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Summer, 1977 No. 78

THE AUSTRALIAN SPELEOLOGICAL QUARTERLY

Photo: Andrew Pavey above the entrance to Kalkadoon, C20 Camooweal, Qld.

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EDITORIAL

This issue marks the 12th that Laurie Moody has prepared, and I am pleased to be able to congratulate him on his effort. This issue means that the ASF Newsletter is again up to date.

The main article in this edition is on exposure, with some comments on Tasmanian conditions. For us Tasmanians who produce this newsletter, summer is always a worrying time - many visiting parties do not appreciate the dramatic changes in our weather. Another article shows what can happen when visiting parties do not fully appreciate the difficulty of the cave they have selected to visit.

Still on safety, Gray Wilson has started the reporting system on a new basis, with a form to be filled in after every caving accident. Some will be published each issue, with comments on how to avoid a similar recurrence. Discussion of your near miss could well save someone else's life!

Administratively, ASF Newsletter has undergone some more changes. Robin Steenson still handles the address changes, but all the posting and packing is done in Tasmania. In addition, I handle the advertising and inserts, and chase up those who owe us money! Address your complaints to me (Newsletter Manager) and your articles to the Editor.

The address label system has dramatically speeded up distribution, it takes about 12 man hours to insert, tape and label the 750 copies we post each issue. With luck (and co-operation from your club's secretary) we can despatch your newsletter the same day that it arrives from the printer. For those members who have not regularly received their copy, the fault is almost certainly in your club. Several issues were held back from posting because not all the labels were available.

You will notice that issue No.77 was almost entirely reprints from club newsletters and that is because you didn't write an article! This issue contains two main items, both written after repeated personal requests from the members of the newsletter commission. We cannot produce a newsletter if you won't write material.

Tony Culberg

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CAVES OF AUSTRALIA : No. 12

KALKADOON CAVE

by Andrew Pavey.

Introduction

Camooweal township nestles under a sunny Queensland sky about 7 kilometres from the Northern Territory border on the Barkly Highway, which runs from Mt. Isa to Tenant Creek. The Barkly Tablelands surround the town and are flat as far as the eye can see, and then some. Winter is the best time of the year to visit Camooweal as the weather is typically balmy, not a cloud in the sky, cool and crisp at night with so many visible stars you could believe that you are almost on another continent (funny comments about being in another age are to be avoided).

Camooweal has other attractions for cavers apart from the pleasant weather conditions. A large proportion of the Tablelands is dolomite and although well-spaced on the ground, there are many large stream sinks. These have been mainly identified from air photos (Grimes, 1974) and all that remains is to systematically visit the sinks and features that may be sinks, to look for caves. This is not all that easy. The country may be flat but negotiation of it in a vehicle is a lot harder than one would expect. Even in winter it is not very bright to be caught walking around on the surface - it gets quite hot and there is a lack of water except in some big standing lakes on the main rivers. Navigation is also a problem, one large patch of grass and open woodland looks pretty much like any other. Most explorers have used old air photos and tracks along fences - there is not a high correlation between the two, unfortunately.

As a caving area, Camooweal has been likened to the Nullarbor of the late fifties - lots of big caves waiting for you to walk into them. As a result of this reputation, several groups have made the effort of getting to Camooweal from the large centres of population. These trips have usually been of epic proportions as Queensland on the ground is a lot bigger than Queensland on a map. As affluence amongst cavers has increased, more use of aircraft has been made.

Camooweal sports a large complex-looking airfield on the air photos although in reality, it is now going to grass rather quickly. UQSS members in 1974 (Grimes, 1975) are the first cavers known to have used aircraft to check out widely spaced dolines for possible caves in the area. The 1974 UQSS party were also the first "modern" cavers to visit a cave listed (Shannon, 1970) as being about 20 (pre-metric) miles down the Urandangie Road (i.e. south of Camooweal).

History

This cave was known for a number of years as "the cave 22 miles south" (Cave 17 to 20, Shannon, 1970) and is now called Kalkadoon Cave (C20). It first crops up in the literature as "Haunted or Bat Shit Cave" known to the original Mt. Isa Speleological Society in 1954 (Benson, 1955) Sprent, in 1964, is reported by Shannon (1970) to have entered the cave and the manager of Rocklands Station knew of it.

The 1974 visit by Shannon, Brown and Grimes (1975) was the first well-documented visit and led to an interest in the cave by the Mt. Isa Cave Explorers (MICE) during 1975-76 (Canty, 1975). I first visited the cave on a 'flying visit' one weekend in 1976 (Pavey, 1977). We found the cave to be much bigger than expected - the entrance passage is getting on for good Nullarbor dimensions. In consultation with Ken Grimes before the trip, it was decided that we should attempt a quick low grade survey of as much as was possible and this was done. About 1,200 metres of passage was surveyed with a Suunto compass in two sessions totaling about 9 hours. We briefly looked at the passages traversed by UQSS and the major easterly trending passage (UNSWSS Cool Passage on map). In all passages we gave up surveying long before the passage gave up, many large walk-in side passages had to be ignored!

The cave had fired my imagination, so in August of this year (1977) I again arranged a flying visit (via light aircraft) - you don't only have to be rich to cave at Camooweal, you also have to be slightly heat affected! Marj, and John Brush and myself spent a pleasant and active week in the area, but more importantly the UQSS/VSA party touring North Queensland caving areas met us at the cave and between us, we considerably extended knowledge of the cave. In this session 2.6 km of cave passage was mapped (see page 3 for result). Grimes (1977) has already reported on some aspects and Elery Hamilton-Smith can be expected (prod, prod) to report later on fauna studies.

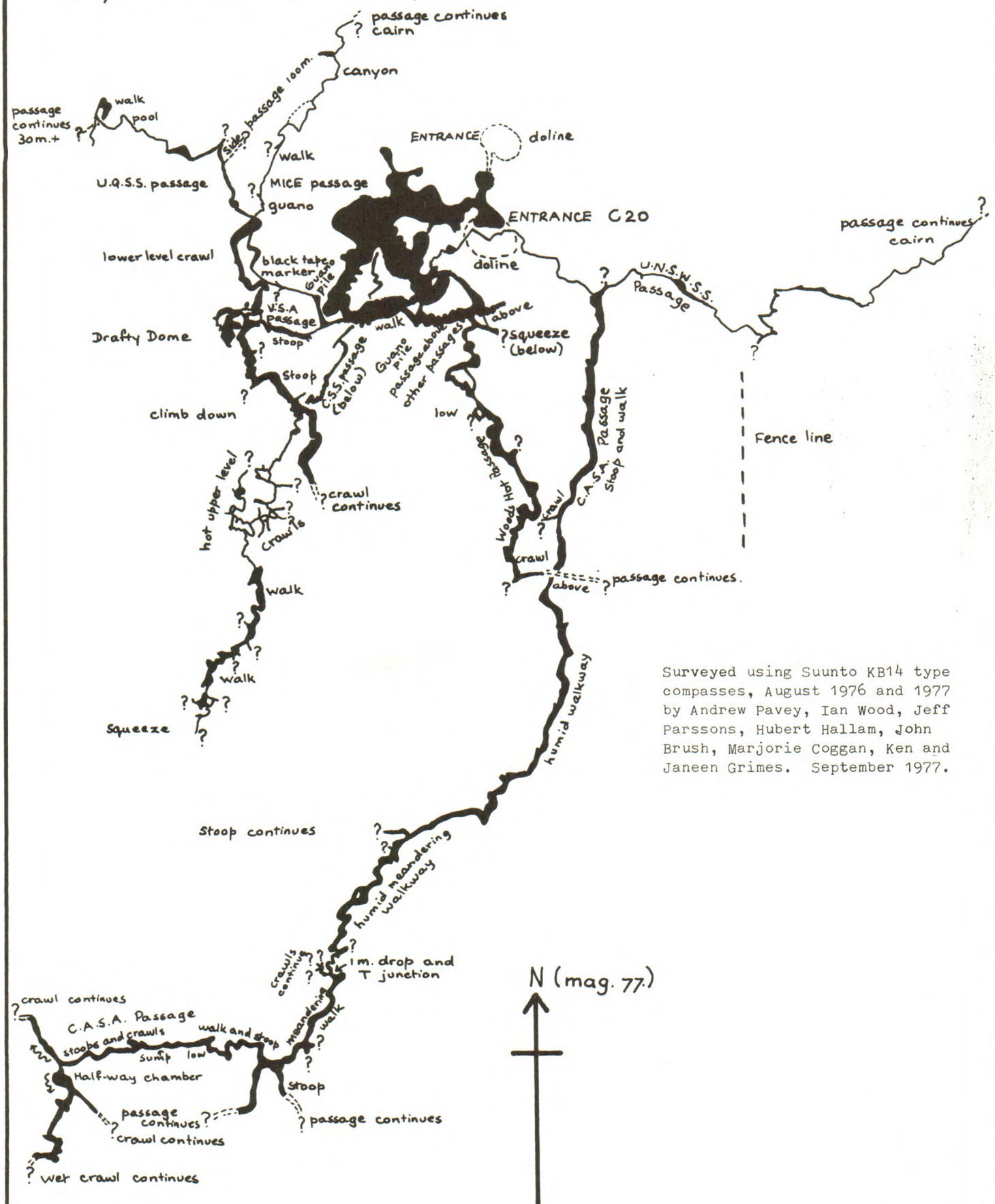
As it now stands, Kalkadoon is the longest cave at Camooweal and eighth longest in Australia (3.8 km) and with a few more trips could easily be the longest in Australia! You think I jest? Not so friends, that map has over 40 question marks on it and everyone of them could go for a kilometre just as a couple of the question marks which appeared on the 1976 map did - and the amazing thing about this cave is that we haven't actually reached the end of a single passage yet!

Description

The cave is located less than half a kilometre from the boundary fence of Rocklands Station, 8.5 km north of the point where the Urandangie road crosses the boundary fence at a grid about 32 km south of Camooweal. From the air, a short and rapidly deepening gully can be seen leading to a large entrance shaft about 25 metres in diameter and over 20 metres deep. Slightly to the north is a subsidiary tumbled block doline in the traditional Camooweal mould - it also contains an entrance to the cave. A flat,

KALKADOON CAVE

C 18/20 CAMOOWEAL QLD.



Surveyed using Suunto KB14 type compasses, August 1976 and 1977 by Andrew Pavey, Ian Wood, Jeff Parssons, Hubert Hallam, John Brush, Marjorie Coggan, Ken and Janeen Grimes. September 1977.

KALKADOON CAVE Cont;

grassy plain with very open tree cover stretches away into the distance, in all directions.

The larger entrance needs either 7 metres of ladder or a bit of rockclimbing skill (down a subtle hole in the ledge). The way on (as they say in all good caving stories) . . . is obvious. The second entrance requires a brief scramble through a rockpile into a large chamber which joins the main route. The chasm is typically 20 metres wide and rises to be somewhat higher. The floor is a jumble of loose and very rough blocks. A steep guano covered slope leads a pleasant (but getting more humid) passage with a lot of insect life in the guano floor. Guano piles, both fresh and apparently recemented, abound. All are found under deeply pitted roof domes. The main passage curves to the south to Fourway Chamber where it splits up (predicatably do I hear you say?) into four passages. Two of these (to the east) join shortly to form the start of UNSWSS Cool Passage, which quickly forks at a small climb. The lower route continues in an easterly direction for over 400 metres - here the survey stops but the passage continues. A major tributary(?) to the south about 100 metres down UNSWSS Cool Passage is CASA Passage followed for over 700 metres by the UQSS/CASA party with a number of good leads at the end from the optimistically titled Half Way Chamber. (Ken thinks it may be halfway to the Gulf).

North from Fourway Chamber, CSS passage leads through a large chamber to a low rocky crawl which swings under the main chamber and heads southwards slowly getting larger, until it's an easy walk through. It then degenerates into a low crawly maze and breaks through into a higher humid passage driving off to the south. Many side passages (not looked at) and the survey then terminates near a squeeze (which almost certainly goes . . .).

Westward from Fourway Chamber, MICE Passage leads to a trifurcation at a small black tape marker on the roof. MICE Passage continues northwards for 150 metres and keeps going . . . while the other higher level passage leads to VSA Passage (heading south). Down the climb and after a crawly section, UQSS Passage is joined by a large tributary and leads to two small climbs (limit of UQSS exploration in 1974) but continues . . .

VSA Passage starts back from the tape marker and connects back to MICE Passage closer to Fourway Chamber. Near the former junction, a drafty crawl up a slope leads to the Drafty Dome (where the breeze is lost). VSA Passage bores off into the great south but rapidly comes down to a wide, flat out crawl. A short climb down just before this crawl leads down into CSS Passage - past the rocky crawl (a heaven sent connection, if ever).

A number of common features are observed in these passages. They all start out as large walk-through passages and as you go along they tend to decrease in size but alternate between low crawls and walk-through sections as far as they have all been followed. The floors all start out very rocky and the further you go, the sandier they become. Bats are present in many of the passages. Mostly M. gigas (according to EHS) although we did find some bones from a much smaller bat. Fresh guano piles and much older recemented (?) ones alternate along the passages. All guano piles appear to be under roof domes. The recemented piles (if that's what they are) I found most interesting on the 1977 trip, as I had not noticed them on the 1976 trip. They comprise alternate layers of a hard black rocky substance and softer lighter-coloured material. They are heap shaped. I suspect they are formed by the alternation between complete flooding during the wet season (December to March) and the drier months (no rain falls in August).

The cave has no speleothem development (typical of Camooweal) but the solution pockets on the walls make up for this lack.

The further you go into this cave the hotter and more humid it tends to get - equilibrium appears to be about 27°C and 100% relative humidity. Not perfect for caving and therefore you have to be careful in regard to heat exhaustion.

So far, unlike the other major caves at Camooweal, Kalkadoon has not yielded terminal lakes. We have got down around 55 metres below the plain wheras the other major caves hit large lakes at about 70 metres.

A vast proportion of the cave must fill in the wet season (a spectacular sight I am sure) but the question of where it all goes has yet to be satisfactorily answered. It's a long way either north or south to Riversleigh/Lawn Hill Gorge or Lake Nash.

The Future

For this cave the future is bright, and for other caves in the area. We sighted one major doline from the air about 30 km north of Camooweal but couldn't find it on the ground. It may well be Hassells Cave reported by Danes in 1816 and not visited by cavers since. Danes reported it as "very deep and contains many bats".

Camooweal is a long way from the centres of population, hence visits are infrequent. The caving areas further north - Ken Grimes calls it the Barkly Karst Region, have already revealed large dolines sighted from the air, but not one visited from the ground. Access is very poor.

I have had much success with successive trips to Camooweal since 1972 but I think flying is the only way to get there. It's not worth the cost, particularly in time, to drive in your own car and probably do it considerable damage along the way (Pavey, 1972 & 1974).

On that note and knowing that vast amounts of undiscovered cave can be expected in the area, do we

Continued on Page 5

KALKADOON CAVE Cont;

have any volunteers for a trip next year or later (bring your money with you). One day I'd like to hire a choppy copter and fly to those inaccessible shafts . . . any takers??

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AN ACCOUNT OF A NEAR MISS IN KHAZAD-DUM FROM A TRIP REPORT BY PETER COVER, NORTHERN CAVERNEERS.

The trip was made by two parties of three, one each in the Stream Passage and Dwarrowdelf routes allowing all pitches to be rigged by one party and derigged by the other.

Peter Cover's party headed down Dwarrowdelf and didn't run into trouble until they started to prussik out through the Stream Passage. They arrived safely in the Brew Chamber and then had to negotiate the first six sets of short waterfall pitches. Although they had on waterproof clothing they still managed to get wet and the water was very cold. One pitch had to be negotiated straight up through the waterfall which the first member to go up found difficult as he had to struggle over a lip at the top fighting his way through the full force of the waterfall.

Denise Devitt followed but became stuck at the lip, unable to get her Jumars over, with the full force of the water hitting her in the chest. She struggled for quite a while being swept from side to side and shaken about by the force of the water. Eventually, the man at the top, Tony Powe, got her over the lip by getting down on his knees at the very edge and hauling on her Jumars. She was stuck in the waterfall for around 20 minutes and was suffering from exposure. With some difficulty, Denise was moved to a fairly dry ledge where she and Tony huddled together under a sheet of plastic in an effort to warm her. Peter Cover started out for help but his light was beginning to fade so he rejoined the others on the ledge. After about an hour, Denise thawed out sufficiently to get moving. The remainder of the trip out was negotiated with fading lights. All the pitches were left rigged, the aim being to get out. They arrived back in Maydena just in time to avert a complete Search & Rescue call out.

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SPACE FILLER

The following was stolen from the Australian Conservation Foundation Newsletter.

"That reminds me," the bunyip added. "Someone asked me what a uranius decision was. I thought he meant unanimous but it's the opposite I gather.

A uranius decision is where almost nobody agrees, and hardly no-one understands. And do you know where they make 'em? In the House of Reprehensibles!"

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DEATH FROM EXPOSURE

Definition

Exposure is the severe chilling of the body surface leading to a progressive fall of body temperature with the risk of death from hypothermia (the condition when the whole body is abnormally cold).

The question of death from exposure is complex, but enough experience and knowledge are to hand to be fairly certain of the following major components in the equation.

FATIGUE PHYSICAL EXHAUSTION	+	ANXIETY MENTAL STRESS	+	REDUCTION IN CORE TEMPERATURE	=	DEATH FROM EXPOSURE

1. Physical Exhaustion

In mountain walking with young people, the critical factor here is whether or not the trip involves being self contained on a continuous trip and thus requires the carrying of a loaded rucksack. If it does, then the younger person, the more prone he is to quickly become physically exhausted.

Consider a 14 year old and a 17 year old. They eat about the same amount of food, take up the same tent space, use the same size sleeping bag, rucksack, and so on. Thus the load that needs to be carried for each is much the same. Furthermore, particularly in cold conditions, if the equipment and food are adequate, the 17 year old will be flat out carrying his own gear without taking a share of someone elses. The 14 year old, on an average, will have considerably less strength and muscular and mental endurance than the 17 year old and in most cases is simply not able to take on such a project.

Where does one draw the line? This is not a new question. It was faced and resolved about 20 years ago in the U.K. The Outward Bound Schools settled on a minimum age of $16\frac{1}{2}$ years and this is now the generally agreed minimum age required by overseas mountain instructors, for students undertaking mountain expeditions. Many in fact, require a minimum age of 17 years. Even then, the experienced leader will have a good look at the physique of the boys of this age. This is particularly true for expeditions that involve a fair amount of climbing and the probability of cold conditions. Around this minimum age, it has been found time and again that the smallest students (irrespective of fitness) are the most suceptible to exposure.

Even with $16\frac{1}{2}$ year olds, the problem of physical exhaustion from pack carrying in cold mountains is still there. To allow for this requires a relatively high leader to student ratio. The lowest that a properly qualified mountain leader would consider under Tasmanian conditions and with $16\frac{1}{2}$ year olds, would be one leader to five students and a minimum of two leaders. This means a party of two leaders and ten students. Even this is getting rather unwieldy and a party of two leaders to seven or eight students would be ideal.

2. Anxiety, Mental Stress

The factors that give rise to anxiety and mental stress are not quite so easy to analyse. However, there are some obvious leads.

First of all, it seems to be a function of age. Empirical evidence of countless expeditions and ventures is that the younger the student, the more likelihood there is of anxiety setting in when conditions get tough. It is difficult to isolate this from the correlation between age and physical exhaustion and it may simply be a consequence of increased physical discomfort. However, many leaders would claim it to be an independent factor. Certainly, the probability of increased discomfort will lead to increased mental stress.

Second, the leader/student ratio is important. Morale can be kept higher, the party can be kept together without weaker members dropping behind and the leader better able to take some of the load from weaker members, if this ratio is adequate. With a low ratio, the onset of tough going can lead to a snow-balling effect of anxiety and poor morale particularly if the party separates.

Of course, most of the question of morale is subsumed under the general heading of leadership in so far as school parties are concerned. Particularly is this so when conditions get tough. The leader of the party should, by definition, be capable of deciding, and be prepared to take the action that he sees to be necessary. Such effective leadership increases confidence and lessens anxiety in the students.

A final factor in anxiety is perhaps not so well agreed. However there does seem to be evidence that it is possible to acclimatise to some extent to cold conditions. As to whether an acclimatised person is any different, physiologically, to an unacclimatised person is not known.

However, the proposition that a person who has had prior experience of very cold conditions is less likely to suffer the same degree of mental stress on a subsequent encounter, as someone who has not had prior experience, is one that appeals to most mountaineers.

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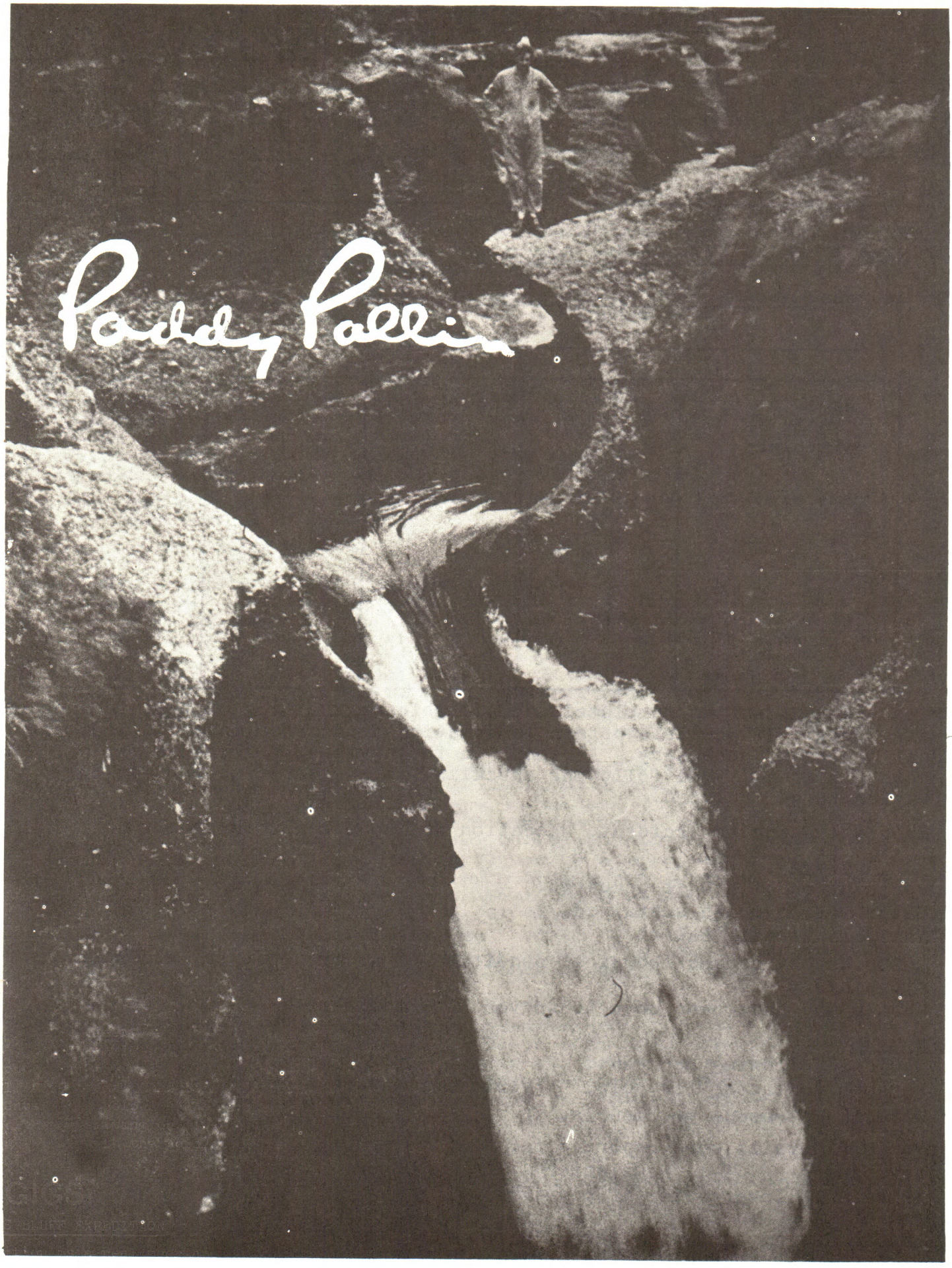

John Dunkley contemplating the Sink of Harpan River Cave, Nepal — Photo by Andrew Pavey

AUSTRALIAN SPELEOLOGICAL FEDERATION

ACCIDENT REPORT FORM

.....
CLUB

Date of Accident:_____ Day of Week:_____ Time:_____

Cave:_____ Area:_____ State:_____

Reported by:
Name_____

Address_____

City_____ State_____ Post code_____

Name (s) of person (s) involved	Age	Sex	Experience	Affiliation	Injuries or comments

Describe the accident as completely as possible on the back of this form or on a separate sheet. If possible obtain information from those involved. Use additional sheets if necessary. A report in the style of *"American Caving Accidents" is ideal. The following checklist is suggested as a guide for information to be included.

Events leading to accident. Location and conditions in cave.

The Accident

( ) Description of how it occurred.
( ) Nature of injuries sustained.
( ) Analysis of main cause.
( ) Contributory causes (physical condition of caver, weather, equipment, clothing, etc.)
( ) What might have been done to prevent the accident.

Rescue

( ) Actions following accident.
( ) Persons contacted for help. A flowchart may be helpful.
( ) Details of rescue procedures.

Further details were reported in:
Newspapers ( ) Newsletter ( ) Other
(Please enclose copies if possible)

* "American Caving Accidents" example reports available from A.S.F. Safety Commissioner or your club safety officer.

Please return completed form to the ASF as soon as possible after the accident.

CAVE SAFETY COMMISSION,
AUSTRALIAN SPELEOLOGICAL FEDERATION
16 NEWSOM STREET,
ASCOT VALE,
VICTORIA, 3032.

CAVE ACCIDENTS

As Convenor of the Cave Safety Commission, it is up to me to organise the 'sorting out' and publishing of the ins and outs of cave search and rescue in each state. I have circularised all ASF clubs on this matter (posted 10/9/77) along with a request for help in the revision of the "Recommended Safety Code".

Some replies are at hand, five in all (2/11/77), have you sent YOURS in? If you missed out on a copy please let me know.

ACCIDENT REPORTING

A form which appears on the opposite page, is now available for your use in writing accident reports. Help me to gather statistics and information so that it can be published to help others. This will then replace the 'poor' production sent out in September.

"AMERICAN CAVING ACCIDENTS" is an extremely good example of how to write 'reports'. Below are several examples of how to write reports and these should serve as food for thought.

KENTUCKY, BLUE GRASS GROTTO Sunday, 8 September, 1974

Scott Schillereff (19), Martin Hackworth, and Jim and Deb Currens dug into a cave at the bottom of a small pit. While descending one particular climb for the second time, Schillereff slipped and fell about 10 feet, landing on his right knee and outstretched hand. Jim Currens blocked the fall, preventing Schillereff from laning on his head. The victim was in a great deal of pain and unable to flex his knee. Using a two-man carry, Schillereff was transported a half mile in an hour. A medical examination later showed he had a possibly fractured right hand and a severely bruised knee.

Analysis: Schillereff fell a short distance because of the slippery rock. The cavers thought this short climb did not require a belay.

Source: Report by Martin Hackworth.

WEST VIRGINIA, ELKHORN MOUNTAIN CAVE: On 16 March seven cavers from the George Washington Student Grotto (NSS) descended the 140 foot entrance pit of Elkhorn, using brake-bars on 7/16 inch Goldline. At about 4.00 p.m., Warren Bogardus (25), George Rabchevsky (30) and Warren Broughton (21) met at the rope to ascend. Bogardus was up in 30 minutes using two Jumar ascenders. Rabchevsky followed, but could not get over the first ledge, about 10 feet up. He decided to descend but could release only one ascender from the rope. Finally, he got into a body-rappel, cut the sling to the stuck ascender and descended.

Broughton then ascended using a Jumar for a seat sling and a prussik knot for his feet. He reached the top in 35 minutes. Meanwhile, Michael Tepping (23) had hurt his knee when he slipped while jumping a stream in the lower cave passages. It became evident to the group that both Rabchevsky and Tepping would have to be pulled to the surface.

Paul Broughton (25) next followed his brother Warren to the surface using a two-point prussik system. About half way up, the lower polyethylene prussik snapped, but he safely switched to a spare manila set. The time was now 6.30 p.m., it was cold and raining, and the three on the surface were soaked and cold.

Rabchevsky was secured to the rope, along with the end of another 150 foot Goldline to be used to pull the main rope down again. The three on the surface tried to pull Rabchevsky up, but the rope caught in a crevice. Another attempt to pull Leonard LeRoy (20) out (he being much lighter) was also unsuccessful. It was decided to go for help. Bogardus and Warren Broughton drove to a telephone and called the Petersburg fire department. By 9.30 p.m., about ten volunteers were at the cave. One of those in the cave had attempted to ascend using Bachmann knots, but this had failed. It was decided to simply pull the four to the surface. Warren Broughton rapelled in half way to provide communications and guide the rope. Connie Wong (20) was pulled out, then various packs, followed by Tepping and LeRoy. Broughton was pulled to the surface on the end of the lower rope. By midnight, everybody was out of the cave.

Source: Warren Broughton

Analysis: (Warren Broughton) Where was the problem? Michael obviously needed to be pulled out. The others lacked adequate training and the cave proved too much for their limited exposure to vertical caving. Because of this, the Grotto will institute training and testing sessions involving various problems which may be encountered in caving. These sessions will be mandatory for those who want to do vertical caves. The Grotto was fortunate that no one was seriously hurt and the trip can best be considered as a learning experience for each of us.

WEST VIRGINA, "X" CAVE Sunday, 22 December, 1974

About 4,000 feet inside "X" Cave, Jim Borden, Tom Shifflet and Mike Dyas placed an expansion bolt so they could rig a line away from the worst spray of a 45 foot waterfall. The bolt used was a 3/8 inch by $2\frac{1}{4}$ inch Star model. This bolt is a masonry-type anchor which is set by an expander plug inserted into the base and pounded in.

As Borden began the initial descent, the bolt abruptly pulled out, sending him into a free fall. Fortunately, the 3/8 inch Goldline had been backed up to a small stalagmite just above the fall. Borden's plunge was partially arrested barely inches above the water-filled bottom. No significant injury was sustained.

Borden's companions were able to re-rig the rope over a chert projection. Borden was able to ascend without assistance, although lightless and hampered by the waterfall spray.

Continued Overleaf

CAVE ACCIDENT REPORTS Cont;

Analysis: The bolt had been placed in sound rock, and there is no obvious explanation for the failure of the bolt. It is possible that the plug was not driven in far enough to adequately expand the shank when the bolt was set. If possible, bolts and pitons should be placed so that the pull on them is perpendicular to the shaft. In any case, single bolts and pitons should not be trusted but should instead be backed up with an additional bolt, piton or natural anchor.

Borden's hard-hat, a Fibre-Metal type, was lost during his fall when the elastic chinstrap snapped. Hard-hats which are better suited for caving are on the market.

"The fall could have been prevented by having belayed the rappeller with a secondary line. However, the small party involved was already burdened with one rope, a kit of bolting hardware, hammer, surveying gear, vertical equipment, wet suits, and normal caving paraphernalia. For this reason, no consideration was given to hauling a second rope." (Dyas)

Source: Dyas, Mike. (1975) "Narrow Escape!", D.C. Speleograph, Feb.issue, p.5.

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NOTICES & NEWS

COMPETITION

In issue No.77, we ran a notice in this section advising that ASF will provide a prize of $20.00 open order on any of our advertisers for a logo or emblem. Apparently, no one seems to need $20.00 as at the time of printing, none have been received from any Mainland state. Tasmania has submitted one entry! We ask you to spend a little time over the Christmas period and submit an entry. Please forward them to: A. Culberg, P.O. Box 36, Lindisfarne, Tas. 7015

C.B. RADIO COMES ON STRONG

I was very interested to read that C.B. radio is now beginning to gain prominence in a number of N.S.W. caving clubs. The Kilo Victor Club comprises of 33 members (Nov. 1977) from NSWITSS, SSS, SUSS, BMSC, HCG, RANCA and CCOG. However, in regard to other states, I have no knowledge as to whether or not C.B. is flourishing in this field.

It is my personal opinion that C.B. radio can prove of great assistance in a caving emergency or any other emergency for that matter. Unfortunately, Telecom have an uphill battle in controlling illegal traffic or general indiscriminate use of the rigs by irresponsible persons. This is the case in Tasmania and I presume that other states experience the same problem.

However, I have heard that Telecom intend tightening up on the mis-use problem in the New Year and look forward to a marked improvement in this regard. I would also like to hear from cavers with C.B. rigs on a personal basis and although I only run a 23 channel AM Roberts RCB-15, I have managed to reach Leeton in N.S.W. on one occasion. My license number and call sign is TAC 227. (Editor)

THE UNDERGROUND PRESS

The Western Caver, Vol.16 No.3 is subject under review in this issue.

Technical Data

Size	-	A4
Cover	-	clear and well presented and features a coloured photo!
Typing	-	good with same type face throughout
Reproduction	-	good, maps excellent, photos B&W are fair
Layout	-	clear and easy to read
Content	-	excellent
Condition on Arrival	-	fair, Australia Post doesn't treat rolled items as well as it might
Other Comments	-	a colour photo is good but one wonders whether we should show cavers sitting on formation. Printing maps so that they have to be bound with the tops at the spine detracts from easy reading.

SPELEO-GIGS

1978 PRECIPITOUS BLUFF EXPEDITION

This expedition is a real goer and any Mainlanders interested are advised to contact Albert Goede (address inside front cover) with $20.00 which will be used to purchase provisions. The expedition will commence on January 21 and return on January 29. Interested persons are asked to contact Albert no later than the first week in January. Access will be by fishing boat if weather is suitable. Aims - further exploration and mapping and scientific work.

DEATH FROM EXPOSURE (HYPOTHERMIA) Cont;

3. Dangers

It is the combination of fatigue, cold, anxiety or mental stress which is particularly dangerous. These will vary greatly with the individual as will his resistance to their effect. It is the additional factor of physical exhaustion over and above the cold which kills quickly. Death has overtaken whole parties, who, thinking they must keep moving at all costs, have bashed on instead of resting in some shelter before exhaustion supervened. The essential is to always preserve a sufficient reserve of energy in severe conditions of cold and high wind.

It should be added that, with an injured and immobilised climber, it is clear that cold may kill him although he is not physically exhausted, but in these cases death will not occur so rapidly and it should be possible to rescue him before he dies of cold.

4. General

In normal conditions the temperature of the body core (trunk and brain) remains constant at 37°C although the temperature of the outer shell (skin, muscles and extremities) is always below this. It is vital to preserve the deep core temperature as a fall in this leads to mental deterioration, loss of muscular co-ordination, heart and respiratory failure and death.

The body maintains core circulation and temperature by restricting the flow of the exposed periphery so that the blood is not cooled at the surface. In any treatment, therefore, the importance must be realised, of not increasing peripheral circulation unless there is minimal loss of heat at the skin surface. Further heat loss from the core must be avoided at all costs. SURFACE WARMING THEREFORE IS WRONG. When the symptoms of exposure are established, any further exercise, such as forcing the victim to continue walking, even downhill, should be avoided.

5. Preventative Measures

Reading back up the causal chain leads to somehow preventing as much loss of heat energy from the body to the cold surrounds as possible, and replenishing that which is inevitably lost. Replenishment is best arranged by frequent intake of readibly digestible carbonhydrate such as glucose. Some of the main points in prevention are as follows:

(1) Wind is the major enemy. As much of the body as possible should be covered by wind proof clothing. (Anorak with hood; overpants; mittens). Ordinary jeans do not keep the wind out. Shorts are suicidal.

(2) In wet conditions the aim should be to try to keep dry as well. Evaporation takes body heat-energy. Therefore the anorak, at least, should also be waterproof.

(3) Wool (underwear, shirt, jumper, trousers, socks) as distinct from cotton and synthetics, is far more efficient.

(4) Insulation from the ground involves good footwear. Specially made boots, preferably with thick rubber tread, are waterproof and provide insulation. Even if woollen socks do get wet in good boots, the 'wet-suit' principle will help.

(5) Warm clothing should be taken off when not needed. The way to keep warm on a mountain is not to get hot.

(6) Emergency protection should be carried. A bivvie bag (approx. 8 ft. x 4 ft. polythene) should be carried by each individual. Space blankets are good but difficult to handle in wind, but a bag of space blanket material would be better.

Long term planning leads to the second preventative measure!

By avoiding fatigue and exhaustion

(1) By progressive training so that parties do not undertake walks which are beyond them in the prevailing conditions.

(2) By ensuring that the party has a good meal before setting out. Energy giving food for consumption through the day, is necessary.

(3) By avoiding carrying unnecessary weights. Your load, WHEN WET, should not exceed 1/3 of your weight. Avoid loads in excess of 45 lbs.

(4) By not persisting for too long in the teeth of high winds which can be very exhausting.

By being accustomed to cold you will lessen the degree of fear and apprehension present and increase your chances of survival in bad weather.

By retreat from conditions likely to cause exposure, by descending from high ground and abandoning the day's walk in exposed conditions.

6. Recognition of Exposure Conditions

Death from exposure can be very rapid. It is better to get the party down into more tolerable

Continued on Page 12

DEATH FROM EXPOSURE (HYPOTHERMIA) Cont;

weather conditions or into shelter and so avoid serious exposure, than to stop and treat an exposure victim and risk losing another member of the party.

To know when it is feasible to retreat to shelter and when the case is serious enough to stop and put into operation the treatment described below, requires great experience, judgement and alertness on the part of leaders and constitutes the crux of the whole problem.

7. Signs and Symptoms

In exposure conditions EVERY member of the party should be alert for signs of these in himself and his fellow members:-

Pallor and shivering
Listlessness or loss of interest in the party's decisions
Slurred speech
Abnormality of vision
Irrational or violent behaviour
Collapse

These may not be all present nor in the order given.

8. Treatment

a) Immediate Treatment in the Field

1. Do NOT rub the skin, give alcohol or apply direct heat. The precipitation of a sudden surge of core blood such as these can be fatal, as it is cooled at the surface and returned cold to the heart.

2. The essential and immediate treatment is to prevent further heat loss by insulating the body. The following is desirable, if at all possible:-

(i) Get the victim into a sleeping bag, lying down, or wrap in sleeping bags to insulate him above and below.
(ii) Put a companion into sleeping bag to supply body heat.
(iii) Cover the bag, victim and insulation with a windproof and waterproof covering (bivvie bag).
(iv) Try to provide shelter, e.g. windbreak.
(v) Pitch a tent over the victim (if the tent has a sewn-in groundsheet, carry him into it).
(vi) If he can take food, give him sugar in easily digested forms, e.g. condensed milk.
(vii) If breathing stops give him mouth-to-mouth resuscitation until he breathes normally or a doctor tells you to stop.

3. If the patient appears to recover he must still be treated as a stretcher-case and full rescue drill applied.

4. While waiting for rescue start heating food and drink and give patient what he can take. Also treat other members of the party as suffering, in some degree, from shock and exhaustion.

5. When carrying patient maintain full insulation. Cover face and mouth but ensure ventilation and ease of breathing.

6. Only if consideration of time, distance and bad weather make it less risky to carry the patient to safety, than to keep him insulated and cared for where he is, should the risk of transporting him be accepted.

b) Treatment on Reaching Base

1. If possible re-warm patient by total immersion in a warm bath (not to exceed 45°C), i.e. temperature at which an elbow can be kept immersed. After body heat is back to normal place patient in warm room, approx. 21°C, judge time for transfer as that at which patient begins to sweat in the bath.

2. Seek medical advice for further treatment.

3. Avoid patient having to sit up or stand during treatment otherwise he may faint.

9. Summary

1. Party leaders MUST:-

(i) Learn to recognise exposure symptoms
(ii) Learn correct treatment for exposure
(iii) Ensure party is well-equipped, including materials to treat exposure patients (tent, groundsheet, sleeping bag, bivvie bag, stove, food, etc.).
(iv) Maintain a watch on all members of his party for signs of exhaustion or exposure.

2. Walkers MUST:-

(i) Accustom themselves to cold conditions

See Page 13

DEATH FROM EXPOSURE (HYPOTHERMIA) Cont;

(ii) Ensure that they are properly equipped (waterproof parkas and trousers, wool shirts, jerseys, balaclavas, wool mittens, etc.)

(iii) Carry energy-giving food (Mint Cake, chocolate, cheese, condensed milk, etc.)

(iv) Carry a self-contained stove and a billy

Km/h Wind speed	Actual Temperature -degrees C									
	10	5	-1	-6	-12	-18	-23	-29	-34	-40
0	10	5	-1	-6	-12	-18	-23	-29	-34	-40
8	9	2	-2	-9	-15	-21	-26	-32	-38	-44
16	5	-2	-9	-16	-23	-29	-36	-43	-50	-57
24	2	-5	-13	-21	-28	-38	-42	-50	-58	-65
32	0	-7.5	-16	-23	-32	-40	-47	-55	-63	-71
40	-1	-9	-18	-26	-34	-42	-51	-59	-67	-75
48	-2	-11	-19	-28	-36	-44	-53	-62	-70	-78
56	-2.6	-12	-20	-29	-37	-45	-55	-64	-72	-80
64	-3.1	-12.1	-21	-30	-38	-47	-56	-65	-73	-82
	Little danger for properly dressed person				Increasing danger Exposed flesh may freeze			Great danger		

Wind speeds greater than 60 km/h have little additional effect. Some researchers suggest that wet cotton clothing loses heat 240 times faster than wet skin.

The above article is an amalgam of two, one by N.P.W.S. of Tasmania, and one by Ted Lovegrove, of S.A.M.A.F., which followed the deaths of several bushwalkers in Tasmania over the previous years. An analysis of these various deaths and one in particular, that of a 15 year old Victorian student revealed a similar pattern, a lack of knowledge about Hypothermia and Tasmanian conditions. The article is an attempt to make people aware of hypothermia; as for Tasmanian conditions they can be summarised briefly as - severe! Summer in Tasmania is an illusory term especially in the South-West. It can snow, sleet, hail, rain, etc. any time of the year and there is nothing between Tasmania and Tierra del Fuego or Antarctica to stop the gale force winds. However, I think most caver/bushwalkers know this. How many of us though consider exposure as a problem when we go caving? Certainly I know we rug up well when we go caving in Tasmania and I assume the same applies on the Mainland. A lot of caves are cold and damp, but consider the following scenarios.

I'll use three Tasmanian caves, firstly because I know them, secondly because they are the caves most visited by Mainland cavers. If we had an accident in Exit Cave, up in the Chamber of Damocles for instance, but anyway beyond the Rock Pile (talus) how long would it take to rescue the victim? It would take a fit caver who knew his way through the rock pile ONE hour to get to the entrance, another FORTY minutes to cross the swamp and FIFTEEN minutes to drive to Lune River and the nearest phone. Assuming the Rangers from Hastings felt they could mount a rescue, it would take them a total time of TWO hours to get back to the Grand Fissure (giving them some time to collect gear). If the Rangers couldn't come it would take TWO hours for the nearest cavers to arrive from Hobart at the car park - let alone in the cave! What meanwhile is our poor victim doing - especially if he is wet? Unless someone in the party had sleeping bag, cooker, etc. with them, I suggest that quite apart from his injury he is not going to be very fit and healthy after FOUR-FIVE hours.

Consider Khazad-Dum! Someone gets injured at the very bottom! It would take ONE hour for a fit caver to prussik out and FORTY minutes to reach Maydena and call for help. It would not take very long for help to arrive from Maydena but it could take considerably longer to get a team of S.R.T. experts together. The same sort of thing applies in Kubla Khan. Either entrance involves ladder pitches and if the accident occurred in the middle then it would take someone at least ONE hour to get to the nearest phone. Cavers from Launceston might be able to get to the cave entrance within THIRTY minutes but it would most probably take longer.

So where does this leave us? In Exit a minimum of FOUR hours before a recue team arrives, in Khazad-Dum THREE hours and in Kubla Khan TWO hours! I don't know how long it takes for someone probably suffering from shock, to start suffering from hypothermia. It would probably depend on a number of variables, including the size of the caver, his fitness and how wet he is, and how severely he is injured. We have to add to this the time for the arrival of the rescue team and the time taken to get the victim out of the cave. I have heard that on one S & R exercise in N.S.W. that the victim had begun to suffer from exposure by the time he was 'rescued' and he was perfectly fit!

These timing exercises could be done for mainland caves also. Don't forget that a particular cave may only take a few minutes to get out of but it may take a long time for a Rescue Team to arrive because of its isolation. So what should we do? It would appear that we should take something to wrap the

Continued on Page 14

DEATH FROM EXPOSURE (HYPOTHERMIA) Cont;

victim in - a sleeping bag perhaps and the means to provide him with hot sweet drinks. This of course also applies to the person who stays with the victim or they will get exposure also. There is probably no need to lug this survival kit around the cave provided it can be stored close to the entrance or somewhere where it can be retrived quickly. This of course means that a party needs to be made up of no less than four people, one to go and raise the alarm and guide the rescue team back, one to collect the survival kit and one to stay with the victim while the kit is being collected. Unattended victims in shock have been known to wander off in a daze and fall over cliffs/pitches etc.

I have no doubt that most cavers having read this will say, "But of course, I always do that anyway! What's the fuss about?" But just in case some of us have got a little lax, may this serve as a reminder! Also if anyone knows specific figures on hypothermia in still, cold & wet conditions, I would be very interested to hear from them.

Pat Culberg.

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Sydney Speleological Society Occasional Paper, Number 7, (Sept.1977)

Published by The Sydney Speleological Society. P.O. Box 198, BROADWAY, N.S.W. Australia 2007

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DOWN UNDER ALL OVER...

news from around the societies.

BMSC : Greg Powell reports that BMSC have visited Jenolan, Tuglow, Bungonia, Yarrangobilly, Cliefden and Wyanbene since the last report. Under Terry Coleborn the club is surveying Taplow Maze at Cliefden and so far over 300 metres of this continuing cave have been surveyed. Two of their members have taken up Guides positions with the Dept. of Tourism. Barry Richard has gone to Jenolan and Alan Fairweather to Abercrombie. The club is looking forward to its Xmas dinner at Oakville House and the 1978 AGM will be held at Jenolan. Many of next years trips are already planned and include Bungonia, Cliefden, Tuglow, Colong, Yarrangobilly, Walli and Kempsey.

CEGSA : Jim Cundy reports that all have been kept busy in the last few months. Apart from caving trips there have been both "Mapping and Training Nights" and "Field Days" to keep the members in touch. Kevin Mott was mainly responsible for these events. Graham Pilkington continues to run surveying trips to Corra-Lyn and he still can't find an end to it! So watch out Exit! A joint CEGSA-VSA trip to the Glenelg River proved to be a most relaxing weekend under the leadership of Brian Franz. Terry Reardon, Kram Smith and Jon Burke are the most recent in an increasing number of CEGSA members to venture forth to Kangaroo Island and they say there's still plenty of potential to discover new caves. There have been two trips to Naracoorte to update and extend CEGSA's Photographic Records in that area. These records are being built up in addition to the clubs normal records and include an ever increasing number of historic photos. A new Sub-committee has been formed within CEGSA, chaired by Jim Cundy. This Sub-committee plans to look into and prepare submissions for the National Heritage Assessment Study. The Cave Diving Assn. of Australia (CDAA) held its first conference in August in Mount Gambier and all papers were very well received. Although the CDAA is a national body the majority of its 350 members are from SA and VIC. The CDAA was formed in Sept. 1973 to provide a united front for all cave and sink-hole divers, to promote safe diving and act as a self regulatory body for the control of safe diving.

CSS : Gordon Taylor informs us that trips have been held fairly regularly. They have been to a broad selection of areas with no area receiving an over-emphasis tripwise. Some of the areas visited include Colong, Wombeyan, Yagby and Jenolan. The club has also been active in the bushwalking sphere with trip to the Buchawango and 9 Mile diggings near Kiandra. The major trip lately was a three-day visit on the October longweekend to New Guinea Ridge. Although marred by an accident, they found the area most interesting and enjoyable despite the climb out. Considerable work has also been expended lately on fixing up Cotterills Cottage at Yagby. All in all a not uneventful period and all are looking forward to the 25th Anniversary celebrations in 1978.

ISS : Dave Dicker reports that the Kimberley Expedition proved quite successful. Dave left 5 weeks before the main party meeting John and Carol Redpath at Camooweal. Places visited en route were Wolf Creek Meteorite Crater, Geikie Gorge (near Fitzroy Crossing), Cave Springs (where they looked at the Cave Springs System and Nardgi Cave), Emanuel Range, Laidlan Range, Tunnel Creek, Windjana Gorge (promising looking holes investigated here) and on to Napier Downs. Here the party investigated parts of the Napier Range 5-10 miles west of the old homestead, prior to returning home.

MSS : Ken Keck informs us that members have been primarily interested in objective work at Abercrombie, Yarrangobilly and Jenolan, although trips to other areas have been undertaken during the year. The work at Abercrombie has been devoted to a thorough documentation of the caves and features of the area, and in addition to a general area map, nine caves have been surveyed and mapped, slides have been produced for sale at the kiosk, a booklet for tourist consumption has been produced and considerable progress has been made in a dig off the Bushranger Cave with very encouraging results to date. An efflux cave has also been discovered and is in the process of excavation. All caves previously tagged in the area have been re-located and many new entrances have been tagged and recorded. At Yarrangobilly, members have found that due to the distance from Sydney the best work can be done over a somewhat extended period and members have spent two weeks in May and a week in September concentrated mainly in the Pine Forest area but also working with the N.P.W.S. in restricting access to Y5 by blocking by-passes to the gate, checking on ways to minimise damage by visitors to Y50, and opening the rockfall at the entrance to Y45. Work at Jenolan has consisted mainly in further excavation in Maiden Cave (J79) which has been their major interest since they opened it in 1975. The club has been fortunate in the constructive interest in caving evident among their newer members, particularly in cave mapping and surveying, and the sustained interest of older members in the continuing work in the three areas mentioned. During the year some of the members appreciated the hospitality of the Hills Caving Group who organised a trip to the Isaacs River Caves, and members are looking forward to a trip to Buchan over the Xmas/New Year period in conjunction with VSA. Other areas visited were Cliefden, Bungonia, Wyanbene, Wee Jasper, Cooleman and a summer beach picnic/caving trip is planned for St. Michaels Cave near Whale Beach in December.

Continued on Page 16

DOWN UNDER ALL OVER Cont;

NUCC : Gordon Taylor reports that due to the end of year exams and a dispersal of members throughout Australia for the Summer holidays, NUCC has been in obeyance lately. Nevertheless, time was found for the odd Wyanbene trip, as well as a very successful trip to Buchan for the October long weekend.

OSS : Ray Rowney informs us that OSS are continuing their paleontological excavation at Canonodine and more large teeth have been identified as Diprotodon. Other bones found include - a giant kangaroo, native cats and other extinct animals. Further trips to Mammoth (Jenolan) and Bungonia and a planned trip to Wyanbene have kept the group busy. OSS will also be celebrating their 25th anniversary and hope to have a reunion of all old members and anyone interested is asked to contact the club.

TCC : Laurie Moody reports that TCC have conducted trips to the Junee-Florentine, (as per usual) and Exit Cave at Ida Bay. John Parker of the Maydena Branch continues his searching and reports that several of his recent finds (mostly in the Chairman vicinity) appear to have some rather promising depth potential. Albert Goede and Bruce McIntosh are leading a trip into the South-West with Precipitous Bluff as their objective towards the end of January.

VSA : Dave Smith informs us that as part of the VSA's policy of improving caving techniques among members an SRT and ladder practice day was organised at Camels Hump at which about 30 cavers participated. The main point of interest was that many abseilers failed to keep the rope protection where it was needed and could have proved disastrous for prussikers if in a caving situation. A brief trip to Timboon revealed some exciting new possibilities in this little looked at karst area. A combined VSA/CEGSA trip was held to Glenelg River and while not a really 'heavy' weekend some good work was done. Transport proved to be a problem on a trip to Indi River on which I2 was surveyed. I8 was visited and some surface trogging was carried out. NG2 and NG5 were also visited on a quick trip to New Guinea Ridge. At Buchan, quite a variety of activities have been underway. Towards the end of August the Buchan State School had its centenary and the VSA joined in with a display of caving activities and a 'float' in the procession through town. On the same weekend a dig in the potholes area was started but due to a possible connection between this and Exponential Pot, digging digging has stopped pending an investigation from underground. Surveying in Exponential has included the entrance chamber and the finishing of the loop past the railway tunnel. Spring Ck. was entered and an area of the Cave Reserve were both searched for possible connections or entrances for the mythical lost Camerons Cave. In the Basin area, the Frogs Hollow survey was started, possible extensions in Slocombes Cave were located with scaling poles and more surface trogging was undertaken. Back in the Caves Reserve, surface trogging revealed several new caves, a dig in Whale Cave was started, Dukes Cave surveying continues and water level record sites have been checked out in it. The Dukes survey is nearing completion and is now known to contain the largest chamber in the Reserve. An index referring to all written reports on Victorian caves has been designed on a per cave basis to assist the retrieval of cave information. Fund raising has been given a tremendous boost through two film nights which raised $180. Coming events include the Annual Dinner and a S & R exercise in mid-December (not to mention New Years Eve at Buchan).

WASG : Augusta: In the Labyrinth (Au16) a number of very muddy trips has seen Peter Bell's survey proceed from the Lunch Room through the Oxbow Bypass to the Artistic Chamber, then past two false floors to the Bastian Network and on to Piccadilly. At the moment the "Watch out for trains" sign has been reached. Peter is also surveying Jewel Cave (Au13). He has laid the main traverse through the tourist section and then surveyed the non-tourist flat roof chamber. One trip also saw the survey of Deeondeeup (Au15) completed. (Connects with Jewel Cave) Au12 has been surveyed by Finlay Cambell and Rauleigh Webb has surveyed the two main chambers of Moondyne Cave (Au11), leaving only the "snowflake" chambers where the CO_2 level is quite high. Easter Cave (Au14) has seen a number of trips into the Gondolin for photography (Wow! Those pendulites). Witchcliffe: The tagging in this area is now almost complete with only 6 findable features requiring tags (A number are lost). In the northern Mammoth chain, WASSG undertook a dig which produced a new cave. Also a new large doline has been found. Yallingup: The Lovedays have begun the survey of Yallingup Cave which is proceeding smoothly. This survey is part of an overall management plan that has been drawn up by the Dep. of Conservation and Environment and the Busselton Shire. Dr. John Watson is director of the plan while Eastern States experts have been called in to advise; Elery Hamilton-Smith and Adrian Davey on Conservation and Management and Miles Peirce on lighting. Kimberleys: Bob Shoosmith has just returned from this area after two months and informs me that the nomenclature for this area has been sorted out. Nambung: A number of ill-fated trips have seen vehicle problems hamper the management plan for this area. Yanchep: A minor accident occurred in Boomerang Gorge leaving Mike Newton with cuts and abrasions. This did not deter Mike and his surface survey has positioned 7 more caves. General: Preparations for a Cavepersons Dinner at Boranup are well underway and much whoopee is expected.

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SPELEO-GIGS

An International Symposium on Karst Hydrology will be held in Budapest in September 1978 and will be organised by the Hungarian Speleological/Geological/Meteorlogical Societies. See Nick White on this!

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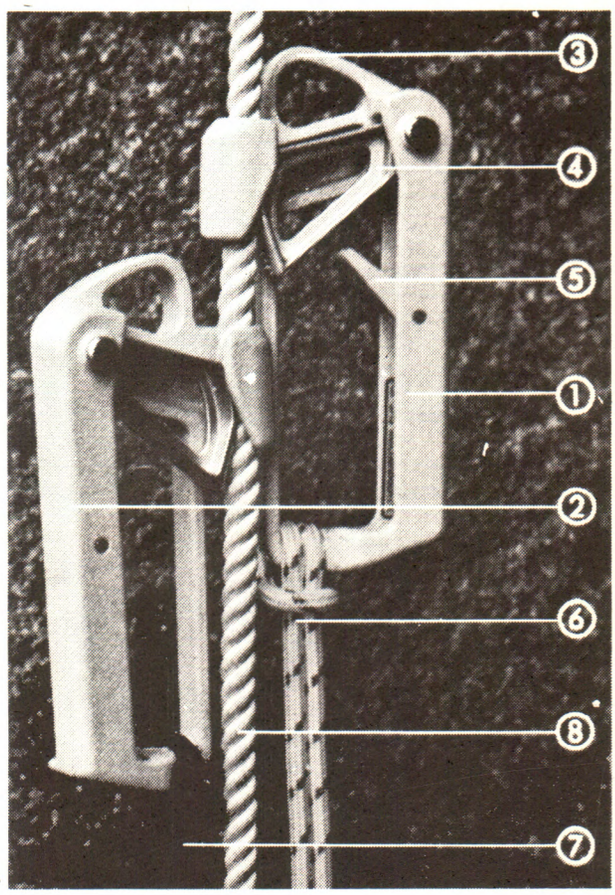

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