AUSTRALIAN CAVER

No. 133. 1993. Australian Speleological Federation Quarterly

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Front Cover Photo:
David London (WASG), in Speleo Sports Tas Trog 93, Launceston. Photo Courtesy of the Launceston Examiner.

EDITORIAL

I hope that most of those who attended the Tas Trog conference have recovered from the bruising that speleo sports caused and have been thinking through some of the issues raised in the papers presented. For those of you who were unable to attend some of this issue is given over to a write up of the Council meeting and some photos of the fun that was had by all.

The on going battle to stop any further mining of Exit Cave continues. During the Federal election campaign the Huon Action Group illegally entered the quarry site and called for the reopening of the quarry. Tasmanian cavers and the ASF contacted Ros Kelly, the then Federal Minister of DASETT, and issued statements to the media emphasising the breach of the Federal law and reiterated the importance of the cave as the only World Heritage listed cave in the country. Pressure must be maintained on both the Federal and Tasmanian State governments to rehabilitate the site and finalise compensation payments. Once again the Federation asks you to write to the newly elected Federal Minister for the DASETT and to John Cleary, Tasmanian Minister for Forests, Parks, Wildlife and Heritage, emphasising the importance of this cave (see Australian Caver Numbers 131 and 132), and the necessity of rehabilitating the site before the winter rains set in.

The next issue of Australian Caver will be printed when I have enough material to put together an issue. **The next deadline is the first of June. My in tray is bare. Clare Buswell.**

WHAT'S ON.

ACKMA Conference. Rockhampton. Qld. May 17 - 20.

ASF Executive Meeting Rockhampton. May 16th. Contact anybody on the executive if you want anything put on the agenda.

XI International Conference of Speleology. Bejing China. August 1993. Details available from Julia James. 41 Northwood St. Newtown. 2042 Ph: (02) 519-1415.

FOR SALE. Tasmanian Cave Exploration in the 1980's. Vol 1. Published Dec 1992. Excellent value at $20.00 plus postage and packaging. Available from T C C. P. O. Box 416. Sandy Bay. 7005

This edition of Australian Caver was put together in the pre federal election hype, on less than the Hewson youth wage; without a contract and in the time honoured tradition of womens work. i.e, in the home and at little cost to the company.

Person foolish enough to be the Editor: Clare Buswell
Proof Reader: Heiko Maurer.

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LETTERS TO THE EDITOR

Dear Editor,
I read with interest the letters to the editor from Carol Layton and Peter Ackroyd, on the subject of the ASF Code of Ethics, in issue 132 of the Australian Caver. The focus of their correspondence, What's in a Code of Ethics? an article in the previous edition of the Australian Caver, had been submitted by the Canberra Speleological Society Inc following changes to the ASF Code of Ethics made at the 36th ASF Council meeting in Jindabyne in January 1992.

Mr Ackroyd's angst, that the CSS article was apparently written by an individual without a detailed knowledge of explosives and was unsigned, is unfortunately peripheral to the debate. I drafted the article in question, but only on the basis of discussion of the issue at a CSS meeting, and I understand that my name was provided to the Australian Caver, although apparently not published. As the article reflects the input of members of the Society, the name of the person holding the pen is immaterial to the issues raised. The membership of CSS stands behind the article which was not meant to put a particular view, so much as to extend and raise the quality of the debate about a code of ethics to which all Australians who undertake caving may refer, including those who claim affiliation with ASF.

Ms Layton's comments, I believe, enter the spirit of the debate and correctly identify that in any diverse community there will be a range of opinion as to what constitutes acceptable behaviour. However, I beg to differ from her view that a code of ethics constitutes a rule book in which standards of behaviour are spelt out in black and white. A code of ethics is more a corporate conscience to which an individual may refer in order to make an informed decision.

There may never be unequivocal rules governing contentious issues in caving. There is no way of policing them even if there were. Nevertheless, there is a responsibility on the part of ASF policy makers to ensure that there is adequate guidance for all, not just those with extensive experience or resort to expert opinion, to make informed decisions about the exploration and use of caves, which takes full account of environmental and social consequences.

Mr Ackroyd's thesis, that an individual's detailed technological knowledge in some way outweighs social or environmental responsibility is false. If he feels that the activity to which he subscribes has some legitimacy, the onus is on him to demonstrate that it conforms with what the caving community, as one of the custodians of Australia's cave heritage, regards as acceptable practice. It may be that there are circumstances where such activity is necessary, but technological competence in itself is insufficient justification.

I would encourage all Australian cavers to give careful thought to the ASF Code of Ethics and to step back from their routine caving activities to assess the consequences of accepted caving practice. Whether "Gung Ho", active or passive in our interaction with caves, it is important to remember that we all have an equal right to express a view on caving practice. It is even more important to remember that we also have a responsibility to those in society less well informed about caves or caving to adopt and publicise responsible codes behaviour on their behalf. This is not to say that ASF should seek to unneccessarily restrict or prohibit certain activities, but rather it should set a framework within which people may adopt responsible caving practice.

Yours sincerely
Peter Nicholson
(Member of CSS)

Dear Editor
The recent correspondence (Australian Caver 132) on the ASF Code of Ethics and in particular the issue of blasting and camping in caves, could not have given members a clearer choice of the options as to what should be included in the ASF code.

We either agree to, what are intrinsically destructive practices and accept both the environmental and political consequences, or pursue a conservatorial and more altruistic approach to cave management.

All cavers will accept that each time we enter a cave we cause some damage, a problem discussed in Do Cavers Have An Impact (Australian Caver 131). Minimising such damage, I would hope, is an issue that we all consider and one that must be appropriately addressed in a Code of Ethics. To pretend, as some correspondents have, that blasting and camping have negligible impacts and or are necessary is both mischievous and false.

How can we blast our way into an unexplored section of a cave and not expect to change permanently air and water flows, humidity, nutrient status etc. Do the advocates of this strategy really believe that their foot steps, and those that follow, will have no impact? Arguments claiming that the *gases generated* (from blasting) *are benign* and splitting rocks and *not a rattled window* while contentious, are irrelevant in this context.

Your correspondents point out that the exploration of Mammoth cave in the US, was achieved by blasting and digging several new entrances. To use this as an example of why we do not need to camp in caves in What's in a Code of Ethics (Australian Caver 131), was obviously a poor choice. However it is not without irony that one correspondent offers us this type of exploration, and camping in caves, as if these are the only choices available.

I can only wonder at the arrogance, implicit in the views of some cavers, that we have an inalienable right to explore caves by any, and all means possible. If our progress is frustrated by the cave morphology, then we just blast a way through. If the current technological limits do not allow us

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long enough underground then the only option is to camp. Is the prize always worth the damage that will inevitably occur? Is the thought that some sections of some cave may remain unexplored, with our current technology and skills, so offensive?

While recent correspondents point out that blasting will only be considered as a last resort, what are the limits to blasting and who will define and enforce those limits? Will it be those advocating blasting?

What's in a Code of Ethics rightly asks what controls do we really have under the present Code? One correspondent states his interpretation of justification for blasting is the need to put together the Karst jigsaw which really means blasting can be justified at any time if the desire to explore is frustrated. Is this what the Code of Ethics means when it states Explosives should not be used.... unless absolutely necessary?

And what of the need for an Environmental Impact Statement? Are we really to believe proponents of blasting have both the scientific credentials and independence necessary to carry out this sort of evaluation? If further justification for this concern is necessary we need only to read one correspondent's (an apparent strong advocate of blasting) comments, in relation to blast gases, where he cites his own unrefereed material published in Australian Caver as substantive proof. Will this be the standard applied to an EIS?

It is clear that in relation to blasting the range of interpretations possible, some already expressed in the correspondence, indicates there are no effective controls and operative safeguards.

To claim that the outlawing of blasting and camping is simply a scramble for the high moral ground is nothing less than a poor attempt to depreciate the concerns many have for the environmental and political consequences of these actions. It is also indicative of the peculiar anthropomorphic view, that human endeavour, in this case caving, over rides the rights and responsibilities we have to care for the world we live and go caving in.

If we fail to outlaw blasting in caves I have no doubt it will be pointed out, and very publicly at that, that ASF while deploring the effects of quarrying and in particular the associated blasting, allows this very practice in its Code of Ethics. What confidence will the public have in ASF under these circumstances? Is the credibility of ASF to be put at risk by a few individuals who cannot control their urge to tread every passage by any means possible?

Over many years one of the strengths of the ASF has been its close affinity with cave research and conservation. Setting a Code of Ethics that promotes conservation and outlaws practices such as blasting and camping, will assist in the protection of caves and the other, non human and far less ephemeral species, dependent on them.

This, as a responsible overview, is a proper and correct approach for our national body. We should be seen to be a leader in this area. If this drives some cavers out of the system, as one correspondent suggests, then so be it. Surely a Code of Ethics should represent a publicly accountable set of agreed and acceptable practices. Not a document that is simply an anecdotal description of our behaviour in caves.

It is clear from the correspondence that we will not all agree on these issues, the views expressed are just too divergent. However, the more personal attack of one of your correspondents, implying, of all things, cowardice on the part of the author of What's in a Code of Ethics, for not signing their name to this article, is both offensive and irrelevant. I would hope, that this type of commentary will draw universal condemnation. Such vitriol adds nothing to the debate, however, it should raise concerns amongst all of us as to the motives of this correspondent and at what level this debate is to be conducted.

What impressed me about the article What's in a Code of Ethics was that it stressed the evolution in acceptable caving practices. While stalled at the moment on the issues of camping and blasting, I believe we can not be deterred from taking an increasingly conservatorial approach to our behaviour in caves.

Ultimately, as the present generation of cavers, we will be judged on how well we have managed this limited resource. Let's hope we are not again subjected to the villification, that still occasionally surfaces, from our earlier days when blasting and to a lesser extent camping, were widely thought to be an acceptable means of cave exploration.

Garry Mayo

Dear Editor,
Several allegations made by Peter Ackroyd in his letter "Caves, Caving and CSS" (Australian Caver. No. 132) cannot be left unchallenged because they are false.

Mr Ackroyd wrote in response to "What's in a Code of Ethics" (Australian Caver. No. 131). CSS submitted the article to encourage further discussion on two important issues and The Society appears to have been successful in this. It has also provoked comment from Mr Ackroyd on a number of incidental issues. In normal circumstances, such comments would not warrant a response. However as Mr Ackroyd is wrong on several points, I would like to set the record straight to avoid further sidetracking of debate.

Firstly, Mr Ackroyd implies that as the article did not include an author, it is part of a sinister plot and the author

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appears to be lacking in courage. In fact there is no ulterior motive other than to have the issue raised and debated in a rational manner. The article appears to be anonymous only because the author's name was inadvertently left off. In any case it is the views that are important not who wrote them.

Secondly, Mr Ackroyd claims, that the author appears not to be speaking for all of CSS. This is quite untrue. The article was drafted following a discussion at a CSS meeting. It was circulated for comment and cleared by The Society before being sent to the ASF. In short the article was written and published with the full support of CSS.

Thirdly, Mr Ackroyd refers to Andy Spate as "a long time CSS Member" while it is true Andy was for a number of years a member of CSS (and of VSA for that matter), he is not at the current time. In fact he has not been a member of CSS for more than five years.

These comments do not further the dabate, but I (meaning in my position as Secretary and dutifully passing on the views of members expressed at our last meeting), hope that now the record has been set straight, discussions on the real issues will continue.

Tim Barrett.
Secretary. Canberra Speleological Society.

Dear Editor,
Whilst recognising that any member of ASF may express any view in the columns of the Australian Caver - and that the views expressed in the newsletter are not necessarily those of the Australian Speleological Federation Incorporated, I am extremely distressed that a direct personal attack, such as that made on me by Mr Ackroyd in Issue Number 132, can be made on an individual without the right of reply in the same issue. The quarterly interval between issues is such that responses to matters of personal concern lose their relevance and impact - this is clearly unavoidable in some cases - but three months is too long when one is being slandered - especially if there is time available to seek a response.

Please let me make some points in relation to Ackroyd's letter:

1. Like Mr Ackroyd, I have no idea who in the Canberra Speleological Society drafted the letter he refers to (published in Australian Caver Number 131), which discusses the reworking of the ASF Code of Ethics at the Jindabyne Committee meeting in January 1992. Like him, I was surprised at the use of the first person in a letter attributed to a society. Unlike him, I share many of the letter's views.

2. I have not been a member of any ASF society for most of the last ten years (except as an individual member of ASF). I have probably been to no more than ten CSS meetings in the past decade - I hardly even talk to its members (many of whom are friends of 15 to 20 or longer years standing) because of the pressure of work, the relative remoteness of my office and because I try to keep my professional role at the NSW National Parks and Wildlife Service remote from any one society.

Just because I live in Canberra does not mean that I have a special relationship with the Canberra Speleological Society, the Capital Territory Caving Club, the National University Caving Club or Dr Hewson or Mr Keating for that matter!

3. In the late sixties or very early seventies the Victorian Speleological Association conceived a plan for a monograph on Buchan. This was before I had any pretence of being a professional in the field of caves and karst. In those days, twenty odd years ago, I was mainly interested in bats and was well aware that cavers and bat researchers were having an impact on bats - so I stopped disturbing them.

Cliff Ollier was invited by VSA to contribute the section on the karst geomorphology of Buchan and surrounding areas. I was either still living in Orbost or had just moved to Canberra, (I think the latter). Cliff could spare little time for the visit and he asked me to show him a "representative" sample of caves or parts of caves - hence the strange array of caves listed by Mr Ackroyd - we visited them all - much to the distress of Cliff's wife who hardly saw him over their weekend away. We did not visit every nook and cranny - sometimes the features of interest were in the first few tens of metres..... Mr Ackroyd probably considers that he has "done" whatever caves he has visited in his long career without necessarily visiting all of the extremities.

"Three distinct karst areas in Victoria" sounds like they are at opposite ends of the State. They are an artificial distinction of genetically, and lithologically, related karst "areas" (Murrindal, Buchan, East Buchan and The Basin) in a restricted geographical area. We drove fast, walked fast and as he suggest may have caved too fast.

Vis-a-vis the VSA Buchan monograph project we heard no more about it and it moved to steadily more rearward backburners. A year or two ago Cliff and I reviewed our notes and the literature etc; of that visit of two decades ago with a view to writing it up as a stand alone piece. We decided, without much trouble, that, in the light of newly developed ideas on Australian landscape development, on karst processes generally and especially in the light of the work of Finlayson, Ellaway, Webb and many others, it would be dangerous, and indeed presumptuous, of us to discuss the karst geomorphology of the area.

4. I certainly visited a lot of caves in a hurry on this occasion two decades ago, I had impacts as every caver who visits any cave does and I probably did not consider those impacts - few did in those days - regrettably. I hope, and believe that I at least, have grown up and developed some

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scruples about such things - as most grey-haired cavers have. I believe it is a pity that I, and many others, did not grow up sooner - it is also a pity that some refuse to grow up and continue to exploit the limited resource. I believe also that newcomers to caving, inside and outside the Federation are not being exposed to enough of the cave conservation message. Goodness knows that the "gung-ho" (by today's lights) cavers of the past have not provided enough examples to learn by.

Perhaps I am wrong; perhaps I am too conservative; perhaps I do express my views too forcefully; perhaps too often - but it is not personal aggrandisement nor personal vendetta against Ackroyd or anyone else which leads me to express conservative views - it is concern for our vanishing karst resource. If I am wrong, I have delayed things a year or decade or so:.... if Ackroyd is wrong it is forever.

I plead *mea culpa* to a "gung-ho" attitude to events of twenty years ago at Buchan - or at least how they were reported in the VSA log book. I wonder what would have happened if I had used "visit" instead of "did"....? I have said elsewhere in public and in writing that I regret things that I have taken part in in my thirty - odd year caving career. I wonder if Mr Ackroyd has the same attitudes now as he did 5, 10, 15, 20, 25, or 30 years ago - or whether he has always been perfect? Were his standards at today's levels 30, 25, 20, 15, 10, or 5 years ago?

I deny I am hiding behind CSS or that I am a "gung-ho" caver who gives no thought to the karst resource I am using, studying - and trying to conserve. There are very many caves, or parts of caves, that I have categorically refused to visit or revisit because of their sensitivities, because I felt that I did not "need to know". A number of cavers and cave managers will acknowledge my distress at being taken to places "just to see ....." when it did not add to my knowledge, have some other positive result or was demonstrably unnecessary.

Most of my grown life has been devoted to the study, proper management and protection of "Australia's rare and sensitive karst resources" to the detriment of my family, perhaps my friends and certainly to my career (and income for that matter). I may not have been as successful as I might have been or as others may have been or have been let down by the rest of the bureaucracy - but at least I tried. I have certainly always appreciated and acknowledged, the contribution of cavers - there are management agencies around Australia who have been astounded at my vehemence about the value of the cavers' contribution to our knowledge of the resource.

I believe Mr Ackroyd owes me an apology for his innuendos, implications and for the omission of a time frame which might have put my actions into context. I am away from Australia until the end of February 1993 and thus will be unable to attend the ASF meeting in Tasmania and thus have no opportunity of raising this issue in any personal sense until the meeting in 1994. Although the Australian Caver has flowered under your editorship it is many months before this letter can appear and thus any response I make is limp and belated, in the interim my reputation is damaged.

Andy Spate.

HANGING AROUND WITH CALCITE STRAWS

D. Dicker & L. Robinson

Introduction

One thing Australia has going for it, is long calcite straws, although this fact is not likely to solve our economic woes. In the West Australian and Tasmanian caves reside many long straws. Western Australia's Strong's Cave houses the worlds longest known straw stalactite.

As every truthful caver, who has explored caves with limited clearance under straws knows, they are easily broken. Worse still, the distinct sound of a breaking straw alerts the entire party as to the offender. One would have to class straws as being fragile and brittle. However, straws above 1.5m long are considerably more resilient to a sideways force (a clumsy caver's helmet) applied to their lower end than their shorter counterparts. One 4m long straw in the Augusta Jewel Cave was struck by a nervous tourist bureau official during an inspection of the cave prior to this cave being developed as a tourist cave. It survived and was estimated to have deviated, at its lower end, 300mm in a number of directions as it swung for that seemed like a lifetime to the embarrassed official. Fortunately for the straw no one attempted to arrest its erratic gyrations.

Perhaps the most notable straw to survive long periods of movement could be the approximately two metre long straw pendulites in the Organ Pipe cavern of the Augusta Jewel Cave, referred to as club straws. During exploration (early 1958) and tourist development (1959 & 1960) of the cave the clubs of these straws were immersed in the cavern lake. In the years prior to exploration the club straws would have experienced the lake rise and fall and may have been disturbed by a wave or two caused by the ocasional rock falling into the lake. Earth tremours are not uncommon in this region. From the time humans entered the cave, there has been considerable disturbance of the lake due to exploration surveying, canoes paddling about for T.V. cameras and the disturbance due to construction of tourist platforms above the lake. The water immersed clubs ensure the resultant waves rock the straws to and fro. They have survived and for the last few years have hung clear of the lake which has all but vanished.

Straws have always had a fascination for cave visitors. In the early day they made excellent souvenirs of ones cave tour. The surviving long straw in the Moondyne Cave said to be 4.369m (14 feet 4 inches) long, was once one of many said to be much longer than the one remaining. Old Augusta residents in 1958 and 1959 spoke of the early days of this century when visitors to the cave could throw stones at the many straws which decorated the high ceiling of the Temple of Babel cavern, making use of a lofty vantage point and collecting the results of their efforts from the cavern floor on the return journey. (Moondyne Cave was closed as a tourist cave on the 24th December, 1959.)

Since the discovery of the long straw in the Jewel Cave and a still longer one in Strong's Cave, various theories have been put forward as to the length a straw could attain before its own weight was the cause of its demise. It is feasible the straw supporting the largest club in the Jewel Cave is carrying the greatest weight of any known straw.

In an effort to give some clue as to the tensile strength of straws, tests have been carried out on short straight sections of straw pieces. It must be borne in mind that most, if not all, long straws are not straight and any load applied to these would induce other forces as the straw attempted to straighten under load, thus reducing its tensile strength.

The reader could be excused for asking what vandalism has been perpetrated in obtaining the straw pieces used in the testing. During development of the Jewel Cave for tourism the late Cliff Spackman and Robinson had to remove a few straws from pathways. These straws were stored in the Jewel Cave for twenty seven years. In 1986 some straw pieces were taken from storage for testing.

Tensile Tests on Calcite Straws.

A total of 10 straw samples were available. These ranged in length from 100mm down to 30mm, some were hollow with quite thin walls, while others were solid. They were all fairly straight and consistent in diameter. As mentioned in the introduction, all the straws originated in Jewel Cave in Western Australia The three samples were selected bearing in mind straightness and consistency of cross-section. A fourth sample was also prepared, but broke during handling due to the extreme fragility of the sample.

A tensile test apparatus was made up as shown in Fig 1. Great care was exercised in ensuring that all drilled holes were at right angles to the centre-line of the adaptor rods, and that the holes in the side plates were on the same centre-distance. Care was also taken to ensure that the two adaptor rods were in line. This was achieved by assembling the test pieces in a vee-block. Each end was glued individually, thus eliminating the risk of glue running down inside the straw. Long setting "Araldite" was used on all samples.

The load was applied to the straws by running a slow trickle of dry sand into a 10lt bucket suspended from the bottom pin of the apparatus. After failure, the bucket and its contents were weighed on a set of calibrated scales.

The broken straws were sectioned as close as possible to the failure point, and mounted on a glass microscope slide. The top face of the straw was inked in, using black drawing ink. The cross-sectional area was measured by projecting the straw section onto a sheet of tracing paper using a 10X shadow-graph machine, and measuring the resultant area using a planimeter. (Fig 2.)

Due to the number of possible variables and the lack of

HANGING AROUND WITH CALCITE STRAWS

sophisticated measuring equipment, the accuracy of the results is in the order of +/- 5%.

Sample One.
This sample was hollow with a reasonably concentric hole. The straw failed approximately 3mm from the top adaptor rod, the mean failure plane being at right angles to the centreline of the straw. (See Fig. 2). The load at failure was 11.8 kg and the resultant cross-sectional area was 0.1484 sq cm.

$$\text{Max stress} = \frac{\text{max. load}}{\text{area}}$$

$$= \frac{11.8}{0.1484} \text{ kg/sq cm}$$

to calculate the density of calcite:

Specific gravity of calcite = 2.71

Density of water = 0.00100 kg/cu cm

Density of calcite = 0.00271 kg/cu cm.

To calculate the maximum length of straw (sample 1)

$$\text{Volume of calcite in 11.8 kg} = \frac{11.8}{0.00271}$$

$$= 4350 \text{ cu cm}$$

Theoretical maximum length of straw

$$= \frac{4350}{0.1484}$$

$$= 29400 \text{ cm}$$

$$= 294 \text{ m}$$

This figure seems excessive, but may not be, as many factors contribute to the premature failure of straws, (see conclusions).

Sample Two.
This sample was thought to be a solid straw. However, there was a cavity directly adjacent to the top adaptor rod, and the resultant failure made it impossible to obtain a section to measure its area.

Sample Three.
This sample was a hollow straw with an offset hole, the offset being approximately 0.70mm. The sample failed half way between the top and bottom adaptor rods, at an angle of approximately 45 degrees to the centre-line of the straw. The failure load was 7.4 kg, and the cross-sectional area was 0.2032 sq cm.

$$\text{max. stress} = \frac{\text{max. load}}{\text{area}}$$

$$= \frac{7.4}{0.2032}$$

$$= 36 \text{ kg/sq cm}$$

The density of calcite is 0.00271 kg/cu cm.

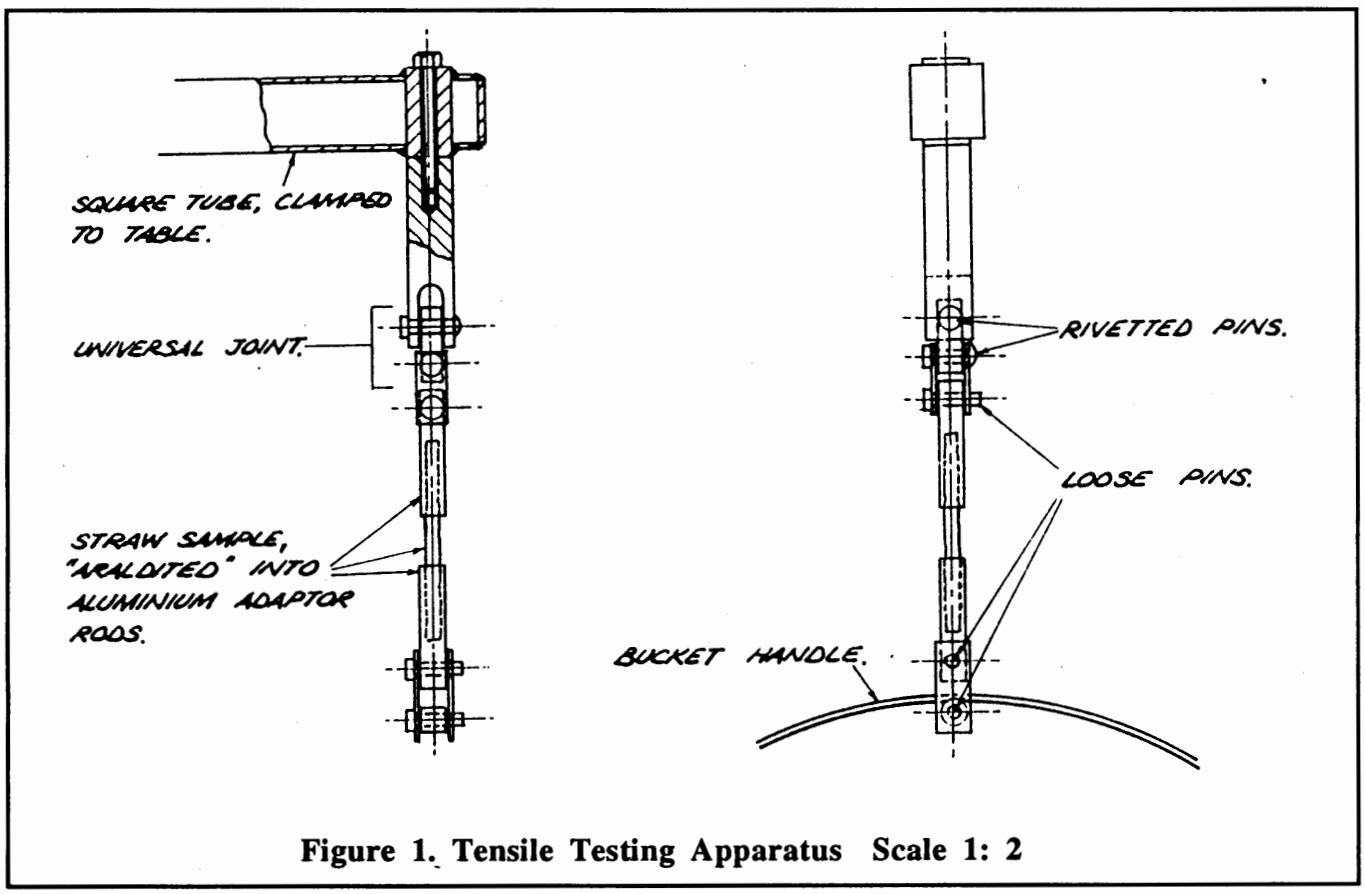


Figure 1. Tensile Testing Apparatus Scale 1: 2

HANGING AROUND WITH CALCITE STRAWS

To calculate the maximum length of straw (sample 3):

Volume of calcite in 7.4 kg = $\frac{7.4}{0.0027}$

= 2700 cu cm.

Theoretical maximum length of straw.

= $\frac{2700}{0.2032}$

= 13000 cm
= 130 m

Conclusions.

The above results are indicative only. The following factors will affect the maximum length to which a straw can grow.

1 The consistency of the cross-sectional area along the length of the straw.

2 The straightness of the straw: any bends in the growth of the straw will induce a bending moment above the deformity.

3 Impurities or inconsistencies in the crystalline structure will probably reduce the strength of the straw.

4 Fatigue. A straw which is constantly being moved to and fro in a breeze or water ripple will fail sooner than one in still air.

Other factors to be borne in mind:

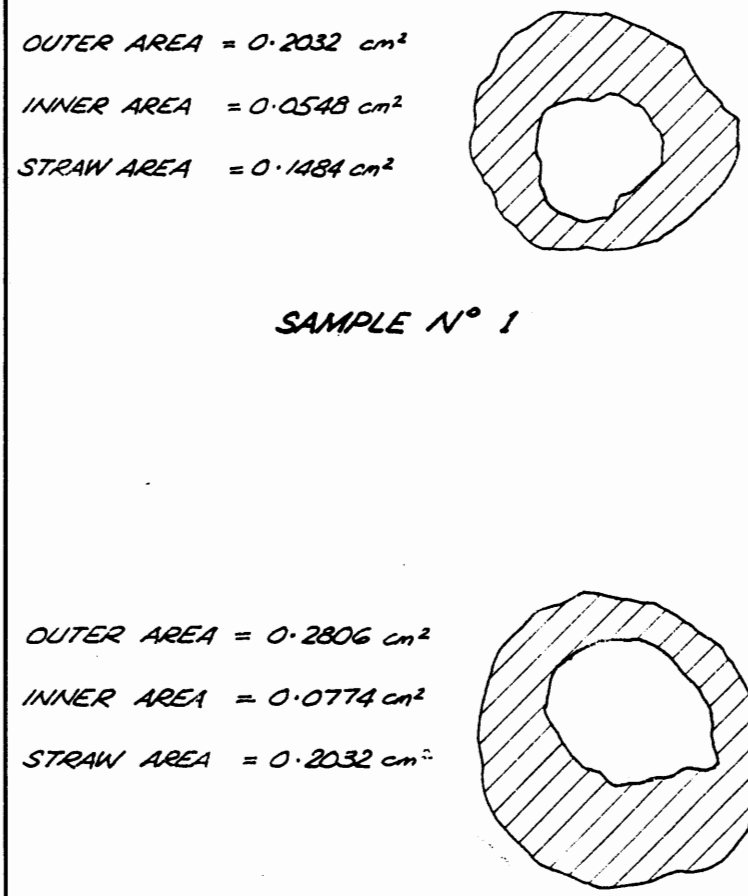
5 Two samples are not a representative sample. A batch of 5-10 successful tests would give a more typical result. To test a batch of this quantity would be difficult (hopefully) due to the rarity of straw samples.

6 Between 1986 and 1991, the straws were stored in two thermometer tubes which were not quite airtight. The question arises whether calcite, which formed under high humidity conditions in the cave, will deteriorate under the lower humidity conditions above ground.

7 The straw samples may have suffered a detrimental effect from being handled during the manufacture of the test pieces.

8 Possibility of bats striking straws. The Augusta Jewel Cave was closed to tourism for some days due to a swallow finding its way into the cavern containing the large straw.

Figure Two.
Scale = 6 X Full size.



ASF NOTES AND NEWS FROM THE CONFERENCE

ASF Council Meeting. Launceston Tasmania January 1993.

This annual Council Meeting was held as part of the Tas Trog'93 Conference, ASF's 19th Biennial Conference at "Glenara" on the outskirts of Lanuceston in northern Tasmania. This was a well run conference and particular thanks go to the Northern Caverneers's organising committee and to the staff at "Glenara".

The Conference proper consisted of the presentation of a number of papers on caving and speleological topics, a Cavers Dinner, a photo and slide competition and one of the most ingeniously contrived Speleo-Sports coures ever seen.

Between 70 and 100 people attended the Conference. Of these, about 50 partook in the Council meeting's two sessions on Monday 4th and Friday 8th January.

Most clubs were represented by their Councillors - 22 out of 25 financial Corporate Member Clubs: five clubs were only represented by proxies. Under the ASF's new Constitution, larger clubs are allowed more Councillors: of a possible 60 Councillors, 54 Councillors or their proxies were present. 17 of our Associate clubs had reps - for future reference, we'd love to see some more of your members at these meeting! Two clubs were admitted as ASF Corportate Members: Illawarra Speleological Society and Central West Caving Group. We'd still like to see some of our well established Associates seek Corporate Membership and participate more fully in the Federation.

Incidentally, Rauleigh Webb distributed a new set of floopy disks to most Corporate Member clubs containing the ASF membership database program and each club's data as at 1st Jan 1993. If your club didn't receive one, contact Rauleigh on 09 444-1020. Be sure to get you club's address list up to date and the disks sent to Steve Brooks at 6 Kidbrooke Pl. Westfield. W.A. 6112.

Early on the agenda were a series of Constitutional changes, most of them minor and some precipitated by changes to the legislation under which we are incorporated in the A.C.T. Further adjustments will be necessary, for example our composition as a federation of voting member clubs and also a federation of non-voting individual members of those clubs may present some problems.

For a change, the Executive tabled a combined report: traditionally, various members of the executive have prepared separate reports. This year's Executive report was modest and it is hoped to expand this in future years, perhaps also summarising the reports of our various commissions and committees.

Despite efforts in past years to circulate reports in advance of the meeting only the Awards report was sent out with the Notice of Meeting. Others were simply tabled at the meeting and some were simply given as verbals, which is not ideal. Dealing with this year's reports took up a good part of the Monday session.

Despite some misgivings during 1992 by a few people and some of the clubs over last minute changes to the Code of Ethics and Conservation adopted 12 months ago, this was left as is for the time being.

There were some holdups during 1992, but early in 1993 the Documentation commission will be distributing, to several clubs for assessment, a pilot version of the Australian Karst Index Database. Peter Matthews is still working on policies and a model agreement covering distribution of ASF's data to third parties.

The conservation front has been focused these days largely on the threat posed by Benders Quarry to the Exit cave system at Ida Bay in southern Tasmania. We even had managed to secure some funding from Tasmania's Department of Parks, Wildlife and Heritage to survey and compile a map and report of Little Grunt Cave which lies partly beneath Benders Quarry and connects hydrologically with Exit cave only 2-300 metres away.

The idea of an ASF initiated trust fund to honour the late Joe jennings, one of the founders of the ASF and of Australian speleology, has been abandoned in favour of a tribute publication. This would be a collection of current studies of Australian caves and karst.

Early in the Friday session we saw the election of Miles Pierce from Melbourne as ASF's new President: other contenders were Rauleigh Webb and Clare Buswell. Although new to the Executive just now, Miles has previously served as a Vice President and Secretary of ASF. Four of the other eight Executive positions were up for election. Elected were: Peter Berrill, Brendan Ferrari, Stuart Nicholas and Keir Vaughan-Taylor.

Under the new Consititution, the Executive may reallocate an or all positions (except President) amongst themselves each year. Brendan will remain as Treasurer: Keir will take over as membership secretary - overseeing Steve Brooks in Perth, who will contiue to run our membership database. Peter and Stuart join Clare Buswell and Pat Larkin as Vice Presidents: Chris Dunne remains as General Secretary and Karen Magraith as Executive secretary. The Executive also appointed a further two Non-Executive Vice Presidents: Peter Kraehenbuehl from Adelaide - he is involved with both Scout caving in S.A. and with the S.A. diving scene, (as a member of CDAA, the Cave Divers Association of Australia); and Mick Moylan from Chillagoe. Mick hopes to bring Chillagoe Caving Club closer to the Federation and the Federation closer to events in Far North Queensland in the next few years.

The important, much anticipated and poorly understood proposals for an ASF National Caving Leadership Scheme

ASF NOTES AND NEWS FROM THE CONFERENCE

were unveiled at this meeting. It is preferred to avoid the term accreditation. A very different scheme has commenced in W. A. and ASF's scheme is largely modelled on the scheme developed by cavers and now in place in S.A. The scheme is not compulsory in other states but will be available should they wish to adopt the scheme. ASF would like several clubs to pilot it over the next couple of years on a voluntary basis.

In a not unrelated matter, Alan Jevons (Convenor of the South Australian Speleological Council) has been investigating insurance of caving activities. Alan gave a disturbing summary of the current liability and insurance status of most clubs. However, he is receiving advice on possible ASF - wide coverage.

Although still thought to be a good idea, the long awaited Beginners Handbook is no closer to completion. It is now thought best to find a professional to write such a book, perhaps even with government funding.

Fees for 1993 remain unchanged at a base rate of $7.00 if paid by the 30th of June or $13.50 after. Brendan fore-shadowed a rise of 50c for 1994. Fund raising for various ASF projects or via consultation is being investigated by Clare Buswell. She was involved in negotiations with Ian Houshold of Tasmania's Parks Wildlife and Heritage which resulted in funds to survey Little Grunt Cave at Ida Bay.

ASF's next meeting is again to be in Jindabyne in southern NSW. Our next Conference will be hosted by VSA in Hamilton in southwestern Victoria. There is talk of celebrating ASF's 40th Anniversary by stageing the following conference (1996/7) in Adelaide, site of our first conference in December 1956.

Further ahead, Julia James is preparing our bid to stage the 2001 Congress of the International Union of Speleology (IUS) in Australia, most likely Sydney. Italy is also hoping to stage the Congress in that year.

Chris Dunne. ASF General Secretary.

PAVAROTTI DOES KARAOKE IN THE POST 'COS HE FORGOT TO TELL US HIS NEW ADDRESS.

Don't be let down, tell Steve Brooks who looks after the mailing list your new address.

You must let him know the following: your old address, your new address; what club you belong to; if you are an individual member and if so when you joined.

Steve Brooks.
6 Kidbroke Place. Westfield 6111.
Ph: (09) 495 - 1661

CAVE AND KARST MANAGEMENT COMMISSION 1992.

Although the Commission itself has not been highly visible this year, its informal membership has been very active, demonstrating that cavers have important contributions to make to management issues. In South Australia Clare Buswell has set up a group to study cave classification. Along with Neil Kell (Yarrangobilly) I completed an extensive report for the Tourism Authority of Thailand on management problems in a tourist cave near Bangkok and I was also able to make a major input to two reports prepared by Canberra Speleological Society Inc. on problems of management at Gregory National Park in the Northern Territory.

During the year, the Commonwealth Government reached an advanced stage towards nominating the Nullarbor Region for World Heritage Listing. It will be recalled that the ASF initiated the proposal over a decade ago under Adrian Davey's leadership. Several ASF members were involed in preparing a report on the significance of the karst and other landforms and I was asked to prepare a critical review of the draft report.

The South Australian Government is very enthusiastic about this proposal, presumably because of its tourist potential, but Western Australia is hesitant due to pressure from pastoral interests. The nomination was not forwarded in 1992 and is now on hold.

Some members have asked about the Jenolan Caves and World Heritage. This could only occur as part of a nomination of the Blue Mountains area of NSW. At present this is bogged down in bureaucratic argument about whether the NSW or Commonwealth should pay for the necessary study.

The Council meeting might care to devote some time to a discussion of the involvement of the ASF in cave and karst management studies. Since formation of ACKMA we have had no formal involvement at all. Is it enough that individuals be involved by ACKMA or should ASF itself be more fully involved? Unless ASF is more fully involved, a situation may well arise where cavers simply react to other people's ideas, or worse still are presented with a fait accompli, rather than having some direct input at the draft stages. Is it too much to expect that, at least in cases involving caves, ACKMA and ASF are involved in management studies as equal partners rather than ASF providing little more than information from the Karst Data Base?

John Dunkley
Chair of the Cave and Karst Management Commission.

ASF NOTES AND NEWS FROM THE CONFERENCE

Conservation Commission Report for Western Australia 1992

Cape Range Marina

Approval has been given for the development of a marina at Exmouth on Cape Range. Grave fears of the impact on the rare and unusual aquatic cave fauna (an eel and a blind gudgeon fish) were expressed by Bill Humphries of the WA Museum. Bill has undertaken considerable work on the cave fauna of Cape Range and he has proven that the coastal fauna moves only around the coastal belt of limestone on the edge of the cape. The effects of allowing a lens of salt water into the coastal limestone are likely to be quite dramatic on the Freshwater aquatic fauna. To date Bill's protests have gone unheeded and the plans for the marina are progressing.

Cape Range Limestone Quarry

A British company has recently obtained the lease on a 20 square Km block of Cape Range limestone that has been zoned for mining. This block is adjacent to Wanderers Delight (4.5km+) the longest cave at Cape Range. At present it does not appear as if the company will mine this particular lease but it does appear that they will mine another smaller lease that will impact smaller coastal limestone caves.

Contact is being maintained with the mining company to ascertain their plans for the area.

Leeuwin Naturaliste National Park (LNNP)

After more that two years and 60 meetings the Permit System for the Leeuwin Naturaliste National Park commenced on September 1, 1992.

Monthly monitoring of the system has shown that the majority of cavers are abiding by the system and obtaining permits. At this stage no fines are being imposed for caving without a permit. Offenders are being issued a warning note and asked to obtain a permit in future. Numbers of visitors to Adventure Caves Class 1 (self registering permit) continue to be very high (about 30000 per annum). However group sizes appear to have reduced as information, regarding party size, begins to reach teachers through the education department.

Difficulties have arisen with commercial operators and the permit booking system (more than 10 commercial operators are working in the park). Abseiling practices of forward abseiling, star diving, angel jumping and swinging are considered inappropriate activities in a cave by the majority of the Cave Management Advisory Committee (CMAC). The majority of the commercial operators are conducting these activities and hence alternative views regarding these activities have been obtained. The ASF via the Safety Officer (Mike Lake) supplied an opinion on these activities, From the replies received to date it appears that these activities are likely to be outlawed.

Signs have been placed at the entrances to all Adventure caves and some easily found Restricted access caves. Conservation, safety and educational material has been placed in large sheltered signs at the entrance to all Adventure Caves Class 1.

Nullarbor World Heritage Listing

Adrian Davey has prepared a report on the Nullarbor karst which will be used as part of the World Heritage Listing application. At present the Department of Conservation and Land Management (CALM) has committed to consult with the Nullarbor Preservation Society (a group based on the Nullarbor and formed from pastoralists and workers in the region) before proceeding with the listing application. This process will not take place until after the election in 1993.

A change of government may alter the proposed listing strategy.

South Coast Management Plan

CALM released the South Coast Management plan in March 1992. This plan took four years to proceed from the draft stage to the final plan.

As at December 1992 none of the proposed National Parks or reserves in the Nullarbor region have been declared. The required legislation is before parliament, which has been prorogued, and no further legislation will be passed until after the election due in early 1993. No on site management is proposed for the parks and reserves in the Nullarbor region.

Yanchep National Park

The final management plan for Yanchep National Park, just north of Perth, was released in 1990. This plan proposes a Cave Management Advisory Committee and a Permit system similar to the LNNP. A number of cavers have been invited to be members of this committee but the nominated chairperson has just retired from CALM and hence the committee is yet to meet.

Nambung National Park

In November 1992 CALM advertised that a management plan was being prepared for the Nambung National Park and a number of associated reserves. A preliminary submission prior to the development of the plan was made by the ASF. This submission provided information regarding the known caves from the South Hill River region which includes the Nambung National Park. It also made recommendations regarding the formation of a single CMAC instead of having one for every National Park in the state that contains caves or karst. These recommendations were discussed at the first meeting of the planning committee and will be considered by CALM. The draft plan is not expected until the third quarter of 1993.

Rauleigh Webb.

ASF NOTES AND NEWS FROM THE CONFERENCE

What is Happening in Speleology in Queensland

Undarra

A core area National Park of 17600 HA has been declared covering the main lava tube sections. Negotiations to extend the park in the near future are occuring. This should ensure a large representative sample of the adjoining vegetation types associated with the lava flows is protected.

A management plan is being implemented. The Working Committee includes National Parks, Chillagoe Caving Club, Local Landowners, tourist operators and specialists.

Mitchell Palmer River Karst

Department of Environment and Heritage have a National Park proposal over the majority of the limestone. No action has occurred in the last twelve months in this regard.

The only trips to this region in recent years has been the annual expedition by CQSS personell, often accompanied by researchers.

The area is rich in aboriginal cave art, unexplored cave systems and large but little studied bat populations. CQSS will persue the gazettal of National Park status as a priority over the next twelve months.

Chillagoe

Quarrying operations near Ti tree Cave have caused concern in recent years. We understand that the cave area itself may be included in the National Park. Ti tree Cave is unusual in that it contains a deposit of green marble.

Mount Etna

The management plan for this area is completed with major assistance from CQSS members. A fulltime ranger is to be appointed in the new year.

A rehabilitation committee to advise Central Queensland Cement has been established. The company has refused to allow CQSS personell on this committee. After lobbying the commmitee Armstrong Osbourne has done a consultancy on the effect of rehabilitation options on the cave systems. Whilst much discussion has occurred, little physical rehabilitation work has occurred

Fanning River

This area west of Townsville has been under threat of quarrying by North Australian Cement. The recently announced closure of the company gives an opportunity to protect this area.

Main features include the second largest known maternity site for *Miniopterus Australis* in Australia and the fossil record, particularly in Rope Ladder cave.

Discussions with the landowners in the region have broken down at present. It appears they didn't mind siding with the environment groups when the major threat was mining but now they see the National Park proposal as their major threat.

Ackma Conference

The Australian Cave and Karst Management Association's 10th. Biennial conference is planned for 17th. to 23rd. May 1993 at Rockhampton.

It is expected that between 50 and 100 delegates from Australia, New Zealand and the United States will be attending.

Lawn Hill

The Lawn Hill National Park extensions, including the Riversleigh fossil deposits have made this area the largest Karst protected area in the state.

Large mining proposals have been announced for the region and at present no information is available on their effect on the Karst systems.

We strongly recommend that this area be concentrated on in order to obtain base data to determine our stance on the various mining proposals.

Peter Berrill. ASF Vice President
Craig Hardy. Convenor Conservation Commission.

For more on the conference see page 23.

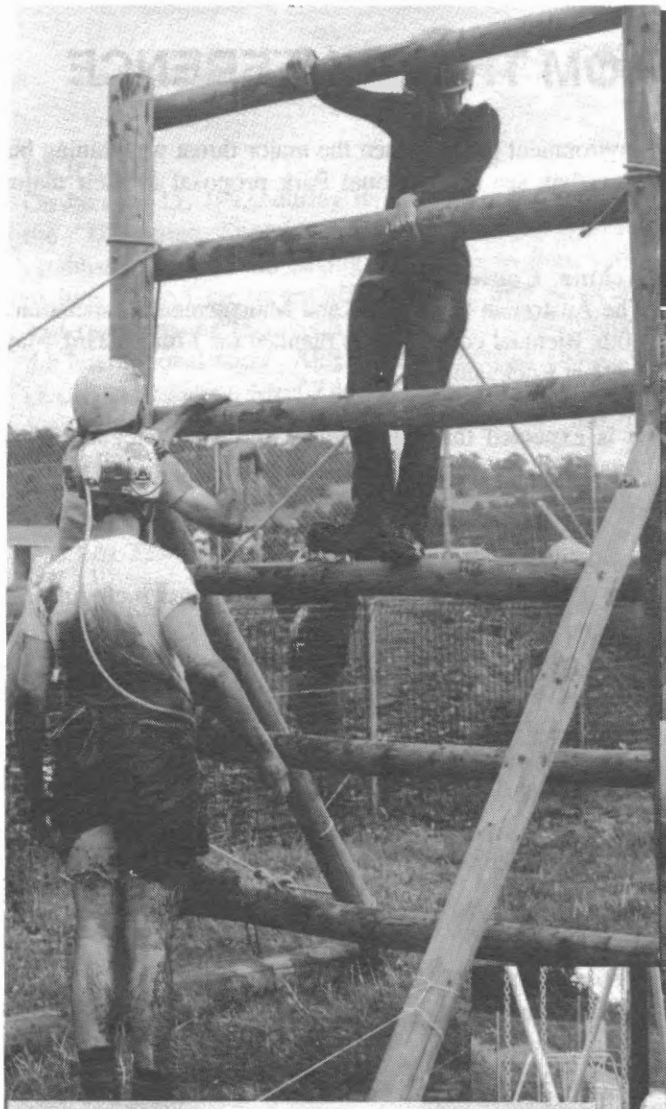
PROFILE OF THE NEW ASF PRESIDENT MILES PIERCE

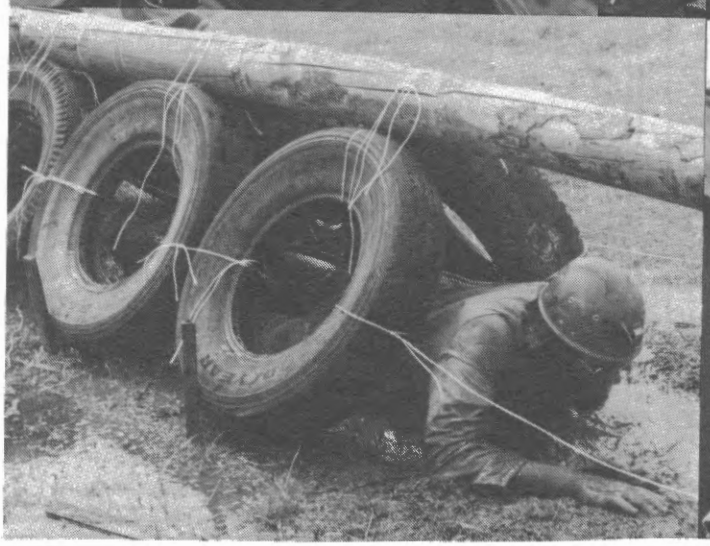
Miles is a life member of the Victorian Speleological Federation and an active caver since the mid 1980s. He is a past president of the VSA and is currently VSA's co-ordinator and caver numberer for Western Victorian Karst. He is also the VSA nominee on the Victorian Government's Caves Advisory Committee.

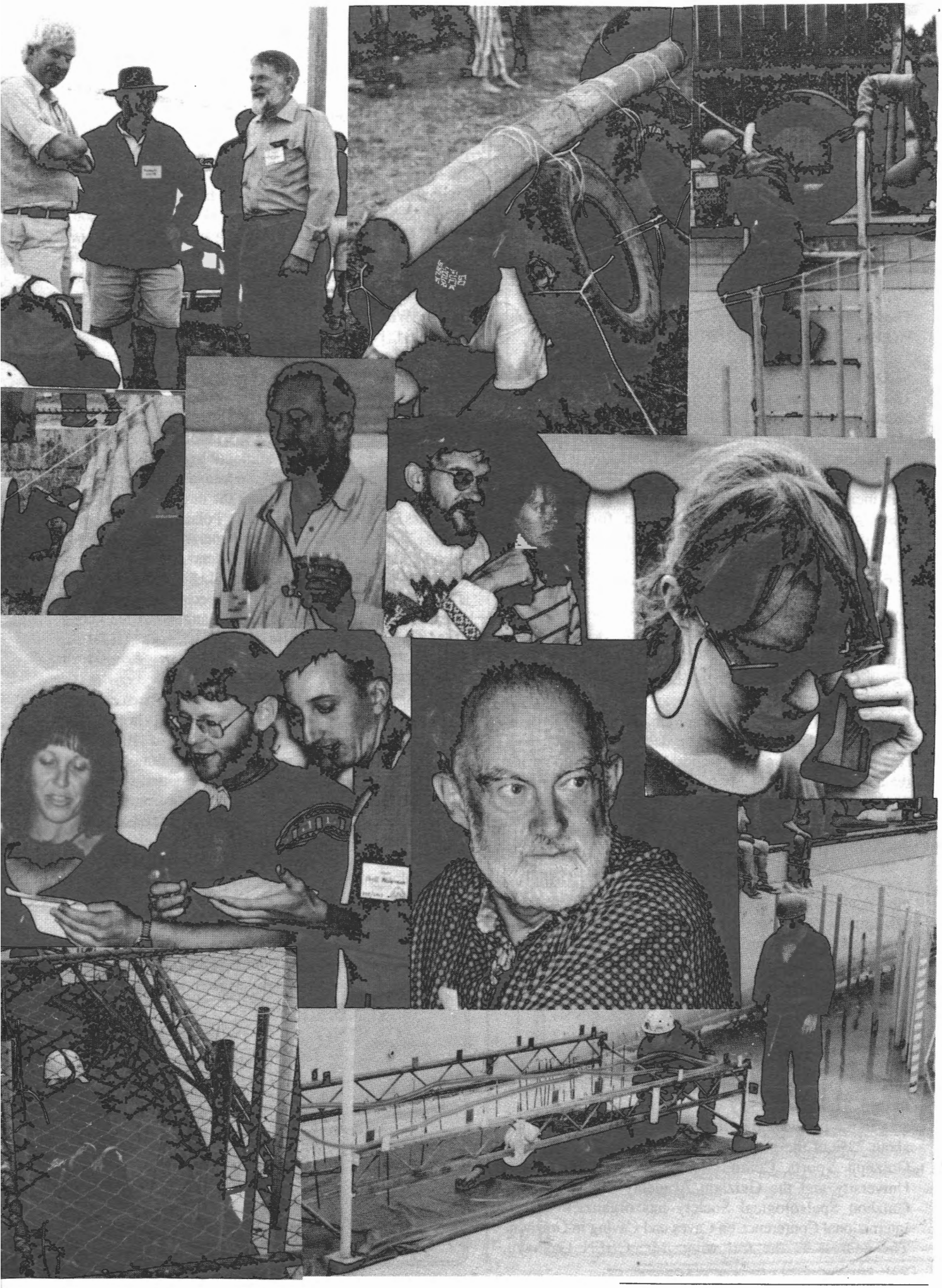
Miles has been involved with ASF activities since 1970 and served as secretary to 1970-73 and was Vice President in 1981-82. He has also been a member of various ASF committees and Commissions including Surveying, Convenor of the Administation Commission from 1982 to 1992. In 1988 Miles was awarded the Federations Certificate of Merit.

An engineer by profession his speleolgical interests include cave development and karst processess, cave surveying and recording, cave photography and cave and karst management. Other interests are in industrial archaeology, bushwalking and ski touring.

PHOTO S FROM TAS TROG 93







NEWS FROM OVERSEAS

UKRAINE.
On January 11, 1992, during its Constitutional Assembly, the "Ukrainian Speleological Association" has been established in Kiev. 23 caving organizations from various regions of the Ukraine are affiliated. The new Association will represent the Ukrainian speleological community on the international scene. Alexander Klimchouk (Kiev) was elected as President, Jozef Zimels (Ternopol) and Alexander Kozlov (Crimea) are Vice Presidents of the new institution.

The address is: Ukrainian Speleological Association, P.O.Box 224/8, Kiev-30, 252030, Ukraine.

SLOVENIA.
The "Speleo Association of Slovenia" (Jamarska zveza Slovenija) is now the speleological association at the national level in the independent state of Slovenia. The Association is co-operating with the International Union of Speleology and hopes that Slovenia will be accepted as a full member of the Union as soon as possible. The Association has nominated members for nearly all Commissions and Working groups of the UIS. The address of the Association is: Jamarska Zveza Slovenije, Lepi Pot 6, P. P.44, SL0-61000 Ljubljana, Slovenija.

CROATIA.
In the independent state of Croatia, the "Croatian Speleological Association Society for researching, surveying and filming karst phenomena" has been formed. The new Association is very interested that Croatia becomes full member of the International Union of Speleology as soon as possible and hopes that the delegates of the member countries will accept their proposal of membership during the next General Assembly of the UIS. The address of the Association is: Croatian Speleological Association, c/o Prof . Dr. Mladen Garasic, Nova Ves 73a, CRO - 41000 Zagreb, Croatia .

Contacts with the Croatian speleology are also possible via the Commission for Speleology of the Croatian Federation of Alpinists. The address of the Commission is: Hrvatski planinarski savez, Komisja za speleologija, Kozarceva 22, 41000 Zagreb, Croatia. The president of this Commission is Vladimir Bozic.

CHINA.
In Guiyang, the capital of the Guizhou province of China with a population of 1 330 000 people (including the suburbs), the "Guizhou Speleological Society" has been formed. The new Society will have a very large working area in the province (the limestone covers 130 000 km2) about 73% of the provincial area. With assistance of the Guizhou Sports Commission, the Guizhou Normal University and the Guizhou Academy of Science, the Guizhou Speleological Society has organzied a First International Conference on Caves and Caving in Guizhou. The address is the following: Mr. CHEN Guangyu, Guizhou Speleological Society, Guizhou Gymnasium, Zhunyi Road, Guiyang, Guizhou 550002, China.

ISLAMIC REPUBLIC OF IRAN.
The Water Resources Research Institute of the Ministry of Energy of the Islamic Republic of Iran has informed the International Union of Speleology that in her organisation a special group for studying the cave phenomena has been formed and that the members of this group "are completing the country's karstic cave booklet". Contacts can be made under the following address: Mr. A. Afrasiaban, Ministry of Energy, Water Research Organisation (I'AMAB), P.O.Box 1587-3584, Tehran, Iran.

VIETNAM.
In Vietnam, speleology and karst morphology are organised at the Institute of Geology of the National Scientific Research Committee (CNRS) in Hanoi. In this Institute there is a Laboratory of Geomophology headed by Mr. Pham Khang, who in 1984, wrote a Thesis on "The Tropical Karst of Vietnam" under the direction of professor Dzulynski at Warsaw University, Poland. There is great interest in the formulation of a co-operative project for the international plan for the future. Vietnam is proposing to become a member of the International Union of Speleology at its next General Assembly. The Director of speleological research in Vietnam is Mr. Pham Khang, NHA D2 Phong 215, Giang Vo Hanoi, Vietnam.

TURKEY.
The Cukurpina Cave, discovered in 1989, has been explored in the years 1990 and 1991. In August 1991, in this cave situated in the Taurus Mountains, the depth of -1022 m has been reached. 'The exploration will be continued from a camp at -750 m in summer 1992. Information concerning this cave and the exploration are available from: Bogazici University Speleological Society, Bogazici University, Magara Arastirma Kulubu, TR-80815 Bebek, Istanbul, Turkey.

Julia James.

SEND REPORTS OF ALL CAVING ACCIDENTS AND INCIDENTS TO

MIKE LAKE.
CONVENOR, ASF COMMISSION ON CAVE SAFETY.

14/16 Cottonwood cres.
Nth Ryde. NSW 2113.
Ph:(02) 888 - 2927

CAVE CLASSIFICATION AND ACCESS IN SOUTH AUSTRALIA

Kevin Mott

Wherever humans have interacted with the cave environment there has always been an impact. The first recorded impact is that of the aboriginal people. We do not see a lot of evidence for their use of the caves although as we begin to know, or understand what we are looking for we can see more evidence. Their impact has however been minimal and is evidenced largely through flint mining, habitation sites and artwork. In the time since white settlement caves are exhibiting greater signs of our impact, both intentional and unintentional.

Changes to the environment land clearance, grazing, agriculture and drainage have certainly had an impact on the caves. Within the South East there are virtually no caves unaffected by these factors. Apart from some historical reports there is little data to provide base line conditions in the caves at the time of settlement.

The greatest impact on the caves must arguably be from direct visitation by people. This ranges from the occasional visit by casual groups through to organised trips by caving clubs and regular tourist trips into show caves. The occasional visits may do less damage than organised trips as the participants are probably unsure of themselves so are ultra careful.

No matter how careful we may be when visiting caves we definitely do have an impact. Even if we religiously follow the old adage of leave nothing but footprints that may well be destroying the habitat of cave fauna. Our presence even transports dust, lint and dead cells into the cave, altering the micro ecology of the cave system. We need therefore to decide what we want to do:

* not visit caves and leave them in a pristine state (for undiscovered caves) or whatever state they are in now.
* visit caves and accept a level of damage that is considered to be acceptable (this level may vary for different caves).

The first option I do not consider is a real option. It would close off all caves, including tourist caves, and that would not meet with general acceptance. We would not be able to monitor any improvement in the caves, if any, and we would miss out gaining a better understanding of the world about us. It is also management by non management and is merely burying our head in the sand hoping a problem will go away.

The second option says we are prepared to accept some contamination of the cave, but not pollution. Any degradation of the cave must be limited to that which will not impair its most beneficial use. Any degradation beyond this limit will cause impairment to its beneficial use or have an adverse environmental impact. The higher the value of a cave the less the amount of degradation that would be acceptable. This acceptable limit of degradation assumes that the term zero carrying capacity for caves is not valid as caves are not a renewable resource as implied when the term is used in agriculture. If we want to use a term one, such as the limiting use of the cave, may be more applicable. If we want to manage responsibly, we must have in place a monitoring system to ensure that the privilege for use is not abused. If we accept management we have a moral obligation to actively manage. We should not accept the role if we can not fulfil the role.

To actively manage caves there needs to be a defined management policy to minimise our impact on the cave environment in which all groups involved with caves have had an input. In developing a management policy it is easier to start with caves on crown land as there are fewer management groups to negotiate with. Some government bodies are already in the process of attempting to develop a management policy. Once a uniform policy is developed it could flow on to caves under control of private land holders.

Even within the ranks of government land holders there are issues that need to be resolved:

* Department of Environment and Land Management are actively selling off crown land in an effort to raise revenue. There is also a shortage of staff to manage the land.

* Woods and Forests are primarily concerned with becoming a business organisation making a profit from trees. Although they manage areas of native forests, conserving these and caves appears to be of a lower priority.

*National Parks and Wildlife Service is now part of the Department of Environment and Land Management so are part of the problems listed above. Many caves under their control are in conservation parks. Caving, whether by clubs or by guided or adventure tours does not seem wholly compatible with the aims of conservation parks.

Cavers and managers do not always see eye to eye. Managers are aware of increasing degradation so more caves are being closed off or heavily restricted. Cavers see access becoming more difficult with yet more caves being opened to paid adventure tours. This is often perceived to mean degradation is alright provided you pay to do it. Cave managers are being subjected to increasing requests to visit caves yet they are not always able to assess the competency of those people intending to go caving.

It is accepted that caves need to be subjected to extensive modification to make them suitable for tourist access. Modern occupation health legislation and the trend to American liability claims makes this all the more so. Some of the indignities include concrete pathways, electric lighting, creosote timber and excavation. Caving whether as a paid tourist or as a recreational or exploratory pursuit does have an impact and we must be prepared to sit down and

rationally decide what limits of degradation are acceptable to the beneficial use of the cave.

To do this management must be a blend of cave classification and access classification. Often the cave classification system published in Worboys et al (1981) is adopted in a mode to suit management. Before adopting any system the caves need to be documented with a comprehensive checklist by an assessment panel and the area/s of importance defined along with their significance. This should form the basis of all classification as it should take the breakfast factor out of the rationale. This is not done in South Australia. This is particularly important where caves have multiple classifications. A plan showing the areas of classification and access restrictions should be available in such cases. An example of such a checklist as derived in earlier CEGSA discussions on the matter is shown in figure 1.

Each feature must have its own assessment sheets. Where the feature has multiple classifications each area should have its own assessment sheet.

Each cave also needs to be allocated an access code based on its classification. This access code should incorporate a restriction category and a level of competency category.

Suggested access categories are:
O - Open access
The cave or feature is robust and not rated highly in scientific or intrinsic value and should be able to withstand intensive visitation.

L - Limited access
The cave or feature has some excellent features and needs some control on visitation to ensure that recreational or other uses will not cause unacceptable levels of damage.

R - Restricted access
The cave or feature contains items of outstanding or unique value. Special permits, outlining any special conditions relating to the visit, would be required if visitation was necessary.

T - Tourist access
This is intended to be for a cave that is entirely a tourist cave.

Suggested competency categories are:
1. No special skills or equipment required as the cave is generally regarded as robust and safe.

2. Inexperienced or unqualified cavers can be led by a competent caver. The ratio of experienced to non experienced would generally not exceed 1:4. The ratio should be stated for each cave.

3. All members of the party should be competent cavers.

4. All members of the party should be competent cavers but the leader should have experience in the cave or section of the cave to be visited.

Figure One: Sample Cave Assessment Sheets.

Cave Classification checksheet - Intrinsic

	International	National	Statewide	Regional	Local	Cave	Insignificant	Unknown	Unassessed
Aesthetic									
Landform									
Biological									
Paleoenvironmental									
Archaeological									
Mineralogical									
Recreational									
Educational									
Reference									
Historical									

need to justify

Cave Classification checksheet - Exploration

	Difficulty							
	Hazardous	High	Moderate	Low	Unknown	Unassessed	Not Applicable	
Pitches								
Constrictions								
Water Hazards								
Loose Fill								
Climbs								
Traverses								
Complexity								
Dehydration								
Hyperthermia								
Atmospheric								

need to justify

CAVE CLASSIFICATION AND ACCESS IN SOUTH AUSTRALIA

5. No access generally permitted.

It is assumed that recognised caving clubs would have a recognised course to train their members in cave competency. It would be ideal to have this qualification recognised in all states. Cavers who are not members of recognised clubs are seen as fitting into categories 1 or 2.

Some examples of access codes are:
O.1 Unrestricted cave in which access is available to all who have permission to enter.

L.3 A cave with some excellent features but a competent party could reasonably visit.

R.5 The cave is restricted as damage to a unique feature can not reasonably be avoided so access is not permitted.

In caves where only part of the cave is classified as a show cave that area would be categorised as either Restricted or Limited access. Where access to other portions of the cave are through the tourist area the category should be Limited access.

A detailed log of visitors should be maintained to provide data on visitation. This should include date, time, leader, party, purpose and comments on the trip. If regular monitoring is utilised to check that the system is working any abuse can also be quickly picked up and through use of a log the offender quickly determined. Suitable consequential action should then be taken against that person. It would save a lot of innuendo arising later.

For any management system to work there needs to be regular reviews of the system. These reviews and the initial setting up need to be done in open consultation with managers and all major users of the resource. A consensus needs to be obtained or the system will not be acceptable to one or both parties and the inevitable breakdown and abuse of the system will occur.

Cave classification by itself is not the way to manage caves. We need to look at all our caves and make an assessment of their value and what level of degradation is reasonably acceptable to determine their ability to sustain recreational caving. A blend of cave classification and access control is then used to determine access. Monitoring then needs to be used to determine the access conditions are being adhered to and see if the cave is degrading beyond the predetermined limits. Regular reviews of the system would ensure it meets the needs of the conditions applying at that time.

REFERENCES

WORBOYS G., DAVEY A. & STIFF C., 1981, Report on Cave Classification, Proc. 4th Australian Conference Cave Tourism and Management, Australian Speleological Federation.

PROJECTS, PROJECTS, PROJECTS PROJECTS.

Are you or your club working on a project of any sort?

Collecting water or soil samples, surveying the catchment area of Little Big Cave, fencing around a cave to keep the rabbits out or just trying to get data published?

The ASF is compiling a list of speleologial projects and who is undertaking them.
The list is to form the basis of funding applications so that the ASF can help you get a project up and running or completed.
The information is as follows:

Detailed description of the project: How long has the project been going and the expected date of completion; Who is organising it and how many people are involved;

What institutions, such as Universities, Gov't Departments, are involved; Has the project received any funding and if so from what sources, eg., NPWS, Australian Research Council Grants?

Please send the above information to Clare Buswell, C/- Politics Dep't Flinders University, Bedford Pk, S.A. 5042.
Ph (08) 388-6685 (hm)
Fax: (08) 201-3622

MILLAR I.R., & WILDE K.A., 1989, General Policy on Guidelines for Cave and Karst Management in areas Managed by the Department of Conservation, New Zealand Department of Conservation.

CAVES, CARBON DIOXIDE & YOU

Gary Smith

Carbon Dioxide often occurs in high concentration at the bottom of deep caves. It is a colourless, odourless and noncombustible gas which is over one and a half times denser (heavier) than air.

Effect of CO_2 on the Human Body.

Although carbon dioxide is not a poisonous gas, it can be dangerous and even life threatening by causing suffocation. Carbon Dioxide (CO_2) is the body's regulator of the breathing function. It is normally present in the air at a concentration of 300 parts per million (ppm) by volume. Any increase above this level will cause accelerated breathing and heart rate. A concentration of 10% can cause respiratory paralysis and death. In industry the maximum safe working level recommended for an 8 hour working day is 0.5% (5000ppm by volume). (CIG 1991.)

Are you placing yourself at risk by going caving?

Before answering this question we should study certain aspects of the CO_2 cycle dealt with in the following text.

How CO_2 Gets Into Caves.

Carbon Dioxide exchange is the dominant mechanism for carbonate deposition in most caves. In well ventilated caves the level is about 10 times higher than that of the outside atmosphere, and approximately 25 to 250 times lower than the CO_2 content of the ground water before reaching the cave. This is because plant roots and soil microbes give out carbon dioxide as part of their life processes, adding it to the air in the soil through which the rain water passes. When the ground water enters the cave, it loses carbon dioxide to the cave air until equilibrium is reached.

It is a popular myth that if the level of Carbon Dioxide (CO_2) increases in a cave, it conversely displaces an equivalent quantity of oxygen (0_2) and nitrogen. In many caves this may be true, however there are caves where the nitrogen level stays constant while the oxygen level decreases and CO_2 increases.

At Bungonia Caves (NSW), CO_2 levels of up to 6% have been linked to micro-organisms (ie. fungi and bacteria) which depend on the nutrition present in organic material leached down from the soil or washed into the caves by floods. These organisms produce CO_2 as a by-product of their digestion process. This mechanism was observed to correlate with the reduction in oxygen accompanied by the increase in CO_2 concentrations. (Crawshaw and Moleman 1970).

At Bungonia it is generally agreed that foul air accumulation by loss of CO_2 from saturated ground water was not the major source, but a contributing factor. High levels in some caves can be attributed to micro-organisms and/or large bat colonies

In 1958 members of S.U.S.S. confirmed that readings of up to 13.5% CO_2 at Wellington and Molong Caves were at the expense of oxygen. ie. the sum of CO_2 and O_2 was constant and the percentage of inert gases was reasonably constant. They also concluded that this was due to organic decomposition. (E. Halbert. 1972)

Although caves naturally breathe due to changes in surface temperature and changes in atmospheric pressure CO_2 is heavier than nitrogen and oxygen, so it tends to congregate at the bottom of deep caves which do not have through ventilation to a lower entrance.

What Percentage of Air do we Use?

To get a complete insight into what actually occurs when a caver is exposed to a cave atmosphere, which contains higher than normal levels of carbon dioxide (CO_2), we should examine the mechanism by which our own body expels this unwanted by-product of metabolism.

The human body under average conditions inhales air which contains approximately 21% oxygen and 0.03% carbon dioxide. The air breathed out of the lungs contains approximately 15% oxygen and 5.6% carbon dioxide.

A person at rest inhales and exhales approximately 6 litres of air per minute but in times of stress, this may increase to more than 100 litres per minute. The lungs do not expel all of the air with each breath. The volume of air that moves in and out of the lungs during each breath is known as the tidal volume. The maximum possible tidal volume is equal to the vital capacity. The vital capacity is the amount of air that the lungs can hold after trying to force out as much air as possible and then taking the deepest possible breath. The amount of air left in the lungs after trying to breath out as hard as possible is the residual volume. It is impossible to empty the lungs of all air in this manner.

For an average adult, approximately 500 millilitres (ml) of air is drawn into the lungs with each breath during normal breathing. But of this 500 ml of tidal volume, only 350 ml is fresh air as the first 150 ml is 'dead' air already in the nose, trachea and bronchi. The 350 ml of fresh air represents only approximately 6% of the lung's maximum total capacity which is about 6000 ml (6 litres).

How the Human Body Gets Rid of CO_2

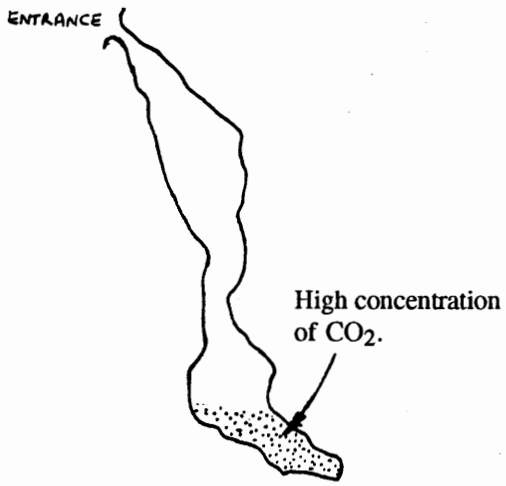
Normally a person is unaware of the complex mechanisms of breathing which are regulated and controlled by the respiratory centre of the brain and the nervous system.

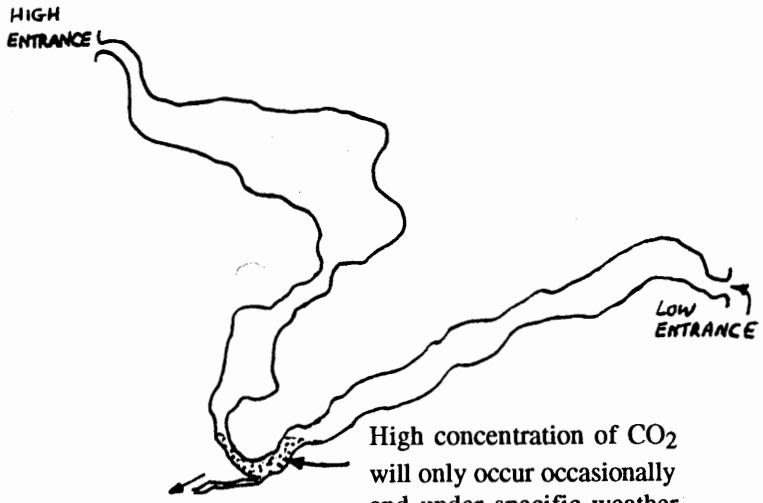
The carbon dioxide level in the blood is an important stimulus to respiration. Nerve receptors in the aorta near the heart and in the carotid artery that goes to the brain, monitor changes in the carbon dioxide in the body. If the amount of CO_2 in the blood increases, both the rate and depth of breathing increases. Changes in oxygen levels are also

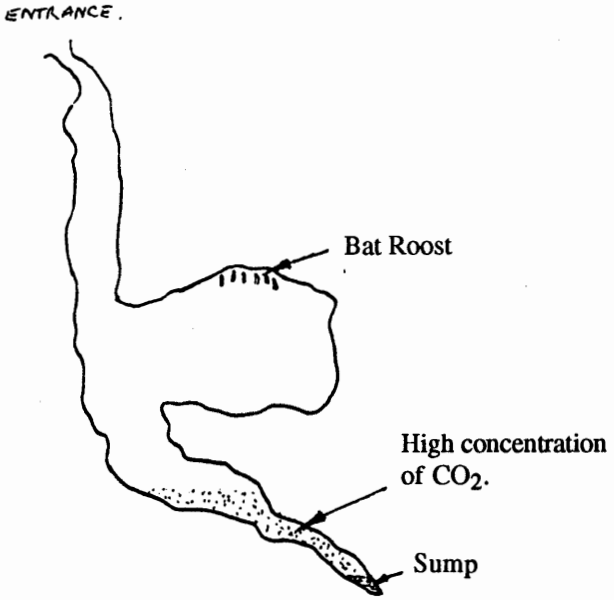
CAVES, CARBON DIOXIDE AND YOU

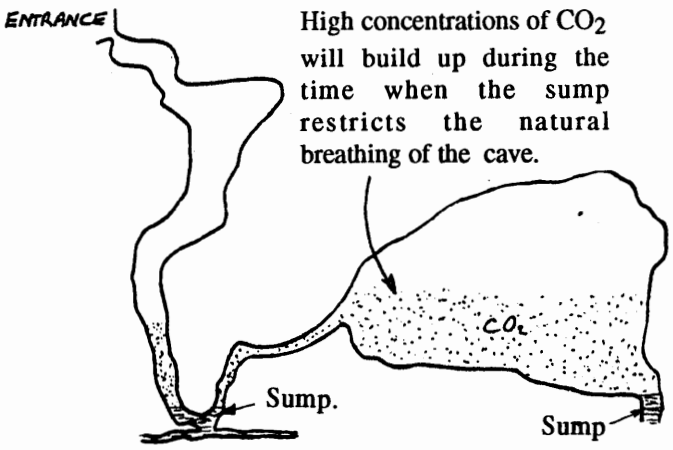
Figure one: Cave Sections

Showing the most likely conditions under which high concentrations of carbon dioxide is found in caves.

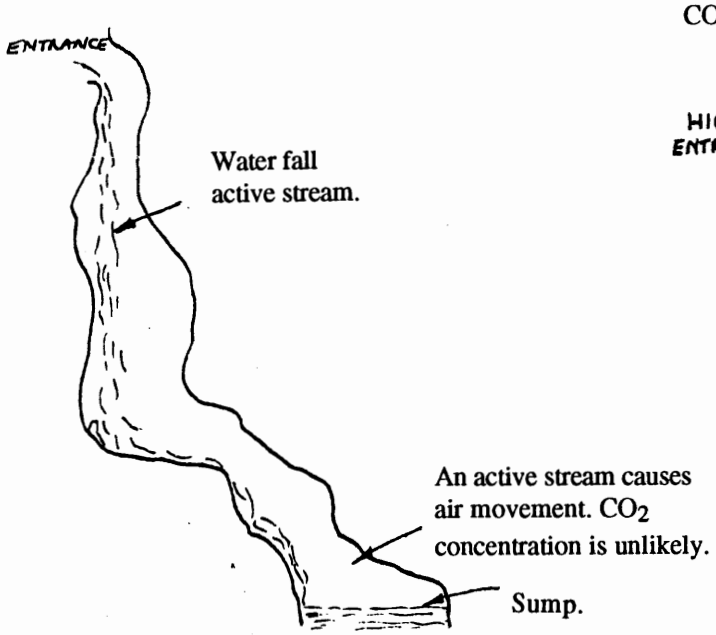


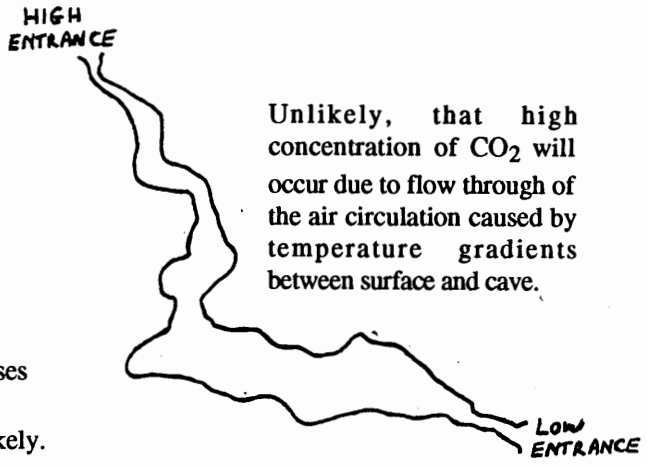






When sump water does not block the flow of air from a cave with large volume chambers, the cave's natural breathing will clear most CO_2 concentrations.





CAVES, CARBON DIOXIDE & YOU

monitored, but the receptors are not as sensitive to changes in oxygen as to carbon dioxide.

The exchange of the two gases (carbon dioxide and oxygen) takes place in the lungs by diffusion across the walls of the air sacs (alveoli). Oxygen from inspired air diffuses across the lining of the air sacs and enters the circulation, while carbon dioxide moves in the opposite direction. Then the gases are transported between cells and the lung by the blood circulation.

The principle by which diffusion occurs dictates that a gas in high concentration will move to an area of relatively low concentration, until an equilibrium is reached. This enables CO_2 in the body at a higher concentration to diffuse to the inhaled air.

How the Body Reacts to CO_2 Levels.

As each persons body has a slightly different reaction and tolerance to stressful situations the following symptoms are general, however nobody is immune to the dangers of CO_2. It should be noted here that in most cases involving caves, it is not the lack of oxygen which is the danger but the critical factor is the high level of CO_2.

Exposure to levels of CO_2 in excess of 0.5% will cause a caver's breathing and pulse rate to increase. Other symptoms may begin to occur in areas containing 1% and greater. These include feeling hot and clammy, lack of attention to details, fatigue, anxiety, clumsiness and loss of energy which is commonly first noticed as a weakness of the knees (jelly legs) may occur.

Long term exposure to levels of between 0.5 and 1% as may be experienced by personnel on a submarine, is likely to increase calcium deposition in body tissues such as the kidney. Exposure at 1.5% for several hours may cause severe headaches.

Accumulation of carbon dioxide in the body after prolonged breathing of air containing around 2% or greater will disturb body function by causing the tissue fluids to become too acidic. This will result in loss of energy and feeling run-down even after leaving the cave. It may take the person up to several days in a good environment for the body metabolism to return to normal. Other symptoms may occur such as severe headaches, dizziness and possible vision disturbance such as speckled stars.

However if the concentration in the cave atmosphere reaches 5% the body's ability to get rid of its own CO_2 waste, is severely impaired. Shortness of breath and severe headaches are most common. The CCH Laboratory Safety Manual indicates that exposure to a concentration of 5% for a period in excess of 30 minutes will cause irreversible effects to health. If the cave atmosphere reaches 6% and the caver remains in this environment for any length of time the levels of waste CO_2 in the body would reach an extremely dangerous level and could lead to suffocation.

Exposure to 10% CO_2 concentration for a few minutes will result in unconsciousness and suffocation without warning. Extremely high concentrations of 25 to 30 percent will cause coma and convulsions within one minute of exposure.

Simple Methods of Testing for CO_2

A naked flame is a simple method of measuring the relative percentages of CO_2 in the cave atmosphere. At 1% a lighted match will go out. At 1.5% a match head when struck on a match box will fizz but not light the match. At 4% a lighted candle will go out. At 6% CO_2 a carbide lamp will go out.

What to do when Encountering CO_2

A test should be made as soon as foul air is suspected and if a match will not strike or burns only briefly, all members of the party should immediately exit the cave in an orderly manner without panicking. Inexperienced cavers in the group should be especially watched and guided to the entrance

When undertaking vertical pitches in caves suspected of foul air the first person down should make thorough checks for CO_2. Besides carrying ascenders, a safety belay is a wise option in the event that the first person down may be overcome when suddenly descending into an area of high concentration. A safety belay should be mandatory with all pitches where a ladder is more than just a hand-hold.

Cavers should only enter areas of foul air during special circumstances, such as search and rescue operations, exploration and scientific work. Under these circumstances special precautions should be taken to ensure the safety of the group. For more information regarding safety precautions refer to ASF Cave Safety Guidelines.

Conclusion.

By now you're probably bewildered as to whether the carbon dioxide in caves is harmful to you. The best advice is that if you have any of the common side affects, carry out a simple match test. If this indicates a high level notify the party leader and the group should vacate the cave.

Carbon dioxide, when treated with respect, is no worse than the other dangers in caves such as infections of cuts and abrasions, histoplasmosis, hypothermia, equipment failure, becoming wedged in a tight squeeze, trapped or drowning by rising flood waters, sustaining injury from a loose rock dislodged overhead, and losing your footing or grip on small climbs. Despite the seemingly endless list of possible dangers, caving is still safer than driving a motor vehicle, which most of us take for granted.

Garry Smith
Newcastle & Hunter Valley Speleo Soc.

References and Further Reading. Cont'd p 23.

A.S.F. AWARDS 1993

The following awards were announced during the Launceston, Tas Trog 1993 Caver's Dinner on the 7th of January.

Edie Smith Award

John Bonwick. John has made a continuing contribution to speleology over a long period of time. He has been involved in many leadership roles, introducting potential cavers to the best and highest standards of caving leadership and practice; has acted as a moderating influence, (described as a 'ballast') on the New South Wales caving scene and has pioneered the photo tagging of cave entrances.

Ernst Holland.

Ernie is one of the most creative and innovative cave managers in Australia. He has been a driving force in vastly improving caver/management relationships at Jenolan and other areas, much more than most cavers realize. Ernie played a major role in the formation of the Australasian Cave and Karst Management Association, its foundation President and as such worked strongly for good relations with our Federation. As a caver, Ernie, was involved in discoveries at Jenolan and in the New South Wales sandstones.

Certificate of Merit.

Arthur Clarke

For service to exploration, documentation and in particular to conservation issues of the Exit Cave karst area, often at great personal sacrifice.

Trevor Wailes.

For service to exploration, surveying and documentation particularly involving the Junee Florentine Karst system.

Rauleigh Webb.

For service and leadership in cave conservation issues in Western Australia, for services to the Western Australian Speleological Group Inc. and the Australian Speleological Federation Inc.

Norman Poulter.

For service and leadership in cave conservation and cave restoration and for services to the Speleological Research Group Western Australia.

Kevin Mott.

For long service to South Australian caving, in particular to exploration, documentation and advice to cave management.

Award of Distinction.

This is a new award recommended by the Awards Commission and adopted by the Executive. Our three longer standing awards are intended to recognise contributions to 'hands on' speleology. It was considered that a need existed for an award that recognises those who have made a notable contribution to speleology by a means outside of the normal caving scene. The first awardees are:-

Norman and Doreen Pershouse.

For over fourty years Norm and Doreen have owned the property on the northern side of Mount Etna, Queensland. They have never been active cavers. Prior to and during the long running Mount Etna conservation caongrantation they have provided cavers with a base for operation, local knowledge, support in at times a hostile environment and access to Mt Etna at great personal expense and sacrifice.

Lloyd Roberston.

For the Awards Commission.

CAVES, CARBON DIOXIDE & YOU

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August 1992 - February 1993
by Peter Ackroyd

AUSTRALIA

JSSS 36(9) (Sep 1992) This issue has a comprehensive trip report on the *Old Homestead Cave* [N-83] expedition of 1991, during which the cave became the longest surveyed cave in Australia at 23 km.

SUSS Bulletin 32(4) (Dec 1992) Tuglow karst features in this issue. Cave numbers T-1 to T-25 are covered and a brief description of the geology of the area is included with a description and map of each cave.

NEW ZEALAND

The Speleograph 28(5) (May 1992) This newsletter is published by the Oregon Grotto of the National Speleological Society. It seems ridiculous, but to get current news from New Zealand you have to read American or British journals. This issue of The Speleograph contains a description of lava caves in and around Auckland, New Zealand.

NZ Speleo Bulletin 161 (Mar 1992) This issue completes the series on the caves of Paturau, a block of little visited limestone on the north-west edge of the South Island. Further on, Kieran McKay describes his discovery and exploration of *Bush Stream Cave* (Waitomo) and some recent cave diving of his.

NZ Speleo Bulletin 162 (Jun 1992) In the lead article, Ashley Cody describes some rare speleothems found in a copper/lead/zinc mine at Te Aroha. This is followed by a detailed report on a cave rescue exercise held in certain caves of Mt Arthur in February 1990 and the description of a new species of cave beetle known only from sub-fossil remains found in some South Island caves.

NZ Speleo Bulletin 163 (Sep 1992) More cave diving in this issue, this time in search of a lost cave, *Solo Hole*, by diving the sumps of its presumed outflow cave near Troopers Road, Waitomo. Jonathan Ravens completes his chatty history of the October 1989 exploration of *Tomo-Thyme* (see part 1 in issue 153) with a blow by blow description of the trapping by floodwaters of three cavers for 56 hours in this 8 km cave. There is also a small map of the cave included with the article. The issue wraps up with a report on a surface search for caves in the Fiordland marble deposit near Lake Te Anau, South Island.

EUROPE

Descent 107 (Aug/Sep 1992) The major articles in this issue cover *Dan Yr Ogof* (Wales) with a summary of recent finds there, and a British/American/Canadian expedition to *Lechuguilla* (New Mexico, USA) during which Peter Bolt dived the sump below Grand Guadaloupe Junction. Peter dived to -28 metres to increase the depth of the cave by a few metres and also took water samples for later analysis. In other news, an expedition to Belize (Central America) found two short (500 m & 200 m) caves in thick jungle which required a two day epic hike to cover 5 km! On the historical front, a belated article summarising the controversial Eli Simpson's life is included. Simpson founded the first British national caving organisation, the British Speleological Association, in 1935.

Cave Science 19(1) (Apr 1992) This issue has major articles on the gypsum caves of the Ukraine and karst geomorphology and its environmental implications in Guizhou Province, China. Other items cover wormcasts in *Speedwell Cavern*, Derbyshire, and monkey remains in Cuban caves.

International Caver 4 (Jul 1992) We get a detailed rundown on the giant gypsum caves of the Ukraine in this issue. According to the author, they are long, but dull. We are also given a caver's guide to Northern Italy - where the caves are and how to reach them. Hungary's longest cave, *Baradla Barlang*, is described followed by an article describing two new caves found in New Zealand by a Czech team and a historical article retracing an 18th century trek around some of England's better known caves. The final article covers the use of modern explosives in caves.

Descent 108 (Oct/Nov 1992) The feature article in this issue is a historic piece by Len Cook covering caving in Yorkshire in the 1950s. Several of Cook's early photos illustrate the article. Other articles describe a visit to caves in Hungary and a connection between *Thrupe Lane Swallet and Atlas* Pot (Mendip) requiring much hard digging and technical rigging. There is also a report on Rescon '92, the 1992 cave rescue conference held in August in South Wales and a brief report on the death of a British caver during an expedition to Spain.

Caves and Caving 57 (Autumn 1992) Central Asia features in this issue with two British expeditions to the area in 1991 just prior to the break-up of the USSR. The tall, dry ranges of the central Tadzhikstan were checked for caves with some interesting entrances found, and the south-east corner of Turkmenistan was explored by another group which concentrated on one cave only, *Cupp-Coutunn*, which has weird gypsum decoration. There then follows the extraordinary tale of the arrest of four South African cavers who were busy finding the deepest cave in Southern Africa. After being forced to burn half their expedition time in court, where the magistrate threw out the prosecution charge of "illegal mining", they still succeeded in bottoming the 250 m deep *Jungle Pot*, which is formed in sandstone. There is also an article on how to take good 3-D cave photos and a mammoth dig project in the Forest of Dean, *Red House Lane Swallet*.

Descent 109 (Dec 1992/Jan 1993) This issue carries news of yet more extensions in *Carno Adit* (South Wales),

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some information on the giant lake caves of Namibia, including *Dragon's Breath Cave*, another drowning in the roof sniff section of *Porth Yr Ogof* (South Wales) and the probable rediscovery of the Lost Cave of Axbridge. The feature articles are the memoirs of Len Cook from the 1940s and 1950s, mainly involving *Gaping Gill*, and a summary of the BCRA Conference held at Bradford in September 1992.

Mémoires de Biospéologie XIX(46) (Jun 1992) This is the official organ of the underground laboratory based in Moulis, France, under the auspices of CNRS. This issue contains details of nine new species and five new genera found in caves. It also summarises the last 40 years of the underground laboratory - a modified natural cave at Moulis, France.

Grottan 4-91 (Dec 1991) (In Swedish with summaries in English) Grottan is the official organ of the Swedish Speleological Society (SSF), in existence since 1966. In this issue there is a report on an expedition to the Isvandet area (far north Sweden), a discussion on the caves of Finland and a list of contacts within the SSF.

Caves and Caving 58 (Winter 1992) Overseas expedition reports dominate this issue with the caves of Matienzo (North Spain), Haute Savoie (France) and Mt Owen (New Zealand) featuring. A Brazilian cave group has published a report on *Toca da Boa Vista* (North-east Brazil), which at 36 km is already very long, but with several thousand unchecked leads is looking to be one for the record books. In other reports, the new FX5 cap lamp is reviewed - very bright, but very expensive - and a round-up of the BCRA Conference held at Bradford in September 1992 is given. In the news from foreign journals section, Australasian magazines get two-thirds of a page coverage.

Cave Science 19(2) (Aug 1992) Non-British caves feature in this issue with reports on an anthropological caving expedition to Belize, Central America, an effort to mathematically model the corrosion chemistry and speleogenesis of a cave in Hungary and an examination of the water chemistry in *Cuevas del Drach* (Majorca). A British flavour is added by D J Lowe in his discussion on speleogenesis in chalk.

USA

The Windy City Speleonews 32(2) (Apr 1992) This is the newsletter of the Windy City Grotto of Illinois and both this particular issue and the next (32(3)) contain details of the recovery of Chris Yeager's body from Cueva Cheve (Mexico) where he had been buried after a fatal fall in March 1991.

NSS News 50(6) (Jun 1992) This issue is a bit of a grab bag of interesting bits from around the world. Pictographs in American caves vie for attention with an article on Chillagoe caves in Australia. A cave restoration project in Marengo Cave (Indiana) is alongside a piece about National Cave Rescue training programmes. There is also a discussion on the relative risk of American cavers contracting rabies from bats and a report from an American embassy official in Hungary who is also a caver. He got the job of taking America's "second lady", Mrs Dan Quayle, through a cave in Budapest. To complete this already well rounded issue there is a humourous article on "dark suckers" which could (well, maybe) rewrite physics.

Speleonics 18 (Jul 1992) Lots of electronic stuff in this issue. There is an examination of globe life versus voltage for incandescent lamps, a fancy lead acid charger based on a switching voltage regulator, a look at hydrogen gas-to-water catalysts for ridding the insides of battery powered things (like photographic strobes) of hydrogen gas, and a detailed article on high light output LEDs - for use as long term, long life back-up light sources.

NSS News 50(7) (Jul 1992) Some dross in this issue, but amongst it is the story of how a water supply tunnel intersected a cave under Minneapolis (Minnesota) in 1864. The cave was surveyed in 1909 but largely forgotten, or believed to be a hoax, until rediscovered in 1990. Another serious article covers the incidence and risk associated with the Coccidioides immitis fungus. Not normally found in caves, but often found in soil below overhangs and old Indian settlements, the fungus can cause a respiratory infection, sometimes causing death. Those most at risk appear to be archeology students working in California.

NSS News 50(8) (Aug 1992) A detailed article on the exploration and mapping of a lava cave, Three Peaks Pit, in South-west Iceland takes up much of this issue. The remainder is given over to a discussion on low impact cave diving and the things to consider when getting people together for a cave trip.

NSS News 50(9) (Sep 1992) A summary of the activities at the 1992 NSS Convention held in Salem (Indiana) is relieved somewhat by the addition of an article on postage stamps and postmarks with a speleological theme.

NSS News 50(10) (Oct 1992) The cover of this issue has a very striking colour photo of an underwater cave. Inside, the cave diving theme continues with articles on the 17 km long Leon Sinks Cave System in Florida and the 13 km long Nohoch Nah Chich Cave System in the Yucatan Peninsula (Mexico). There is also a detailed article on the physics and sometimes dangers involved with "blowing" (draughting) caves and wells and a product review of ultra bright LEDs which are suitable for use as an emergency cave light, and can be relied upon to last for days on a pair of AA cells.

NSS Bulletin 53(2) (Dec 1991) In this issue: large

REVIEWS

Legal Organisation for Non-Violent Action. David Mossop. Published by the New South Wales Environmental Defender's Office. Revised editon 1992 $15.00 includes postage and packaging. Available from the Environmental Defender's Office Ltd, Suite 82, Lincoln House, 280 Pitt Street Sydney. 2000. Ph (02) 261-3599

Non-Violent action is often employed in Australia as a means of defending parts of the environment threatened by activity which those involved in the action believe is destructive and therefore inappropriate. An appreciation of the organisation necessary to undertake successful non-violent action is important for cavers concerned to protect caves against mining or other potentially harmful activity.

As those undertaking non-violent action commonly come into contact with at least one of the players in the criminal justice system, an understanding of the legal implications and possible outcomes of non-violent action is crucial. However, one of the central faults of the Australian legal system is that knowledge of the law, which is possessed almost exclusively by members of the legal profession, rarely filters into the general community. Consequently, most people know very little about the operation of the criminal justice system or their rights in the face of police action. The esoteric nature of the law serves to render individuals powerless in situations wherein knowledge of the law and an understanding of legal processes are crucial to success. This situation is perpetuated by the prohibitive cost of legal advice. As a consquence of insufficient knowledge of the law, combined with limited access to legal services, the legal system is a largely unknown entity.

As many people are oppressed by the powerlessness which is an inevitable consequence of lack of access to the law, any publication which demystifies the law by providing a clear and succinct account to essential aspects of the legal system is welcome. In Legal Organisation For Non-violent Action, David Mossop combines a clear explanation of the legal rights and the operation of the legal system with practical advice on how to organise non-violent action. Mossop includes a brief discussion about the nature and philosophy of non-violent action and describes various forest based non-violent actions which have occurred in Australia in recent years.

In providing extensive information about the legal support necessary to undertake successful non-violent action, Mossop stresses the significance of the legal system's capacity to dis-empower the individual. Whilest non-violent action should be a positive and empowering experience, insufficient knowledge or use of the legal system can result in failure and dis-empowerment. As Mossop states, "without the provision of adequate legal support, individuals are helpless. It is therefore essential that those involved in legal organisation make the legal process as accessible, understandable and manageable for the individual as possible". If non-violent action is to be a positive and continuing process, then legal support for such action must be sufficient to empower the individual.

This book assists in the process of empowerment by providing a clear explanation of the working of the criminal justice system, focusing in particular on the operation of the system in the context of non-violent forest action. As well as providing information on relevant players in the system, such as the Legal Aid Commission and the police force Mossop discusses the power of the police before and after arrest, and addresses such questions as the nature of an

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maze caves in gypsum (Western Ukraine); a theoretical model of underground radio-location; historical review of saltpetre beds; effects of moisture on survival of cave beetle and cave cricket eggs; micro-fungi in a Michigan cave; abstracts from the Proceedings of the NSS Meeting, July 1991; index to NSS Bulletin 53.

Compass and Tape 10(1/2) (Summer/Fall 1992) This issue of the NSS cartography section's newsletter goes in for some really serious navel gazing about whether to include precise cave locations on cave maps, what to call a merit medal and why the cartography award at the recent NSS Convention was placed last on the list of presentations.

NSS News 50(11) (Nov 1992) The lead article covers the construction of a 150 m long "cave" in the Cincinnati Museum of Natural History. This artificial cave makes extensive use of glass fibre reinforced cement panels moulded to actual cave wall profiles, and has a bat dome with a population of live bats. Other articles cover the 1992 Latin American and Caribbean Speleological Federation's Convention in Cuba, at which Mexican cavers expressed anger at foreign expeditions streaming into their country without providing them with the courtesy of inviting them along. There is also a short article on modifying lead acid miner's lamps. The issue winds up with an index for volume 49 of NSS News.

The Speleograph 28(8) (Aug 1992) This is the newsletter of the Oregon Grotto of the NSS. This issue describes how the members of the Grotto have just commenced a systematic cave tagging project at Mt St Helen. Up to now the caves have not had any identifiers placed on their entrances. This issue also contains a summary of a clean-up of Ape Cave (Mt St Helen).

arrest (i.e. exactly what action by the police constitutes an arrest) and the amount of force the police are entitled to use when effecting an arrest. These are crucial questions in relation to protest action, but they are issues about which most people know very little. Mossop also provides information necessary for successful organisation subsequent to arrest, including information on bail, pleas and defences.

Legal Organistion For Non-violent Action includes extensive appendices which again provide useful and necessary information for a person contemplating or involved in non-violent action. For example, Appendix C provides notes on the structure of a Local Court trial, designed to assist a person who has chosen to represent herself or himself. The appendices also include a number of extracts from relevant legislation, thereby providing the reader with access to statutory provisions directly and indirectly relevant to non-violent action. This sort of information is important but is not often readily provided to the public. Mossop notes, however, that the legislation is only intended as a guide. The law changes rapidly, and it would be a mistake to rely heavily on the information provided in the statutes.

I have two reservations about recommending this publication to cavers in Australia contemplating the use of non-violent action to protect caves. These reservations relate not to the publication's quality but rather to its (necessarily) limited scope. First, the book is concerned mostly with non-violent forest action, thus some of the information might be irrelevant to people involved in non-violent efforts to conserve caves. However most of the information regarding legal organisation would be equally applicable to such action.

My second reservation is more significant. The book is concerned with non-violent action in New South Wales. It would therefore be a mistake for individuals in other states to rely on the information regarding legislation and legal processes. Although much of the information provided by Mossop is useful throughout Australia, the law with respect to police powers, rights upon arrest and other important aspects of the system does vary from state to state. Although some of these differences are minor, they might nevertheless be fundamental.

Legal Organisation for Non-violent Action is nevertheless an excellent publication for individuals contemplating non-violent action in New South Wales. Mossop goes some way towards providing individuals with both knowledge of the law, the operation of the legal system and the information necessary to obtain the legal support which Mossop argues is crucial to successful and positive non-violent action.

Richard Ewart.

DOWNUNDER ALL OVER

Not much has been heard from SRGWA in this section of the Australian Caver since mid-1991. The club has however, been active with trips to the Leewin - Naturaliste Ridge, Mandural and Eneabba. A dominant feature of trips to the L-N Ridge was restoration in Crystal, Calgardup and Mill caves, the latter two coming under increasing pressure from casual cavers. Crystal Cave received a slab pathway through sand to further minimise contamination of the Christmas Star Extension. The Calcified Tree Root extension of Calgardup Cave, where PVC barricades are being trialed in co-operation with the Dep't of Conservation and Land Management, saw several trips where sand, eroded by countless visitors wandering all over the soil cones, was shovelled back up the slopes. Although it is felt that there is a high degree of compliance to the barricade concept, keeping the area clear of the evidence of those who don't is a continuing problem. Mill Cave, an important educational cave that has only recently started showing signs of pressure from increased visitation came in for some track marking towards the end of 1992 utilising funds made available from "profits" of the Cave Leeuwin Conference.

During the 1991 Christmas period, Robert and Norman Poulter spent a month in Scandinavia. While in Sweden they made contact with the 400+ strong caving fraternity and Norm managed visits to a couple of granite caves in the Harnosand region, some 250km north of Stockholm.

In early 1992, the club made a short excursion to Mandurah to investigate finds made by members living in the area. One interesting cave with some decoration was in the middle of a domestic block of land, while a small tight passage leading to water with clean flowstone decoration around the edges was discovered in a small, well visited cave to the south of the popular holiday town.

While several SRG members were on their way to and from the TAS TROG Conference, and as the rain allowed, caves of the Nullarbor received some attention. Several caves in the Nuytsland Nature Reserve and on Madura and Mundrabilla Stations received their reflective cave number tags, the information of which will be published in due course. Replacement track and survey markers were placed in Mullamullang and Thampanna caves. During the excursion into Mullamullang, primarily to collect data from the Dome area to add weight to the argument for an extension to the "Dome non-entry resolution" (see Below), the preserved notes removed from the 1 Mile Cairn during 1991 were replaced in a

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DOWN UNDER ALL OVER

folder along with background information relating to the 1965 note and the discovery of two bodies near White Lake during 1991. It was felt that the condition of the Manila rope at the Drop Off had deteriorated and so it was removed. The rope had been inplace for more than a quarter of a century. During the 1960's, Manila rope was usually given an active caving life of 9 months so it was about time this one was pensioned off.

From perusing the notes in the visitor's book now located outside the Dome, not everyone who made it to that point was in agreement with the non-entry resolution passed at the Cave Leeuwin Conference in January.

However, it was interesting to see a comment from Glenelg Venturers (21-4-92) claiming that members had seen a Tartarus spider during a 1989 trip to the Dome. Coupled with a comment from Hills Speleological Club trip report of October 1992 noting the sighting of an adult Troglobattella cockroach outside the Dome. It is encouraging to now speculate that whilest the two species are not extinct they are still on the endangered list.

It is for this reason that SRG persisted in an extension of the non-entry resolution at Tas Trog. The resolution is as follows:
"In view of the perilous state of certain troglobitic fauna in the Dome of Mullamullang Cave, the ASF recommends to all its members and to the public that for at least two years only entomologists and essential assistants visit the Dome so as to give the relevant fauna populations a chance to recover".
The resolution will be reviewed at the 1994 Conference. Do we have the right to destroy the habitat of cave fauna and hence the fauna themselves, just to satisfy our own egoes?
Norm Poulter.

A warning from the University of New South Wales Speleological Society.
As reported in a recent issue of UNSWSS's journal SPAR, a new cave was discovered at Wee Jasper which has been named Nice Cave. Due to the delicate nature of the cave, its location has been deliberately suppressed although it has been made known to NPWS. Despite this, there have been some unauthorised visits to the cave.

During last year a member of a group of cavers which had entered Nice Cave developed a condition refered to as Cryptococossus. This is a condition not unlike Histoplasmosis insofar as it is contracted from a fungus which grows in bat guano. The person involved was severely affected by the disease and was reportedly near death. It is believed that the disease was picked up from fungus growing in the entrance chamber of Nice Cave.

As a result of this incident UNSWSS has erected a number of signs in the entrance to Nice Cave warning of the danger and encouraging people not to enter. Work is currently taking place to try and confirm the extent of the danger. Until such time as the cave is declared safe, fellow cavers are encouraged not to visit this cave. The signs are A4 laminated and are clearly visible to any one entering the cave.
Rob Whyte.

Currently Work at the Narcoorte Caves site involves DNA printing by Dr Craig Fowler and honours student Ms Ginny Sargent of Flinders University. They are attempting to islolate the mitochondrial DNA from the fossil bones to reconstruct their relationships to animal ancestors and decendants.

The Federal Govenment recently announced it would nominate the Naracoorte Caves and the Riversleigh fossil site in Queensland for World Heritage listing.

Dr Rod Wells and Dr Grant Gartell discovered the fossil chamber at Naracoorte in 1969. Since the discovery a new species of extinct kangaroo, a giant boid snake and a giant mallee fowl had been first described from the Naracoorte caves. Much other material found there had been known to science for the past 100 years, but only from fragments, portions of jaws and teeth. The site at Naracoorte is important as it contains complete skulls, jaws and parts of skeletons of the animals.

Kate Salmon

**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 an Australia Post Disk Box, that way the chooks won't get it and you will get it back. Always include a hard copy of the article with the disk.

**Material should be sent to the following address:
Clare Buswell c/- Politics Dept, Flinders University, Bedford Park. S.A. 5042.**

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