

AUSTRALIAN

The Journal of the Australian Speleological Federation

CAVER



No. 158

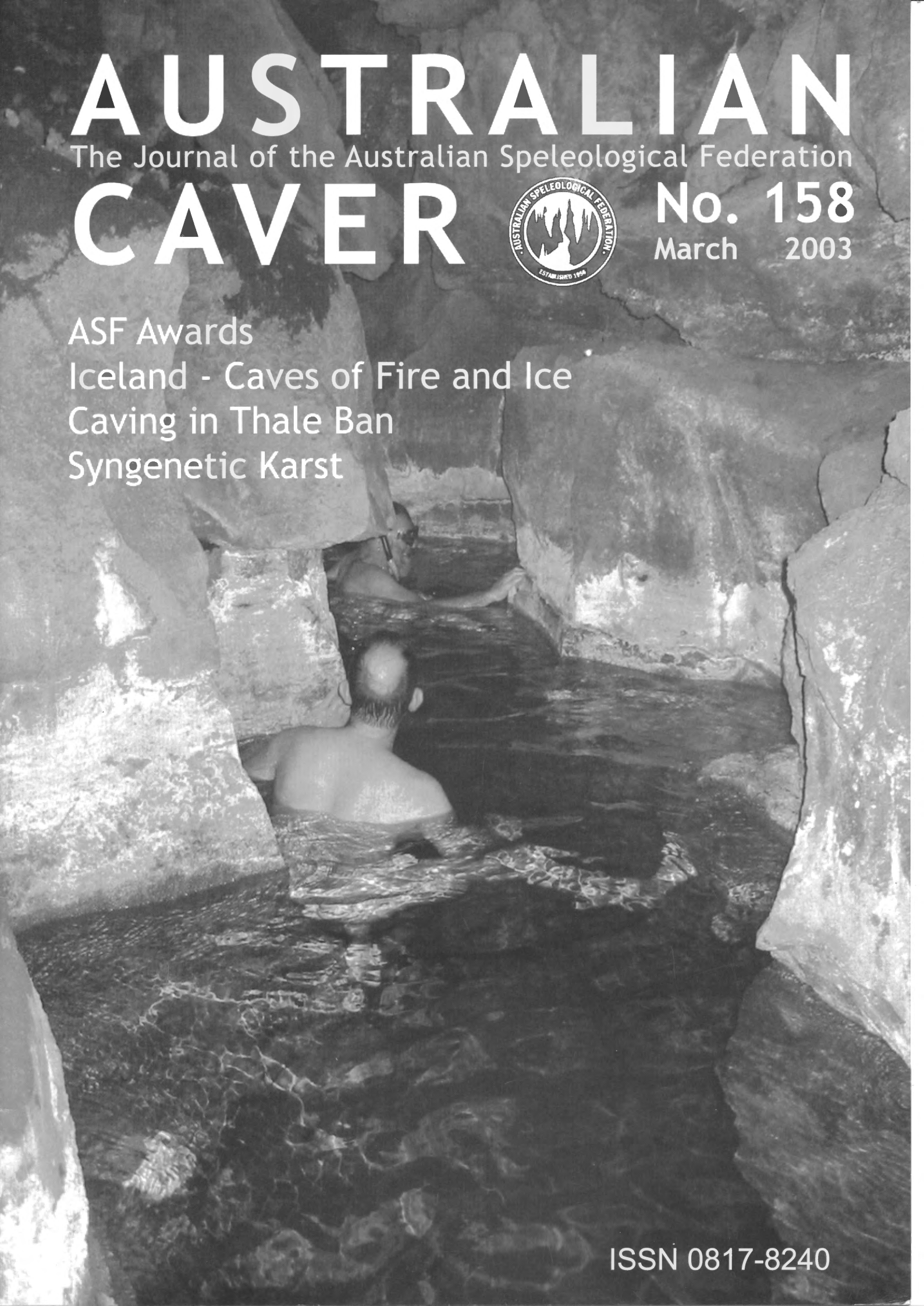
March 2003

ASF Awards

Iceland - Caves of Fire and Ice

Caving in Thale Ban

Syngenetic Karst



ISSN 0817-8240

Coming Events

In particular, this list will cover events of special interest to cavers and others seriously interested in karst. A similar list in the ACKMA Journal will give more attention to meetings of specialist scientific interest. Both of these lists will be just that: if you are interested in any listed events, contact Elery Hamilton-Smith on: [REDACTED].

If you plan to visit North America or Europe, we can provide details of the many local and regional meetings which take place there.

2003

May 5-12	ACKMA Conference, Chillagoe-Undara, Qld.
May 29-31	Scientific Meeting to celebrate 300 th Anniversary of Kungur Ice Cave. Perm, Russia.
June 3-8	International Conference on Karst Hydrogeology and Ecosystems, Bowling Green, USA.
July 7-11	Australian Vertebrate Palaeontology Conference, Brisbane.
Aug 4-8	NSS Convention, Porterville, California. (See www.nss2003.com)
Aug 26-28	Gypsum Karst Areas of the World, Bologna, Italy.
Sept ?	Water Resources in Karst and Hard Rock Formations, Isfahan, Iran.
Oct 13-18	Caves and Karst Management Symposium, Gainesville, Florida, USA.
Oct 15-30	Karstlands Tour of South-West China, led by Dwight -and Mary Deal.

And Looking Ahead:

2004: Jan 24-25	ASF Council Meeting, venue TBA.
2004: Sept 13-18	First International meeting of the Vietnamese-Belgian Karst Project, Hanoi.
2005: Jan 2 - 8	25 th ASF Conference, Dover, Tasmania (see separate note in this issue) Preliminary details: Arthur Clarke [REDACTED]
2005: Autumn	ACKMA Conference.
2005: Mid-year	14 th International Congress of Speleology, Athens, Greece.
2007: January	26 th ASF Conference, South Australia, celebrating 50 years of the Australian Speleological Federation. Start planning now!

Coming in the next issue

More on Cave Diving from Keir Vaughan-Taylor.
The Legend of Hibashi Cave, Saudi Arabia.
More on the Yarrangobilly incident.



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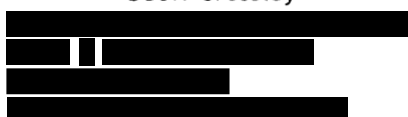
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Australian Speleological Federation Inc.

Annual Report 2002

Presented by the President, John Dunkley

Bunbury, January 2003

Highlights of 2002:

- Following last year's outstanding success in court action to prevent mining leases on Cape Range in Western Australia, involvement in the Environmental Impact Assessment process for a proposal to develop a limestone quarry on Cape Range near Learmonth.
- Progress on a structure for operating as a registered Environmental Organisation.
- Acquittal of a NSW Environment Trust grant at Cliefden, NSW, with highly favourable reports on the outcome from the assessment panel, and of the NHT Project in the Macquarie region.
- Joint project commenced with Aboriginal parks officers for training speleologists to identify sites of Aboriginal significance on karst.
- Expansion of a new Web-site.
- Representation & papers presented at cave management meetings and at the International Vulcanological Conference in Reykjavik, Iceland.
- Completion of software specifications & calling for tenders for an updateable Karst Index Database,
- After more months of work, adequate but still less than comprehensive and not inexpensive insurance.

Introduction

I was elected President by the Executive in May following the resignation of the previous President Peter Berrill in most regrettable circumstances. The third-longest serving President in our 46 years, Peter was in the Chair for 5 difficult years, presiding over the most significant achievements by ASF in several decades. He was an Executive Member for 13 years, probably the longest term of anyone. Under his leadership ASF acquired the research journal "*Helictite*" and other assets of the former Speleological Research Council Ltd, was registered as an Environmental Organisation by Environment Australia, commenced an Annual Report, and an electronic bulletin. Peter instigated the setting up of a tax-deductible Public (Environmental) Fund, reformed the Karst Index project, and ensured completion of a highly acclaimed Natural Heritage Trust project in the Macquarie region of NSW.

During those 5 years Peter also chaired Central Queensland Speleological Society, chaired the organizing committee for ASF's 22nd Biennial Conference in Yeppoon, obtained caver representation on the Mt Etna Caves National Park Advisory Committee, and led grant-aided investigations in the karst of Mitchell-Palmer region in north Queensland. His crowning achievements were securing the addition of Cammoo Caves to Mt Etna National Park, and playing a leading role in the historic reconciliation between Queensland Cement Ltd and its former adversaries in a joint project to redevelop the area. To top this off, the company recently announced closure of the mine entirely.

Executive

During my time as President since May 2002, the Executive has been excellent and has functioned very efficiently, productively and supportively. The best possible proof is that all those elected two years ago whose term was expiring, have renominated. While everyone has done a superb job, I want to pay particular tribute to Joe Sydney's unflappable common sense and patience in handling insurance & other crises, and to Jodie Rutledge who has taken on risk management as well as membership, keeping up to date with the rapid changes in this field by attending several seminars & meetings. Jay Anderson has been a superb Executive Secretary, somehow finding time to also be WASG President, to help organise the Conference and to play a leading role in conservation activities in Western Australia.

The convenience of e-mail continued to improve communication between the Executive, increasing the workload but, we believe, also increasing the quality of decision-making. In May while Jay Anderson (WA) and Kath Rowsell (NT) were fortuitously in Sydney, the Executive had a face-to-face meeting at minimal cost to ASF, other meetings being by telephone or e-mail. The May meeting received the resignations of Peter Berrill and Alan Jevons, and appointed Nick White and Graham Pilkington to fill the Executive vacancies pro tem. Peter Berrill and Peter Dykes continued as non-Executive Vice-Presidents.

Community Honours:

Last year we were delighted to report that founding Secretary, longest-serving President of ASF, and peripatetic speleologist, Elery Hamilton-Smith received the award of Member of the Order of Australia (AM) in the January Honours List. In May 2002 Elery received further recognition, being awarded the honorary degree of Doctor of Applied Science from Royal Melbourne Institute of Technology (*since this was written, Lex Bastian received the award of OAM (Medal in the Order of Australia) on 26 January 2003 "For services to speleology in Western Australia as an explorer and surveyor, and to the protection of caves". Congratulations to Lex, founder and stalwart of WASG for nearly 45 years*).

Conservation

The various state chairmen will present detailed reports at this Meeting. Western Australia deserves mention as providing an outstanding record of achievement on practical conservation issues. Nick White accepted the position of national Chairman of the Commission with a primarily coordinating role. We urgently need a Convenor to cover Tasmania following Arthur Clarke's resignation.

Following our signal victory in 2001 in the WA Mining Wardens Court, the WA Government has yet to make a decision on the Cape Range issue. WA members want ASF to continue to oppose limestone mining on the Cape Range peninsula, call for the Government to remove the strategic limestone mining purpose from the proposed 5(h) reserve, enlarge the Cape Range National Park and advocate World Heritage Listing. The Queensland and Western Australia Conservation Reports show that in this and other initiatives, ASF members in those states have set enviable precedents worthy of emulation elsewhere.

In NSW, ASF initiatives (e.g. through the NHT-funded Macquarie Karst Vegetation project, and through the good offices of Bill Allen, NPWS Aboriginal Liaison Officer in Bathurst) drew attention to the importance of karst on private land, and to sites of Aboriginal significance on karst. In December we were approached by Peter Dykes NSW for assistance in drawing up a Voluntary Conservation Agreement over caves and karst at Tricketts Arch, NSW. This is a time-consuming though not very expensive process, and the project could serve as a model for numerous other karsts on private land throughout Australia. Similarly, we commenced a pilot project in cooperation with the NSW National Parks & Wildlife Service, to train speleologists in the recognition and preservation of sites of Aboriginal significance on karst. Practical work will commence at Tricketts Arch, NSW on 6th April, 2003, under the auspices of the NSW SC.

In 2000-2001 ASF brought Mining Wardens Court proceedings relating to Mt Cripps in Tasmania and the WA Cape Range. Both karsts were listed by the Karst Waters Institute in the USA among the year's ten Most Endangered Karst Ecosystems of the world. We would have been in a much stronger position in these actions had the ASF Public (Environmental) Fund then been in place. As noted below, a working relationship needs to be established between our conservation activities and the ASF Environmental Fund.

NSW Environment Trust project, Cliefden, NSW

This project was acquitted during the year, and Chris Dunne is to be heartily congratulated for his initiative in obtaining, overseeing and acquitting the grant. The evaluation panel wrote, *inter alia*:

"The Final Report is detailed, professional and very well presented. The photographs provided were particularly useful to the review The quality of the final report together with the photos provided should be noted in any feedback, as should the ongoing and adaptive nature of the applicants response to the revegetation failures in the project. The positive relationship between the grantee and the land owner is also notable.... The project as applied for is clearly complete. ... The Environmental Trust clearly got value for money for this project".

Environmental Gift Fund

ASF was registered as an Environmental Organisation by Environment Australia in 2001 following three years of work. We had intended to spend 2002 consulting clubs as to the best way to operate the Fund. The insurance crisis diverted us, so this is high priority for 2003. I will present a separate report to Council seeking constructive feedback on how to proceed. A promised anonymous seeding donation is awaiting completion of arrangements for operation of the Fund, but matching funding from ASF has been approved.

Environment Australia Funding

In July we applied for funding under the Grants for Voluntary Environmental and Heritage Organisations programme of Environment Australia, a very time-consuming operation.

Risk Management

Jodie Rutledge took this in hand in 2002 and will lead working groups on it during the Conference.

Insurance:

This really is a Weapon of Mass Distraction. Last year the President cautioned that this must not dissipate our energies in unproductive debate about details. Unfortunately it *did* continue to take up a grossly excessive proportion of the time and energy of at least 4 members of the Executive and of clubs and members. Since taking over Insurance Joe Sydney did an outstanding job negotiating with the broker and answering member queries. Jodie Rutledge attended seminars on insurance and on related Risk Management issues. In mid-year I asked Iain McCulloch to chair an ad hoc Committee to come up with some recommendations about some details of this and fees which were troubling university societies particularly. These will be discussed at this meeting, but there are longer-term issues remaining. Should ASF vacate the field of public liability insurance entirely, offer it only as an option, or continue the vastly time-consuming service we now have? It distracts us from our real mission, is resented by all and is used as political football by a few for unproductive purposes. We *must* move on.

International Union of Speleology:

A remarkable nine ASF members attended the International Vulcanological Conference in Reykjavik, Iceland in September, with three members presenting papers. This was a truly memorable place for a conference, with spectacular scenery, great hosts and magnificent lava caves, some barely 20 years old! Dr Armstrong Osborne continued as a member of the Executive of the International Union of Speleology, Peter Matthews as President of Informatics Commission, and Grace Matts as Vice-President of the Cave Rescue Commission.

Speleo- E-Bulletin:

This innovation continued to be popular. Joe Sydney has taken over its production.

Helictite:

The publications flagship of ASF, *Helictite* presents the achievements of Australian speleological science and other cave-related research to the world. As one of the world's only 4 or 5 refereed publications on these topics, it rubs off positively on recreational cavers. Since ASF acquired ownership in 2000 it has flourished under the editorship of Sue White, assisted by Ken Grimes and Glenn Baddeley. We do not mandate a subscription to this as part of our membership fee, but we would like to see more members subscribe. As well, why not contribute? - you don't need to be a scientist or academic: many recreational cavers have contributed articles of lasting value, and the editors are ever willing to assist you. During the year Iain McCulloch and John Dunkley reprinted out-of-stock volumes. All issues back to Volume 1, 1963 are now available. A number of sales of complete sets have boosted the *Helictite* coffers.

Australian Caver

Introduction of new InDesign software greatly improved the quality of AusCaver but delays in its appearance bedevil us. The 2002 arrangements were unsatisfactory - my own contribution given in May appeared in December, by when it was outdated (but this was *not* Geoff Crossley's fault). Suggestions?

Jennings Book

Great news: it's with the Publisher (UNSW Press) with publication expected by March 2003.

Web-site and Membership List:

Carol Layton continued to administer the Web site admirably. Please contact Carol with suggestions and corrections - she is very amenable and obliging. We need improvements to the Membership List software.

Archival and Historical Material:

The Executive began a process of assessment of the ASF archives, assisted by Chris Dunne. Much of our records are still in the possession of some previous executive members scattered throughout the country. Some early records thought to have been lost have been re-located.

Representation on Other Bodies:

ASF's representative on Jenolan Caves Reserve Trust, Patrick Larkin continued on the Executive Committee of the Board. Two other members of the Board, including the Chairman Richard Mackay, are present or former ASF members. Several VSA members were invited to join an advisory committee on Victorian karst. Megan Pryke organised a meeting with NSW DLWC at Goulburn to discuss possible futures for the Wee Jasper Caves Trust which had ceased operation following withdrawal of funding. Speleologists are filling major advisory roles in WA and at Mt Etna Caves National Park in Queensland; Tasmania could do to follow their lead.

Australasian Cave and Karst Management Association (ACKMA):

Just as I was writing this report, news arrived of the sudden death of Peter Dimond, President of ACKMA. Twice in the last two years I had the pleasure of meeting Peter, whose many years at Waitomo Caves in NZ led to the award of QSM (Queens Service Medal). He developed strong relations between speleologists and cave managers, and is a great loss to speleology and cave management in New Zealand.

Anne Wood officially represents ACKMA at UnderWay. ACKMA has invited an ASF representative to their next Conference in north Queensland. ACKMA primarily aims at improving standards of cave management, so it is likely ASF will continue to play a leading role in conservation and environmental issues. We need each other, and a working relationship between the two organisations is essential, but it has to be based on mutual respect. Chris Bradley discussed some of these issues with the ACKMA Executive at Yarrangobilly in May, and is continuing in a liaison role. A PR Kit on ASF was given to all present.

Intellectual Property and Products:

Several clubs again enquired about the professional advice which we received in 2001 on protecting copyright and other intellectual property in such materials as cave maps and cave data. The advice is authoritative, very comprehensive and is available on a need-to-know basis. In a recently published paper I placed a notional value of

\$20 million on cave maps produced in this country, and clubs and individuals with extensive collections should consider how to protect their rights. As Peter Berrill wrote last year, we all need to act from an informed position and not make assumptions of a bush lawyer variety.

Karst Index Database:

The data originally held on a mainframe computer has been transferred to the Web site and limited fields are available for perusal. Mike Lake has circulated a Discussion Paper to each State Coordinator on a new updateable database and we expect to let a software development tender probably by February 2003. A training program will follow, then the huge task of updating. Mike deserves high commendation for his phenomenal job on the technical aspects of this task. The Executive is dealing with a new structure for on-going management of the KID, to be in place when the software is available. A Guideline Document on Cave and Karst Numbering urgently needs to be finalised at this meeting.

Public Relations:

For some time many have stated that ASF needs to improve its public image. On any objective assessment our achievements are quite staggering, and many members have devoted much of their life to conserving caves and karst, often at considerable personal cost. Yet we haven't exactly beaten the drum about this, and there is an inaccurate perception in some quarters that only 'professionals' are involved in looking after Australia's caves. More speleos now have environmental credentials at just the time that an increasing number of management and academic people interested in caves and karst have no background in those areas, and as always, memory is short. Public Relations is not an area in which we have great expertise. However, Sue White has circulated notes on a meeting with a professional Public Relations consultant, and the Executive wants advice from the Council on how to publicise our achievements more widely.

Where to Now?

Let's put insurance and similar distractions behind us and get on with our real objectives. *I recommend to members that our priorities for 2003 be:*

- *Deciding whether or how to continue Public Liability Insurance for members*
- *Refining procedures for admission of new members, and improving member services to new members*
- *Better public relations e.g. publicising the achievements of volunteers in cave conservation projects*
- *Further improving public relations with cave managers*
- *How to integrate the Environmental Fund with the Conservation Commission & ASF's other roles*
- *Launching a new updateable Karst Index Database*
- *Ensuring clubs are aware that ASF has available professional legal advice on intellectual property and copyright attached to club maps and associated information*
- *Strengthening support for Helictite to improve the standing of speleology in Australia*
- *Greater support for Australian Caver, our primary source for what's happening on the cave scene.* ■

CAVING, RISK MANAGEMENT, DREAMS & VISIONS

Brian J O'Brien, FTSE

(Editorial note: The 24th Biennial Conference of ASF in Bunbury, WA, was opened by Dr Brian J O'Brien, PhD, BSc (Hons), FTSE. Dr O'Brien became founding President of the Australian Speleological Federation Inc. at our inaugural Conference in Adelaide in 1956, going on to a distinguished career: Professor of Space Science at Rice University, founding Director of Environmental Protection in Western Australia, Managing Director of Brian J. O'Brien & Assoc. Pty Ltd, author of over 400 scientific papers and about 1,000 reports, starting Greening Australia (WA), coordinator of the Rotary East Java Hearing Project, and life member of SUSS.

This is a summary. In the next Australian Caver Dr O'Brien will develop his themes more comprehensively. We will also include a fuller account of the life of this pioneering Australian speleologist).

In 1956 I had the honour in Adelaide to be elected the first President of the Australian Speleological Federation (ASF). Today I have the honour and delight of opening the 24th Biennial Conference of the ASF.

The theme title of this Conference is "Under Way", and how right it is. The program is of staggering and wondrous variety, the mixture that speleology should be, of science and exploration, of delight and joy.

The title of my opening address is deliberately provocative - *Caving; Risk Management; Dreams & Visions*. I take the liberty of that franchise of Presidency loaned to me in 1956 to suggest a few thoughts you might bear in mind later in this Conference.

I will also take the opportunity to correct some of the many errors in the literature about me being lost for 3 days in the East Deep Creek Cave at Yarrangobilly in 1953.

I went into the cave with my long-time caving mate, Fred Stewart, about 2pm Monday, 14th December, 1953 for a brief reconnaissance, just as we had done in the West Deep Creek Cave shortly beforehand. We wanted to choose one cave and plan full exploration for the next day. We quickly separated, as we usually did to double our speed of probing such unknown, 3-dimensional mazes of rock, where the roof had fallen in again and again over millennia. Fred came out again after about half an hour, having found only more rocks. But I found a fabulous, wondrous white and glittering cavern below the maze of rocks. Entranced, I explored it a little,

but then could not find the right slots in the maze to rejoin Fred. I did not even know if Fred had got out. So I had to try to find my own way out, listening for the underground creek and perhaps even a yell from Fred. For all but about 8 hours of the next three days, I was exploring in the dark, and I will describe my techniques and feelings. I emerged with one of the half dozen search parties at 5.30 p.m. on Thursday, 17th December.

The Yarrangobilly incident made headlines in the Eastern States for a few days, and may have inspired more general Australian interest in speleology. I went back to the East Deep Creek Cave twice more, and it has now been more extensively explored.



Presentation to Brian O'Brien by John Dunkley
(Photograph by Arthur Clarke - 03/01/2003)

One of the later sessions is on Risk Management. Many of my scientific discoveries during my half century of science occurred because I was politically incorrect. I challenged "accepted" views. In fact, almost any "discovery" must challenge accepted views. There is a vital lesson here for cave explorers dealing with Risk Management. Fred and I pioneered chasing "foul air" in caves, and with Dennis Bourke and Ben Nurse, pioneered in very, very primitive high-risk underwater exploration. Many of the most exciting discoveries, provided one survives, involve political incorrectness, serendipity, and both dreams and visions, as in Apollo work.

I revisit that old Biblical forecast about old men dreaming dreams, and young men seeing visions. I urge you all, no matter what age or sex, to be as young men and see Visions as the most vital need of all speleologists. So I have great delight in opening this 24th Biennial Conference by urging you to get "Under Way", and turn more Visions into Dreams. ■

CONFERENCE

Australian Speleological Abstracts

Led by Greg Middleton and assisted by Arthur Clarke, Ken Grimes and others, the ASF Bibliography Commission prepares abstracts every year of all significant materials published in Australia, forwarding them to be published internationally by the Swiss Speleological Society for the International Union of Speleology.

This has been a labour of love for many years, for both the Australian contributors and the Swiss publishing team. The 2000 volume contains 5,263 abstracts from all over the world, and is available either in hard copy (25SwFr + 21SwFr post) or as a searchable CD (25SwFr + 2SwFr postage). Also available is the long-awaited searchable CD covering 60,000 (!) abstracts for the 12 years from 1988-1999. This costs 125SwFr. Both are invaluable for finding what has been published about virtually any cave area or any speleological topic you may be interested in, in Australia or overseas. The endeavour needs your support. Go to www.isska.ch/bbs for full details, price lists, addresses and an order form. Highly recommended for all with a serious interest in caves and karst anywhere in the world.

Bushfires on karst in Canberra and south-east NSW, January 2003

(information from John Brush, Geoff Kell & Andy Spate)

The most disastrous fires for perhaps a century devastated ~70% of the ACT, >65% of Kosciusko National Park and large parts of the Wee Jasper area in January and February 2003, destroying over 500 houses in Canberra, where 3 CSS members' houses were burnt out or damaged. Andy Spate coordinated some of the fire fighting strategy at Yarrangobilly, Wee Jasper and elsewhere.

Yarrangobilly

Firefighters and water bombing helicopters saved the historic Yarrangobilly Caves House and visitor facilities on January 13, along with Cotterills Cottage. The karst was extensively burnt over, with varying effects: the fire was very hot above Jersey and Jillabanan Caves but little or no ash has been observed inside. What the medium to long-term effects might be cannot be estimated. Certainly changes to the internal cave environment will occur until the vegetation returns to 'normal'.

Speleologists with a long memory will recall that, while heavily timbered, much of the so-called Plateau area of Yarrangobilly 30 years ago had an open ground cover that had gradually thickened to the point of virtual impenetrability in places. Not any more. Local identities suggest that the Plateau had not burnt since 1909. Some backburning took place around the show caves precinct in 1965. Some limestone has been calcined but other places (e.g. Deep Creek) have not been so damaged. The valley of Wombat Creek running up from Coppermine Cave may have been the hottest part of the fire.

Andy Spate points out that while bushfires in this part of the country are rare, they have been happening for a very long time - certainly long before humans arrived to have an effect on the fire regime. Jersey Cave, for example, traps bushfire smoke perhaps more than any other cave in Australia, recording major fire regimes as long as 440,000 years ago.

Coolleman Plain

The Blue Waterhole track was used a containment line, and in general all the area to its east and north was burnt, including the gorge, which looks rather depressing. The caves and karst upstream from Blue Waterhole are unscathed, and Coolamine Homestead is intact.

Wee Jasper

The main potential environmental damage was at Church Cave, the surrounds of which were burnt over. The effect on the bat colony is unclear: bats have been observed emerging but will have difficulty finding food at a time when the young are just spreading their wings. Geoff Kell reports that the immediate surrounds of Careys Cave escaped the fire, along with the village and camping area, but some damage occurred from subsequent heavy rain early in February. Some valuables from the village were stored in the cave at the height of the crisis, attracting media interest.

Otherwise a backburn scorched small patches on Punchbowl hill area without known adverse impact. These were quickly extinguished by direct ground attack in heavy terrain - plus some helicopter water bombing.

Canberra

Two members of CSS lost their house entirely. Another had to move out of his damaged home that contained the CSS Library, maps & records. Fortunately these were stored in closed boxes, only the outsides of which appear to have been affected by smoke and soot. CSS extends its thanks to the many who asked how things were, including one query from as far away as the USA. The fire reached to within 80 metres of the ASF Library, demonstrating the importance of safeguarding our archival material. It is certain that Cotter Cave has been completely burnt over but it has not yet been visited.

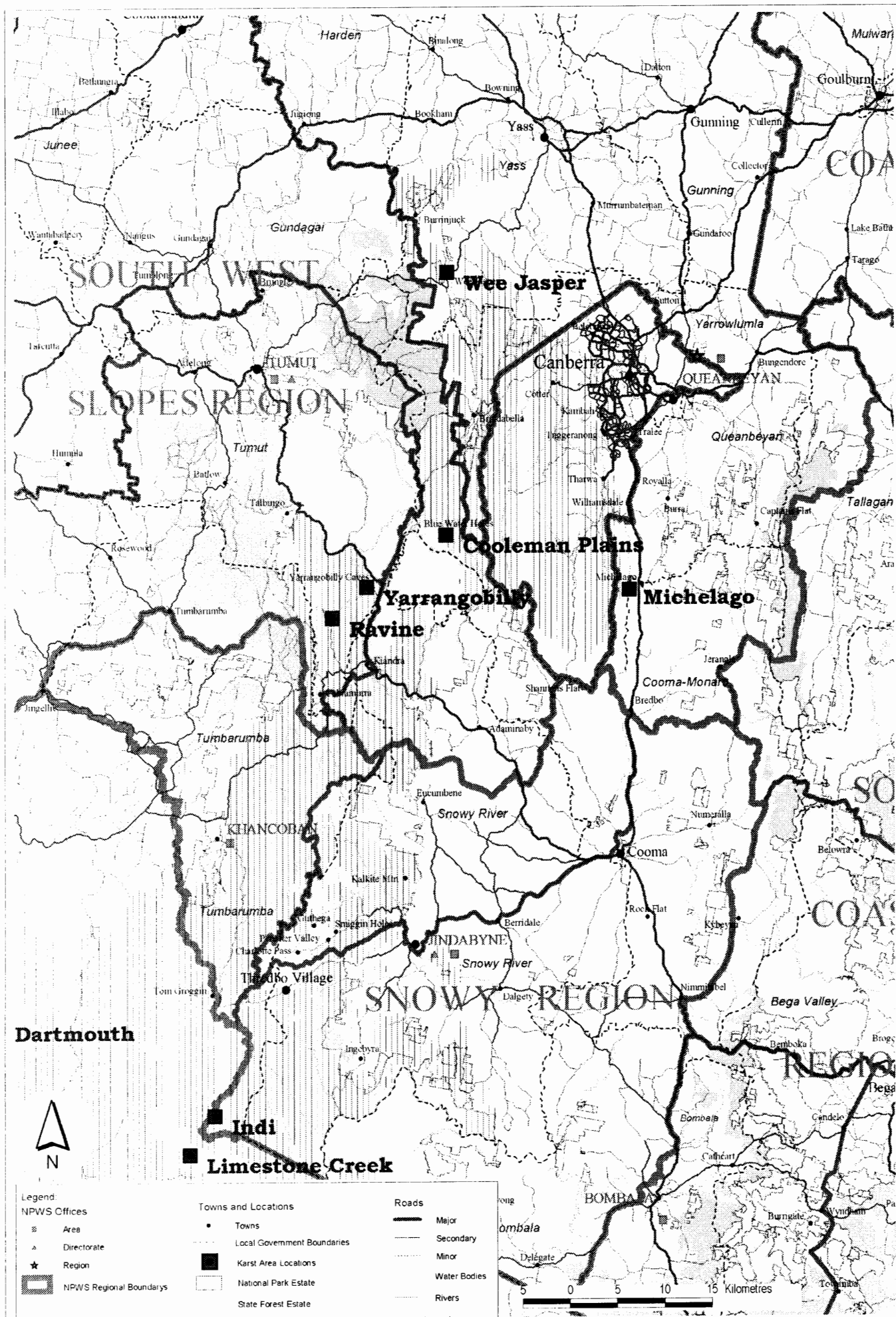
Other areas

The Quaternary limestone at Ravine south of Yarrangobilly has burnt. There may well be considerable calcining of the strange limestone formations here.

It is certain that Indi and Limestone Creek have been burnt over - but no assessment of impact can yet be made.

Map on page 9 courtesy of Jo Caldwell and Andy Spate.

Vertical hatching indicates the affected area.



Publications for Sale

Good news for bibliophiles and armchair cavers. We've found stocks of several publications previously thought to be out of print. And we've managed to make high-quality copies of several that really were out of print. The newly available titles include:

Australian Karst Index 1985. (ed. Peter Matthews) The famous bible of Australian caves, complete (also reprints of NSW section including references)

Caves of Southeastern NSW & Eastern Victoria and Caves around Canberra (combined)

Proceedings of Cavconact (11th ASF Conference, Canberra, 1976)

Proceedings of 23rd ASF Conference, Bathurst.

Helictite back issues - SPECIAL OFFER

following a marathon reprinting of out-of-print early issues of *Helictite*, we are able to offer ALL back issues from Vols. 1 - 37 at \$10 per volume (except Vols. 36 & 37 - \$20 per volume) plus postage of 50c per volume (minimum \$2). Complete sets from Vol. 1 to Vol. 35 (87 issues) or Vol. 37 (91 issues) are also available for \$350 and \$390 respectively, *incl. postage & a free index to Vols. 1-23. Only 2 complete sets are left.* More will be printed if there is sufficient demand. Originals will be supplied until stocks are exhausted. Thereafter reprints will be included - in most cases these include original letterpress plates. All proceeds go towards improvements in future *Helictites*. See note below about ordering.

For subscriptions to *Helictite* please go to

HOW TO ORDER

Orders for complete *Helictite* sets will be processed promptly while stocks last. Requests for less than complete sets, or complete sets if further printing is required, may be delayed and filled in June, October & December 2003. Purchasers will be advised.

Please address orders to **John Dunkley, 5 Coleman Street, PEARCE. ACT 2607** and list your requirements clearly. Cheques for the *Helictite* offer ONLY should be made payable to "Helictite".

(See also the advertisement for other cave books on page 13 of this issue. Note that orders for these items should be made payable to **Australian Speleological Federation Inc.**).



FRONT COVER.

Swimming in a cave at the bottom of a volcanic rift which ejected lava during the 1980s eruptions of Mt Krafla, north-east Iceland. Yes, the water is still hot! (photo: John Brush)

Centenary Medal for Bob Kershaw

Congratulations to Bob Kershaw, chairman of ASF's Risk Management/Cave Safety Commission who has been awarded one of the Australian Government's much delayed Centenary medals. The citation reads

"For service to the community through the New South Wales State Emergency Service".

A member of the Illawarra Speleological Society and Operations Manager for the Bullita Cave Project in the Northern Territory, Bob was appointed our Risk Management expert because of experience gained in the State Emergency Service.

25th Biennial ASF Conference, January 2005

The 25th Biennial Conference of ASF will be held at Dover, southern Tasmania, in the first week of January 2005. Within 30 minutes drive of some of the best caves of Tasmania, a superb waterfront venue has been booked at very reasonable rates, and some camping accommodation should be available. The most exciting cave trips are planned for Conference participants. More details later - mark the dates in your diary now!

New World Depth Record

The deepest known cave in the world is once again in France. During 2001, a French/Italian team dived a sump in Gouffre Mirola in Haute-Savoie, adding about 550m of new passage of which 250m lies downstream from the breakthrough point, ending in another sump. Gouffre Mirola is now 1,733m deep. Voronya (or Krubera) in Georgia is second deepest at 1,710, followed by Austria's Lamprechtshofen at 1,632m.

Do you like the revamped Australian Caver ?

We recently purchased new software that has greatly enhanced our ability to produce *Australian Caver* in an attractive format. It's the same software used by professionally produced publications such as *Choice* magazine, and provides many more presentation options. As you can imagine it has taken me quite a while to learn to use it - one reason for the delay in producing this issue.

Your constructive comments and suggestions on the legibility, layout, font and content of *Australian Caver* are always welcome. See my editorial contact details on page 3. ■

BACK COVER.

Gate in 1,585m long Vithgelmir, largest (though not longest) cave in Iceland, in the Hallmundarhraun lava flow. The tiny passage disappeared under accumulating ice in 1972, blocking the large cave beyond for 19 years until the ice was painstakingly chopped away by the Iceland Speleological Society. Located on private property, the cave is now an attraction for adventure tours. (photo: Greg Middleton)



ASF Awards - 2003

Lloyd Robinson, Jay Anderson & John Dunkley

Edie Smith Awards

Lex Bastian, OAM

The Australia Day Honours List for Australia Day, January 26, 2003, contained the following:

"Order of Australia, Medal (OAM) in the General Division:

Lennox Vernon Bastian, Beldon, WA "For service to speleology in Western Australia as an explorer and surveyor, and to the protection of caves"

We extend our heartiest congratulations to Lex, and our delight that the community recognises the contribution to Australia's social fabric of explorers and surveyors. Only three weeks earlier, ASF had conferred the Edie Smith Award on Lex for similar achievements over a lifetime of caving.

Lex Bastian began his caving career in 1949, at the age of 12, when he took a torch and rode his bicycle on a 70-mile round trip to Yanchep, exploring the holes he found by the side of the road. Through the 1950s Lex continued to visit Yanchep, exploring every hole he could find, and very early on developed a disciplined habit of keeping field notes, sketching the caves, and locating them in relation to obvious landmarks and to each other. During this time he studied geology.

WA speleology's early beginnings were initiated and role modelled by Lex, setting the scene for a very large and active speleological group in Western Australia. Lex has remained a VERY active member of the group - attending regular monthly meetings, training days, participating in presentations to members and organising monthly caving trips to Yanchep.

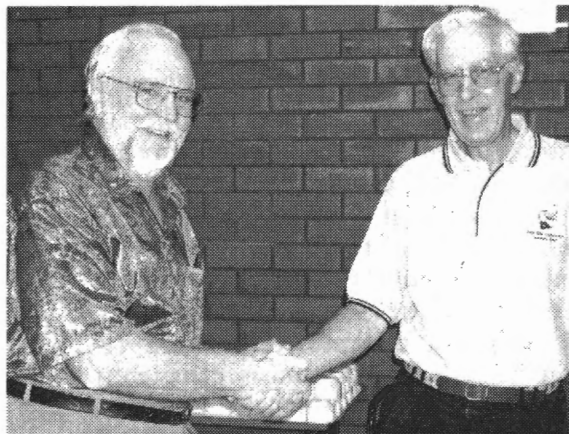
The voluntary contribution made to Speleology by Lex has been huge and outstanding, evidenced both by the number of research papers written by Lex on the hydrology, geomorphology and speleogenesis of the karst areas in south west Western Australia and the number of committees of which Lex remains an active member.

Summary of achievements

- Lex founded the WA Speleological Group and father of organised speleology in WA. The WA Speleological Group was started as a sub-group of the Naturalists, the first meeting being held in Lex's home on 17 July 1958. Lex was the first president of WASG and is an Honorary Life Member.
- Discoverer and re-discoverer, explorer, surveyor and recorder of numerous significant caves in the south-west of WA.

Australian Caver No. 158

- Lifelong advocate of the importance of recording cave finds and scientific discoveries for posterity.
- Researcher of, and universally recognised expert on, the caves of Yanchep and surrounding areas, with over 450 new records added to the Karst Index for the region over the period 1988-2001. Developed a comprehensive and cumulative surface map of the area and the caves and karst features.
- Champion of the karst heritage of Yanchep and surrounding areas in the face of threats from urban expansion. Lex is universally recognised as the "Yanchep expert", and in addition to the national park, is frequently approached for advice by landowners, emergency services, local councils and Government Departments.
- Ongoing roles as trip organiser; trainer; motivator of cavers old and new; adviser to national parks, local authorities, Government Departments and landowners; popular speaker on geology; and conservation activist.
- Author of numerous articles on WA karst geology and cave history (see Select Bibliography).



John Dunkley congratulating Lex Bastian on his award. (Photograph by Arthur Clarke - 06/01/2003)

Lex is an individual with dreams and with insight, his level of fitness and activity, his knowledge as a geologist and speleologist all contribute to a purpose-driven individual.

Select Bibliography - Lex Bastian

1958: Caveman's glory: exploring a new cave at Augusta, Western Australia. *Walkabout*, July 1958, pp. 10-14

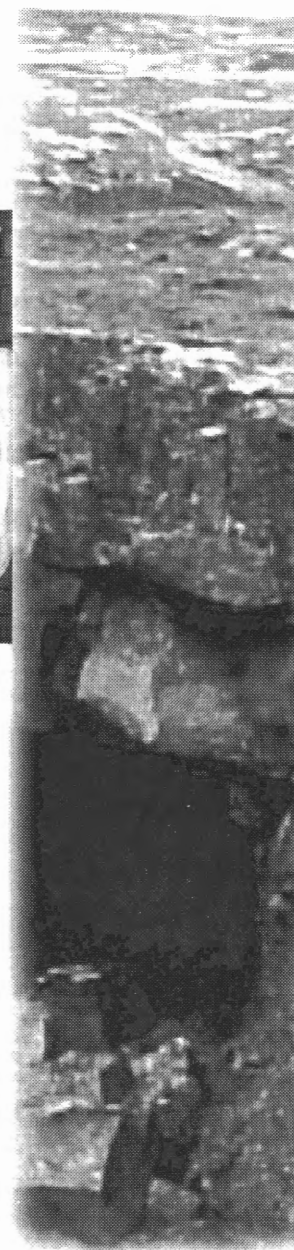
1962: Notes on the origins of caves, south-west WA. *Western Caver* 7 (5): 5-8 & 13, reprinted from *WASG Journal* 1962: 12-17.

1964: Morphology and development of caves in the southwest of Western Australia. *Helictite* 2: 105-119.

1985: In the beginning: the prehistory and origins of WASG, *Western Caver* 25: 6-9.

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AWARDS



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1991: The hydrogeology and speleogenesis of Yanchep. *Proc. 18th Biennial Conference*, Australian Speleological Federation Inc.: 19-24

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1993: The discovery and exploration of Mambibbny and Bebo Moro Caves, Yanchep, WA. *Western Caver* 33: 57-58.

1994: The discovery and exploration of YN7, Yanchep, Western Australia, by John Septimus Roe. *Western Caver* 34: 61-63.

1995: What did George Grey discover? *Western Caver* 35: 41-43.

1996: Residual soil mineralogy and dune subdivision, Swan Coastal Plain, Western Australia. *Austr.J. Earth Sci.* 43: 31-44.

1996: Speleogenetic controls at Yanchep. *Western Caver* 36: 13-19

1996: Tree root speleothems. *Western Caver* 36: 76

1996: Helictite growth controls. *Western Caver* 36: 76.

1996: Inactive sections in caves. *Western Caver* 36: 77.

1999: The water table slot: primary focus in paraphreatic caves. *Western Caver* 39: 20-21.

1999: The first cave exploration in Western Australia. *Western Caver* 39: 25-30.

2000: Streams in Yanchep caves. *Western Caver* 40: 39-40

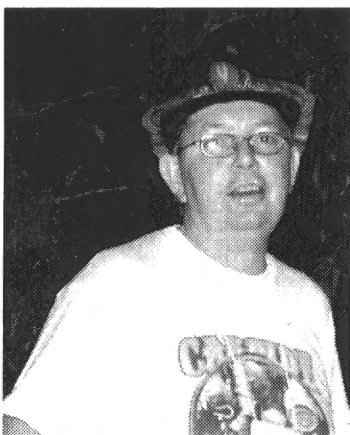
2001: The Gracetown cliff collapse. *Western Caver* 41: 32.

2001: The bones in Yonderup Cave. *Western Caver* 41: 51-

Rauleigh Webb

Rauleigh's contribution to caving and conservation in WA cannot be calculated. He has been an "active" caver for a long time (over 25 years now), being involved in other aspects such as assisting in the organisation of WASG and of ASF as a Vice-President. Rauleigh started caving in 1976 and became a Trip Leader in 1978. He has, at all times, had the interest of the caves at heart. This is often in complete, selfless disregard for what other people would think of his actions or opinion.

Rauleigh served on many committees including the



Rauleigh Webb

(Photograph by Arthur Clarke - 06/01/2003)

ASF Executive, the WASG committee and CAC (Caves Access Committee), and was active in advocating the conservation of caves and karst at all times. He joined ACKMA (Australasian Cave & Karst Management Association) years ago because he saw the need to get involved in management of caves and to educate landowners and cave managers. He was a WASG representative on

various committees involved in the management of caves, such as the CMAC (Caves Management Advisory Committee) in Margaret River. Rauleigh developed the Minimal Impact Caving Code when he saw a need for cavers to be aware of the impact that caving causes; it is a code that has received world-wide recognition and has been accepted by cave managers around Australia. He was the ASF Conservation Co-Convenor for WA for over 13 years. This involved coordination of a number of conservation projects and writing reports to the government and annual reports to the ASF.

He has been involved in numerous projects and has worked with numerous other bodies (other caving clubs, scouts etc) to help their members visit caves and learn how to cave in a careful and safe way. Rauleigh also helped, along with several other experienced Perth cavers, to develop a training system for cave leaders.

Rauleigh has been called a "Cave Surveyor Extraordinaire". He has mapped many caves in Australia and overseas, thus contributing to the combined knowledge of caves in a variety of karst areas. He has been the WA coordinator for the Australian Karst Index, an ASF position involving liaison with the ASF and WA caving clubs with regard to cave information - a massive job in itself.

More recently, members would be aware of the Exmouth (Cape Range) court case (mining application by Learmonth Limestone) that the ASF and WA caving clubs have been involved in. Rauleigh was the primary organiser behind this important project. He spent countless hours of his time researching, meeting with lawyers and preparing the case for court, then spent many days of his time away from work and in court to support the case. As this case has not yet been completed, there is still more ongoing work being done that Rauleigh is involved in.

Rauleigh Webb has given outstanding service to the ASF over a long period of time, making specific contributions to a variety of roles within speleology - exploration, conservation and documentation of caves, leadership and administration. He continues to promote minimal impact caving practices through the development and refinement of policies and procedures. Rauleigh has made great personal sacrifices for ASF and its member club in WA over a long period of time.

Fellow of the Australian Speleological Federation Inc.

Peter Berrill.

On a motion from the floor of the ASF Council Meeting in January, Peter Berrill was unanimously elected Fellow of ASF. Our equivalent of Honorary Life Member, the award of Fellow is given specifically for outstanding service to ASF itself, and accordingly is determined by the Council itself. In the 30 years since it was instituted, this is only the seventh time it has been awarded, a measure of the high esteem in which we hold recipients.

Peter was a member of the ASF Executive for 13 years, probably the longest continuous service ever, and President for 5 very difficult years until his resignation in 2002. Under his leadership in those 5 years, as detailed in the ASF Annual Report for 2002, ASF obtained registration as an Environmental Organisation, acquired the journal

"Helictite" and other assets of the former Speleological Research Council Ltd., reformed the Karst Index Project, and undertook the highly acclaimed Natural Heritage Trust project in the Macquarie region of NSW.

Elsewhere, Peter's name has been most closely associated with the campaign to halt mining and to establish a national park at Mt Etna in Central Queensland. This culminated in 1999 in the ground-breaking reconciliation which saw former adversaries surrender some leases and sponsor, jointly with Central Queensland Speleological Society and others, the incorporation of Cammoo Caves into Mt Etna National Park

Certificates of Merit

ASF Certificates of Merit recognise specific contributions to speleology, through exploration, scientific study, conservation or documentation, including roles of leadership, administration, publication and development of new techniques and equipment. Recipients for 2003 are:

Julie and Peter Bauer, NSW: for research, documentation and publication on Bungonia Caves, particularly the book "*Under Bungonia*", and continuing active involvement in management advisory roles.

Fr Ken Boland, Vic.: for innovative exploration (using ultralight aircraft), mapping and documentation of Nullarbor caves, especially Old Homestead and Thampanna Caves, and the discovery of major palaeontological and other sites of scientific significance.

Darren Brooks, WA: for systematic survey and recording of karst features of Cape Range, WA, including assistance to WA Museum expeditions, thereby strengthening the case against mining in the area and for proper heritage protection, and for many years of editing *Western Caver*.

Daryl Carr, Vic: for exploration, discovery, mapping and documentation of numerous caves in the Buchan-Murrindal area, Victoria.

Peter Horne, SA: for documentation and publication of caves in south-east South Australia, and for long-term administrative support for Cave Exploration Group SA.

Athol Jackson, SA: for many years of service to CEGSA including editing CEGSA News for many years, President for over 5 years, and for assistance in organising several ASF Conferences in South Australia.

Tom Porritt, Qld: an active caver in several states, currently in north Queensland, described by a referee as "an Australian caver of note ... a modest man whose achievements are not well publicised (and who) epitomises all that is best in Australian speleology".

Sue White, Vic: for exploration, research and publication on soft rock caves in general and western Victoria in particular, for editing of *Helictite*, and for leadership in introducing young people to caving. ■

CAVE BOOKS NOW AVAILABLE

Wee Jasper Caves (James, Martin & Welch): We have located a limited stock of this essential guide which includes comprehensive maps and cave descriptions, 45pp. **\$15**

The Caves of Thailand (John Dunkley). Following a recent bulk order from the USA, there are only 15 or so copies left. 2,000 cave descriptions & locations, 53 photos, 124pp. Includes free 12pp update. **\$15**

The Management of Soluble Rock Landscapes: An Australian Perspective (Kevin Kiernan). 61pp. The only text on cave and karst management in Australia, this book is part of the required reading for the Karst Management course at Charles Sturt University. **\$15**

Australian Karst Index 1985. (ed. Peter Matthews) Just a few reprints are available of parts of this mammoth volume listing details of all known caves in Australia over 6,600). Price **\$44 (non-members \$49) + post** (from ACT varies from \$5-50 to \$9).

Also available - reprints of the NSW listing, 92pp inc. references, over 2,000 caves **\$15**

Karst of the Central West Catchment, NSW: Resources, Impacts and Management Strategies (Dunkley & Dykes, 2000) All original copies were distributed to landowners and managers, but we have some strictly limited reprints. 103pp, 24 photos. Available with photos either in black & white (inc. postage) **\$25** or in colour (only 2 left) (inc. postage) **\$39**

Proceedings of 23rd ASF Conference, Bathurst (ed. Cathy Brown, 2002) 200 pages, over 80 photos and maps, free CD if you ask nicely **\$25**

A Bibliography of Jenolan Caves Pt 1: Speleological Literature (postage \$1) **\$5**

A Bibliography of Jenolan Caves Pt 2: non-Speleological Literature (postage \$1) **\$5**

POSTAGE: unless indicated otherwise, add \$3 for first item and \$1 for each additional item

HOW TO ORDER

In 2003 only, please address orders to -

Dick Heffernan, [redacted] listing your requirements clearly. Please make cheques payable to **Australian Speleological Federation Inc.**

CAVE/CANYON/ROPE PACKS for sale

Heavy duty PVC, reinforced base, end strap, drain holes, carry handle, adjustable straps, haul loops, simple closure. 25/30/35 litre sizes; \$55/60/65, + \$8 p/h. Contact: [redacted]

Iceland - Caves of Fire and Ice

Greg Middleton

About the furthest you can go from Australia on the planet and still find caves is the tiny volcanic speck in the far North Atlantic called Iceland. Also considering that Australia has few volcanic cave areas and correspondingly few devotees of volcanic caves it's quite surprising that Australians outnumbered even the locals at the Tenth

International Symposium on Vulcanospeleology held in September 2002 in Reykjavik. Perhaps it was the attraction of the exotic or the thought that the opportunity might not arise again that induced John Brush, Marjorie Coggan, John and Jeanette Dunkley, Ken and Janeen Grimes, Julia James, Ruth Lawrence, David Wools-Cobb and the author to sign up for the symposium and its associated field trips. Other participants were from Azores (Portugal) (6), UK (3), Japan (3), USA (2) and 1 each from Switzerland, Italy, Saudi Arabia and Netherlands.

The island is a bit less than twice the size of Tasmania (with half its population) - and no karst. To compensate there is an abundance of volcanic pseudokarst, particularly in its more recent (Holocene) lava flows. There is a small but dedicated local group calling itself Hellarannsóknafélag Íslands (Icelandic Speleological Society), headed by Sigurður ('Siggi') Jónsson. They did a great job organising the meeting and field trips.

Iceland is not for the budget traveller. As the *Lonely Planet* guide puts it, "Even the Sultan of Brunei would think twice before hiring a car in Iceland". Beer is the equivalent of about A\$12 a bottle, if you can find one of the five cunningly concealed State-run liquor outlets in the capital (open only 2-6pm Mon-Thu and 11:30-6 Fri - not at all on weekends!). The 25% GST doesn't help but apparently extra taxes are applied to alcohol to try to limit consumption - it doesn't seem to. The one thing that is cheap is hot water. It's used to generate electricity and it's piped to the larger towns where people heat their houses (and even their driveways) with it. The distinctive smell of H₂S associated with this geothermal water takes a bit of getting used to.

Papers delivered at the symposium ranged from descriptions of the 'Great Crack' on the side of Kilauea volcano to the lava caves of Samoa, Cheju Island (South Korea), Saudi Arabia, Sicily and the Azores, with contributions on Icelandic caves and our own Mount Eccles, Victoria. There was quite a lot of familiar-sounding discussion on the use of databases to store cave inventories - obviously each country likes to reinvent its own. The proceedings should be published in due course. We were also treated to screenings of two of Gérald Favre's professional videos of caves in Hawaii and Iceland - the latter including an epic attempt to do a through-trip of a geothermal glacier cave with over 5% carbon dioxide. The closing banquet was a grand affair held in a restaurant on the tiny island of Vífey in Reykjavik harbour.

The paper sessions were interspersed with local excursions to interesting places:

1) the Reykjanes Peninsula, including a visit to Leifarendi Cave which has some fine lava stalactites and a range of lava flow features and to a geothermal power station where we gained an insight into the processes involved in converting hot water to electricity and an opportunity to bathe in the milky blue organic soup which is the effluent;

2) the south-west corner, featuring Lake Þingvallavatn, another geothermal powerstation and the original site of Iceland's thousand-year-old parliament, the classic Tintron Hornito, geysers and hot pools at Geysir, the 'golden waterfall' Gullfoss and Arnahellir, a small but extremely well decorated lava tube which had just been declared a national monument. The lava stalagmite chamber surely has few rivals anywhere.

3) the Hallmundarhraun lava field, featuring Surtshellir, Stefánshellir and Vífgelmir. And yes, 'hellir' (pronounced like 'head-leer') means cave. The ice formations in these caves were interesting, though obviously suffering the effects of 'summer'. Stefánshellir has been surveyed at over 1,500 m but Chris Wood and associates have detected a major continuation of this tube beyond the lava tube at its eastern end, using magnetometer and ground penetrating radar. Vífgelmir, also about 1,500 m long, has been claimed to be the lava tube with the greatest volume; it certainly has many lava stalactites and the remains of numerous stalagmites. It operates as a tourist cave, possibly with the highest entry fee of any.

The highlight for those who attended the post-conference trans-island minibus tour, was a visit to Lofthellir and its world-class ice galleries. It may not be on the scale of Austria's Eisriesenwelt, but its ice decorations, both massive and intricate, certainly impressed our group. The cave was discovered by Siggi who sighted its large entrance from a plane - hence the name which means 'air cave'. The trip crossed the vast black sand desert-like *sandurs* of central Iceland, returning by a different track, between glaciers sliding off shield volcanoes and 'tuyas', table mountains formed under ice caps. There were also more hot springs and fumaroles, and a most impressive waterfall into a basalt-column lined gorge, Aldeyjarfoss. Around the lake Myvatn we visited a field of rootless vents, two hot water fissure caves (one of which is just cool enough to swim in), the 1974 Krafla lava flow with its power station, crater lake, hot springs, steam vents and hornitos, Dimmuborgir, an impressive region of lava towers, stacks, arches, windows and tunnels, and climbed a mountain of the black volcanic glass, obsidian.

In contrast to the stark bleakness of Iceland, the next international vulcanospeleological symposium will be held in the much milder Azores in September 2004. The lava

caves are renowned for their number and variety, and if the enthusiasm of the organisers is anything to go by, it'll be well worth the trip. ■

LOFTHELLIR ICE CAVE

Entrance to Lofthellir, north-east Iceland, so called because it was discovered from the air.

(Photograph by Greg Middleton)



David Wools-Cobb among ice Stalagmites in Lofthellir

(Photograph by John Brush and Marjorie Coggan)

Photographers among ice decorations Lofthellir

(Photograph by Greg Middleton)



VITHGELMIR CAVE

Collapse at entrance to
Vithgelmir

*(Photograph by John and
Jeanette Dunkley)*

*N.B. Portions of this photograph
used as background for title
bars.*



ARNAHELLIR CAVE



Julia James exiting Arnahellir,
south Iceland.

(Photograph by Greg Middleton)

Lava stalactites and stalag-
mites, Arnahellir.

(Photograph by Greg Middleton)





John Brush in Characteristic lava tube.

(Photograph by Greg Middleton)

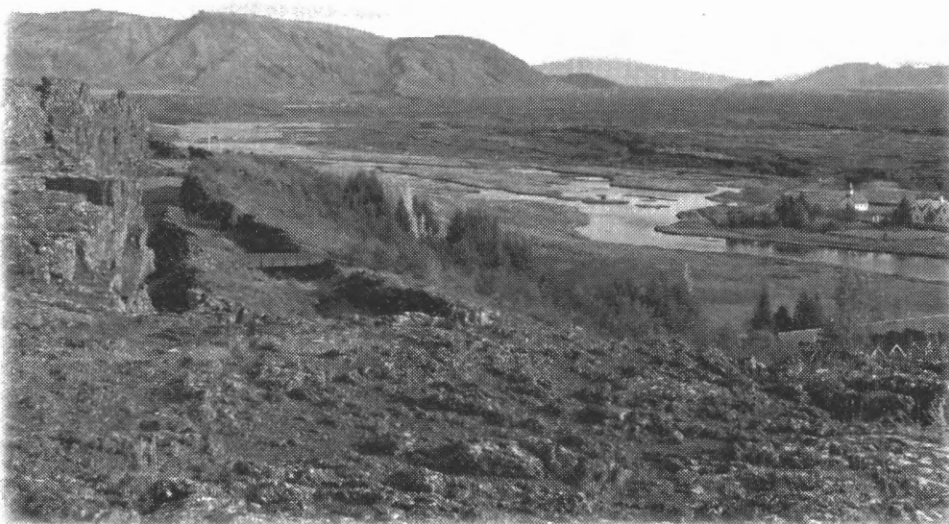
Characteristic lava tube.

(Photograph by Greg Middleton)



The North Atlantic Rift at Thingvellir. The land to the left is on the North American plate, the graben to the right is on the European Plate.

(Photograph by John and Jeanette Dunkley)



Australian Caver No. 158

Caving in Thale Ban

Liz Price

Wot, wot, wot was the dominant sound each evening and it lasted until dawn when it was replaced by *wa wa*. I was in Thale Ban National Park in Thailand and these were the sounds made by the local inhabitants - hundreds of frogs living in the lake. Unable to find the real name of the frogs, we soon called them the *wot wot* frogs, and they provided much amusement each night. I imagined long ago someone had asked them a question and they misheard and said "what", and this remained the extent of their vocabulary. Each morning at dawn, the gibbons could be heard calling out to each other on the distant hill range. It was a very pleasant sound, the *wa wa* would reach a crescendo then die away until another gibbon took up the call.

carpeted with a remarkable semi-evergreen rainforest, featuring flora and fauna more indigenous to Malaysia and Sumatra. However, few people come to Thale Ban for caving - most people are here for birding. Over 200 species of birds inhabit the park, including the peregrine falcon, hawks, and hornbills. Interesting animals such as the mousedeer, white-handed gibbons, and dusky leaf monkeys are sighted regularly.

The park's headquarters is located in a valley floor between limestone and granite mountains. From this beautiful spot, there are several trails leading to the park's major scenic places. There are also two impressive waterfalls, and on the southern edge is a mangrove forest. And of course, there are caves.



The limestone mountains of Thale Ban National Park (*Photograph by Liz Price*).

Thale Ban in Satun province is the southernmost park in Thailand - its headquarters a mere couple of kilometres from Malaysia's Wang Kelian border post in Perlis. In fact, the Perlis State Park complements Thailand's Thale Ban National Park and forms a transboundary park. The main geological feature of the Perlis Park is the Nakawan range of limestone hills which run northwards from Kuala Perlis across the border into Thailand. These hills in Perlis are riddled with caves, so it is logical to assume that the caves would continue in Thailand. I went to investigate with a caving friend from Perlis, and a caver from England who had flown out for a holiday cum caving trip.

We checked in at the park headquarters. As we walked alongside the 32ha lake to our bungalow, the *wot wot* frogs greeted us in a noisy chorus. Our rooms were situated right by the lake, the limestone mountains forming a great scenic backdrop. Thale Ban is a lush tropical park,

The best known is Tham Ton Din, a 400m long river cave, just across the road from Park HQ. I had explored this on a previous visit, and although it is very pleasant, we didn't go in this time, as we were looking for new caves. Many people in southern Thailand speak Bahasa Malaysia as they are from Malay stock, so it is quite easy to communicate. However, in the park it was different, as most of the staff only spoke Thai. We managed to meet up with one ranger who could speak Bahasa Malaysia and explained that we needed transport to look for caves.

That same afternoon we set off in a truck for a Ranger Station in another part of the park, joined by a couple of Field Force guys who came along to escort us, one with a HK automatic rifle, the other with a gun in his shoulder bag. As we climbed up a slippery hill slope, I was a bit perturbed to see the guy with the rifle, who was immediately behind me, using the rifle as a walking stick. I just hoped that the safety catch was firmly in place.

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We found one small cave which was so short that it hardly qualified as a true cave. But we had an eventful time exploring it. There was a hornets' nest in the narrow entrance, which we gingerly passed to enter the cave. As we dropped down into the stream, we saw a toad with one bare femur bone - all the flesh had disappeared. Ugh. After about eight metres, the cave ended in a sump, a place where the water meets the roof. On the way out, I accidentally disturbed the hornets and got stung several times. Outside the cave, Ronn slipped and bruised his leg very badly. We named the cave "Broken Leg Cave" after the toad and Ronn's legs.



Looking for caves among the tropical limestone towers (Photograph by Liz Price)

That night we went into Satun for dinner. As we were sitting having a beer, the landlady who is a nurse came out with some ointment for Ronn's leg. We thought it was some special remedy, sticky and minty, but it turned out to be aloe vera toothpaste!

The next day the truck we had arranged didn't appear. We sat around, waited and waited, and whilst wondering what to do, we were suddenly offered a lift on a truck packed with boy scouts. Not wanting to look a gift horse in the mouth, we eagerly climbed aboard, and were soon speeding down the road, hanging on for dear life. After visiting a school, we were dropped off along the roadside, and found an old man who escorted us through the rubber plantation to a cave.

This cave was also short, but required swimming. Emerging dripping wet, we walked back to the road and flagged down a passing pickup truck. We were able to hire the vehicle to take us around to other sites. Although we found no more caves that day, we did visit a couple of waterfalls and a hot spring which we smelt long before we saw it as the stench of sulphur permeated the air from afar.



There were obstacles to reaching the caves (Photograph by Liz Price)

The next day we went up to Wang Prah meadows to look for caves. I found the name intriguing as it conjured up an area of meadows filled with wild flowers. Sadly, when we visited, there were no flowers, it was just grassland. It is actually a large area of redundant rice fields which is slowly reforesting. It is supposedly a good place for bird watching.

During our stay, we found a few caves, but none as big or spectacular as those in Perlis. It is strange that although it is the same hill range, the caves seem to stop at the border. Obviously the man-made border didn't exist when the caves were formed. The caves are some of the oldest in Malaysia, made of 400-million-year-old limestone, so I wonder why the caves didn't really develop on the Thai side. It is a geological mystery of Mother Nature.

(slightly edited from original article in the Star, Kuala Lumpur, 28 December 2002) ■

Late News

NZ cave dive rescue. - Nelson divers should have been prepared say police

A four-hour rescue of three Nelson divers on Saturday night could have been avoided if they had been properly prepared, Police said.

The trio, who had failed to return from an expedition into the source of the Riwaka River, were found about 10.15pm in a chamber about 100m from the river's resurgence entrance.

They had been in the cave system for just over six hours. they were cold but not injured.

Senior Sergeant Grant Andrews of Motueka police said they had wetsuits and dry jackets, which prevented them becoming hypothermic, but did not have enough torches and did not lay a guide rope.

New Zealand Herald, Story ID=3452653.

Received from Mexican Cave Rescue.

On Tuesday, March 4, a tourist had one foot caught in a rock when the river started to rise. The guide of this very visited cave went back to help him, but he fell down. Both died: the tourist drowned, and the guide with head traumatism. This happened in the very well known PETAR (Tourist State Park of High Rivera), a park for tourist cavers. ■

Speleotechnics

Lamps and Equipment

Available again in Australia.

Contact Iain Lynch (BMSC)

Phone: [REDACTED]

[REDACTED]

SYNGENETIC KARST

Ken G. Grimes

UnderWay, the 24th ASF conference, was held in the heart of Australia's "softrock" or "syngenetic" karst country – the southwest of Western Australia. This is where many of the ideas about syngenetic karst first developed (e.g. Bastian, 1964).

But what is syngenetic karst, or a syngenetic cave? Most Australian cavers are used to the "hardrock" limestones of eastern Australia, and that type of limestone is typical of most cave areas around the world. Such limestones are hard, dense, rocks, with little primary porosity and they are much older than the caves we find within them.

By contrast, along the coasts of western and southern Australia we find younger "softrock" limestones that are formed of weakly cemented calcareous sand grains – we call them calcarenites. Many of these formed as sand dunes beside the coast; others, such as the Nullarbor and Gambier limestones, formed on the sandy bottoms of shallow seas and were then exposed by uplift. What they have in common, and what makes them different from the hardrock limestones elsewhere, is that they are only partly cemented (i.e. soft) and still have a strong primary inter-granular porosity. More importantly, the dune limestones are quite young, geologically. So much so, that cave development has been happening at the same time as the loose sand was being cemented into a rock. This simultaneous evolution of both rock and the caves is what we call "syngenetic". The term was coined by Jennings (1968), but he was formalising a set of ideas that had already been generated by the cavers in Western Australia and South Australia – in particular Lex Bastian and Allan Hill.

Features of Syngenetic Karst

Syngenetic karst and caves have some distinctive features which are shown on the accompanying diagrams and photos - taken from a paper and poster presented at the 24th ASF conference.

The typical features of syngenetic karst are:

- shallow horizontal cave systems;
- a general lack of directed conduits (low irregular chambers occur instead);
- vertical solution pipes which locally form Dense fields;
- extensive breakdown and subsidence to form collapse-dominated cave systems;
- paleosol horizons, which can be indurated to form a cap-rock;
- a variety of subsidence features and locally large collapse dolines and cenotes; and ...
- limited surface sculpturing (karren).

In Australia, syngenetic karst and softrock karst is restricted to a coastal belt running from Barrow Island down the western coast of Western Australia, and then along the southern coasts of Australia into Bass Strait (see map). There is an isolated occurrence on Lord Howe Island, off the New South Wales coast.

The Development of Syngenetic Karst

In calcareous dunes, percolating rain water gradually converts the unconsolidated sand to limestone by dissolution

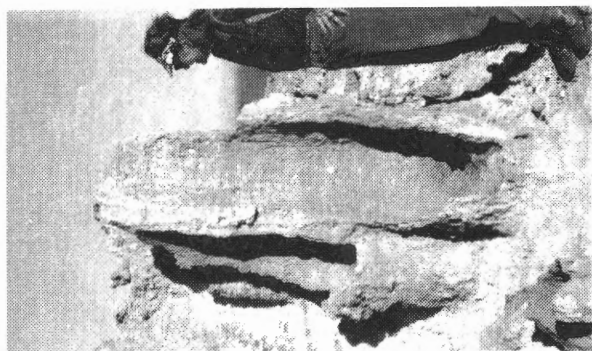
and redeposition of calcium carbonate. Initial solution at the surface forms a terra rossa or similar soil depleted

in carbonate but enriched in the insoluble grains (e.g. quartz). At the base of the soil precipitation of carbonate forms a cemented calcrete layer or hard-pan, also known as cap-rock. Below this the downward percolating water becomes focussed to dissolve characteristic vertical "solution pipes, and simultaneously cements the surrounding sand. Early cementation tends to be localized about roots to form distinctive rhizomorphs or rhizocretions. Cementation can progressively block the primary inter-granular porosity, but simultaneously, dissolution can generate localized secondary porosity at scales ranging from small vughs to large caves.

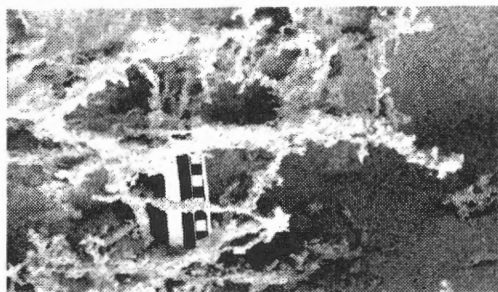
Cave development occurs mainly at the water table, which is commonly controlled by the level of a nearby swampy plain that also provides acidic water. In coastal areas, water levels fluctuate with changing sea levels and further complexity results from a freshwater lens floating above sea water which results in two mixing zones, above and below the thin lens. At Yanchep, in Western Australia, we meet a special case where aggressive water is moving upward into the dune limestone from an underlying quartz sand aquifer. Lex Bastian will be telling us about that at the conference.

In the early stages of dissolution (Early Syngeneses, see diagram) the loose sand subsides at once into any incipient cavities, possibly forming soft-sediment deformation structures. Subsidence dolines may form without caves. An exception is that beneath the cap-rock, which appears to form quite early, some shallow caves may form. Once the bulk of the rock is sufficiently hardened to support a roof (Late Syngeneses), caves can develop. The presence of buried cap-rocks (and associated paleosols) may also assist in cave development. The uniform inter-granular porosity, slow moving groundwater, and lack of joint control means that directed linear conduits seldom form. Instead, horizontal cave systems of low, wide, irregular, interconnected chambers and passages form either in the zone of maximum solution at the water table, or by subsidence of loose material from beneath stable cap-rock layers. Flat cave ceilings are common: either marking the limit of solution at the top of the water table, or where collapse has reached the base of an indurated (cap-rock) zone. Where a shallow impermeable basement occurs, as in parts of southwest Western Australia, its topography may concentrate water flow along buried valleys to form linear stream caves.

Collapse is ubiquitous in these soft rocks and large collapse domes commonly obscure much of the original solutional caves. Many caves are nothing more than a series of such open domes and "inclined fissures" around the edges of rubble-filled chambers.



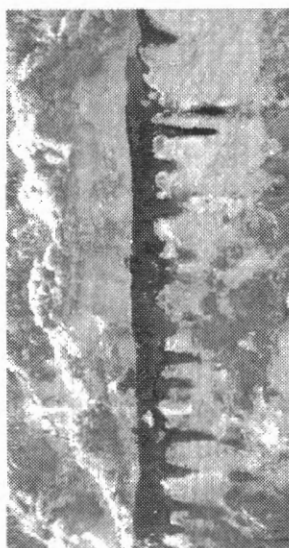
Solution Pipes



Rhyzomorphs



Calcrete hard-pan (cap-rock)



Paleosol with filled pipes

Calcareous Dunes

Swamp

water-table



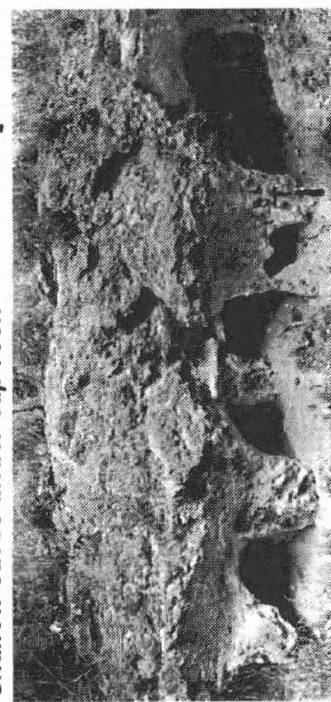
Early Syngensis

The sediment is too soft to support a roof.
Soils with hard-pans form near the surface of the dunes.
Shallow caves may form under the cap-rock.
Solution pipes begin to develop.
Solution at depth causes subsidence of the loose sand and forms deformed bedding structures but no caves.



Subsidence structures & breccias

Shallow caves under cap-rock



References

- Bastian, L., 1964: Morphology and development of caves in the Southwest of Western Australia. *Helictite*, 2: 105-119.
- Hill, A.L., 1984: The origin of the Kelly Hill Caves, Kangaroo Island, S.A.. *Helictite*, 22: 6-10. [written 1957, published posthumously with a note by J.N. Jennings]

- Jennings, J.N. 1968: Syngenetic Karst in Australia. in P.W. Williams and J.N. Jennings [eds] *Contributions to the Study of Karst*, Research School of Pacific Studies, Australian National University. Department of Geography Publication G/5.

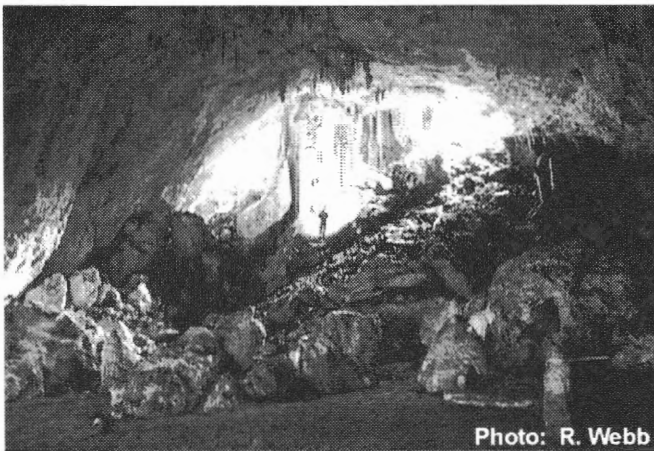
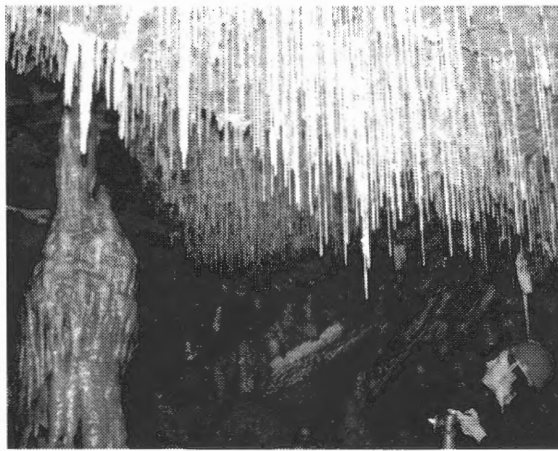
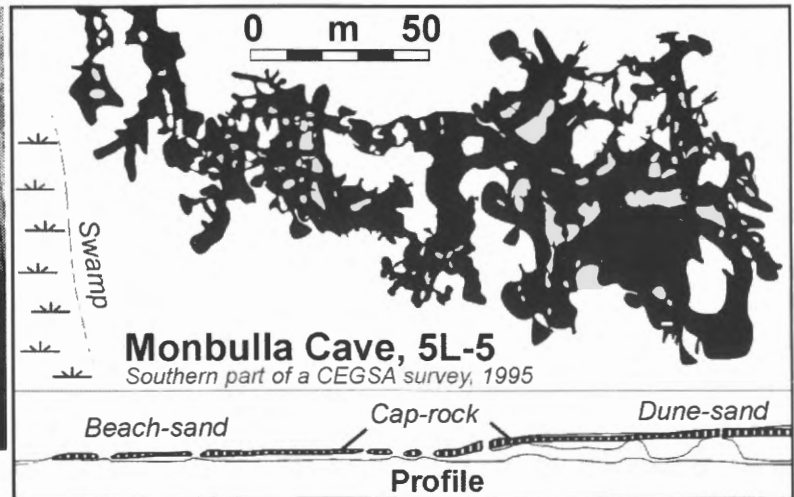


Photo: R. Webb

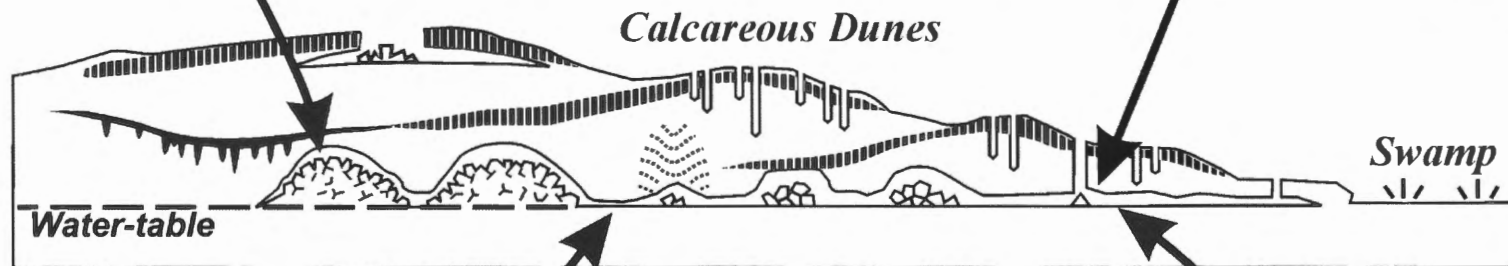
Collapse Dome



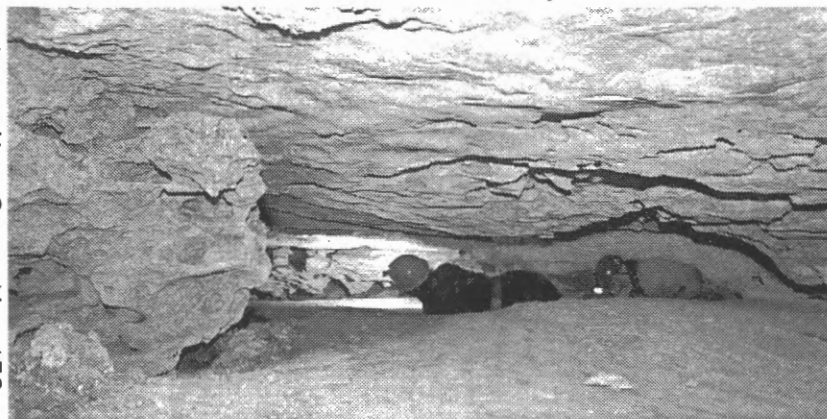
Seepage through the porous sand creates numerous straws



Low-roofed maze cave at swamp level



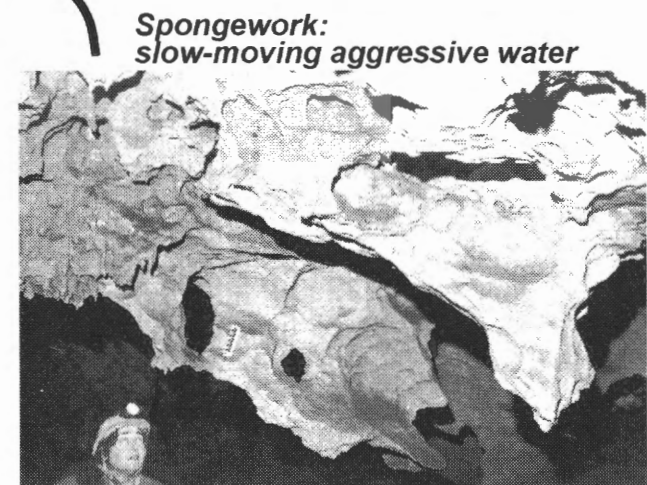
Low-roofed cave at swamp level



Late Syngeneses

The rock is now sufficiently hardened to support a cave roof.

Horizontal maze caves form. Directed flow forms stream caves in some places. Breakdown is common in the soft rock - producing large collapse domes.



Spongework: slow-moving aggressive water

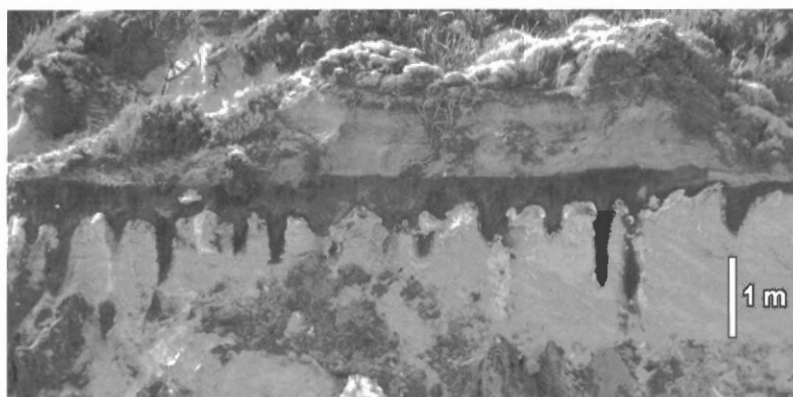
Solution Pipes

Solution pipes (or dissolution pipes) are common and distinctive features of syngenetic karst on porous host sediments.

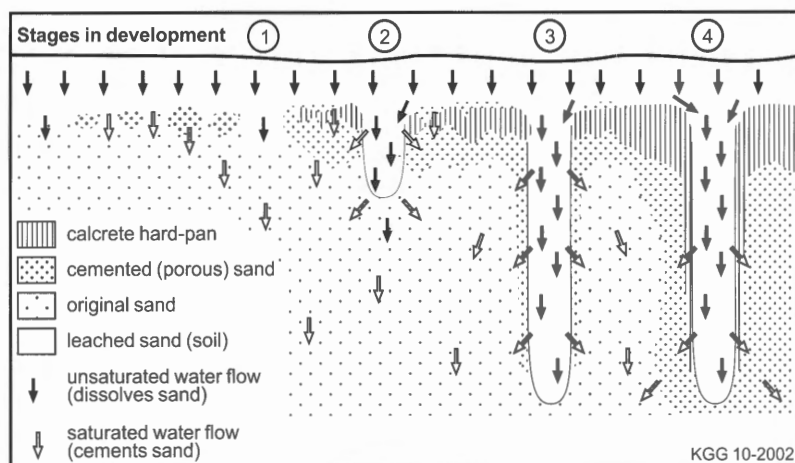
- Solution pipes have been recorded from calcarenites worldwide (e.g. Lyndberg & Taggart, 1995).
- They are vertical cylindrical tubes, typically 0.3 to 0.6 m in diameter, with or without cemented rims, which can penetrate down from the surface as far as 20 m into the soft limestone. The top is the present surface or a buried paleosoil. The bottom (where seen) is generally abrupt and hemispherical. The pipes may contain soil and calcified roots.
- They occur as isolated features, or in clusters with spacings to less than a metre. Some pipes can intersect caves and act as entrances.



Solution pipes with well-developed rims at the "Petrified Forest", western Victoria.



Cross-section of soil-filled pipes at an unconformity between two sand dunes.



Formation of pipes, with rims, by focussed vertical vadose flow

The pipes form by focussed vertical vadose flow through the porous sand. The focussing may be spontaneous and associated with patchy cementation of the hard pan of the soil, or it may be guided by other factors such as hollows in the surface, concentrated stem-flow, or by solution along tap roots.

Australian Caver No. 158



Solution pipe entrance to a cave

Reference

Lyndberg, J., & Taggart, B.E. 1995: Dissolution pipes in northern Puerto Rico: an exhumed paleokarst. *Carbonates and Evaporites* 10(2): 171-183.

