998 Expedition members

Bernadette, Paul Cornish, John Cugley, Stefan Eberhard, Ken, Kim Ely, Doug Fitzgerald, Carolyn Forte, Dawn Graves, Rob Klok, Yvonne Ingeme, Alice Linford, Gabriele Linford, Adam Minchin, Michael Playford, Rebekah, Clive Rippon, Mick Sander, Brian Vine, Veronica Weber, David Woods. Reto Zollinger

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Tuglow Caves - Review

by Mark Staraj

A4 format, soft cover printed in colour, 72 pages printed b/w, published by Sydney University Speleological Society 1998, Photos 33 b/w, 2 colour plus photo index, Index and descriptions of all tagged features, most with maps. Sections include History, Biology, Geology and Hydrology and references. No general index. Fold-out maps of 2 caves - B1 and A3 sheets provided loose in back pocket.

Tuglow Cave is one of the best wild caves in New South Wales. So says the opening line of the Introduction to *Tuglow Caves* a very recent publication of the Sydney University Speleological Society. In fact I can recall describing the cave in similar glowing terms when seeking funding from the S.U.S.U. for the publication of this book back in 1993 - Wet, long, sculptured and vertical, it remains one of the classic NSW caving trips. And so it is.

Anyone who has had the good fortune to visit Tuglow Cave will agree with the statements above. For this reason alone every N.S.W. caver should possess a copy of this book. It is the first and only publication on this significant cave system. It also contains the first ever published map and by far the most comprehensive survey ever undertaken - and also the only completed one.

And if you are one of those who are still wondering what the fuss with Tuglow Cave is all about then even a passing look at this book will no doubt excite interest. This book then will provide an excellent and invaluable reference for anyone planning a visit

However this books finest qualities would probably be most appreciated by those who will never have the opportunity to visit the cave. I am referring of course to the content and presentation of the material within it. There are many aspects of this publication that merit elaboration.

It is probably best to begin with the maps contained in the map pocket at the back of the book as without doubt this what all cavers will study first.

Most obvious is the size and clarity of the map. The cave has been drafted at 1:50 0 scale and fits comfortably on the B sheet. The layout is intelligent and clear and the composition of Elevation, Plan and offset views works extremely well. The scale has permitted the whole cave to be represented on a sheet that is not so large as to make interpretation difficult but still sufficient to resolve detail in some of the more complex areas. In particular the cave has been represented with floor and wall detail that is not only informative but provides a very pleasing appearance. All in all it is an excellently executed map.

Still, some improvements could be made with the labelling. Some of the features referenced in the text such as Main Room, Olms Orrible Ole, Crystal Palace and most significantly Shale Bands Canyon are not shown on the map. Also I would have preferred use of mixed point sizes to distinguish between the features of greater and lesser importance - for instance Singing Shawls . This might also have resulted in making space for more labels.

Pushhi Cave has also bee n included on separate A3 sheets for clarity but the other maps have been printed with the text. All maintain the high standards of the Tuglow Cave map and care has been taken to maintain clarity and uniformity by using the same grid orientation of AMG North.

One of the standout map inclusions is in the Geology and Hydrology section where 2 maps illustrate very clearly both the geology of the area and Tuglow Cave s relationship to it. This is an extremely powerful tool to any cave explorer looking for clue s to understanding and locating more of the system. My only disappointment with it is that it stops just short of fulfilling its role - it should also indicate locations for the other caves and probably a silhouette for Pushhi. This may in part have been a necessary concession to private landowners.

I would also have liked to have seen a checklist for all known Tuglow maps to aid further research by the reader.

The authors strongly emphasise the value and philosophy of sharing information and reference occasions in the past where previous prodigious efforts in surveying have benefited very few. It is one of the key reasons given for this book s existence and I am in fundamental agreement with it. So I must draw attention to the most important deficiency of this book. It does not contain instructions for how someone can obtain their own copy of the survey data. Until this is advertised survey-based work done by parties other than S. U. S. S. cannot be compiled with the data making up this publication and hence will be of little value to everyone. Nonetheless the section Surveying and Maps gives a very good introduction and practical guide to the techniques used in surveying the Tuglow Caves and emphasises the importance of the integrity of this data. A reference for interested readers on survey reduction would have been useful in this context.

The next section to receive close attention would probably be the descriptions. Except for Tuglow Cave these are included in a section on their own with the relevant maps. These are prefaced with a tag list for the Tuglow karst area and the cave descriptions follow sequentially. These are well laid out, informative and clear.

However the sequence of descriptions for Tuglow Cave is not systematic in any obvious sense: for instance the Upstream Sumps appears prior to the passages used to reach it eg. The Shale Bands anyon . The best approach for the descriptions in my mind is to recognise that readers will be planning trips. The sequence and structure within these sections should clearly aid a reader in visualising, planning and executing the likely trips of interest. This would also highlight the need to include in blow-up detail the sections of the map that would be most confusing to interpret for route finding. For instance the route between the entrance and the river. This section would also benefit from a comprehensive index - no index at all has been included. For instance if you had heard of the major route to the back of the cave via Olms Orrible Ole and wanted to suss it out you would have to skim the book to find it. Nevertheless the descriptions are comprehensive in themselves and provide a blend of useful information for navigation, a feel for the experience of each place, and illustrated with items o f interest.

The History section is well presented and features historical photos and reproductions of old surveys and text. It provides good coverage of exploration history from earliest European acquaintance with the area through to cave discovery and cur rent state of knowledge. In many ways this is the hardest section of all to put together in any state of completeness and the authors must be given substantial credit for the

result. Historical records by their nature are scattered, contentious in respect of accuracy and frequently incomplete. Nonetheless this section flows well and gives the reader a clear sense of the way in which peoples, and in particular cavers and governments attitudes to caves have altered with time. Hopefully this commendable eff ort will entice those with further knowledge to contact the authors to help fill in some of the obvious gaps in the record. Again, an index would be an invaluable help to the researcher but there is at least a comprehensive list of references.

As for the photographs there are a good many of these and most were taken inside of the caves. An index is provided for these. Excepting the cover photos these are all reproduced in black and white. This is a great pity as they all were originally in colour and the b l ack and white versions are somewhat flat and lack good definition. By contrast if one compares the rear cover colour photo with its equivalent on page 36 its apparent how much better the colour reproductions look. There is more texture, more variation, mo re interest and more atmosphere. The cover photo is another good example of this and catches the eye effectively with a scene both moody and mysterious. Hopefully one day we will see more of these photos produced in colour.

Finally the other sections such as Caving Procedure, Introduction (which has directions on how to get to Tuglow) and Biology are all useful inclusions respectively for visitors and interested experts.

All in all this is an excellent production and sets new standards in Australian caving literature especially for its maps. At $16 each it should represent excellent value for intending visitors and armchair readers alike.

Rescue at GP 48 Britannia Creek 4th April 1999.

Personal notes made after the event by Mark Somers

GP48 is a granite boulder filled stream channel that has created a cave. It is designated as a recreational cave and is extensively used by many organisations for that purpose. Unfortunately, the close proximity to Melbourne often attracts those with little or no caving experience or equipment. This often necessitates the use of rescue services. This particular area is serviced by the Upper Yarra State Emergency Service as the responsible authority. Apparently, their training consists of their own in-house practice but no formally structured course.

In the afternoon of Sunday 4th April 1999, a group from the St John Ambulance Cadets were in this cave. It is unknown the qualifications or experience of the persons leading this group.

Whilst progressing through the cave, a member of their group became stuck at an area known by local guides as 'childbirth'. The person was a large16 year old male, Vince Perry. He managed to get this chest through the hole but when he got to his hips due to angles and gravity, became wedged in a V formation between two rocks. The actual time this occurred was around 1pm (this time is an estimate based upon who you speak with at the scene).

Being aware of the media implications, they were reluctant to call for assistance and tried pulling and pushing this person in attempts to get him out. They tried lubricating the persons wet clothes with oil, Vaseline and the like to no avail. They had an off duty ambulance MICA paramedic as part of their group.

The first emergency service organisation called out was the Wesburn CFA at approximately 3pm. No one at the scene was able to explain why there was such a time delay in requesting assistance. Half an hour later, the Upper Yarra State Emergency Service were called out and attended. They were told of the previous endeavors and decision was made to drill into the rock and break off pieces in an attempt to enlarge the hole. I believe this was flawed from the start as gravity was still working against them.

At 3:41pm a message appeared on my pager requesting I attend to assist. I contacted the Ambulance dispatch centre that confirmed that a cave rescue was being undertaken, so I responded. On my arrival, I noted that there were no ambulance vehicles in attendance. I was immediately approached by the police on scene who briefed me and said it was all under control and that they were drilling rocks and expected to have the patient out in half an hour. They didn't believe that caver assistance would be required at all. I expressed concern about the use of cutting equipment especially so close to the patient and the police suggested I go down and further assess the situation.

After approximately one hour of drilling with an electric hammer drill, above an active streamway, centimetres from the patient, they had managed to break away a piece of rock about 25 cm and achieved little. At this point, they revised there estimate of an expected time of extrication - another four hours. The stuck person was becoming increasingly distressed by the drilling and hammering with no progress. He had been stuck about 4 hours by this stage.

At this point, I decided that it was time they finally listened to a caver and requested to assess the situation a little closer. They finally agreed and I found that the person was stuck as described with a small gap above and below the patient. His muscles were tense and he was becoming cold.

I decided to go around to the other end and explain what we were going to do to get him out and directed that they stop drilling. They reluctantly agreed. The patient was crying when I got to him and was difficult to calm. He took the briefing of my plan well and this alone raised his spirits. I also briefed the St Johns people who were with him.

On return to the rear of the patient, I briefed the State Emergency Service members about how we were going to get him out. They took their positions and in a co-ordinated effort of slight traction from the front, gentle pressure from the rear and a lot of relaxing by the patient - the patient was gently released from the position he had been in for the last four hours. He thanked us and crawled out of the cave unassisted. The usual massed media then interviewed him.

This rescue shows many issues that cavers have known for some time.

1. Untrained/experienced persons should not take groups caving

2. If prompt assistance is called, then the patient gets extracted sooner.

3. Teamwork is important

4. Keep It Simple S.....

5. If you listen to caver's then we can help - We do this for fun

Bulmer Cavern Rescue Jan 1999

Lindsay Main

(South Owen Expedition organiser).

On 28th December 1998 12 cavers assembled at Bulmer Lake, Mt Owen, for the 13th South Owen Expedition. Three of the group - Kieran McKay (Turangi), Marcus Thomas (Christchurch), and Rob Gillespie (USA) - left for Bulmer Cavern to spend three nights at Camp 2, which was established last year as an exploration base for new extensions beyond the previous limit of exploration in the Soupmix area.

Bulmer Cavern is New Zealand's longest cave, with over 50 km of passages surveyed to date. The new extensions have given a long-awaited boost to exploration, adding 10 km during several camping trips by small teams. The cave is complex, with several old phreatic levels and a streamway interconnected by vadose rifts and shafts. There are seven entrances and the depth is 748 metres. The passage is all contained within an area about three kilometres from north to south and a few hundred metres wide.

On the first caving day those based at Bulmer Lake rigged down the Erebus Passage to The Labyrinth area, at a depth of about 400 metres, or toured around the upper levels of the cave. Most rested on the second day. At Camp 2 Rob, Kieran, and Marcus surveyed about 200 metres of passage on the first day, and on the second day headed for a promising area involving some small shafts. Kieran descended a shaft to the top of a second one, and prusikked back up again to swap the ropes around. Just as he was about to descend again, a large rock bollard to which the rope was anchored broke loose and hit him, causing him fall about 15 metres, landing on rocks at the bottom.

While Marcus and Rob were re-rigging the rope and descending, Kieran crawled clear of the base of the pitch (which was dripping heavily), and apparently lost consciousness. When the others reached him he was moaning and incoherent. He was bleeding heavily from a deep cut under the jaw, which they dressed as best they could. He had severe bruising all down his left side, particularly to the wrist, knee and ankle. They suspected broken bones, and later breaks were confirmed to the jaw and left arm.

After strapping his arm and splinting his leg, they were able to get Kieran back up the pitch and started the trip back to Camp 2, normally about 1-1½ hours. This took 6-7 hours, with Kieran walking most of the way and being assisted up pitches and climbs. Then they settled him for a long wait.

After a brief sleep, Marcus, who fortunately knows the route through the cave extremely well, set off for the surface at around 2 am on the morning of New Years Eve, arriving at Bulmer Lake at 8 o'clock while people were having breakfast and preparing for the day's caving. After a brief discussion we swang into action. The Police were alerted via the Mountain Radio Service, and a few cellphone calls were made to key people to speed the process up. A team of three - John Atkinson, Julian Stone, and Andrew Matthews - was despatched to Camp 2 to assist Kieran.

Another team was given the task of trying to devise an alternative route at the top of The Lions Den, the pitch series which connects the upper and lower levels, which had been the site of major rock-falls in the past and was considered too dangerous for a rescue operation. The remaining three made preparations for the arrival of the rescue teams. Marcus was sent to bed.

The first rescue team of three arrived mid-afternoon and included Michael Brewer, a doctor who had recently been involved in exploration beyond Camp 2. After their departure to the cave a rescue headquarters was set up and another team of four strong cavers left to support the medical team, taking a rescue stretcher. The stabilisation team from the expedition reached Kieran and Rob mid-afternoon and John set to work to treat properly Kieran's injuries, wkile Andrew returned to the surface with Rob. The medical team reached Camp 2 late on New Years' Eve, and the stretcher team a couple of hours later.

Later, in the evening, the two cable-laying teams started - one to work from the entrance to the bottom of the pitches at The Roaring Lion, and the other from The Roaring Lion to the site of the rescue.

Both teams made good progress and the two wires were linked, giving telephone access as far as the Wildwest area, at about 8am on New Years' Day. The deep team continued to the Soupmix area, meeting Kieran and the rescuers about three hours later. Kieran had been dragged in the stretcher through some of the low parts, but was walking with assistance along most passages. There were enough people present to use a direct haul on any climbs. The cable-layers accompanied the group to the Awesome Aven, a forty-metre flat-floored pitch, and then returned to the surface. A feature of the communications on this rescue was a VHF link from the telephone base at the entrance to the rescue controllers at the Lake, enabling

those underground to talk directly to the controllers without the need for relaying.

The Awesome Aven was a formidable obstacle which was intended to be re-rigged for the rescue, but because of Kieran's mobility and the availability of enough people and rope, he was hauled using the existing pitch rope, with a safety rope. Then the team moved on through the Wildwest-Wildcat area, arriving at the old campsite in the Octopus Room in the evening. Here they stayed the night.

Meanwhile rigging teams were working in the Lions Den to ensure that this phase of the rescue would operate smoothly. A deep rigging team was to be despatched, but Kieran's speed continually confounded planning and none of the further pitches was re-rigged. However, the rescue team was carrying sufficient rope to deal with each obstacle as they reached it.

On the next day, January 2nd, a second rescue team relieved those who had stayed overnight at the Octopus Room, and started moving Kieran forward again. By now retrieval of gear was a priority, and other teams had entered the cave to carry out superfluous equipment behind the rescue team. Several such teams of "cleaners" were used during the rescue.

Kieran now seemed to be walking more readily, and his increased speed meant plans were continually changed and ETAs updated. He reached the Roaring Lion around midday, was hauled up the 20 metre pitch to Castration Corridor. The narrowness of the passage and the small pitches caused little delay, and the team was at the base of the two 40 metre Lions Den pitches at around two o'clock. These had been set up with hauls, with a long tyrolean rigged above the upper pitch so that the very loose section there was avoided. This worked like a charm and Kieran's landing on level ground in the upper levels, along with a brief interview, was recorded by a TV3 cameraman who just happened to be there. With the whiff of the entrance in his nostrils there was no holding Kieran back, and he made good time to Panorama Entrance, assisted by numerous additional handlines which had been installed over some of the scary traverses and climbs. At around 3.30pm he was picked up by a helicopter from Panorama Entrance and taken to Bulmer Lake, before being flown to Nelson Hospital.

Kieren McKay during the rescue.

Meanwhile cleaning teams worked on de-rigging the ropes, winding the phone cable back, and lugging all the gear out of the cave. This wasn't completed until the following afternoon. A debrief was held on the morning of the 3rd, and then the rescuers were flown out. The expedition members continued until the 7th as planned, but everyone was tired and very little was achieved.

Overall, the rescue was hugely successful and things ran very smoothly. There were some minor hiccups, as you would expect on an operation of this size, but generally people worked very well and did what was required to make the rescue happen.

The usual absurd statements appeared in the media, with ridiculous comments about crawling under 5 km of parked cars (there are no squeezes and very few crawls in Bulmer). There were also the usual outraged taxpayers complaining about the rescue's cost, but generally these were treated with the contempt they deserve. All in all it was a very successful operation.

New Finds Near Kempsey

Phil Lardner

Storm Pipe Cave WW79

Sunday 28th February '99.

Party: Phillip Lardner, Madelyn Lardner (age 3), Debbie Hannan & David Collett.

Having had a very wet summer, David Collett rang up this morning (David is the owner of a farm in the Upper MacLeay, west of Kempsey, on th mid-North coast of NSW, which has quite a few good sporting caves) to say that the creek in the gully was flowing lightly, so we drove up with caving gear and a container of fluorescent marine dye marker.

Phillip, Madelyn and David climbed down into the cave using a 15m tape and a 10m tape tied to Madelyn. Phillip went in first followed by Madelyn, who was lowered down. David then came down, holding the tape to Madelyn, while Debbie stayed on the surface in the rain. Once the 15m tape ran out we climbed down with Madelyn being lowered and climbing with her own torch. Once at the bottom of the climb we found that the hall that we had many digs in was level with water. The way into Storm Pipe was blocked off totally with water, level to where we were satnding. Make a hell of a diving trip!

Water could be heard running from the surface, and now that we were at water level the noise was quite dominant. While Madelyn and David stayed on a rock at water level, Phillip climbed out over the water into a very small side passage where the noise was greatest and observed the rapids of water flowing though the passage. He emptied a container of the fluorescent marine dye into the water and climbed back to the small rock to rejoin Madelyn and David.

We chatted for a while about our adventures in this cave and about how it always seems to come up with new passages & grand formations, & taking in our watery surrounds before our climb out. On the way up Madelyn said "I don't think this is going to work", 3-year-olds seem to have a way with words.

Once on the surface and back in the rain we closed up the entrance and rolled up our climbing tapes. Then we set off down to the gully with David using a pink 3-year-old's umbrella for shelter.

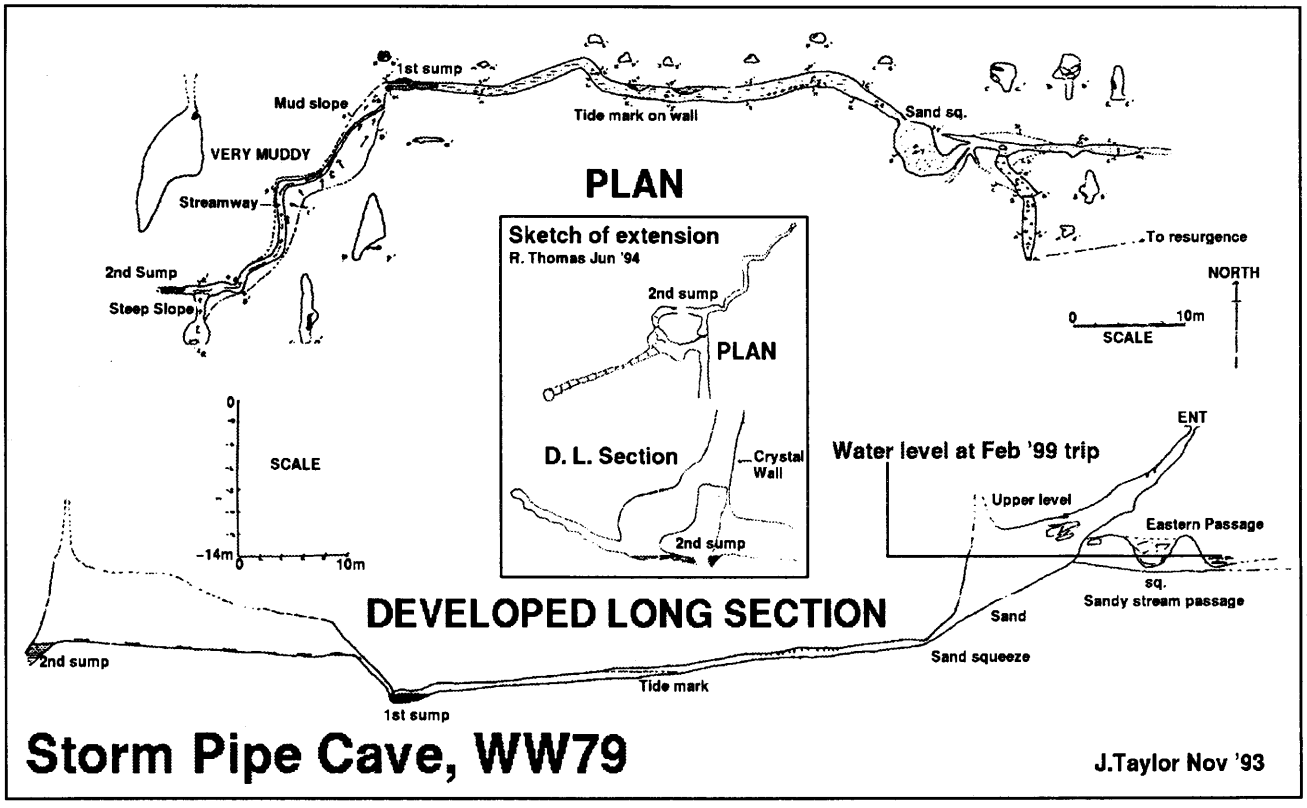
No coloured water at this stage so over to the house for a few cups of tea. Upon returning to the spring there was only a faint colour of dye so off for more tea and talking about the big cave we'll find one day. Another look at the spring and it was showing signs of green colour change getting stronger and stronger as time went on. The time from putting dye in and a colour change on the surface was one hour. It did peak in colour before becoming fainter. All up a really good trip - quite worthwhile.

Bathtub, Eastern and Western Block of Limestone, Upper Stockyard Creek

23rd-24th May '99.

Party: Phillip Lardner, Eric Walsh, Martin Woshizka, Bev Smith, John Tabyor, David Collet and ColStafford - staying at Kookaburra with the ladies netball team (good on ya Col).

After Martin Bev and john had travelled down the coast from different towns to South-West Rocks for the night, we had an early breakfast at the Rocks and we set off to David's farm. Once there a cup of tea and play lunch was had before we set off to Haydenville. Once at Haydenville we got the packs from the vehicles and col drove the dual cab back to Kookaburra for the night, to come back between 3 and 5 pm Sunday.



Off we set, down towards Bat Cave area and checked out limestone over a large area. John found a new cave that Phillip got stuck in. Martin pulled him out and had a go himself and got a little further in but it didn't seem to go much more anyway.

So it was packs on and on we went looking at more limestone and walking towards a knob on the ridge going down to the Eastern Block. John was in front and we pushed and bashed our way through thick rainforest, stinging nettle and stinging trees, over and under logsand it went on like this for a long,long time. Sometime later we got to a dry timbered ridge, had a late lunch and set off down the ridge to the knob. Anyway, we covered more ground which is more trogging. From here we followed the ridge down to a large limestone outcrop making an outstanding lookout of three valleys below running into one.

At the top end of the Eastern Block, and down the hill from there, David found a new cave. Martin went in after the entrance had been cleared, going along one passage before using a tape to go down into a second passage. On coming out he had a two litre container, a drink bottle, yet it was a new cave when you look at the amount of rock we moved from the entrance. The bottle had Rheem stamped into it so the cave was tagged and named Rheem cave.

It was on with the packs and more walking and climbing downhill over limestone outcrops from here on. Once at our campsite some put up tents, others got firewood and it got dark. Dinner was had and we went to sleep early.

On Sunday we walked up to Roleyn Cave and Eric, Martin and Phillip pushed the cave off the map to one side. We did not go right through to the end as they explored an old watercourse and pushed that till we were stuck and needed pulling out.

On the way back we pushed a few other side passages that stopped after a while. Once back at the point from where we had turned off, we could not seem to find the same way back to where we'd started from. After looking for about 15 minutes we climbed over a large rock face and down to the bottom of the large chamber - the point where we'd set off on out side trip from. From here we set of towards the few really good climbs and squeezes towards the surface. Marty using his video camera took film of Eric and Phillip coming through the squeezes and upper tunnels towards the entrance, ready for another trip into the area - for more trogging and caving.

Bev was on the surface waiting for us, we had been underground for just on four hours and bev had eaten out fruit etc while we were caving, so it was back to camp for lunch.

Back at camp a few billies of tea were put on the fire and lunch was made. John,Eric, David and Bev started walking out well before Martin and Phillip. Once camp was packed up and a last billy of tea had we started walking out on a different route than we walked in on. We found quite a few interesting holes well worth a look at on a future trip into the Eastern Block area. We cought up with everybody at the knob and had a drink and some fruit before setting off on a different route than the previous day through the rainforest. It was a much better on at that, without all the thick undergrowth and stinging nettles and stinging trees. Martin climbed over a large dead tree, some metres from the ground, fell through it and out the side (it was a really large old tree), down through a thick carpet of ferns to the ground, pack and all.

From here we made our way along one creek and into another before a climb up to the Bat Cave. Some took of quite fast, not wanting to get stuck in the thick rainforest in the dark like their last trip in here after mapping Roley's Caves. So, picking our way up the ridge in semi-darkness under thick rainforest we got to the open track where in better light we walked to Haydenville and our vehicles as night set in.

SPELEO SYNOPSIS No 26

January -- March 1998 by Peter Ackroyd

AUSTRALIA

The Western Caver 37 (1997)
This issue contains a list of cave descriptions for Cape Range in Western Australia. There is an interim cave list for Wanneroo, a new cave area, formerly part of the Yanchep area in Western Australia's south-west. A report of a mid 1996 trip to the Kimberleys is also in this issue.

Illawarra Speleo Society Newsletter 4(3) (September 1998)
A history of organised caving in the Illawarra area of NSW, from 1946 to the present, is contained in this issue.

Speleo Spiel 310 (September/October 1998)
In this issue there is a listing of all the known caves in the Hastings, Ida Bay and North Lune karst areas.

NEW ZEALAND

NZ Speleo Bulletin 180 (December 1996)
This issue has a summary of all known caves in the lowland karst areas of Takaka and Aorere Valleys, north-west of Nelson, South Island. The summary includes a species list from two of the caves. In other articles there is a discussion of Maori rock art sites in New Zealand and a report on isopods from Babylon Cave on the west coast of the South Island.

NZ Speleo Bulletin 181 (March 1997)
Reports of Ellis Basin trips (South Island) and exploration and diving in HH, a 560 metre deep cave in the Ellis, take up much of this issue. A review of cave rescue procedures and a summary of recent discoveries in the Whakapunake and Paturau areas complete this journal.

NZ Speleo Bulletin 182 (June 1997)
This issue is given over to a report of the 1990 Czech expedition to Mount Owen (South Island) when two major caves, Bohemia (3.5 kilometres long, 393 metres deep) and Achenar (1.5 kilometres long, 252 metres deep) were discovered.

NZ Speleo Bulletin 183 (September 1997)
In this issue there are articles on several small caves found on Mount Owen; Crash Cave, a 300 metre long cave found at Makuri; an accident report from Gardeners Gut cave and two articles on a diving trip into the Pearce Resurgence, Mount Arthur, where Dave Weaver drowned. His body was subsequently recovered from 85 metres depth of water, two years

after his death. An index for issues 161-180 is included with this issue.

EUROPE

Cave and Karst Science 24(3) (December 1997)
This issue contains papers on 'organ pipes' (solution tubes) in a gypsum cave in Russia; the tufa and travertine deposits of the Grand Canyon in USA; limestone quarry revegetation in Australia and the effects on groundwater of micro-porosity and cavities in limestone in Tennessee, USA. In the Discussion section, some broken flowstone sheets in caves in the UK are attributed to earthquake activity.

International Caver 22 (1998)
A series of expeditions to the caves of the north-east Indian state of Meghalaya is the lead article in this issue. The longest cave in India, Krem Kotsati-Umlawan (19.2 kilometres) was found and explored during these trips, which were conducted in the 1990s. We also learn about the Cave Racer, a troglobitic snake found in Southeast Asia, and of Gruta do Centenario (Brazil), at 454 metres, the deepest quartzite cave in the world.

Descent 141 (April/May 1998)
Martyn Farr is still diving and in this issue he tells us of Schwyll Spring, a new cave he has dived to a length of 600 metres. Later in the issue, Dave Checkley gives us his thoughts on caving in northern Spain.

Descent 142 (June/July 1998)
The discovery of a cave containing a Bronze Age human skeleton is the main feature in this issue. The 1997 cave rescue report indicates there was only one death in UK caves for that year.

Caves & Caving 79 (Spring 1998)
In this issue we mainly read about British cavers abroad: the discoveries made in the Totes Gebirge area of Austria, some inland caves in Norway which contain sea shells from the last Ice Age, cave diving exploits in Mallorca, Spain and caving and diving in the Matienzo area of Spain.

Grottan 2-98 (June 1998) (Sweden)
In this issue we discover that voles in Sweden have been found to be carriers of a flu-like disease. Communicable to humans, it is transmitted by inhaling dust containing the vole's faecal matter. A huge, 60 metre deep cleft in Nolby Hill near Sundsvall, Sweden, is described. Another article on the Klovberg Caves, which are located in a Stockholm suburb, reveals that the cave, discovered in 1972, has become extremely popular.

Stalactite 2/96 - 1/98 (Switzerland)
These four issues of the Swiss Speleological Society's journal are written in French and German. Issue 2/96 contains reports of new caves and passages found in Switzerland's lapiez country. A review of "Boomerang" brand rechargeable batteries and a history of Switzerland's longest (Holloch, 171.4 kilometres) and deepest (Sieben Hengste-Hohgant-Hohle, 1,340 metres) caves complete that issue. Issue 1/97 carries an article on assessing the age and history of caves using speleothems. Also included are several articles on karst hydrology in some parts of Switzerland. Issue 2/97 consists of an index of all issues of Stalactite and issue 1/98 has a summary on the 1997 IUS Congress, an article on the use of GPS in Switzerland and more information on batteries for caving lights.

Caves & Caving 80 (Summer 1998)
The use of ground probing radar (GPR) to look for new cave passages is described in this issue. Capable of penetrating to 30 metres in well drained karst, GPR has been used to locate two good cave prospects which will be drilled and a down-hole camera lowered to check them out. A story about a cave diving trip to the Blue Holes in the Bahamas is made more interesting by the revelation that one team member had to be left behind so that the seaplane could take off. He was eventually picked up by boat -- two and a half days later! With some help from an Australian caver, Migovec Cave in Slovenia was pushed to a depth of 958 metres in 1997. The 1998 expedition to the cave hopes to make it deeper still.

Regards 31 (1998) (Belgium)
A trip report covering the exploration of some caves of Lebanon and two articles on the Belgian caving regions of Haie des Pauvres, which has stone age artefacts, and Piton de la Rochette, near Liege, are contained in this issue.

Regards 32 (1998) (Belgium)
A team, which included some Belgian cavers, has been exploring caves in the Cantabria region in Spain. To date they have discovered 11 kilometres of cave passage. Also in this issue we learn about the funeral rites of Neanderthal man and repositories of Neanderthal remains in Germany. A small karst outcrop, Le Roche des Quartre Tours, is described and a study is made of bats hibernating in a well used tourist cave. Results indicate the frequency of human visitation affects only the location of the hibernating bats, not their number.

Descent 143 (August/September 1998)
Ogof Draenen, a cave in Wales, is again in the news with the 1.1 kilometre long Prisoners of War extension discovered in mid 1998. Also in this issue, Jim Eyre discovers that after 40 years' experience, he is unaccredited and needs to take a caving course, costing 95 pounds sterling. There is a race against time for divers in the Resel Resurgence, France, before it is closed in October 1998.

Cave and Karst Science 25(1) (April 1998)
This issue contains a paper on the age of fossils of warm climate animals, including hippopotamuses and hyaenas, found in a cave at Kirkdale, northern England. Dates of 121,000 years before present were deduced. The reconstruction of the original environment of Oligocene-aged island remnants in Florida, USA; a description of ancient caves in the United Arab Emirates; a reconnaissance trip to karst in Zambia; a historical reconstruction of the use, in the 1740s, of speleothems from Wookey Hole, UK, in Alexander Pope's "grotto", and abstracts from the 1998 BCRA conference complete the issue.

Slovensky Kras 34 (1996) (Slovakia)
This 207 page journal from Slovakia reports on speleological studies conducted in the area in 1996. Pre-Ice Age mammal remains, geomorphological and hydrological studies, water pollution issues and summaries of karst features in parts of Slovakia are all included.

Descent 145 (December 1998/January 1999)
This issue contains a summary of the 1998 BCRA conference. This is followed by an introduction to the most southerly caves on Earth -- on islands off Chile's Patagonia coast. The deepest cave found in this area so far is 350 metres and conditions are so severe the explorers recuperate in a fishing boat offshore rather than on land. We learn that an IMAX film is being made about caving. Apparently the caves of Greenland are being used as a set. There are short articles on Iron Age human remains, including skulls, being found by cave diggers and a steaming hot bat cave found in the Kalahari Desert.

International Caver 23 (1998)
More exotic places in which to cave are revealed in this issue of International Caver. An Italian expedition to the southern Chinese region of Ziyun (Guizhou province); a snapshot of the caves and karst of northern Bavaria, Germany; a trip to the caves of south Oman by Slovenian cavers; a 402 metre deep cave found in Mexico by a small international team and a description of a 865 metre long Tyrolean traverse over a 400 metre deep chasm in Slovakia. There is also an index to the first 20 issues of International Caver.

AMERICAS

NSS News 55(12) (December 1997)
A gripping tale of the blasting and further exploration of Close to the Edge, a cave in British Columbia, Canada, is in this issue. The cave was discovered in a remote mountainous area in 1985. It has a 245 metre deep entrance shaft and another short shaft which once ended at "The Crack" -- a gap with a blowing draught. The Crack was finally opened in September 1994, resulting in a total cave depth of 433 metres. Leads still remain. There is also a report on the 12th International Speleological Congress held in Switzerland in August 1997.

NSS News 56(2) (February 1998)
This issue carries articles about a gypsum cave in New Brunswick, Canada, a cave dive in Papoose Cave, Idaho, USA and a man-made cave dug into a hill in North Carolina. The ten most endangered karst ecosystems are described in this issue also.

Journal of Cave and Karst Studies 60(1) (April 1998)
In this issue, we learn of the significance of condensation in a cave's development and water flow. There are several articles on the climate, biology and mineralogy of Torgac Cave, New Mexico; a summary of the distribution of obligate cavernicoles in the USA and Canada; snow caves in Mount St Helens, Washington State; minerals in some caves in New Mexico and a paleoflow model inferred from caves in Brazil.

NSS News 56(3) (March 1998)
This is a special conservation issue. It has articles about conserving cave wildlife and caves in the US.

O Carste 10(2) (April 1998) (Brazil)
This issue marks the 15th anniversary of the speleo group which publishes this high quality journal. In it we learn of the history of the group and its greatest discovery to date -- the deepest quartzite cave in the world, Gruta do Centenario (454 metres). A map of the cave is included.

Georgia Underground 33(4) (May 1998)
Interesting articles on new cave discoveries and a report of a cave rescue in the TAG (Tennessee, Alabama, Georgia) area of the USA are in this issue.

NSS News 56(5) (May 1998)
The hydrology, exploration and surveying of the 2.5 kilometre long Qualkinbush Cave System in Indiana, USA, is the lead article in this issue. There follows a roundup of activities in Sistema Cheve, a 1.4 kilometre deep cave in Oaxaca, Mexico, from its discovery to 1997. Finally, an analysis of an abseiling accident that lead to the death of an experienced caver in Fern Cave, Alabama, USA, finds that no specific cause can be found.

NSS News 56(6) (June 1998)
This issue discusses the effects of earthquakes on cave decoration and the discovery, exploration and surveying of the 2.6 kilometre long Ka'eleku Caverns lava tube on the Hawaiian island of Maui.

O Carste 10(3) (July 1998) (Brazil)
A report on karst features in Malta; speleobiology of caves in Quaternary limestone in north-eastern Brazil; speleological potential in the quartzites of Sao Paulo, Brazil and a summary of speleological research currently being undertaken in Brazil are in this issue.

Journal of Cave and Karst Studies 60(2) (August 1998)
This issue is devoted to a series of studies conducted on the Isla of Mona, Peurto Rico -- an island composed entirely of carbonate material which has been raised to 20 to 70 metres above sea level by uplift. Hydrology, geology, paleontology, history and speleology of the island are some of the topics covered.

NSS News 56(7) (July 1998)
A harrowing tale about seven cavers caught in a flooding cave in Costa Rica is the lead article in this issue. Fortunately, they all survived the experience. From the same region comes two other stories -- one about caving in Cuba and another about the caves of Cayman Brac in the Cayman Islands.

NSS News 56(10) (October 1998)
The story of a visit to caves in Norway and Sweden is the lead article in the issue. It is followed by an interview with Linda Heslop, a noted cave artist from Canada, and a report on the sea caves of California, USA.

NSS News 56(11) (November 1998)
This issue is taken up with reports on the NSS Convention held in Sewanee, Tennessee, in August 1998.

Nittany Grotto News 45(4) (November 1998)
There are some entertaining and informative articles about mapping and biological sampling trips to Mexico in this issue.

Journal of Cave and Karst Studies 60(3) (December 1998)
The lead article in this issue is on lava stalactites and other lava features found in Hawaii. There are also papers on limestone karst in Hawaii, gypsum speleothems of freezing origin, geochemistry of caves in Turkmenistan, cave dwelling beetles in Cuba, measurements of dissolved carbon in Marengo Cave, Indiana, USA, and the current status of a cave amphipod from Illinois, USA.

O Carste 10(4) (October 1998) (Brazil)
This issue is a special one devoted to reports from the 1997 exploration of caves in the Brazilian province of Sao Domingos, Goias.

O Carste 11(1) (January 1999) (Brazil)
The south-western corner of the state of Bahia in Brazil has only recently been opened up. The region has plentiful karst and caves, including the 8.5 kilometre long Gruna da Agua Clara.

Last Speleo Synopsis!

I regret that this instalment of Speleo Synopsis, my 26th, is my last. Over the last few months I have found it progressively more difficult to gain access to the various newsletters and journals that come to the Victorian club of which I am a member.

I would like to think that Speleo Synopsis has been of some benefit to readers of Australian Caver over the 13 years I have written it. I think it important that we all keep in touch with the wider world of caving and to this end encourage anyone who has good access to speleological and caving journals to continue the series.

CAVE RESCUE SERIES
No 1. - Equipment Used in Caves

By Mark Somers (This article first appeared in Nargun)

There is a large range of equipment available for patient retrieval underground. Many people sing the praises of one particular apparatus for a variety of reasons. Maybe they feel comfortable with it, perhaps it is what they were originally trained on, or possibly just because that is what they have. The one thing to remember is - nothing is perfect.

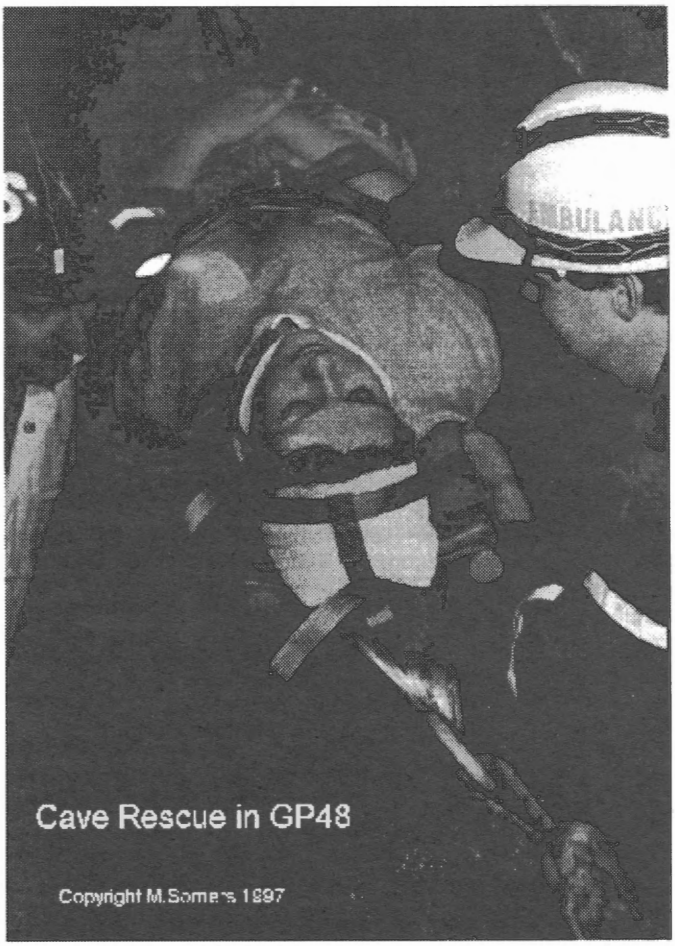
In this article, I will discuss the more commonly used pieces of rescue equipment used in the Victorian emergency services. That, of course, does not mean they are the best, but they are what you are most likely to come across should the need arise. As with any piece of equipment, their use should be restricted to those with formal training and ongoing re-training.

Spinal Care

A simple rule of thumb is every patient has a spinal injury until proven otherwise. This MUST be assumed for anyone who has:

1. Falls from heights greater than 1.2 metres
2. Significant blows to the head
3. Struck on head by objects
4. Landing heavily on feet or buttocks
5. Pains in the neck after any accident
6. Any changes to sensations after accidents - (i.e. loss of control, pain or no feeling.

In these cases, the patient needs some form of cervical spine immobilisation. This is usually achieved by using collars. The common brands of spinal collars, Vertibrace, Laerdal and Stiffneck, have numerous sizes (up to eight per set depending on which brand) and they retail at around $35 each. They provide the basis for any spinal care. Older soft foam collars and cardboard based collars should not be used because any benefits are lost to their limitations. If cervical collars are to be used, then the appropriate rescuer training must be undertaken.



Kendrick Extrication Device (KED)

Originally designed for motor racing, the Kendrick Extrication Device (KED) provides good immobilisation of the cervical and thoracic spine when used in conjunction with an appropriate cervical collar. It is designed to place "handles" on a person and therefore make it easier to move them. They cost around $250:00. The take approximately five minutes to fit in ideal circumstances

Basket Stretchers

The Basket Stretcher, also known as a Stokes Litter after the most common brand, have been the traditional rescue stretcher for many years. They were initially made from aluminum and wire, but are now also available in fiberglass or aluminum. These latter models provide better protection from rough edges. Basket stretchers can be fitted with head and face protection. The main drawbacks with basket stretchers is their bulkiness and the difficulty putting patients in and getting them out again, particularly if spinal injuries are suspected.

Paraguard Stretcher

The paraguard is an aluminum and vinyl folding rescue stretcher that fully encloses the patient. The have the benefit of being partially flexible (by bending in the middle) whilst still holding the patient securely. They have head, chest, thigh and foot restraints. Newer designs incorporate telescopic carry handles as well as the standard tow, lifting and carrying handles.

Spine Board

The spine board stretcher is a flat fibreglass board that is primarily designed to lift patients. The patient is placed on the board and then strapped down to prevent sliding off. These boards are not flexible and their use underground would be limited to larger caves or where a rough surface may be encountered (such as lava tubes).

Conclusion

Over the next few editions, I will delve more deeply into these various rescue devices and stretchers, their advantages and disadvantages.

No one device should be considered perfect for each and every situation and therefore those people who are, or maybe, involved in a rescue must fully understand any limitations.

Bibliography

Mark Somers is a Clinical Instructor with the Metropolitan Ambulance Service in Melbourne. Mark also operates Adventure Tag Along Tours, an outdoor adventure pursuits tour company and has had many years caving and rescue experience. He is a member of the Victorian Speleological Association and The Caving Club of Victoria.

Thailand 1997

Terry Bolger

The Canberra Speleological Society (CSS) has been active in exploring the caves of Thailand since the early 1980's. I joined the 1996 CSS / Thai Royal Forest Department (RFD) expedition to Lam Khlong Ngu forest reserve and the combination of good caving, comraderie and Thai hospitality hooked me. Early in 1997 I was faced with the prospect of not getting my expedition caving 'fix' for the year. Other commitments had prevented me from joining either the Australian expedition to Vietnam or an American expedition to Borneo. I decided that I could squeeze in a short trip to Thailand in late April and went about organising a small team from Australia to explore caves in conjunction with colleagues from the Thai RFD. Don Glasco, a fellow CSS caving mate, and Georg Kaufmann, a seasoned expedition caver at the ANU, were both eager to come along. I also recruited Perth cavers Linda Fellows and Graham Innes, whom I'd become good friends with on the 1995 Vietnam expedition. The trip was led by our friends Nopparat Naksathit and Dean Smart from the RFD. This was a light and fast trip. In two weeks we surveyed nearly 9 km of cave in three national parks: Thung Salaeng Luang in Phitsanulok province, Tham Chaoram in Sukothai province, and Sri Nakarind in Kanchanaburi province.

The evening of our arrival we were met at Bangkok airport by Nop and Dean, and headed straight to Thung Salaeng Luang. For four days, our base camp was the Ban Mung ranger station, situated directly at the cliffline of a huge karst tower on the southwestern slopes of the park. The general landscape in this area is characterised by the smooth, rounded relief of Triassic/Jurassic sandstones. Along the southwestern edge of the park, Permian limestones outcrop, and the geomorphology is dominated by steep, rugged karst towers overlooking the flat outwash plains with their patchwork of fields. The vegetation is the first indicator of the geological setting, with the sandstone areas often covered by secondary forest, while the more rugged and dissected limestone areas remain the habitat of pristine forests with denser vegetation of darker colour. Some isolated karst towers left over by the backward erosion of the main plateau loom over the flat fields, adding to the picturesque character of the landscape. However, these relatively pure limestone towers are an easy target for the local mining industry, and some towers have been quarried away completely leaving scars on the landscape.

Just behind the ranger station, a small stream emerged from a resurgence located at the base of the cliffline. Walking up the slope, we arrived at the rim of a huge collapse entrance, providing a steep access to Tham Dao (Star Cave). At the bottom of the entrance, we soon found ourselves wandering in a sizeable passage 10 to 15 meters wide and 5 meters high and becoming larger in some places. Only one low duck slowed progress up the stream passage which meandered in a northerly direction before ending abruptly in an upstream sump. Two teams completed the 1100 meter survey in a few hours during the afternoon of arriving at Ban Mung; a good way to stretch our legs and a good start to the expedition. We had an enjoyable evening of dining, drinking and socialising with our hosts, assistant chief Wasan Thuphichit and his staff at the station. They joined us in our explorations, and also prepared the meals and provided other logistical support.

The next morning we drove up to the northern end of the limestone outcrop to a cave called Tham Phra Wang Daeng (Monk's Red Palace Cave). The large entrance was located on the grounds of a forest monastery, and we were told a story that it took a monk three days of walking to get to the end of the cave and back out. The entrance section of Tham Phra Wang Daeng is a huge collapse chamber with two entrances facing each other. A foot path crosses through the upper levels, passing several golden buddhas. Two bamboo platforms for monks were erected in the middle of the entrance chamber. On the opposite site, the path continues to the downstream entrance of the cave. The team of Dean, Georg, Graham and several Thai rangers headed upstream through a door installed at the bottom of a steep boulder pile in the entrance chamber. Inside, the steep descent over large boulders continues, finally dropping over a concrete stairway to the bottom of the first (entrance) boulder choke. Here the stream is reached. Downstream the water quickly disappears into the boulder choke, but it

Waiting for the minibus at Sri Nakarin Ranger Station. Clockwise from front left: Don Glasco, Terry Bolger, Georg Kaufmann, Dean Smart, Nopparat\ Naksathit and Graham Innes (photo Linda Fellows

can be rejoined after a few hundred meters from the downstream entrance. Upstream, a huge gallery opened into the darkness, just waiting for exploration ...

Some gours damming the stream soon led to the first swim. Here a steep climb to the right (looking upstream) was rewarded by a large buddha image and the remains of a toilet! An even steeper climb on the left over muddy flowstone, rigged by the local monks with a thick knotted rope, led to an upper dry gallery some 30 meters higher decorated with buddha images, umbrellas and a 15 m high stalagmite. At the far end of the bypass, a slippery boulder pile leading down to the stream was negotiated, this time without the help of a handline. This bypass can be used

to avoid the first swim. Back down at stream level, a large pool was encountered, which hosts an abundance of at least two new species of white cave fish. The small fish are a Schistura spp. and the large fish are Barbus spp. Also, what appears to be a new crab and a new shrimp species, both troglobitic, were noted. Beyond the first pool, the passage left the boulder choked entrance area and gave way to several hours of walking, swimming and bouldering along the superb and spectacular vadose passage of the main streamway. The size of the gallery started at about 10 meters wide and 5 meters high, but successively increased to a width of 25-30 meters and a height of 20-25 meters. After a little over 2 km, a second huge collapse area was reached. The entire river passage is blocked by a huge boulder choke, giving access to a large, dry boulder room at roof level. Here a major fault zone is intersected by the cave, as a result the ceiling has collapsed with its overlying sandstone layers, burying the stream passage for approximately 100 meters. A thin red string marking the best way through this unstable zone gave a glimpse of the tenacity of the monks, who explored the cave by candlelight. After passing the second boulder choke, the active passage continued in a southerly direction.

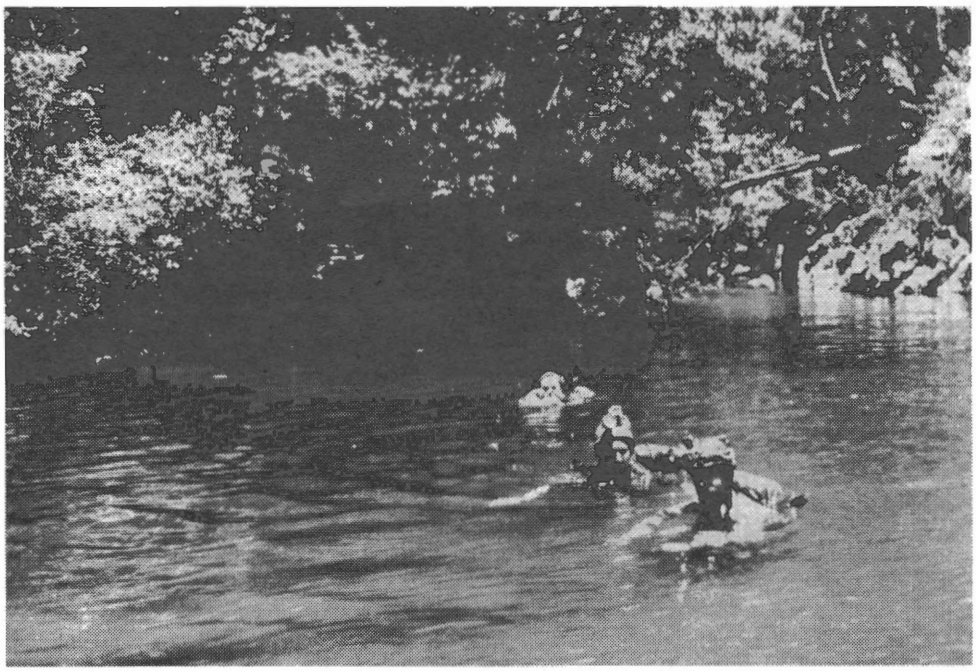
The team of Don, Linda, Nop, a contingent of Thai rangers and I explored and surveyed downstream. The downstream section of Tham Phra Wang Daeng is less extensive than the upstream section. The entrance is at the bottom of a large doline, past another golden Buddha. Inside, the passage descends steeply, with stairs in places, to intersect the stream. The passage can be followed upstream for about 200 meters before becoming too small to continue. Half-way along a junction is reached. Straight ahead is a dry upper level passage over rock and flowstone. This seems to be an overpass above the stream level. It has unstable rock in some places and was not surveyed. A low air-space duck under to the right which becomes a swim across a deep pool must be negotiated to continue at stream level. This section is nicely decorated with flowstones, gours and stalactites.

Downstream from the entrance series the passage is initially quite large (8 meters wide x 20 meters high), with a noisy colony of bats roosting in the ceiling above the stream. The guano dropping into the stream provides the energy source for a rich and diverse fauna in this section of the cave. We noted several specimen of fish, crayfish, shrimp, crabs, centipedes, cockroaches and a python. This richness of biological life already encountered in the upstream section is even more diverse in the downstream part and will be a challenge for cave biologists.

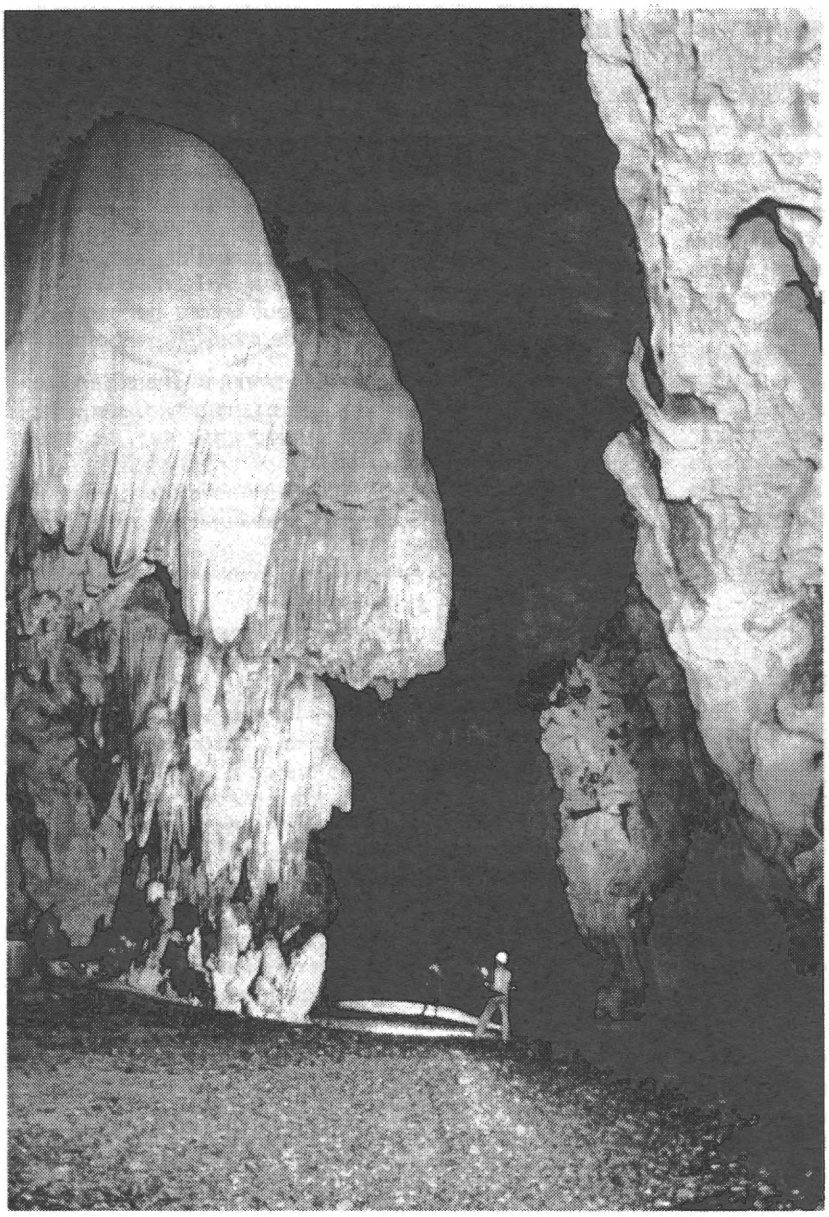
200 meters downstream there is a large karst window on the left with the surface about 40 meters above stream level. Another 50 meters along we encountered a junction with the choice of a large, dry upper level, or a swim through a suddenly reduced-size passage of 3x3 meters continuing downstream.

The Thai rangers had explored ahead and were waiting for the survey team at the entrance to the upper level, a short climb above the stream, which seemed to them to be the sensible direction to go. To their dismay we decided to continue surveying downstream first. The deep water is interspersed with sections of gours and several 1 to 3 meter waterfalls. A 2.5 meter waterfall into a deep swim was rigged with a handline, but shortly beyond we were stopped for the day after about 500 meters of survey at the top of a 4 meter flowstone cascade for lack of SRT (single-rope technique) gear. On the surface we dried off in the late afternoon sun. As the sun was setting, there was still no sign of the upstream team. I mentioned to Nop in an offhand way that it would sure be nice if we had some cold beer. One of the Thai rangers got on the two-way radio, and we were told that cold beer was on the way from the nearby Ban Chomphu ranger station. Sunset turned to a starlight night and there was still no sign of the other team or the beer. Finally a truck came up the road with beer, AND a complete catered dinner of rice and several curries! We spread out some ground cloths and had a fabulous candlelight dinner under the stars. The other team returned from the cave in time to enjoy some of this feast. Our spirits were high and we were carrying on with much excitement and laughter. The upstream team of Dean, Georg, Graham and several rangers had surveyed almost 150 stations in big stream passage, many of them 30 m shots! Our total for the day was over 3.5 km of survey. No wonder we go all the way to Thailand for caving!

Two teams, each with a contingent of rangers, went back into the cave the next day. Don, Nop and I continued



Don Glasco, Linda Fellows and Graham Innes swimming along the Khlong Ngu towards Tham Nok Nang-An (Swallow Cave) (photo Terry Bolger).



Along the stream passage in Tham Nok Nang-An (photo Terry Bolger).

downstream, descending the 4 meter cascade using SRT, but we quickly found a free-climbable bypass off to the left of the cascade. Below the cascade there were a number of leads, and it was initially difficult to find where the water was going. A climb down through a rocky slot on the right wall provided the way on. Below, the water was quite still, and we meandered through about 200 meters of passage nicely decorated with stalactites and gours before encountering the terminal sump.

We returned to the large, dry upper level which yielded about 330 meters of passage. This section is nicely decorated with stalagmites, stalactites, columns and flowstone. The passage makes a loop, with a small karst window seen at the far end of the loop accounting for the airflow in this section. At 1.2 kilometer the exploration and survey of the downstream section of Tham Phra Wang Daeng is essentially complete.

Dean, Georg, Graham and Linda continued upstream in a huge, wandering vadose canyon. The average passage size was 10 m wide by 20 m high. The 30 m tape proved ideal as the distances between bends was generally between 25 and 35 m! They finally had to turn around in this booming stream passage, and many side passages were also left unexplored. In two days we had surveyed 6.3 km in this cave. So perhaps the monk's story was true! Unfortunately, we had only allocated two days for this cave as our schedule was tight.

In April 1998 the Thailand Cave and Karst Group in cooperation with staff from Thung Salaeng Luang national park returned to Tham Phra Wang Daeng to continue the exploration and survey. In four days of exploration, including an overnight camp in the cave, they surveyed another 5.8 km of passage. The end of the cave was reached at a sump, but many side passages remain unexplored. At 12.1 km, Tham Phra Wang Daeng is now the second longest cave in Thailand, and is almost certain to surpass Mae Lana as the longest cave in Thailand when the side leads are surveyed on a return trip planned for December.

Tham Phra Wang Daeng is perhaps the most significant cave in Thailand, given its geology, geomorphology, hydrology and biology. The main trend of the cave follows the contact of the Permian limestone with the Triassic/Jurassic sandstones. The cave displays some of the finest examples of vadose and phreatic passages in Thailand. In addition to its survey length, it has the longest continuous stream passage in Thailand at 10,250 m. The cave has a dendritic drainage pattern, where many small inlets and percolation water contribute most of the water in the cave during the dry season. This is unique in Thailand, where most active caves carry a single stream from a sink to a resurgence. Four new species have been identified in the cave already, and more are sure to follow when a proper biological survey is undertaken.

Our final day at Thung Salaeng Luang we went to survey the third cave on our list, Tham Phra Sai Ngam (Monk's Beautiful Fig Tree Cave). This resurgence cave drains the central part of the limestone outcrop, but was not flowing at the time of our visit. One team went in to explore while the other team began surveying from the entrance. It was another nice stream cave with more moderate-size passages averaging 5 to 10 meters wide and high, which ended in a series of high avens. We surveyed 1200 m before running out of time (again!), leaving about 500 m still to be surveyed. On the way out we did some photography, only to find out later that the film hadn't wound onto the spool.

In the morning we thanked our hosts and loaded up the minibus to head for Tham Chaoram, north-west of the ancient city of Sukhothai, the first capital of the Thai Kingdom. On the drive, Dean passed around an article on Tham Chaoram that he had written for International Caver. The descriptions of being covered and bitten by lice, fleas, ticks, etc. didn't help enthuse people about our next objective. However, we arrived to find a peaceful ranger station at the base of two lonely karst towers. The cave hosts a colony of wrinkle-lipped bats (Chaerephon plicata). At dusk they began flying out of the cave, and we were awed by the long, thick 'plume' of bats that lasted for 45 minutes. We estimated their numbers to be from 1 to 2

million. Ranger station head Charoen Promma and his staff made us feel most welcome, providing a lovely evening of food, drink and conversation under the evening stars

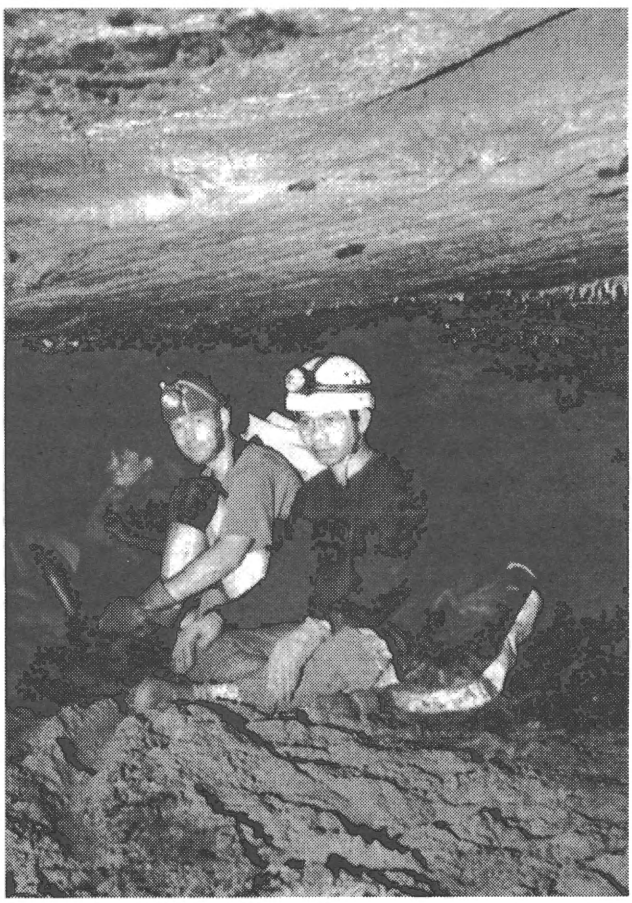
In the morning, several intrepid explorers decided it was a good day for a rest day. The braver (or more foolhearty) among us prepared to go finish the survey of the cave. Insect repellent was applied head to toe, and coveralls were substituted for the usual Thailand caving attire of T-shirt and shorts. Just inside the entrance is a large chamber where the bats reside, and the floored is covered by large and deep deposits of guano. Much of the guano was dry and powdery, and clouds of fine guano dust were stirred up by each step. We were wearing dust masks, but they were basically ineffective. As we got near the back of this chamber the guano was moister, so the dust subsided but the invertebrate life teemed! At this point another intrepid explorer decided he'd had enough and headed out. The first vertical pitch had a lot of guano and loose rock at the top and required careful rigging. I rigged it re-belay style for SRT, and Nop and Dean followed. However, our fellow Thai rangers preferred "thick rope technique" over SRT, and several of them came down the pitch along with what sounded like several tons of rock and guano! Amazingly there were no broken bodies among the rubble, so we proceeded to a second pitch and our lead. We descended this pitch uneventfully, and it led to a lower level gallery with a seasonal stream and two avens, but no obvious way on. Completing the exploration and survey added 220 m, making Tham Chaoram a little over 1 km long. There was more excitement on the way out as the Thai rangers climbed the thick rope hand-over-hand up the 30 m pitch. Back through the large bat chamber the guano dust stuck to our parched throats, and we arrived back at camp late to find the others preparing to start a rescue! We were all happy to share beers and tales of the day instead.

The next morning we were on the road again for the long drive to Sri Nakarind. Along the way we made a lunchtime stop to visit some of the ruins at Sukhothai, and stopped for a nice dinner at one of the floating restaurants alongside the "Bridge Over the River Kwai" in Kanchanaburi. We ended up staying the night at Erawan national park, and drove on to the Huai Khamin station of Sri Nakarind the next morning. This would be our base for the next 6 days.

Our objective at Sri Nakarind was to continue the exploration and survey of Tham Ban Nam Mut (Sinking Water Village Cave). This cave had been surveyed to over 4 km by a British army team in 1992. They had turned around in going stream passage, and the topo map suggested that the upstream entrance of the cave was a further 4 km away. We drove out to Ban Nam Mut and located the resurgence spring, the buddha entrance, and a large collapse entrance to the cave. Graham and I entered the collapse entrance, doing a sporting 10 m down-climb to stream level. The CO2 concentrations were noticeably high but not bad. We spent a while finding a route through a 100 m boulder choke before it opened out into the main streamway again. That accomplished, we left the cave, ready for a big push with a full team the next day...minus Dean though. He had been feeling weak and dizzy since the trip into Tham Chaoram, and was out of commission for several days.

Things started off well the next day. We placed a long piece of bamboo at the entrance pitch so people had their choice of SRT or SBT (Single Bamboo Technique). The CO2 concentrations seemed lower and we moved easily through the boulder choke. Soon we were splashing up the large stream passage, occasionally having to go through a low airspace duck under flowstone. We continued upstream like this for 2 or more kilometers, stopping finally on a sand bank when we noticed high CO2 concentrations. We were all breathing heavily, but still able to pull enough oxygen out of the air. Don, Graham and Linda decided to turn back. Georg, Nop, the Thai rangers and I continued on. However, we too were stopped after a short distance by a slick flowstone drop without sufficient rope or SRT gear. We made a leisurely exit, taking pictures along the way. At the entrance climb, Georg scoffed at the SBT until the 3 Thai rangers and Nop were up and out before he had even gotten his SRT gear on...that made a believer out of him!

We decided to make one last attempt at Tham Ban Nam Mut. Loaded up with gear for any eventuality, Georg, Nop, several Thai rangers and I headed back into the cave. Meanwhile, Don, Graham and Linda spent the day doing surface reconnaissance of the area above the cave using the topo map and GPS, and maps and grid references from the British army report. They determined that there were inconsistencies in the British report about which direction the cave went in. Back at the flowstone slope, I downclimbed an etrier into the streamway and swam off around an S-bend. I encountered another flowstone plug with a low airspace duckunder, and called for Georg to follow me. The floor dropped away to a deep pool and we swam out from under the flowstone, about 20 m to a gravel bank. We climbed out of the water onto the bank, and attempted to catch our breath. Our lungs were working hard, but the feeling was one of suffocation. Knowing that we had to do something quick, we took a chance and scrambled up to a balcony about 6 m above stream level. This paid off, and although the CO2 levels were still high, we were able to catch our breath. From this vantage point we could see the large stream passage disappearing off into the distance, but it could only be traversed at stream level. Realising that this was as far as we would go in this cave, we took one last



Wasan, Georg Kaufmann and Nopparat Naksathit in Tham Phra Sai Ngam (photoTerry Bolger)

look upstream and then moved calmly but quickly back down to stream level, through the flowstone duckunder, and back to where the others were waiting. We spent 3 days in Tham Ban Nam Mut with nothing to show for it. Curiously, there was no mention of high CO2 levels in the British report. If low CO2 levels are found in the future, opportunistic exploration and continued survey of Tham Ban Nam Mut is likely to be a fruitful endeavour.

Back at camp, Nop and Dean had a talk with Paiboon Sewetmalanon, the park superintendent, and several rangers, about other options. There was rumour of a coffin cave as well as a tiger cave (or were they one and the same?) in the upper Mae Khamin valley. A local guide was rounded up, who "knew" where the cave was. We drove to a high point on the rim of the upper valley, which had a beautiful view of the extensive forest below. There was some confusion and we split off in several different directions. As it turns out, the guide headed off in his own direction and was not seen again! We wandered around the base of a large limestone bluff but saw no caves. So we made our way down to the Huai Mae Khamin, and had an enjoyable walk 3 km downstream to the station. The station is situated along a beautiful series of tufa waterfalls and pools, and we had a refreshing swim after the hot day in the forest.

That evening there was more talk, and a new guide with new directions to the coffin/tiger cave was produced. In the morning we headed off for another try, but we stopped along the way to visit Tham Ong Bah. This is a significant archaeological site from which coffins, bronze drums iron tools and pottery were removed by excavations in the 1970's. On the entrance slope, Dean was scratching around and found a piece of bronze...from one of the drums! Soon we were all digging enthusiastically in the talus of the entrance slope and found a number of pieces of bronze, along with some iron tools and pieces of pottery. We surmised that these artefacts were dropped while being removed during the earlier excavations. After lunch, a long hot walk down the Huai Mae Khamin and up a side stream led us to...the tiger cave? ...the coffin cave? No, only a small shelter cave in a cliff face. The disappointment on our faces was visible. One of the rangers offered to lead us to a cave he knew of a few kilometers further on. Dean and I were the only takers, the rest opting for a refreshing swim and a cold beer back at the station. Sure enough, he led us to a small but interesting cave high on a hillside. It had two entrances and about 200 m of narrow, winding passage. It also had black marks on the walls that looked like survey stations. Dean reckoned that it was one of the caves in the area surveyed by an European geologist some years before.

Although there was no lack of trying, we had spent five days at Sri Nakarind and had nothing in our survey books...quite different from our first four days at Thung Salaeng Luang! We decided to cut our losses and spend the final day taking a tourist trip through Tham Nok Nang-an (Swallow Cave), about a two hour drive away in the Lam Khlong Ngu area of the 1996 expedition. This is a through-trip where the Lam Khlong Ngu, a sizable river, flows underground for the better part of 4 km, with a number of karst windows along the way. We had a fantastic day swimming, walking and scrambling through this amazing cave, and emerged from the final karst window feeling exhilarated. Above the karst window at the take-out point a new ranger station was being built, and we enjoyed meeting many of our ranger friends from the 1996 expedition. The tourist potential of this cave is becoming realised. We were told that a group of a dozen local people did the through-trip during the recent Songkran festival. The Tham Nok Nang-an through-trip is truly world class and is a 'must see' for anyone in the area.

The expedition had come to an end. Riding back to the station under a star-filled Kanchanaburi sky, Dean and I talked the whole way about the NEXT expedition!