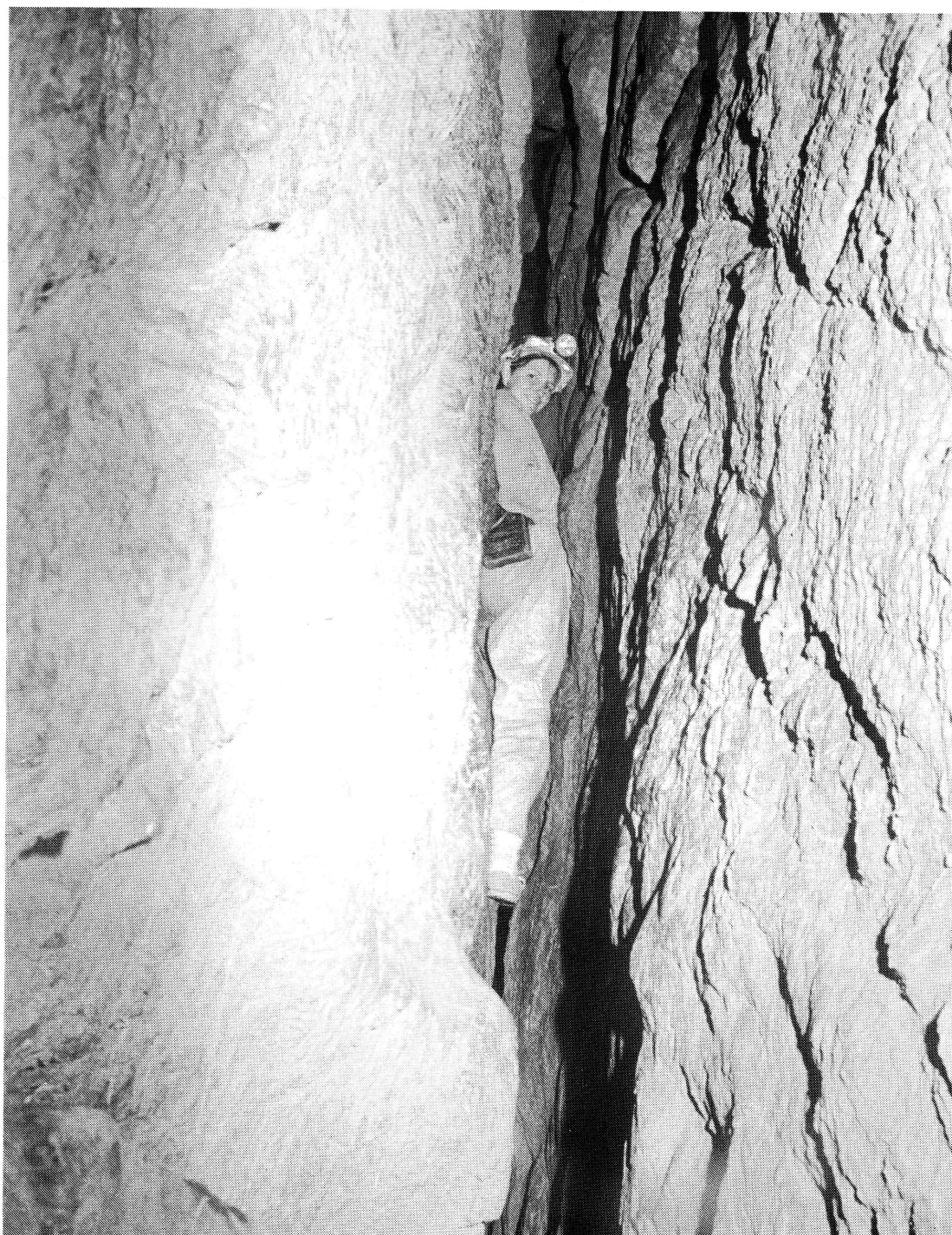


# AUSTRALIAN CAVER

THE AUSTRALIAN SPELEOLOGICAL  
FEDERATION INC.  
QUARTERLY JOURNAL

**No.130**

**1992**



## CONTENTS

GEOLOGICAL OBSERVATIONS OF OLD HOMESTEAD CAVE.	p. 3
LETTERS TO THE EDITOR.	p. 6
A BIT MORE INFORMATION ABOUT BLASTING THAT YOUR CONSERVATION OFFICER SHOULD KNOW.	p. 8
GETTING IN TOUCH WITH THE ASF.	p. 9
CODE OF ETHICS.	p.10
ASF NOTES AND NEWS.	p.14
AN INCIDENT IN GUY CAVE, KATHERINE N.T.	p.17
SPELEO SYNOPSIS.	p.18
DOWN UNDER ALL OVER.	p. 20
FRONT COVER: In the slot at the beginning of COLLEGE CAVE, BUNGONIA. Photo by Chris Lloyd.	

## EDITORIAL

I have held this issue off from the printer so as to be able to let you know if any final decision has been made on the future of Exit Cave Quarry (see Australian Caver 129. 1991). The joint federal-state World Heritage Ministerial Council which was due to meet on the 29th of February still has not met and may not formally meet until the end of June. It seems at present however, that after many meetings and much public pressure that the quarry is to close. The real question now is when, how much if any compensation is to be paid to Bender, who is going to pay it- State or Federal Gov't, and how much blasting is to occur to stabilise the mine so that rehabilitation of the site can begin. Currently both both State and Federal Governments are haggling over these issues and hence the Council has not met and no formal announcement has been made.

The Wilderness Society and the caving fraternity in Tasmania have borne the main responsibility for the campaign on the ground. They have been keeping a watch on the Quarry and were present when blasting occurred in the first week of February. People have also been arrested at the quarry site, not that one would know from the press on the mainland. The Wilderness Society, as reported in the Hobart Mercury, revealed that the Field Government had paid Bender \$200 000 in compensation, for sticking to 'voluntary' restrictions on quarrying activities as well as \$40 000 towards an environmental plan. It also appears that some of this money, around \$180 000, came from World Heritage funds.

It is still important that the pressure of letters and faxes should be kept up on the politicians stressing the World Heritage importance of Exit cave, that no further blasting is acceptable and call on them to close the quarry and rehabilitate the site as soon as possible. Letters to: Hon. Ros Kelly. Department of Arts, Sport, Science, Environment and Tourism. Parliament House. Canberra. ACT 2600. Premier Ray Groom. GPO Box 123B Hobart Tasmania. 7001. Hon J. Cleary, Minister for Parks Wildlife and Heritage. State Office Building. 10 Murray St. Hobart. 7000.

This issue has a number of reports presented at the ASF Council meeting in Jindabyne as well as a summary of the meeting itself. I hope that it enables you to ascertain what is happening on the speleo front and what hard work goes on behind the scenes. There is an ASF Executive meeting to be held in Melbourne on the last weekend in May so if any Clubs want anything discussed please get in contact with anyone on the Executive before then.

Finally, I am in need of articles for the Caver: please send me your words of wisdom. The next deadline is the end of May.

Clare Buswell.

Australian Caver is published quarterly by the Australian Speleological Federation Inc.

Editor: Clare Buswell.

Proof Reader: Heiko Maurer.

This issue was put together using "Ready Set Go" and who knows what else on many Macs.

Printed by: Empire Times Press, Student's Association, Flinders University, S.A.

The views expressed in Australian Caver are not necessarily those of the Editor or the Australian Speleological Federation Inc.

Printed on 100% Recycled Paper, except for the cover.



# GEOLOGICAL OBSERVATIONS OF OLD HOMESTEAD CAVE, NULLARBOR PLAIN, WESTERN AUSTRALIA

M C BENBOW. Regional Geology Branch and

A J HAYBALL. Regional Geology Branch

© DEPARTMENT OF MINES AND ENERGY GEOLOGICAL SURVEY SOUTH AUSTRALIA

## Abstract

Observations of karst events at Old Homestead Cave on the Nullarbor Plain add further evidence for a regional, post-emergence Nullarbor karst history or succession of events. Litho-stratigraphy and facies have exerted a control on dissolution and cavity formation as well as proximity to the surface. Joint control is also recognisable. Phreatic sculpturing is well developed indicating much of the extensive navigable passages formed at or below the watertable. The oldest post-cavity infill are red brown clay-rich sediments with a range of textures and fabrics. These are associated with calcite speleothem. Multiple sources (beyond, on and beneath the Plain) are recognised in these and younger sediments. The rainfall gradient explanation for "coastal belt" distribution of caves on the Plain is questionable.

## Introduction

An invitation was extended to participate in the 1991 (September-October) Nullarbor Plain caving expedition to Old Homestead Cave. This is one of the Plain's more northerly caves, being located in Western Australia approximately 80-90km north of Mundrabilla on the Eyre Highway.

The major objective of the expedition was to survey and extend the known cave system and thus make it the longest in Australia; this was achieved, with over 23km of subterranean navigable passageway mapped.

We had several objectives whilst participating in the Old Homestead Cave expedition:

i. gain experience in caving exploration to enable safe subsurface geological observations in this part of the karst, and

ii. enhance our understanding and geological mapping of the eastern Nullarbor Plain.

We were keen to examine the cave's history of post-cavity sedimentation and mineral precipitation (eg. calcium carbonate), both products of accumulation (cf. dissolution). Work to the east indicates a geological (karst) history of successive events that include formation of grey karst breccias, silicification, red brown karst breccias, calcite speleothem, calcrete and gypsum (Benbow, in prep.; Benbow et al., in prep). Our return journey was along the east-west railway line to undertake a traverse on COOK 1:250 000 map sheet and to examine the 10m section of Nullarbor Limestone at the Reid railway quarry. What follows is a brief account of some of our findings.

## Geology and Geomorphology

As we travelled north across the Nullarbor Plain from Mundrabilla to Old Homestead Cave, we observed a

landscape very similar to that of the eastern part of the Plain. This raised the question: what was the major control on cave formation/occurrence in this, one of the world's large arid/semi-arid karst terrains?

To the east, in the Ooldea region, aerial photographic study indicates a surface morphology akin to the cockpit karst of Jamaica (Pfeffer, 1976, photo 11) and the dolinas country north of Belize, Bermuda (Esteban and Klappa, 1983, fig. 14). In marked contrast to the karst of Jamaica, however, the relief on the Nullarbor is very subdued, being commonly 2-10m between depression and the surrounding rocky shoulders or rises. The occurrence of the Old Homestead Cave entrance and system in a depression hints at the surface morphology not being a recent development; that is, depressions have been regions of preferential infiltration for some time (Fig. 1).

The presence and apparent absence of caves in the southern and northern Nullarbor Plain regions, respectively, have been attributed to a rainfall gradient. It has been suggested that rainfall in the past was insufficient in the north to allow cave formation there (eg. Lowry and Jennings, 1974). It has also been proposed that a further reflection of the rainfall gradient is evident in the progressive southerly increase in erosion of the Nullarbor Limestone (the 15 million year old marine formation that outcrops over most of the Plain). With greater rainfall on the south of the Plain, one would expect more prominent surface relief. However, this is apparently not the case between Mundrabilla and Old Homestead Cave. Furthermore, the zones of dissolution at Old Homestead Cave (see below), Koonalda Cave, which is near the coast, and Haig Cave which is further inland, are similar. This evidence suggests other controls on cave distribution.

The present rainfall gradient has not always existed. During the Pliocene for example, some 3-5 million years ago, there was substantial deposition in the old rivers buried beneath the Great Victoria Desert dune field which abuts the northern and eastern margin of the Nullarbor Plain (eg Benbow et al, in prep). This suggests that there would have been significantly greater rainfall over the entire Plain at this time. It is possible that:

i) either there should be substantial cave development beneath the northern half of the Plain and that upward stopping to the surface has not occurred

ii) or that there was a hydrological feature of the Nullarbor Plain region that exerted a controlling influence on the position of past water table.

## ACKNOWLEDGEMENT

This paper is published with permission of the Director-General of South Australian Department of Mines and Energy. REPORT BOOK 91/98 DME No 177/87

# GEOLOGICAL OBSERVATIONS OF OLD HOMESTEAD CAVE, NULLARBOR PLAIN, WESTERN AUSTRALIA

At the very least, this should have been a major time of cavity formation in the Nullarbor Limestone across the entire Nullarbor Plain.

In the immediate area of Old Homestead Cave, two major flat lying rock layers (formations) are present: the 35-40 million year old Wilson Bluff Limestone and the overlying 15 million year old Nullarbor Limestone (eg. Lowry, 1970). Both were laid down in shallow seas as Australia drifted northwards from Antarctica toward the equator. The Nullarbor Limestone as observed in the doline walls and cave is 30m thick. Due to retreat of the sea and uplift of the region, the Nullarbor Plain has been emergent and exposed to weathering for approximately 15 million years.

At least three major horizontal zones of karst cavity development are recognisable at Old Homestead Cave and these have in part a lithological (stratigraphic) control: relatively few and generally only small cavities developed in the non-shelly facies of the uppermost 7-8m of the Nullarbor Limestone (three cavity types or forms are evident); pervasive, inter-connecting cavities developed in the underlying shell-rich facies of the Nullarbor Limestone; and long passageways and interconnecting cavities of the Wilson Bluff Limestone. The exact history of cavity formation is unknown. However, it is apparent that the doline itself ie. the upward stoping from a depth of 60-70m to the surface, is a very recent phenomenon, possibly no older than 10 000 to 30 000 years.

Phreatic sculpturing is extensive and is preferentially developed along joint systems in the Wilson Bluff Limestone (ie. at depth). Similar sculpturing, although on a smaller scale is evident in the Nullarbor Limestone. Sculpturing is better observed in Nullarbor Limestone in the wall of the Reid quarry to the northeast, at 5-8m below ground level. This provides evidence for temporary, perched water tables. The morphology of the sculpturing is worthy of future study as it may provide clues to past flow direction, water velocity and pressure levels. Collapse caused by salt exsudation, parting along bedding planes in the Wilson Bluff Limestone and by weaknesses in cavity sediment infill, has only partially masked the original phreatic nature of much of the cave system.

There has been major infilling of the cavities and passages from the surface to the depths of the cave system. This post-dates phreatic sculpturing. Red brown clay-rich sediment is ubiquitous and is associated with speleothem development. A similar association is common across the eastern Nullarbor Plain and is testimony to wetter times in the past. The origin of part of the clay, particularly in the uppermost 30m, is likely to have been beyond the Plain, transported first by wind and thence by water. Another source is the grey to green (glaucous) clay from within the Wilson Bluff Limestone such as can be seen in the "White Room" and "Hall of Mirrors".

Breaks in sedimentation are evident; individual areas of this extensive cave system are likely to have had independent histories on a very short time scale (ie. sediment infilling may have occurred at one locality whilst calcite speleothem was forming at another). Reworking and drying out (desiccation) is evident. Large scale mud-cracked sediment has been redeposited to form complex-textured sediment including fragmental hash of calcareous, indurated mud curls that may be partially cemented together by calcite speleothem. Reworking also resulted in deposition of sand and conglomerate. Individual rounded clasts consist of green glauconite, fossil (bryozoan) fragments replaced by glauconite and red brown clay. The red brown sediment infill of the uppermost 7-8m of the doline section displays soil features, namely plant-root meshworks and weathering micro-morphology (ie. vadoids).

Different forms of cave decoration (precipitated calcite) reflect different and changing micro-environments. Reworking of flowstones is common and produced variously-textured sediments including breccias of fragile, very thin calcite plates. Boxwork textures have formed where clay has been preferentially weathered out from flowstone-lined and/or infilled mud cracks. Such features can be observed from near ground level to the base of the cave.

Sand (to conglomerate) textures are also a feature of the younger, poorly consolidated sediments of the cave. However, in contrast to the sediments they overlie, there is no associated calcite speleothem. Surfaces of extensive sheets of these younger sediments display current ripples that indicate water flow to the north (ie. away from the coast). Similar sediments between the entrance and the "White Room" contain numerous bone remains of small marsupials and a few fragments of thin-walled land snails. Also a feature of these sediments are grains (sand to gravel size) derived from the young surface-sediment cover (see below).

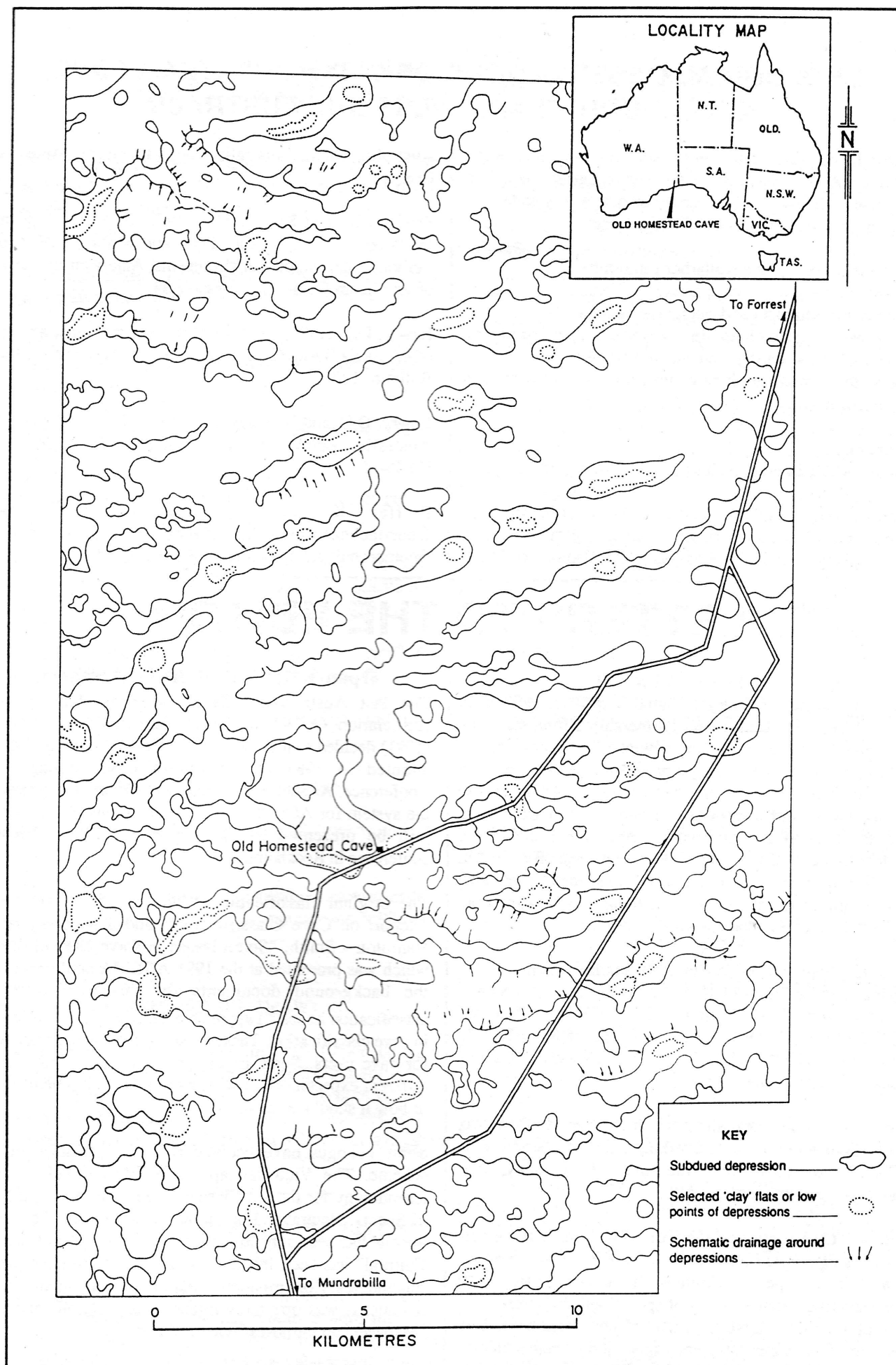
Gypsum speleothem (eg. flowers) are a relatively recent phenomenon. The source could in part be the gypsum lunettes of the inland, with which they may be coeval, as well as cyclic salt.

Over the surface of the Plain is a very thin (<1-3m) blanket of orange-brown calcareous sediment. This wind-blown mantle is derived from reworking of surface material (eg. calcrete), with an input of quartz from the adjacent Great Victoria Desert. Its age is believed to be less than 30 000 years old. In the area of dissection around the doline there is also exposed minor indurated calcrete. This soil developed in a somewhat older aeolian sediment. The quartz (silt-very fine sand sized) component is typically iron oxide stained and the grains are rounded, indicative of an aeolian origin.

## CONCLUSION

Our five-day participation in the expedition whetted our





**FIG 1 Morphology of the Nullarbor Plain in the Old Homestead Cave Area Western Australia.**

# GEOLOGICAL OBSERVATIONS OF OLD HOMESTEAD CAVE, NULLARBOR PLAIN, WESTERN AUSTRALIA

appetite for further research in the subterranean realm of the Nullarbor. A succession of events was recognised which is consistent with what has been observed over a very wide area of the eastern Nullarbor Plain. These include:

- i, recrystallisation of the Nullarbor Limestone
  - ii, dissolution leading to cave and cavity formation
  - iii, red brown sediment and calcite speleothem infill
  - iiii, gypsum speleothem and youngest cave sediment (including bone - bearing sand and gravel) infill.
- Finally, the rainfall gradient control on cave occurrence is questioned.

## References

Benbow, M.C., in prep. Nullarbor Karst Stratigraphy.

Benbow, M.C., Lindsay, J.M. and Alley, N.F., in prep. Bight and Duntroon Basins, Eucla Platform and palaeodrainage. In: R.K. Johns (Ed.). The Geology of South

Australia. South Australia. Department of Mines and Energy.

Esteban, M. and Klappa, C.F., 1983. Subaerial exposure. In: Scholle, P.A., Bebout, D.G. and Moore, C.H. (Eds), Carbonate depositional environments. American Association of Petroleum Geologists, Memoir 33.

Lowry, D.C., 1970. Geology of the Western Australian part of the Eucla Basin. Geological Survey of Western Australia. Bulletin, 122.

Lowry, D.C. and Jennings, J.N., 1974. The Nullarbor Karst Australia. Zeitschrift für Geomorphologie N.F., 18 (1):35-81.

Pfeffer, K., 1976. Probleme der Genese von Oberflächenformen auf Kalkgestein. Zeitschrift für Geomorphologie. Supplement Band, 26; 6-34.

## LETTERS TO THE EDITOR

### ASF TAKEOVER BID

Referring to the article by J. Dunkley in A.C. 129 "ASF and ACKMA - A Continuing Partnership", John states in his opening sentence "Many speleos are members of ACKMA, the Australasian Cave and Karst Management Association and more should be." He then goes on to say that to "swell your esteem as a speleo...", I am grateful to John for attempting to do this, however I am at odds with the fact that the ASF set up ACKMA because "By 1987 it was clear that a separate organisation was needed..." and now he is asking us to Join ACKMA. I thought part of the role of the ASF is to do what ACKMA is doing?

I would appreciate if you or John could expand on the reasons why we set up ACKMA as I believe that it has only fostered the "THEM and US", "EMPLOYED vs VOLUNTEER", "PRIVATE vs GOVERNMENT", "CONSERVATION vs RECREATION" attitudes that some speleos and cave managers have.

Even John is concerned about the drifting apart of the two associations and now we are asking ASF members to join ACKMA, are they doing the same? How many cave managers are member of the ASF?

I endorse the intention of the article but wonder if we had stayed as one organisation do you think we would have by now had a Speleo Council in every State with representatives from all areas of speleological interest? and even at a National Level!! Instead of now wanting to pull down the fences and have each other join together again. Who is making the takeover bid here??

Vote for 1.

A. Jevons. Adelaide S.A.

### Open letter to all ASF Members.

The last Australasian Cave and Karst Management Association (ACKMA) Conference in West Australia, (1991) decided to review the Cave Classification System as adopted in 1981 at the Fourth Cave Management Conference. As such I was asked to facilitate the review of the system for ACKMA. Recommendations of the review will be presented to the September 1993 ACKMA conference in Rockhampton

The original classification, Worboys, Davey and Stiff, "Report on Cave Classification", and a paper by Elery Hamilton - Smith, "Some Issues in Cave Classification" which was presented at the 1991 ACKMA conference, are the background documents for this discussion on classification issues.<sup>1</sup> I appreciate the complexities involved in cave classification. These exist for both management and for cave users. Some of the perceived problems rest in different expectations of what a classification scheme is for or how it should be used.

Some changes have occurred in the application of the scheme. The Victorian application has broadened the terminology for the 2.2 Classification by renaming it Sites of Special Natural and/or Cultural Significance. The word Special has been substituted for "Outstanding" and "and/or Cultural" has been inserted. Much of the criticism of the scheme rests on misinterpretation of the intent of the scheme. It was originally intended as a classification for "Management purposes" not an Access Policy.

The following prompts are posed to help provoke contribution to this review of the Scheme.



# LETTERS TO THE EDITOR

Is there a need to change the name "Adventure Cave" to "Open Cave"? There has been different application and interpretation by various management agencies for caves in this classification.

Davey recommended the changes in terminology of 2.2 Category sites as mentioned above, are these appropriate?

Has there been insufficient management attention to Category 3.1 Wild Caves? Should there be subclassifications of the Category?

Are the criteria for putting caves in various classes appropriate?

Are there problems with classifying caves/sites or parts of caves with different classifications?

To what extent is the original objective of a uniform systems of classification blurred by differing application by different authorities? Is this significant? Does it matter?

What do cavers expect of a classification scheme? Are managers confused between access and classification?

Is there confusion between classification and cave conservation or preservation?

What are the legal implications of classification?

Should the existing scheme be changed? How would you change it?

These are just some of the questions and issues surrounding classification. Please feel free to contact me with your contribution.

**Nicholas White. Vic.**

Phone:(03) 3284154 (H). (03) 3874211 (W).

1. Worboys. G., Davey. A., and Stiff. C., "Report on Cave Classification" in: Cave Management in Australia IV. Proceedings of the Fourth Australian Conference on Cave Tourism and Management. Yallingup. September. 1981. This paper and the paper by E. Hamilton Smith are available from Nicholas White.

---

## NULLARBOR WORLD HERITAGE LISTING

Dear Speleos,

As you are probably aware, the Commonwealth, SA and WA governments have reached tentative agreement on preparing a nomination of the Nullarbor for world heritage. The proposal will rely mainly on karst values, with support from scenic values of the seacliffs, archaeology and habitat for the Southern Right Whale in the head of the Bight.

The Commonwealth has engaged a study team to document a draft nomination for the karst component. (Other consultants are working on other aspects). The timetable for the proposed nomination involves preparation of the thematic reports over the next few months, with subsequent integration and negotiations within governments and with landowners and managers during winter, in time for Commonwealth/State agreement and submission of a final nomination to the World Heritage Bureau in December 1992.

Our work is necessarily based on existing documentary sources, notably the various published lists and summaries, plus the scientific literature. If you are aware of any unpublished information you believe should be considered in the world heritage evaluation process, please let me know. In the case of site specific data, it would be useful if you would also send a copy of the same information to CEGSA, as ASF records co-ordinator for the region.

Specific ways in which you may contribute to the nomination if you have information, materials or opinion you would like to offer include:

Ideas on how we should go about defining the boundary for the nomination (i.e., the scientific principles or rationale for boundary definition). Ideas on exactly where the boundary should go (i.e., what specific things should be "in" and what should be left "out").

Information about published items relevant to the Nullarbor since 1986 (the last update), particularly if published in a local journal.

Colour or black and white photos illustrating cave and doline form, speleothems, biospeleology etc. In the first instance, please do **not** send originals of photos to me, rather a summary of details of what you would like to offer.

Attributes you believe are important and should be put forward as a basis for the international significance of the region and/or specific features within it. Information about the existence or nature of specific sites which are not otherwise documented, including description and/or maps, please remember to send a copy to CEGSA.

Please note that the fairly tight deadlines mean that any information you wish to contribute will **need to reach me by the end of April at the latest**. I look forward to any comments or ideas you would like to put forward.

**Adrian Davey.**

School of Resource & Environmental Science.

Faculty of Applied Science, University of Canberra.

P.O.Box 1 BELCONNEN ACT 2616

Ph:(06) 2012517. Fax: (06) 2015030

## A BIT MORE INFORMATION ABOUT BLASTING THAT YOUR CONSERVATION OFFICER SHOULD KNOW

by Peter Ackroyd

In my previous articles covering this subject (Ackroyd 1988 and Ackroyd 1990) I discussed the practical application of explosives to the art of cave exploration. In this article I want to look more closely at the chemistry of explosives and some of the byproducts which may pose a risk to the cave or the caver.

The reason explosives break up rock is that they convert a small volume of various ingredients into a very large volume of gas, extremely swiftly. The relevant figures for the product I use (Powergel 3151) are:

Velocity of detonation (rate of chemical conversion radiating out from the initiation point) = 5 km/sec.

Volume of gas generated by 1 kg of explosive = 825 L at normal pressure (1 atm).

Clearly the swifter the velocity of detonation and the larger the volume of gases generated, the greater the blasting effect. These figures indicate a quite high velocity of detonation (Gelignite AN60 by comparison is 3.6 km/sec) and a large gas volume; hence Powergel 3151 is an extremely effective explosive for this type of work.

In a confined space, such as a well stemmed (packed) shothole, this rapid conversion from solid to gas causes the rock (or any other brittle material) to fracture under the sudden onslaught of gas pressure. Deep in a cave it is often impractical to drill shot holes, and so many users of explosives in caves simply plaster the explosive onto the rock to be broken. The methods by which this may be best done were covered in my earlier articles. The main disadvantage of using the plastering method is that the confinement of the explosive is reduced and therefore the conversion from solid to gas is less efficient.

In a perfect situation, using factory prepared explosive, in well stemmed shotholes, the gases generated by a blast would consist of nitrogen, carbon dioxide and water vapour. In practice, especially within caves, it is rare to get the perfect situation and so some other gases are also generated. In the past, when the only readily available explosive was Gelignite AN60, significant quantities of oxides of nitrogen ( $\text{NO}_x$  - commonly but erroneously referred to as nitrous fumes) and carbon monoxide were also generated, along with some hydrogen and oxygen. Only carbon monoxide (CO) and the  $\text{NO}_x$  family of gases are of concern to us here.

Carbon monoxide is toxic to animals which utilise haemoglobin to transport oxygen throughout the body, ie all red blooded animals. Carbon monoxide bonds to haemoglobin much more strongly than oxygen, effectively taking it out of commission. Consequently a red blooded animal left in an environment containing high levels of carbon monoxide for long enough will eventually have insufficient available haemoglobin to transport oxygen to its tissues. This bonding of carbon monoxide to haemoglobin occurs more or less straight away and is such that if a person

is poisoned with carbon monoxide, but is immediately removed to the open air while still breathing, the process is reversed with no significant ill effects. The short term exposure limit for CO is 400 parts per million (ppm) according to Hartman (1982).

This is not the case with  $\text{NO}_x$ . The two dangerous members of the  $\text{NO}_x$  family of gases are NO (nitric oxide) and  $\text{NO}_2$  (nitrogen dioxide). NO oxidizes readily to  $\text{NO}_2$  and so for all intents and purposes they can be both considered as  $\text{NO}_2$ . The insidious danger of  $\text{NO}_2$  is that it hydrolyzes slowly to form nitric and nitrous acid. Because it is slow, the  $\text{NO}_2$  may be inhaled deep into the lungs before it is hydrolyzed. The resulting acid causes oedema (fluid in the lungs) over the next several hours. This can cause shortness of breath for several months. Hartman (1982) lists the short term exposure limit for NO as 35 ppm and for  $\text{NO}_2$  as 5 ppm.

Both CO and  $\text{NO}_x$  can lead to death if they are present in high enough concentrations. There have been no cave deaths to date from this cause, but Williams and Williams (1963) relate how a caver in South Wales (UK) became critically ill in the hours following several minutes inhalation of fumes from a blast conducted using Plastergel (a nitro product similar to Gelignite), when he duck dived into an airbell he had just blasted.

Our generation is indeed fortunate that we no longer have to run these risks in order to further cave exploration. For the past six or seven years there has been available a new generation of emulsion type explosives such as Powergel. These modern explosives are much safer to handle, have no nitroglycerine based products in them at all (no more headaches) and have a much reduced output of dangerous fumes. Some recent experiences of mine highlight the clear superiority of these modern explosives over the old nitro products.

Back in 1985, just after I became a licensed shotfirer, my first blasts were conducted with Gelignite. This nitro based product appeared satisfactory from a user's point of view except for the "Geli headache" which invariably followed its use within the confines of a cave. (Gelignite contains the explosive nitro product nitroglycerol, which is a vasodilator and hence causes quite bad headaches.) While caving in December 1985 and after initiating 0.5 kg of Gelignite in a squeeze, I found that I could not retrieve my shotfiring cable from outside the cave. So I ventured back into the cave to

---

### Acknowledgement

I wish to acknowledge the assistance given to me by Darrel Williams and Margaret Snare from ICI Australia, Explosives Group, in the provision of most of the technical data presented here.

Cont'd p.13



# GETTING IN TOUCH WITH THE ASF

Please phone or write to the Officers, Commissions or Member Societies concerned.

They sit by their phone and letter boxes waiting to hear from you.

## OFFICERS

Public Officer Garry Mayo  
21 Gaunson Cres, WANNIASSA 2903 (06)231-6862

## EXECUTIVE COMMITTEE MEMBERS

President Lloyd Robinson 167 Mt Keira Rd,  
MT KEIRA 2500 (042)296221

Senior Vice-President Pat Larkin 2/4 McLeod St,  
MOSMAN 2088 (02)960-4726

## Vice-Presidents

Peter Berrill PO Box 6343,  
ROCKHAMPTON MAIL CENTRE 4702 (079)34-2870

Clare Buswell PO Box 131, NAIRNE 5252 (08)388-6685

Lloyd Mill 11 Warner St, ESSENDON 3040 (03)379-8625

Stuart Nicholas 7 Rupert Ave,  
NEW TOWN 7008 (002)28-3054

Secretary Chris Dunne PO Box 388,  
BROADWAY 2007 (02)605-7003

Secretariat Steve Brooks 6 Kidbrooke Pl,  
WESTFIELD 6112 (09)390-9259

Karen Magraith 27 Day Dr, PASADENA 5042  
(08)296-1581

Treasurer Brendan Ferrari 122 Hawke St,  
WEST MELBOURNE 3102 (03)329-0479

## CONVENORS OF COMMISSIONS

Administration Miles Pierce 42 Victoria Cres,  
MONT ALBERT 3127 (03)890-8319

Awards Lloyd Robinson 167 Mt Keira Rd,  
MT KEIRA 2500 (042)29-6221

Bibliography Att: Greg Middleton C/-PO Box 388,  
BROADWAY 2007

Documentation Peter Matthews 66 Frogmore Cres,  
PARK ORCHARDS 3114 (03)876-1487

Cave Diving Ron Allum c/- 19 Wilshire Ave,  
CARLINGFORD 5087

Cave Safety Mike Lake 14/16 Cottonwood Cres,  
NORTH RYDE 2113 (02)888-2927

Cave & Karst Management John Dunkley 3 Stops Pl,  
CHIFLEY 2606 (06)281-0664

Conservation Arthur Clarke PO Box 245,  
NORTH HOBART 7002 (002)34-1150

Craig Hardy PO Box 1459,  
ROCKHAMPTON 4702 (079)27-9016

Keir Vaughan-Taylor 39A Renwick St,  
DRUMMOYNE 2047 (02) 819-7153

Rauleigh Webb 16 Loftus St,  
NEDLANDS 6009 (09)444-1020

International Relations John Dunkley 3 Stops Pl,  
CHIFLEY 2606 (06)281-0664

Julia James 41 Northwood St, NEWTOWN 2042  
(02)519-1415

Library Cathy Brown 13 McDonald St,  
CHIFLEY 2606 (06)288-2819

Newsletter Clare Buswell PO Box 131  
NAIRNE 5252 (08)388-6685

Nominating & Electoral Miles Pierce 42 Victoria  
Cres, MONT ALBERT 3127 (03)890-8319

Survey & Mapping Standards Ken Grimes  
PO Box 362, HAMILTON 4075 (055)74-8225

## CONVENORS OF AD HOC COMMITTEES

Beginners Manual Alex Kariko 24 St Kinnard St,  
ESSENDON 3040 (03)337-7680

Codes & Guidelines Evalt Crabb PO Box 154,  
LIVERPOOL 2170 (02)607-2142

Jenolan World John Dunkley 3 Stops Pl,  
CHIFLEY 2606 (06)281-0664

Heritage Nomination Structure & Organisation  
Lloyd Mill 11 Warner St, ESSENDON 3040  
(03)379-8625

Derek Hobbs Cairnes Ln, GLENORIE 2157  
(02)652-1767

Tas-Trog '93 Steven Collins 28 Upton St,  
WEST LAUNCESTON 7250 (003)31-1153

## CONVENORS OF STATE SPELEOLOGICAL COUNCILS

NSW Speleological Council  
Derek Hobbs Cairnes Ln, GLENORIE 2157 (02)652-1767

South Australian Speleological Council  
Alan Jevons. Arthur St, RIDGEHAVEN. (08) 264-6690.

ASF COMPUTER BULLETIN BOARD  
(courtesy of Rauleigh Webb) (09)386-2041

## MEMBER SOCIETIES

ACT  
Canberra Speleological Society Inc.,  
18 Arabana St, ARANDA, 2614

Capital Territory Caving Group, PO Box 638, WODEN, 2606

National University Caving Club,  
c/- Sports Union, GPO Box 4, CANBERRA, 2601 NSW

# **CODE OF ETHICS AND CONSERVATION**

## **AUSTRALIAN SPELEOLOGICAL FEDERATION INC**

**Adopted 1992**

**P.O BOX 388 BROADWAY 2007**

---

### **1. Introduction**

1.1 Recognising their primary aim of protecting the caves and karst of Australasia, cavers will actively promote cave conservation and sound management practices through example, education, advice and training.

1.2 This code establishes a minimum standard of caving practice.

1.3 Higher standards may be required by management authorities for particular caves or karst regions, in which case those standards will be adhered to.

### **2. Toward Landowners and Management Authorities**

2.1 Landowners, tourist guides and any person representing a management authority will be treated with courtesy and respect.

2.2 All caving parties must have specific or tacit approval from the landowner and/or management authority before entering any property or reserve, must follow only agreed routes and must not visit forbidden areas.

2.3 The prevailing procedures regarding gates on properties and reserves will be followed, and care taken to cause no damage to stock, crops, equipment or landscape features. In short, leave as found.

2.4 All parties will be as self-sufficient as possible and will not presume on the good will of landowners and/or management authorities for water, supplies or assistance.

2.5 Where the cave entrance has been blocked by the landowner and/or management authority, it will be re-blocked after use, or, with the landowner and/or management authority's permission more appropriate protection installed unless the landowner and/or management authority otherwise instructs.

2.6 No gate will be installed at to in a cave unless approved by the landowner and/or management authority and arrangements are made for key security. Any gate must have an accompanying sign giving reasons for gating and access conditions unless the landowner and/or management authority otherwise instructs.

2.7 No cave excavation, including the use of explosives, will be undertaken without the permission of the landowner and/or management authority and/or management authority and the society committee, and only after an assessment of the environmental effect.

### **3. Toward Caves**

3.1 Camping will not occur in a cave, unless absolutely necessary to achieve a specific speleological or conservation objective.

3.2 Caving activity must be conducted in a manner responsible to the cave environment, taking particular care to avoid damage to speleothems, sediments, biota and other natural phenomena. The maximum size of any party should be limited to that which provides the best quality of experience or achieves specific aims.



# CODE OF ETHICS AND CONSERVATION

## AUSTRALIAN SPELEOLOGICAL FEDERATION INC

Adopted 1992

P.O BOX 388 BROADWAY 2007

---

3.3 Cave entrances and passages should not be excavated/enlarged, including the use of explosives, water levels in sumps should not be modified and stream flows should not be diverted, until all possible effects are assessed and the appropriate permission gained. Any modification must be the minimum required.

3.4 Established marked routes must be used single tracks should be followed and care taken to avoid needless deposition of mud. Mud-throwing or modelling is unacceptable.

3.5 All human introduced wastes must be removed from the cave and disposed of properly.

3.6 Cavers will not smoke in any cave.

3.7 Caves must not be disfigured by unnecessary marking (including 'direction arrows'). Entrance tags and survey marks should be small and inconspicuous.

3.8 Disturbance should not be caused to any biotic community. No disturbance should be caused to maternity or over-wintering roosts of bats. Collection of specimens will be kept to the minimum required for study purposes only.

3.9 The technique, agent and justification for air or water flow-tracing experiments should be chosen to minimise environmental impact and must be approved by the relevant authorities and the society committee.

3.10 Explosives should not be used inside a cave or at the entrance unless absolutely necessary, and then only with the permission of the landowner and/or management authority and the society committee, and only after an assessment of the environmental impact.

### 4. General

4.1 Recognised codes for minimum impact camping will be observed with particular emphasis on complete removal of rubbish and, wherever possible, avoidance of camping on karst catchment areas.

4.2 Reports on speleological work and caving activities are to be honest and accurate, avoiding sensationalism or exaggeration.

4.3 Any published work must acknowledge other people's contributions to the work, either as clubs or individuals, published work or personal communication.

4.4 Consideration should be given before publishing an article disclosing a cave's location, as to its intended audience, the wishes of the landowner and/or management authority, and the subsequent effect on the cave.

4.5 When visiting an area frequented by another society, the club or party will co-operate fully with that society.

4.6 Disputes will be conducted in a restrained and responsible manner.

# GETTING IN TOUCH WITH THE ASF

Please phone or write to the Officers, Commissions or Member Societies concerned.

Baptist Caving Association, 90 Parkes St,  
HELENSBURG, 2508

Blue Mountains Speleological Club,  
PO Box 37, GLENBROOK, 2773

Endeavour Caving & Recreational Club Inc.,  
PO Box 63, MIRANDA, 2228

Highland Caving Group, PO Box 154, LIVERPOOL, 2170

Hills Speleology Club Ltd., PO Box 750, CASTLE HILL, 2154

Kempsey Speleological Society, 27 River St, KEMPSEY, 2440

Macquarie University Caving Group, c/- Sports Assoc.,  
MACQUARIE UNIVERSITY, 2109

Metropolitan Speleological Society Inc.,  
PO Box 2376, NORTH PARRAMATTA, 2151

Newcastle & Hunter Valley Speleological Society,  
PO Box 15, BROADMEADOW, 2292

Orange Speleological Society, PO Box 752, ORANGE, 2800

RAN Caving Association, c/- 58 Redmyre Rd,  
STRATHFIELD, 2135

Rover Speleological Society of NSW,  
c/- 2 Ray Pl, WOODPARK, 2164

Sydney University Speleological Society,  
Box 35, The Union, SYDNEY UNIVERSITY, 2006

University of NSW Speleological Society, Box 17,  
The Union, University of NSW, KENSINGTON, 2033

University of Technology Sydney Speleological Society, c/-  
The Union, PO Box 123, BROADWAY, 2007

## QUEENSLAND

Central Queensland Speleological Society Inc.,  
PO Box 538, ROCKHAMPTON, 4700

## SOUTH AUSTRALIA

Cave Exploration Group South Australia Inc., PO Box 144,  
Rundle Mall, ADELAIDE, 5001

Flinders University Speleological Society, c/- Clubs &  
Societies Assn. Flinders Uni., BEDFORD PARK, 5042

## TASMANIA

Northern Caverneers Inc., PO Box 315, LAUNCESTON, 7250

## VICTORIA

Victorian Speleological Association Inc.,  
GPO Box 5425 CC, MELBOURNE, 3001

## WESTERN AUSTRALIA

Speleological Research Group Western Australia,  
PO Box 120, NEDLANDS, 6009

Western Australia Speleological Group,

PO Box 67, NEDLANDS, 6009

## ASSOCIATE MEMBER SOCIETIES

Australasian Cave & Karst Management Association,  
PO Box 36, CARLTON SOUTH, 3053

Avondale Speleological Society,  
c/- 20 Avondale Rd, CORRANBONG, 2265

Campbelltown Caving & Outdoor Group,  
PO Box 50, GLENFIELD, 2167

CAVEX Inc., c/- 15 Sandery Ave, SEACOMBE GARDENS,  
5047

Central West Caving Group, c/- PO Box 428, OBERON, 2787

Chillagoe Caving Club Inc., PO Box 92, CAIRNS, 4870

Curtin Outside Club,  
Box 18, Student Guild, Curtin Uni., BENTLEY, 6102

Illawarra Speleological Society,  
PO Box 94, UNANDERRA, 2526

Mole Creek Caving Club c/- Post Office, MOLE CREEK, 7304

NSW Cave Rescue Squad Inc., PO Box 122,  
BANKSTOWN, 2200

OTC Caving & Canyoning Club,  
c/- PO Box 1996, NORTH SYDNEY, 2059

Plane Caving Inc. c/- 437 Hay St, SUBIACO, 6008

PNG Cave Exploration Group,  
c/- G. Francis, PO Box 1824, Port Moresby, PNG

Savage River Caving Club, PO Box 1114, BURNIE, 7320

Scout Association of Australia (NSW Branch),  
PO Box 115, HABERFIELD, 2045

Scout Caving Group (South Australia),  
c/- 44 Fullarton Rd, NORWOOD, 5067

Snowy Mountains Speleological Society,  
c/- Wolumla Public School, WOLUMLA, 2550

Southern Caving Society, PO Box 121, MOONAH, 7009

Sydney Speleological Society, PO Box 198,  
BROADWAY, 2007

Tasmanian Cave & Karst Research Group,  
PO Box 338, SANDY BAY, 7005

Tasmanian Caverneering Club, PO Box 416,  
SANDY BAY, 7005

Top End Speleological Society, c/- Peter Bannink,  
PO Box 40242, CASUARINA, 0811

University of New England Mountaineering Club,  
UNIVERSITY OF NEW ENGLAND, 2351

## A BIT MORE INFORMATION ABOUT BLASTING THAT YOUR CONSERVATION OFFICER SHOULD KNOW

release the snagged cable, spending maybe five minutes in a densely fume filled area. I then left the cave and spent a normal night. The following morning I returned to the cave to assess progress at the dig. After scrabbling around for a couple of hours without making a breakthrough, I withdrew from the cave and commenced the return walk back up the quite steep hill. About half way up the hill I was quite suddenly struck with extreme breathlessness and lethargy. I very slowly struggled up the remainder of the hill, taking frequent and lengthy rests.

That night I barely slept, suffering from shortness of breath, inflamed eyes and sinuses, and a rasping, sore throat. The following day I could not do anything till after midday from which point my recovery was slow but steady. I suffered serious sinus irritation for the next week, cold-like symptoms for two weeks and shortness of breath for three months, but finally recovered fully.

These are classic symptoms of inhalation of  $\text{NO}_x$  fumes. Following this unpleasant experience, I immediately set about looking for a superior product and after carrying out some research settled on Powergel from ICI Australia. I also made sure that I never again was in the position of inhaling visible blasting fumes.

However even with the best of intentions one cannot always win through, and this was the case in April 1991 when I was carrying out some work at the far end of a quite extensive cave. The cave normally draughts outwards quite strongly and so I knew I would have to devise some way of avoiding the blasting fumes when I initiated the charge in the cave. It is almost an hour's journey through quite low and tortuous passages to reach the dig site and my

shotfiring cable is the standard length of 100 metres.

On the day that I visited, the draught was considerably reduced and so I reasoned that I could carry out the blast then scamper out ahead of the fumes, having a 100 metre head start on them. I placed, then initiated 0.5 kg of Powergel 3151 at the limit of my shotfiring cable, then quickly packed up and commenced my retreat. I soon realized that the draught had picked up and though I crawled till my elbows were raw, the fumes quickly caught me. I had no option then but to continue to hasten out of the cave despite the added hindrance of visibility that was less than a metre.

After an hour of this I emerged from the cave and returned to the car. I immediately made a diary entry, setting down the circumstances I had just experienced in case I fell ill during the night. Based on my knowledge of Gelignite fumes I felt quite concerned for my safety. The following day I did nothing strenuous and kept a check on my general condition - nothing. After no symptoms manifested themselves on the second day I realized that, compared to Gelignite, Powergel was a quantum leap ahead in terms of safety. I am not for a minute suggesting that one should set out to re-enter caves which have just been blasted with Powergel, or undertake any blast with Powergel in the belief that it is safe to inhale the fumes. But the fact that one can survive an hour in thick Powergel fumes and not suffer any obvious ill effects is particularly significant when contrasted with the effect of a few minutes exposure to Gelignite fumes.

A comparison of fumes generated by Powergel and Gelignite is included in the Appendix. The conditions of this test, carried out by ICI Australia at their Deer Park facility in Victoria, closely parallel those met in typical

### Some Recent Comparative Tests of ICI Explosives

#### 1. Results of tests carried out by ICI Australia at Deer Park, Victoria.

##### Method

100 grams of each product was initiated (unconfined) in a test cell of approximately  $14 \text{ m}^3$  in volume. The resultant gases were analyzed using Drager tubes. The table shows the average of two separate tests and includes the short term exposure limits (STEL) from Hartman (1982).

Gas	Powergel 3151	Gelignite AN60	STEL (15 mins)
$\text{NO}_x$ (ppm)	24	75	5 ( $\text{NO}_2$ ), 35 (NO)
CO (ppm)	52	86	400

2. More elaborate comparative tests have been conducted by ICI Explosives Group in Canada. A purpose built test cell, closely matching a shot hole, was connected to a gas-liquid chromatograph and a chemiluminescence  $\text{NO}_x$  analyzer. The test conditions are somewhat removed from those likely to be met in a cave, but the results show that  $\text{NO}_x$  production from emulsion type explosives (eg Powergel) is less than a tenth that of nitro based explosives (eg Gelignite) and that carbon monoxide production is less than a half that of nitro based explosives.



## A BIT MORE INFORMATION ABOUT BLASTING THAT YOUR CONSERVATION OFFICER SHOULD KNOW

caving situations. The results of these tests reveal Powergel to be a vastly superior product from a health point of view in that NO<sub>x</sub> generation in particular is less than a third that of Gelignite. It should also be noted that, while carbon monoxide generation by either Gelignite or Powergel is below the short term exposure limit, carbon monoxide generation from an unconfined blast using Powergel is 60% that of Gelignite.

These figures tend to match my own field observations, although from these same observations it would appear that Gelignite is far more sensitive to imperfect placement of charge with a consequent increase in undesirable fume generation. Powergel on the other hand seems quite insensitive to poor packing or placement and hence is both more effective as an explosive in caves and as an added bonus produces much lower fume levels. The performance

of Powergel 3151 is an indication of the advances made in explosives technology when compared to the bad old days of a decade ago.

### References

Ackroyd, Peter (1988) Everything you wanted to know about blasting but were afraid your conservation officer may overhear. *Australian Caver* 117:3-5.

Ackroyd, Peter (1990) Some more things you wanted to know about blasting. *Australian Caver* 123:10-11.

Hartman, H. L. (1982) *Mine Ventilation and Air Conditioning*. Second ed. John Wiley & Sons.

Williams, Robert M. and Williams, M. Ann Mason (1963) Hazards of Using Explosives. *Trans. Cave Research Group* 6(2):69-78.

## NOTES AND NEWS FROM THE ASF COMMISSIONS

### THE STATE OF SPELEOLOGY IN QUEENSLAND

**Mount Etna.** There have been a number of developments in the last twelve months. These include the following:

A large area of vine thicket including a small Karst area previously owned by CQSS life member Ernie Gomersall, has been included in the National Park. The existing Fitzroy Caves National Park, which covers limestone ridge, has been joined with Gomersalls' and the Mount Etna scientific area and renamed "The Mount Etna Caves National Park" covering a total area of 390 Ha.

Central Queensland Cement, who continue to quarry the western side of Mount Etna have announced the setting up of a rehabilitation committee for the disused eastern quarry. The Capricorn Conservation Council, Mines Department and National Parks and Wildlife are represented on the committee. CQSS is endeavoring to gain access in order to ensure proper rehabilitation of all features of the karst environment occurs. CQSS still has an outstanding debt to Central Queensland Cement of approximately \$240,000. The company has not proceeded against us as yet to recover the \$30,000 held in trust accounts.

The first draft management plan for the enlarged National Park is now available. CQSS has had major input to the plan. Contained in this plan is provision for CQSS to accredit cavers for access to gated caves. Most gated caves have access restricted to CQSS members and ASF affiliated members accompanied by CQSS.

**Mitchell Palmer**

This karst area on Cape York covers 800 square kilometers

of Tower Karst, most of which is unexplored. The area as Aboriginal values as well as immense biological values not fully determined. CQSS is actively working with Chillagoe National Park's personell in assessing and reporting on the area. Chillagoe Caving club has completed a book on the area as a basis for future exploration in the area.

### Fanning River

North Australian Cement Limited (NACL) have announced the closure of the Townsville cement plant in 1993. NACL leases at Fanning River should not be needed. CQSS is preparing a submission to the Department of Environment and Heritage for gazettal of the entire area as National Park, approximately 150 Ha which includes Rope Ladder Cave, an important biological and geological site. Pat Comben, the Minister, has indicated personally to us that he is in favour of gazettal of the entire Karst area.

### Chillagoe Area

National Parks service are preparing a draft management plan for the area with input from Chillagoe Caving Club. Including new discoveries, Chillagoe now has over 500 caves listed.

### Undara Lava Tubes National Park Proposal

Inspite of media comment, the large extensions to this National Park have not been made as yet. The core area is secure but further extensions are held up in the Lands Department.

### Karst Index - Queensland

The two clubs in Queensland, CQSS and CCC have agreed that Chillahoe Caving Club is best situated to handle the main compilation of the Karst Data base for Queensland. CQSS will help with the southern regions of the state.

**Peter Berrill** Vice President ASF, President CQSS  
**Craig Hardy** Conservation Secretary ASF,  
Conservation Secretary CQSS

## NOTES AND NEWS FROM ASF COMMISSIONS

### 36th ASF COUNCIL MEETING JINDABYNE, NSW - January 1992

This "off year" meeting (ie. a non-Conference year) was our second to be held at the very-laid-back Jindabyne Sport and Recreation Camp. Ian Mann is again to be thanked for organising the accommodation and another fine BBQ. About three dozen people were booked in.

Eight ASF Associates, and 19 out of 21 financial Corporate Members were represented. Under the new Constitution, large clubs are allowed more Councillors; of a possible 52 Councillors, 24 Councillors or their Proxies were present.

SUSS had six reps present; VSA and WASG, our two other big clubs, only fielded one each. Rauleigh Webb is to be commended for coming from Perth, and Stuart Nicholas from Hobart; VSA could have done better!

Secretary Chris Dunne put forward a proposal to amend the Constitution and allow bigger clubs to grant no more than three proxy votes to any one person [more on this later in the year]. Bigger clubs should be able to field more than one rep (or one proxy) to any meeting.

ASF's new Constitution only commenced from October. Major changes to voting equity and fee structure have yet to filter down. It's also hoped these structural changes will entice those outside clubs: CCC in Queensland; SSS in NSW; and SCS and TCC in Tasmania; to join as full Members.

In future, reports will be submitted to the Executive in advance of these meetings. An Executive Report, summarising the Federation's activities, will hopefully occupy less time. As it was, the written reports from a dozen Commissions and half a dozen ad hoc committees took up most of Day One.

A new 'ASF Code of Ethics and Conservation (1992)' was adopted. The Draft, developed by Evalt Crabb, was based on our 1974 code, but with a greater emphasis on conservation. The draft was subject to some discussion and amendment by the meeting.

The Documentation Commission was the subject of some comprehensive resolutions at Margaret River, but was scarcely mentioned here, with most of last year's directives having been implemented. Disappointingly, only three from the list of people consulted, bothered to respond regarding specifications for the Distributed Karst Database (ie. the Karst Index on PC).

There were Conservation reports from Queensland, WA, NSW and Tasmania. However, the issue of the moment is Benders Quarry at Ida Bay, Tasmania. Councillors were asked to initiate an immediate letter-writing campaign - this is the only tactic likely to have any effect. \$1000 was voted

to this campaign.

1991 saw the transfer of the Newsletter Commission out of NSW: Clare Buswell has been editing since 'AC 128' - in case you haven't noticed! Steve Brooks in Perth is now handling ASF's computerised mailing list. Floppy disks were handed around (5.25" DOS format, one for each club) containing the ASF Database application (written by Rauleigh Webb) and each club's current listing. Clubs were asked to update their membership list and return the disk to: Steve Brooks, 6 Kidbrooke Pl, WESTFIELD WA 6112.

Saturday saw the election of six members of the Executive: Clare Buswell, Chris Dunne, Pat Larkin, and Karen Magraith for two years; and Steve Brooks and Brendan Ferrari for one year. New Executive members did not take up positions till the end of the meeting on Sunday, however positions were allocated as follows: Peter Berrill, Clare Buswell, Lloyd Mill and Pat Larkin as Vice-Presidents (Pat Larkin, Senior); Chris Dunne - Secretary; Steve Brooks and Karen Magraith - Secretariat.

Applications: Rover Speleological Society of NSW were admitted as Corporate Members, while three Associate applications were approved: Mole Creek Caving Club - Tasmania; Curtin Outside Club; and Plane Caving Inc. - both from WA.

Our South Australian clubs - members CEGSA and FUSS, Associates SCGSA and CAVEX, plus CDAA (Cave Divers Association of Australia), have formed the SA Speleological Council. That Council applied for, and was accepted as, a state liaison council under ASF's Constitution. As an aside, the setting up of cross affiliation with CDAA, similar to that for ACKMA, is in train.

A major program being undertaken by the SA Speleo Council is implementation of the NPWS instigated Caver Accreditation. Such systems are being considered or implemented in Queensland, Tasmania and WA. The Federation is to seek a delay in implementing the SA system, while a national ASF sponsored system is investigated jointly between ASF and ACKMA.

It was generally agreed that basic caver accreditation would be fairly straight forward, whereas leader accreditations would be more problematical, as local requirements can vary markedly across regions or states eg. SRT efficiency is important in Tasmania but not in SA.

ASF's long awaited Beginners Handbook, which all agree is still a good idea, is expected to be available towards the end of 1992, and should key in well with the Caver Accreditation proposals. The Handbook is now 10 years old and into about its fifth editor.

Beyond the end of 1992, our next Council meeting will be

## NOTES AND NEWS FROM ASF COMMISSIONS

in conjunction with the Tas-Trog '93 Conference, which is being hosted by Northern Caverneers, and will be held in the first week of January 1993 in Launceston, Tasmania.

Further ahead, Julia James reported on our proposal to host the 2001 Congress meeting of the International Union of Speleology. This will require a tremendous effort and the co-operation of our sister organisations, ACKMA and NZSS (Australasian Cave & Karst Management Association and the New Zealand Speleological Society).

Chris Dunne - ASF Secretary

### INTERNATIONAL RELATIONS

#### More About the Chinese Congress

Papers may be presented by full members of the Congress only: and a person may be an author or co-author of not more than three papers. Abstracts may be in English and should not exceed 250 words. To be sent to Secretariat, XI International Congress of Speleology, Institute of Geology Chinese Academy of Sciences, P.O. Box 634, Beijing 100029, China.

At the IUS Working party Bureau meeting on Cave Conservation it was proposed by Romania and the USA that IUS form a commission on the conservation and preservation of caves. In order to assist various countries in their efforts to save caves by exchanging ideas, details, legal views etc as to how the caves may be saved from miners and developers. To establish a set of criteria that make it possible to place a cave as to its significance internationally. A working party will be formed to prepare a proposal for consideration at the General Meeting of IUS in China, (as a commission can only be created by the General Assembly which are held every four years.) An Australian representative for the working party would be appreciated. If the commission is formed then we will require a representative from Australia. A world listing of the significant caves in each country was proposed but was regarded as hazardous because a cave omitted could be regarded as insignificant in a dispute. If you are interested please contact:

Christian Lascu  
Institute de Speleologie, E. Racovita  
Str Frumoso Nr 11,  
78114 Bucuresti, Romania.

#### IUS Working Party on Artificial Caves.

Another Australian representative is required by Jacques Chabert for his IUS - Working Group on Artificial Caves, that is, tunnels, mines and even drains. If you or you know of anyone who is interested in such features and would like to be the Australian on that IUS working party please write to Jacques direct:

Jacques Chabert  
IUS Working Group on Artificial Caves  
8 rue Cremieux. 75012 Paris.

#### Australia's Bid for the International Congress in 2001 - Timing.

August 1992 - At IUS bureau meeting in Belgium assess delegates' reaction to a congress that would be held during the Australian summer so that university accommodation would be available for participants.

If the Congress is held in the July - August - September period, 2001, it will not be possible to use University student accommodation. So we will require a venue for the Congress with conference facilities that will house 400 - 500 participants. Any suggestions are welcome, however it is possible that by then there will be an Olympic Village.

August 1993 - In China we should put in a preliminary proposal to the IUS General Assembly and Lobbying of delegates for support in 1997.

August 1997 - Full proposal to the IUS general assembly and voting by delegates.

If we get the congress.... It will be the XIII, (Julia is not superstitious!) Then there is four years of the hard work of raising money and organisation. To hold the Congress in Australia will require the support of all speleo clubs in the ASF, ACKMA and the New Zealand Speleological Society and possibly the Australian Academy of Science.

Field trips for the Congress - these would be organised around the participants entry and exit points in Australia and N.Z. Participants would be advised to minimize field trip costs by having travel within Australia as part of their International fare. This makes field trips to the Nullarbor, New Zealand and Chillagoe possible.

### International Conferences 1992

**May 18-24th 1992** ALCADI'92 Speloe History conference, Contact: Magyar Karszt es Barlangkutato Tarslat, H-1027 Budapest, Foutca 68.11.201 Hungary. Tel 36-1-2019493.

**June 12-14th 1992** Alpine Caves: Alpine Karst Systems and Their Environmental Context, ASIAGO (VI) Italy. Contact: Secretariat, Robert Zorzin, Vicolo Riva San Lorenzo, 1-37121 Verona, Italy, Tel 045 - 32140.

**August 3-7th 1992** NSS convention P.O. Box Salem IN Delany Creek Park. USA Contact: Scott Fee 1992 Convention P.O. Box 2929 Indianapolis, IN 46206, Tel 317-328-9432.

**August 20-23th 1992** European Conference of Speleology. Contact: Jan Vloeberghs, President FNBS. Place Willems, 14. 1020 Bruxelles. Tel 32.16.23.78.99.

**August 23-30th 1992** RESCON 1992, International Cave Rescue Congress. Contact: A.R. Wood, 1-10 Powell St, Penwyllt, Pen-y-Cae, Swansea, SA9 1GQ, UK.

Australians will be most welcome at these conferences.

Julia James.



# An Incident at Guy Cave, Katherine N.T.

Guy Bannink and Karen McGraith

In October 1991 an incident involving severe dehydration and suspected hyperthermia occurred in Guy Cave on Cutta Cutta Nature Reserve, during a Top End Speleological Society trip. Fortunately the incident was not as serious as it could have been, but it served to illustrate some of the unique caving conditions and safety requirements of the Top End.

There were four people in the party, two experienced NT cavers and two novices who were present for scientific purposes. They were physically fit and were well acclimatised to the NT conditions. The purpose of the trip was to go to the water table to inspect and sample shrimp, and investigate rumours of the presence of blind fish.

Both in Darwin and before entering the cave, the NT cavers impressed upon the novices the dangers of hyperthermia and dehydration, and they were advised to have frequent drinks and rest stops. The party entered the cave at 9pm, as the air flow into the cave cools the deeper passages at night and the return journey to the surface would be less stressful. Approximately two litres of water per person was carried along with spare lights, and scientific equipment. At the water table conditions were expected to be extreme, with temperatures around 31 degrees and humidity about 98%.

The trip to the water table, about 800 metres into the cave, took about one and a half hours. Most of this distance involved crawling or difficult walking. Every twenty minutes the party stopped for a rest and a drink. During these stops the novices were encouraged to drink. One of the novices, insisted that he was not thirsty. It was noted that both novices' overalls were completely saturated. There didn't seem to be any problems on the way in and both novices commented that they felt comfortable but were quite hot.

There was no evidence of foul air at the water table and the group spent about an hour collecting shrimp specimens and waited for traps to catch fish. Most of the cavers spent this hour lying around in the dark, which allowed them to cool down and wait in relative comfort.

Before the return journey all water containers were refilled. Shortly after starting, the novice complained of thirst, weakness and feeling overheated. His overalls were completely saturated with sweat, whereas the experienced cavers' overalls were only just damp. The other novice was also hot, but was otherwise well. The party stopped to drink water and rest to allow the person to cool and rehydrate. As the party was moving to the surface the ambient temperature was dropping noticeably. After a short crawl he began to vomit and was unable to move for some time. He was eventually able to continue slowly, with someone else carrying all his gear (and the vomitus!). On the route he continued to vomit, and was becoming dizzy and incoherent. A decision was made to continue to move as opposed to stopping and sending for help, because the temperature was

dropping and an inflowing breeze helped to cool the party.

With some firm handling, slow progress and a change in the route the party made an exit after two and a half hours. It normally takes about 30 minutes for experienced cavers to reach the surface from the water table. At no time did the group run out of water. On arrival back at camp the casualty was very tired and uncommunicative and retired to his sleeping bag after having some oral fluids

Our assessment was that the person was significantly dehydrated, hypotensive, (low blood pressure) and probably had suffered hyperthermia. The next morning, he felt much better, but was determined that he would never enter a cave again! Despite this unfortunate incident, the trip was not entirely unsuccessful, as a new genus of shrimp was identified in the specimens collected at the water table.

Since this incident, TESS has changed its policy about which caves novices may enter, in order to prevent an incident which may be more serious next time. We have developed a set of safety guidelines, which includes a protocol for logging in and out of caves, and proposed guidelines for cave rescue in the Top End which take into consideration the extreme conditions in the caves and the dangers of dehydration and hyperthermia.

In the next issue of Australian Caver we will be outlining the first aid procedures for treating hyperthermia.

**ARE YOU INTERESTED IN GETTING TOUCH  
WITH OTHER CAVERS?**

**OR**

**FINDING OUT HOW TO GO ABOUT GETTING  
A PERMIT TO CAVE INTERSTATE?**

**OR**

**WANTING SOME INFORMATION ON WHO  
HAS RESEARCHED THE DIETARY HABITS  
OF THE LESSER KNOWN CAVE SCORPION?**

**BY JOINING**

**THE AUSTRALIAN SPELEOLOGICAL  
FEDERATION INC**

**NOT ONLY WILL YOU FIND THE ANSWERS  
TO THESE QUESTIONS BUT YOU WILL  
RECEIVE**

**THE ASF QUARTERLY NEWSLETTER  
AUSTRALIAN CAVER.**

**INDIVIDUAL MEMBERSHIP COSTS  
\$11.00 IF PAID BY THE END OF JUNE.**

**Phone or write to Steve Brooks  
6 Kidbrooke Pl, Westfield. 6112. (09) 390-9259  
or**

**Chris Dunne  
P.O.Box 388 Broadway. 2007. (02) 605-7003**

# SPELEO SYNOPSIS

## August 1991 - December 1991

by Peter Ackroyd

### AUSTRALIA

Speleopod 3 (Jul 1991) This newsletter of a new Australian caving club (Savage River Caving Club, Tasmania) contains a cave atlas of all known caves in Gunns Plains area, Northern Tasmania.

Speleopod 4 (Oct 1991) This issue adds to the Gunns Plains cave atlas (up to GP-23) and introduces us to the Mt Cripps cave atlas (up to CP-6). [The Mt Cripps area was formerly known as the Mayday area in the 1985 Karst Index.]

Rimstone 18 (Jul-Dec 1991) [Newsletter of the Top End Speleological Society (TESS)] TESS is becoming involved in the exploration and documentation of the caves of Limestone Gorge, Northern Territory.

### NEW ZEALAND

SUSS Bull 31(3) This issue is entirely devoted to recent caving trips to New Zealand, most notably the caves of the Ellis Basin, South Island.

NZ Speleo Bulletin (157/8) (Mar/Jun 1991) This appears to be a 'catchup' issue with many early reports sprinkled throughout its pages. Aquarius Cave, Takaka Hill, is described, followed by Ratite Rest Home, a small but interestingly located pot on Mount Arthur. Trevor Worthy describes in detail the 13.7 km long Honeycomb Hill Cave, which has (at last count) 70 entrances and some of the most significant bird sub-fossils in New Zealand. A 1983 expedition to the Tawarau State Forest (Te Anga) resulted in the discovery of 2.7 km Tawa-Kananda. Little is heard of lava caves in New Zealand, but Hound's Hole (Mamaku Plateau) is described (with map) in this issue. Dogleg Cave, Canaan, has finally been mapped after originally being discovered in 1958. You're Mad Cave, Waitomo, and Laird's Cave, Mt Owen, are small, but significant caves which have finally made it into print before the issue wraps up with a cave management visit to Ana Hulu Cave (in Tonga) in 1989.

### EUROPE

Caves and Caving 52 (Summer 1991) British teams report in this issue on their reconnaissance trips to Vietnam, Uzbekistan, Turkey, Irian Jaya and South Nordland. Other items include descriptions of routes and a map of Nettlebed Cave, New Zealand, and a circuit diagram of a simple Radio Location Device operating on 874 Hz.

La Nostra Speleologia (1990) [Bulletin of the Trieste Alpine Club] *In Italian, summary provided by Gaby Grusovin of VSA.* This issue includes articles on an expedition to the St Paul Underground River in the Philippines, a trip to the Grotte Todaitto in Sardinia during which a high level extension was discovered, and various trips to the karst regions of north-east Italy and northern Yugoslavia. Other articles cover old Roman baths at

Monfalcone, Trieste, and the 1965 discovery of ruins of a 1,600 years old Roman pagan temple.

Descent 101 (Aug-Sep 1991) Continued diving in Kingsdale has resulted in the underwater connection of Kings Pot and Keld Head, making the total length of the Kingsdale System 20+ km. This issue also carries an article detailing the new, highly decorated, finds in Peak Cavern, Derbyshire. Already several hundreds of metres long, the new passages have many leads which may bypass the famous Far Sump. The caving accidents summary for 1990 shows that Great Britain had three cave deaths in that year, although only one could be classed as the death of a caver while caving. The majority of incidents were due to falls.

Proceedings of the 7th International Cave Rescue Conference. The proceedings of this conference, which was held in northern Italy in 1987, have been jointly published by the Union Internationale de Speleologie and the Italian Alpine Club. Among the topics discussed during the somewhat loosely organised conference were underwater cave rescue, semi-remote medical monitoring of accident victims, assessment of stretchers available from different countries, the use of cordless drills in placing bolts and/or explosives for use in a cave rescue and the risk of contracting histoplasmosis in European caves. Of particular interest were several discussions about the need for international co-operation in cave rescues. One example of the need for this was given at the conference where a Spanish delegate related how his team was asked to conduct a rescue in Poland, but could not leave for five days until the financial negotiations had been completed.

Cave Science 18(1) (Apr 1991) This issue consists of a detailed examination of the Peak-Speedwell Cave System, Derbyshire.

Descent 102 (Oct-Nov 1991) Carno Adit is a brick-lined tunnel in Wales, which was originally intended to carry water to the Carno Valley. Construction work stopped in 1911 when a loose shale band was met. However, during the work a draughting cave passage was intersected, which was subsequently bricked over and forgotten until Bill Gascoine turned up this information from the early construction reports. Cavers began digging in 1982, continuing unabated until the breakthrough in August 1991. The resulting cave is horrible for the first few hundred metres but eventually opens up into some really big passage below Llangynidr Mountain. Other news in this issue describes Canadian cavers' realisation that they must start documenting their caves if they are to maintain credibility with the management authorities and a British expedition's results from a visit to Nan Dong area, Yunnan Province, China. In July 1991 an international team attempted to dive the Doux de Coly (Perigord, France). Using mixed gas re-breather technology, the team reached



# SPELEO SYNOPSIS

## August 1991 - December 1991

more than 4 km penetration and a maximum depth of 60 m without reaching the end. This sump is now the longest sump dive in the world.

Caves and Caving 53 (Autumn 1991) The record breaking 3.05 km sump dive from Keld Head to King Pot is described by Geoff Yeadon and Geoff Crossley in this issue's lead article. A couple of pieces on caving in Uzbekistan and Slovenia are the only other items of interest.

Descent 103 (Dec 1991 - Jan 1992) British caving is very much alive and kicking with more than enough proof found in this issue of Descent. Really big digs requiring civil engineering skills are underway at Redhouse Swallet (Forest of Dean), Penyghent Pot (Yorkshire Dales) and Whitepit (Mendip). Elsewhere, the magnificent 'Heaven' extension in Peak Cavern (Derbyshire) is described with accompanying photos, the BCRA conference for 1991 is summarised, diving exploits at Doolin (Ireland) and the King Pot - Keld Head (Kingsdale) connection (3.05 km) are written up and a description of the highest limestone cave in the UK is given. In the equipment section a new self belay device from Petzl, the Grigri, is reviewed.

Cave Science 18(2) (Aug 1991) This particular issue is mainly devoted to the currently popular topic of radon in caves with reports from various caves in the UK being given. A report (with maps) of the six caves surveyed by the members of Operation Raleigh who visited Gregory National Park (Northern Territory, Australia) is also presented here. Other reports cover the limestone karsts of the Nepal Himalayas, karst areas of Aamas Daglari, Turkey, and a discussion on artificial anchors in caves.

### USA

NSS News 49(6) (Jun 1991) Cave restoration is the theme of this issue with details of rubbish removal projects involving cavers and cave managers at Mammoth Cave (Kentucky) and Stillhouse Cave (West Virginia).

Compass and Tape 8(3) (Winter 1990-91) This issue is almost entirely taken up with a reprinted 1962 article from a British caving magazine dealing with cave survey grades and what they all mean.

NSS News 49(7) (Jul 1991) This issue is entirely devoted to the reciprocal USA/USSR cavers' visits undertaken in 1988 and 1990.

NSS Bulletin 52(1) (June 1990) The lead article in this US karst research journal covers the history of cave mapping techniques. Other articles are: caves of Tabago (West Indies), karst landforms in Saudi Arabia, meander cut-off caves and meteorological observations in an ice cave.

NSS News 49(8) (Aug 1991) Caving in Brazil is given a

run in this issue, followed by a bit of nostalgia from the early days of NSS.

NSS News 49(9) (Sep 1991) The recent 50th NSS convention is reported in this issue with some interest added by Tom Lera's article on postage stamps which feature bats.

NSS News 49(10) (Oct 1991) John Moses writes of his experiences in USSR's deepest cave, Snezhnaya (Georgia), as part of an American/Soviet team that visited the cave in 1990. In the Safety and Techniques column, Bill Storage looks at the best way to assess the true or objective safety of equipment and hardware. Within Bill's lengthy dissertation there is the germ of a good idea trying to push its way through his verbal compost.

NSS News 49(11) (Nov 1991) The exploration and survey of Clayton Conrad Cave (Indiana) is the lead article in this issue. It is followed by a short item on crystal caverns in Switzerland - geode like fissures lined with quartz crystals. This issue also contains the index to Volume 48 of NSS News.

NSS Bulletin 52(2) (Dec 1990) In this issue: lithologic control of shallow karst groundwater flow, Kentucky; subaqueous speleothems in Lechuguilla Cave, New Mexico; paleomagnetism of speleothems in Gardner Cave, Washington; hydrothermal cave genesis, Turkmenia; influence of seasonal changes upon the genesis of gypsum speleothems; factors which may affect radon daughter concentrations in caves in Nevada.

### House Keeping and Address lists.

Steve Brooks wants all those disks given out to the last ASF Council Meeting in Jindabyne back with your club members' up to date address lists on them.

Anybody who moves house and wants to remain on the Australian Caver's address list: you have to write to Steve not to the editor.

She gets very disappointed when she opens the mail expecting an article or the odd photo (hint, hint), and all she gets is an "I've moved" notice!

Back copies of Australian Caver write to  
Macquarie Uni Caving Group.  
c/- Sports Assoc., Macquarie Uni.  
WEST RYDE, 2109



## Tasmanian Caverneering Club

has done a lot (mainly due to the long spells between these reports!). This is by no means the complete recente historie of TCC, but probably a fair collection of some of the major happenings.....

Couldron Pot (JF2) has seen the discovery of a long horizontal streamway beyond the "bottom" chamber. This was found past the upward Au Cheval pitch, an area previously written off as being a waste of space. There is still exploration potential at both upstream and downstream ends of this extension.

A few entrapments, near entrapments and rescues have occurred, all revolving around floods and heavy water. A considerable amount of cave rescue training and re-equipping of the Police S&R squad has happened to the point that several of the Rescue Squad members are now competent vertical cavers in their own right. A major vertical rescue exercise was held early 1991 in Big Tree Pot at Ida Bay and another is planned for Khazad-dum in the Florentine Valley early April. Pitch rigging and hauling techniques have now been refined to the point of being mundane! General organisation of cave rescues has also been tightened up considerably, particularly with regard to communication and logistic support during the circus.

Australia's ultimate through trip was done again in good style and time. The Ice Tube -> Growling Swallet trip was completed in about seven hours by a group including two visitors from NSW. The feeling of isolation coupled with the spray lashed wild and untamed nature of the bottom few pitches of Ice Tube is something to behold and a memory to treasure for all time, no matter how many times one does this trip!

Various people have been on various overseas trips/expeditions with generally good success.

Maps of Growling Swallet, Serendipity and so on are drawn up and will be published in an "exploration journal" in the near future.... (certainly before TAS TROG 93).

A considerable amount of work at Ida Bay in southern Tasmania has resulted in the discovery of a number of hitherto unknown caves and major extensions to some others, notably Little Grunt. Most of this effort came about as a result of the Bender Quarry conservation issue. This major impost on the natural processes of evolution of the Exit Cave System is not currently resolved, but will be in the near future.....?????

Hydrological mapping of the Florentine Valley was carried out by one of our members as part of an honours thesis. A few revelations were brought to light with the work and no doubt future studies based on this work will reveal more.

The now third deepest cave in OZ was found and explored about twelve months ago. Situated on the high slopes of Wherretts Lookout in the Florentine Valley, it is a stream sink and contains an inordinately large number of big pitches, viz 85m, 103m, and the longest in Oz at 190metres amongst others! All these are free hanging.... The total cave depth is 371 metres, with a nasty 300 long and low serpentine entrance series before the verticals are reached. Its name is Niggly Cave - very appropriate if you are lucky enough to visit it at some time... Tassie has at least the deepest 25 caves in the country.

**Stuart Nicholas**  
President TCC Inc.

## The South Australian Speleological Council

has received funding from The South Australian National Parks and Wildlife Service to carry out some work on the populations of Cave Crickets in the Naracoorte Area. There has been a substantial amount of work already undertaken by Mr Ron Simms from the Scout Caving Group who has discovered that recent clean ups of some caves have resulted in a decline of the populations of cave crickets. The funds received will enable the continuation of field work and publication of results. Anyone with information on cave crickets in general and in the Naracoorte area specifically could you please send it to Mr Ron Simms, 29 Kentdale St. Grange. S.A. 5022. Ph (08) 356 5366.

**Material for Australian Caver can be sent to the Editor in many formats:**

**Hand written and typed manuscripts must be double spaced.**

**Disks: please send in ASCII, on 3 1/2" or 5 1/4" - Macintosh or IBM.**

**Please pack your disk in lead and then cover in a hard outer casing so that it can not be bent by the postie. Please send a hard copy of the article with it just in case the postie is particularly addicted to disk bending!**

**Material should be sent to the following address:**

**Clare Buswell**  
**C/- politics Department, Flinders University, Bedford Park S.A. 5042.**  
**Fax: (08) 201 3622.**  
**or via electronic Mail: heiko@cs.flinders.oz.au**