AUSTRALIAN CAVER

THE AUSTRALIAN
SPELEOLOGICAL QUARTERLY

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All articles, reports, tests, photos and reviews are welcomed for publication.

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DEADLINE FOR COPY

All articles should be submitted to the editor by the end of
FEBRUARY
MAY
AUGUST
NOVEMBER

If you find writing a chore, why not phone the editor directly???

COVER PHOTOGRAPH

R.D.F. Cave Survey, Buchan
Courtesy P.J.Ackroyd, 26th Jan.1985

The opinions expressed in this journal are not necessarily those of the A.S.F. Inc. or the Editor

HYPOTHERMIA

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INTRODUCTION

Most articles on ACCIDENTAL HYPOTHERMIA state the factors that contribute to the occurence of hypothermia and continue with a list of do's and dont's to help speed your patient's recovery.

This chapter, while still telling you the do's and dont's, attempts to explain the effects on the bodily functions during the cooling and warming processes.

Exposure is easily related to activities like bushwalking, mountaineering and ski touring, where wet, cold and windy conditions are the norm. However, cavers have died within 1.5 hours of the first hypothermia signs being detected.

Recent years have seen an increase in the use of the "outdoors" for recreational purposes. It would be reasonable to assume that the incidence of death from exposure will likewise increase.

One could always hope a chapter like this might save a life.

DEFINITION

(Hypo = below)
(Thermia = heat or temperature)

The reduction of the body's core temperature, resulting in a decrease in the efficiency of the body's functioning, eventually resulting in unconsciousness and death.

OR

The logical and inevitable outcome of earlier (bad) planning and decision making (Hamilton-Smith and Trowbridge).

CAUSE

Exposure is the culmination of many contributing factors. Cold, wet and windy conditions are the main killers, but many forces act to create an overall potential hazard:

* Poor leadership = not knowing when to say "STOP"
* Bad preparation = ill prepared; poor training and equipment
* Poor clothing = Light, inadequate
* Exhaustion = not being fit enough for the planned trip
* Anxiety/shock = from some accident, eg: broken leg
* Sickness = previous or current
* Young people are more susceptible than adults
* Small persons and thin persons

Taking all these factors into account, take special care of unfit teenagers of small build. However, given bad conditions, anyone can suffer from exposure, it's just that the weaker one's die first.

RECOGNITION/SYMPTOMS

* Fatigue
* Slowing down
* Muscular weakness
* Cramps
* Shivering
* Stumbling
* Outburst of energy
* Anxiety - when conditions are tough or due to physical discomfort
* Abnormal behaviour - slurring speech, vision impairment
* Need for frequent rest stops
* Decreasing attention span
* Apathy - indifference ("I'm OK, leave me, I'll catch up")
* Repeated falling
* Stupor
* Collapse
* Convulsions
* Unconsciousness - leading to death

Note that a lot or very few of the above symptoms may be apparent in the victim and also that people have died without once having complained of the cold.

Shivering isn't usually a symptom of hypothermia as it often doesn't occur in people exercising vigourously (ie bushwalking, caving and skiing).

Unfortunately, the signs of hypothermia are hard to see and usually the first indication to the inexperienced party is a collapsed party member.

IMMERSION

Sudden immersion in cold water causes major body changes.

Heart rate and blood pressure rise, sometimes resulting in heart attacks or ruptured blood vessels. The shock of cold water also causes hyperventilation which can produce blood chemistry changes and lead to unconsciousness and drowning, eg: a likely possibility of this occuring is when swimming in a cavern.

SURVIVAL TIMES FOR VICTIMS IN WATER

Temperature	Expected Survival Time
* Below -2	Less than 3/4 hour
* 2 to 4	Less than 1½ hours
* 4 to 10	Less than 3 hours
* 10 to 15	Less than 6 hours
* 15 to 20	Less than 12 hours
* 20 +	Depends on fatigue

Body heat is quickly lost to water as water is an excellent conductor of heat. Heat is quickly lost where there is little covering of muscle or fat in areas like the head, groin and sides of the chest.

A person will die sooner in cold water if he is swimming or treading water than if he is in the Heat Escape Lessening Position (HELP).

Although by swimming or treading water the muscles are creating heat, it is all lost through conduction of warm blood in the legs and arms to water. A person survives up to 35% longer in the H.E.L.P position, which involves, hugging the sides of the chest with the arms and the thighs raised up to enclose the groin area. A bouyancy vest needs to be worn for H.E.L.P. to be effective.

WIND CHILL

As said before, wind is a major factor in the occurence of hypothermia. The wind chill chart (shown below) gives values of equivalent still air temperature compared to the actual air temperature and wind speed.

WIND CHILL CHART

Wind Speed (km/h)	Actual Air Temperature (°C)										
	10	4	-1	-7	-12	-18	-23	-29	-34	-40	-46
	Equivalent temperatures when wind speed is as given in left hand column										
0	10	4	-1	-7	-12	-18	-23	-29	-34	-40	-46
8	9	3	-3	-9	-14	-21	-26	-32	-38	-44	-49
16	4	-2	-9	-16	-23	-29	-36	-43	-50	-57	-64
24	2	-6	-13	-21	-28	-38	-43	-50	-58	-65	-73
32	0	-8	-16	-23	-32	-39	-47	-55	-63	-71	-79
40	-1	-9	-18	-26	-34	-42	-51	-59	-67	-76	-83
48	-2	-11	-19	-28	-36	-44	-53	-62	-70	-78	-87
56	-3	-12	-20	-29	-37	-45	-55	-64	-72	-81	-89
64	-3	-12	-21	-29	-38	-47	-56	-65	-73	-82	-91
Wind speed = 64 km/h produces additional effect	little danger for properly clothed person			increasing danger			great danger				
	Danger from freezing of exposed flesh										

Reference Standard Military Wind Chill Chart (converted to Metric Units)

WHAT HAPPENS BODILY

As a person gets cold, increased activity by exercise or involuntary muscular activity (shivering) generates heat to balance the loss. If the victim is still cooling down, the body restricts the blood flow away from non-vital areas to vital areas, eg: heart, lungs, brain etc and any working muscles. Non-vital areas begin to cool down. So now the the body has a warm 'core' and a cool 'shell'. As cooling continues the core decreases in size. This is known as contraction of the core.

Further cooling now affects the core temperature and bodily functions begin to be impaired.

It is unlikely that a victim of accidental hypothermia will survive after rewarming from a core temperature of 26° to 24° C.

HEART AND CIRCULATION

The heart pumps blood through the lungs to be oxygenated; this oxygenated blood travels back to the heart to be re-pumped around the body.

The circulating blood:

* picks up oxygen for tissue use
* carries carbon dioxide (CO2) from tissues for expulsion by lungs
* carries food from the digestive tract to the tissues
* carries waste and poisonfrom the tissue to the liver and then kidneys
* carries vitamins, hormones, antibodies etc.
* heat is redistributed by circulation

Normal body temperature is 37° C.

As the heart cools its pumping rate slows and will easily stop at any temperature near 28° C.

At around 34° to 32° C any upset in the blood can cause heart failure, eg:

* too much CO2 - as in caves or rebreathing own breath
* too little 02
* pH (acid/base relationship) - upset in the blood caused by muscular activity. This likely to happen if a victim with a cool core moves around.

Sudden immersion in cold water increases heart rate and blood pressure and occasionally results in heart attack and blood vessel rupture. The heart will not be fully stable until core temperature reaches 37° C.

BRAIN

As the brain is cooled below 37° C the normal impulses emitted to control function, activity and speech etc start to reduce, and when the brain reaches 24° C, failure occurs.

On cooling of the brain, intelligence is affected followed by automatic reactions (those things that you do without thinking), followed by unconsciousness and total failure of the brain. As the brain regulates circulation and breathing, the victim will die. All cerebral functions are recovered on rewarming.

LUNGS/RESPIRATION

Oxygen consumption falls with reduction in body temperature. Rate of breathing is decreased. During rewarming, oxygen demand increases, so ensure a clear airway.

LIVER/GLUCOSE USAGE

Carbohydrates (sugars, starches - flour, rice, cereal) and fats are broken down in the intestine, mainly into glucose. The glucose is absorbed into the bloodstream and is carried to the liver. If the glucose level in the blood is high the liver removes some and stores it. This stored glucose is called glycogen. When the level of glucose in the blood is reduced (by exercise) the liver calls on the store of glycogen and converts it back to glucose. As the exercising subject uses all the glycogen, the liver uses stored body fat and protein. When the glucose level in the blood drops below a certain level (70 mg percent) the victim becomes clumsy and bad tempered, confused and finally comatose.
Glucose from the blood is used by the tissue by first converting it to lactic acid and combining the ladtic acid with oxygen, creating CO2 and H20. If oxygen supply to the tissue is not sufficient (during heavy exercise) the lactic acid accumulates.

Upon cooling, the liver is less able to utilise glucose and when the oxygen supp-

ly is inadequate(due to cooling of the lungs and slower pulse) the liver is unable to remove the lactic acid sufficiently and this causes a pH upset in the blood stream which can cause heart failure.

Hypoglycaemia is the term used for low blood glucose.

It is a good idea to eat 'munchies' regularly through a day of exercise to save your store of energy.

MUSCLES

As temperature falls, initial shivering gives way to increasing muscle stiffness As the muscle cools oxygen from the blood is less able to be utilised by muscle tissue. Any muscular effort creates lactic acid and this causes a pH imbalance in the blood which can cause heart failure. This is why it is most important that a victim of hypothermia should not be asked to move himself and be restrained from moving until he is COMPLETELY RECOVERED (which may take days).

TREATMENT

Mild Case

* Act quickly and decisively
* Stop at first sign of exposure
* Remove from wind (behind rock, lee of hill, tent)
* make shelter (tent, survival blanket, biv sac)
* Remove wet clothes and replace with dry (BUT ONLY IF THIS CAN BE DONE WITHOUT FURTHER HEAT LOSS TO THE VICTIM)
* Put in a sleeping bag with another fit party member or sandwitched between two others and insulate from ground using karri mats, packs, boots, wet clothes in plastic bags etc.
* Try to warm the air that the victim is breathing so that he also warms from the inside out. This can be done by close proximity breathing or crowding into a tent, hut or vehicle
* Victim should be moved as little as possible and under no circumstances should the victim be made to exert himself
* Protect head and neck from heat loss with a balaclava/beanie (at 5°C, 50% of body heat is lost through the head)
* Give victim warm sweet drinks and easily ingested foods, eg: thick mixture of glucose and powdered milk dissolved in warm water. Glucose provides instant energy whilst powdered milk provides long term energy,
  - barley sugar
  - honey
  - chocolate
  - sweetened condensed milk
* Do NOT give alcohol (can increase cooling by 20%)
* Do NOT massage (or rub down a wet victim with a towel)
* Do NOT sit next to fire

All these cause blood flow to the colder extremities of the body which will reduce the blood temperature by as much as 3°C and the cold blood returning to the heart causes heart failure.

* Do NOT smoke as it is known to cause capillary and vascular constriction which reduces blood flow.
* Give warm drinks and food to remainder of party.

Serious Case
(Where the victim has collapsed)

* All the treatment for the mild case with the additional points
* Be careful administering food and drink at this stage as victim may not be able to swallow. Digestion will be impaired, so food eaten may later be vomited causing shoking.
* Victims head should be slightly lower than the feet to minimise chance of convulsions from cerebral anaemia (lack of red blood cells in the brain) Breathing may cease at any time so vigil must be kept. Resuscitate if necessary.
* Victim will be a stretcher case and should be treated as such despite embarrassment. Notify rescuers only when it is safe to send out part of the party. Victim must be carried head down and securely protected from the elements.

After-drop/Waterbath Treatment

* After-drop is the continued lowering of the core temperature after the victim has begun rewarming. The drop may be as much as 4°C and core temperature may then reach dangerous levels. This is due to cooling of the core by th blood coming from the cold superficial blood vessels which have opened up.

* Waterbath treatment involves rapid rewarming of the victim by immersion in warm water (41 - 43°C) and is best suited for persons rapidly chilled in cold water (10 - 15 minutes) or chilled persons who are metabolically stable. It is not suitable for victims who have been cooled slowly (unless under medical care). In a slowly cooled victim, metabolism has changed and rapid rewarming will cause a metabolic upset with a large drop in blood pressure.
* After-drop doesn't usually occur with warm waterbath treatment as the extremities rapidly rewarm to normal temperature before the superficial blood vessels open.
* Obviously warm baths are hard to arrange in the bush.
* It is best that any treatment, whether slow or rapid, be under the supervision of a doctor - this also is often impractical.

PREVENTION

It shouldn't happen in the first place.

Leadership

Good leadership is most important. Some person(s) with enough sense to say 'stop' make sound judgements and firm decisions. Party opinion should not carry much weight as, in most cases, the response is to continue on despite conditions.

EFFECTIVE LEADERSHIP INCREASES CONFIDENCE - LESSENS ANXIETY
Therefore, strong leadership should outweigh novice ratio.

Preparation

Are all members of the party fit enough to cope with the expedition? Young persons are prone to physical exhaustion, have less strength both physically and mentally.

* Adequate equipment and its use should be well known
* Sufficient food to last a few days longer than planned, in case of mishap, should be provided
* Does someone responsible know your destination, route and expected time of return?

Clothing/Equipment

* Clothing should be able to trap air. Trapped air is an excellent insulator.
* Wool is best, but wind can travel through it, so a wind/waterproof over layer should be worn.
* Even when wet, wool retains 50% of its insulating power.
* Remember 50% of body heat can be lost through the head, so a woollen balaclava should be worn.
* Equipment should be of adequate quality to suit your needs and the use of any technical equipment should be well known to you.
* Safety equipment should be mandatory:
- First aid kit
- Rescue blanket
- Emergency kit (matches, whistle, compass, pencil, paper, knife)

IN RELATION TO CAVING

* Think of a cave you know well
* Think of an accident that could occur in that cave - eg: broken leg.
* Quote " deaths occured within one and a half hours after first hypothermia signs were detected " (in relation to three cavers who died underground in England).

Lets take Wyanbene - a broken leg, or worse, at Frustration Lake
The victim will be wet, cold, anxious and probably fatigued - all good ingredients for hypothermia for a person who is now totally dependent and IMMOBILE.

Time taken for rescue:
1.5 hrs exit cave by 2 party members
1.0 hr to phone (boggy road, so run)
1.0 hr assemble rescuers and gear
2+ hrs arrive

5+ hrs for an experienced rescue team to arrive - "deaths occurred within 1.5 hrs"

Apply the above to any cave. More than three hours? Most probably. The answer is always a minimum party of four, one to stay with the victim to provide as much comfort and encouragement as possible while the other two go for help.

It seems essential that a good first aid kit is located at the cave entrance or nearby in a vehicle. A foam insulation mat, sleeping bag, food and clothes

wouldn't go astray either. It is a good idea for each caver to have a survival blanket taped to the inside of his/her helmet.

The seriousness of the exposure case depends on many variables like fitness, fatigue, size of caver, degree of wetness and how severely he is injured; BUT will you take the risk?

SUMMARY

The cooling of the body's core temperature resulting in death.

Brought about by adverse conditions of wet, cold and wind along with exhaustion, anxiety, bad planning and equipment.

Stop at first signs of hypothermia and find/erect a shelter.

Remove wet clothing (if it can be done without further heat loss) and put on dry clothes and into sleeping bag/rescue blanket.

Give warm sweet drinks, easily ingested food.

Complete rest with as little movement as possible.

Head slightly lower than feet.

Do not massage.

Do not give alcohol.

Do not sit near fire.

Do not smoke.

Give rest of party food and warm drinks.

Act quickly and decisively.

BEING SAFE IS ONLY A MATTER OF BEING CAREFUL. TO BE CAREFUL IS MAINLY A QUESTION OF BEING INFORMED .....
TAKE CARE

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SPELEOTEC '87

It is now The New South Wales Speleo Clubs' turn to host the bi-annual Australian Speleological Federation Inc. conference. This conference - SPELEOTEC - promises to be the biggest and best A.S.F. conference so far, discussing techniques and technical aspects of sporting, scientific and recreational caving.
SPELEOTEC is to be held in January 1987, and whilst that date is a long way distant, we are now putting together the handbook for field trips for this conference. This field book will also be a reference book for N.S.W. karst.
To help make this conference and fieldbook a success we need your assistance. Most clubs will by now have received forms to fill in. These forms when combined with A.S.F. speleo handbook forms and other references will provide a valuable asset/resource book on caves in N.S.W. If you have information or want to know more write to A.S.F. SPELEOTEC FIELDBOOK CONVENOR.
P.O. Box 388 Broadway NSW. 2007.

Guy Mckanna.

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DURING JANUARY 1987

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COMPILED BY ROMAN LICHACZ - UPDATED BY R. MANN

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ASTERISK REPRESENTS NO BACK ISSUES.

A CAVE RESCUE

By Terry O'Leary

Recently in N.S.W. near Lithgow a young boy was stuck in a narrow sandstone cave. The cave was fairly short and a typical sandstone cave (ie: narrow and passages at right angles).

The following article will be in two main sections:

1) a report
2) a discussion

The report will be an account of events as seen by the author. A more detailed report is available from the author.

The discussion is just that, it tries to take into account some historical and political (caving politics) factors and I am sure the Cave Rescue Group of N.S.W., P.O. Box 122, Bankstown, would welcome any constructive comments as would the author.

REPORT

The incident occurred on Sunday 24th June, 1984 near Lithgow. I received a phone call at about 1pm Sunday. I was at home with some friends at least seven of whom were experienced cavers. I suggested that they also should come to Lithgow in case they were needed, I was told they were not. I proceeded to pack my gear and within 10 minutes was told to go to the Police Rescue Squad Headquarters. This I did, driven there by Ivan Desaily of SUSS, and accompanied by Ellie McFadyen. We were then quickly rushed to the Police Helicopter and flown to near the site of the incident.

Ellie and I arrived at about 2.30pm. I entered by the bottom entrance and Ellie entered by the top.

I spoke to several people and then examined the stuck boy. I noted that he was firmly wedged and appeared to be in fairly good condition.

I tried, with some difficulty, to get a clear story of what had happened and to ascertain the time of the accident.

The first effort was to see if the boy could be moved downwards towards the lower entrance. This did not appear to do much except wedge him more tightly, so then I tried to squeeze up past him, which I found impossible. As I was much smaller than the stuck boy, I realised that this meant the only way out for the boy appeared to be the way he had fallen in.

Then I decided to go out of the cave and come back in the top entrance. The situation was easier to assess from here and the slings that were fastened under his arms and behind his head were not doing much, except expanding his chest when pulled, and hurting under his arms.

Grease had been liberally spread around by earlier would-be rescuers and proved to be a hindrance. It made tying knots and doing up karabiners very difficult as well as getting a good grip on the boy difficult.

Earlier, Ellie McFadyen had placed a 2 inch tape under the boy's arms and around his chest (and back). The slings under his arms placed by earlier rescuers were removed after the new sling had been secured to a haul rope and a safety rope (attached to the sling by another karabiner).

The haul rope ran to the surface through a daylight hole and was the main means of extraction of the boy.

The main haul system was thus a haul rope (to the surface) a tape around the chest, attached by a karabiner to another tape which in turn using a second karabiner was attached to the main haul rope and the safety/redirection rope.

A rope attached to a sling through the groin was also secured by a person located high in the rift. This rope was mainly used for support and safety as too much hauling on this rope could have been harmful to the trapped boy.

The victim's clothing was torn and removed where possible as it tended to snag, a blanket was provided, but had to be removed when hauling to prevent it being snagged also.

Electric light and a fan-forced heater helped reduce the effects of the cold on both victim and rescuers alike.

The boy was given N_2O which seemed to have little effect. Once the boy was moved to a more upright posit-

ion the doctor gave him some injections which took 20 minutes to have maximum effect. Muscle relaxation occurred and the victim's mental condition also seemed to improve.

However, when asked, the doctor informed me that the drugs would exacerbate the effects of hypothermia.

After 20 minutes it was decided to make maximum effort. So regardless of complaints from the boy we hauled until he moved quite a few centimetres.

Mike Attard of N.S.W.I.T.S.S. then laid down and pulled on the boy's arms, and this plus the main haul rope finally freed the boy. Ellie McFadyen was, at the same time, working her legs under the boy and pushing his body upwards in conjunction with people below (Terry Matts - N.S.W.I.T.S.S., Tony Allen - SUSS) pushing on his feet.

Once the boy was free he was taken to Lithgow hospital and found to be suffering only minor bruises and cuts and the effects of shock and hypothermia.

Brian McGuillan of N.S.W.I.T.S.S. organised the above ground part of the rescue extremely well. Many other cavers, rescuers, police and ambulance personnel were also involved.

DISCUSSION

It should be noted that all the cavers involved in the rescue were members of the Cave Rescue Group of N.S.W. Other non-Cave Rescue Group cavers were not used though some were on standby. The difficulties in using experienced but non-Volunteer Rescue Association (VRA) personnel can be quite large. The incident at Jenolan not long ago used non-VRA cavers extensively. However, some problems occurred, but they were minor, and some non-VRA cavers were essential to the successful finding of the lost boy.

This incident once again showed the need for Cave Rescue Group to have access to the large caving community. Adjustments need to be made to streamline the process and of course more cavers need to take an active interest in Cave Rescue.

Doing your own thing in rescue is fine, but unless you are a VRA member, liability and insurance could be a major problem.

The Cave Rescue Group provides the means for protection of the individual plus if desired a forum for ideas and a training area in cave rescue.

Many cavers do not like the structure and the way Cave Rescue Group is run and I can see many of their points.

The best way, however, to change an organisation is to become involved in it; understand it's problems and change from within.

Some points to note about the rescue were:

* If clear information was made available on the time of the accident and the nature of it, initial assessment would have been easier.

* The initial placement of slings by earlier rescuers was not very good. A tape around the chest, under the arms seems to be a very good way to attach a hauling rope to a person in a difficult situation (normal climbing slings could not be fitted due to the tightness and position of the victim).

* The advantages of a simple rig with one main haul rope was demonstrated. It allowed good control of the movement of the victim and the ability to stop quickly when necessary. Though various safety lines were employed and were essential, they added little to the actual movement.

* The use of grease by earlier rescuers seemed to be more of a hindrance than a help.

* The use of a sedative by the doctor allowed the victim's muscles to relax which aided in his removal. The gas used earlier seemed to have little effect. An important point was that medical help was available and on their advice it was often essential to ignore some of the complaints of the victim if he was to be removed while conscious. (Unconscious removal was considered, but it is much more dangerous, and tended to be left as a last resort).

* The use of angle grinders and the like were considered, but postponed until other avenues were exhausted. They fortunately were not needed.

CONCLUSION

The boy was firmly stuck and could not have possibly extracted himself and it took considerable effort and force to move him once he was wedged.

The whole operation was quite successful, but it was a race against time and the onset of hypothermia. Other methods may have been possible but it should be remembered that time was very important.

EVALUATION and FIELD TEST of the SKED STRETCHER

By Terry O'Leary

The "Sked"stretcher was used during the New South Wales Cave Rescue Group "Rescue 85" weekend on the 9th of March 1985. The stretcher was used in the Yellow Exercise which is the most difficult and realistic exercise undertaken on the weekend. The participants in the exercise were a mix of experienced cavers, scout instructors, State Emergency Services and National Parks And Wildlife Service personnel. The observers were four members of the Cave Rescue Group and all people involved in the exercise had reasonable experience in other rescue exercises

The exercise was difficult. It consisted of removing two people one with shock and hypothermia, the other with shock and suspected spinal injuries. The suspected spinal patient was transported in the "Sked stretcher". The stretcher had to carry the patient up a 30m (106ft) pitch, up a narrow spiral passage and through a tight squeeze. This is difficult enough for an unencumbered individual. It requires considerable twisting and turning to travel through the narrow part of the cave. The cave was Acoustic Pot (B.22) at Bungonia, New South Wales.

Some observations about the stretcher were:

* Not suitable for a vertical lift unless the patient is secured by a separate belay on the patient NOT just on the stretcher. This means the patient MUST be fitted with a suitable comfortable harness. At least a waist harness, but preferably a full body harness that would support the patient totally independently of the stretcher for an extended period of time should be fitted.

* The possibility of a failure of the stretcher material or eyelets should be kept in mind. A split in the back of the stretcher which might open up and release the patient could be disastrous. The plastic of the stretcher is an unknown quantity and its strength should be assumed.

* The stretcher rope that was threaded through the eyelets when loaded in a vertical lift caused some deformation of the plastic.

* The low friction of the plastic allowed the patient to slide down and be supported by standing on the foot section.

* The knots that secure the ropes of the stretcher must be suitable for synthetic ropes and tapes. The most appropriate been a double fishermans. The alpine butterfly and the double figure of eight are also knots suitable for synthetic ropes.

* The chest strap ran outside the back of the stretcher and tended to catch on projections, it also was too narrow for comfort and safety.

* The feet splayed out at 45 degrees and even though the patient said this was comfortable they tended to catch on projections.

* The stretcher provided very little support for the head and neck. There was even a tendency for the head to be pushed hard forward. In some situations the airway could be blocked. The use of a neck brace or a back board may overcome this difficulty, this should be further investigated.

* The two corners at the top end of the stretcher tended to catch on projections. There could be a taper at the top end that could reduce the amount these corners stick out.

* Good support was provided for the hips and shoulders.

* The haul handles along the side worked well. However a few more eyelets and handles would have been useful.

* The light weight of the stretcher and its small size when rolled was a decided advantage over many other types of stretcher.

* The flexibility while a disadvantage in

some situations was an advantage in others.

* The thermal insulation was very good and generally kept the patient comfortable except for the problems mentioned above.

* The material of the stretcher provides protection against rocks sticking into the patient. The low friction of the material was an advantage when dragging the stretcher.

The stretcher was the best drag stretcher I have used. It could be used in the vertical situation, but the patient must have a separate independent belay and be accompanied up the pitch by another person in case of problems. In particular the stretcher bending and causing a blockage of the airway makes it essential for constant observation of the patient.

I recommend that the Cave Rescue Group purchase a Sked stretcher as it would be a valuable addition to its rescue equipment.

I would like to thank the participants of the yellow exercise for their comments at the time. In particular Ian Binnie (the patient), Jeanette Metcalf (the leader) and Ron Poulton (first aid) for their comments in writing.

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Observer Yellow Exercise
Rescue '85
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Beaconsfield 2015.

* *

NOT THOSE DAMN SCOUTS AGAIN!

On the weekend of February 9-10th we were caving at Wyambonia and found that many beautiful speleotherms were broken!

When we exited the cave, we found a pile of remnant decorations near the entrance to the cave.

From the group was heard
"Those damn scouts again!"
Unanimous agreement!!!

How many times have you heard that expression whilst you have been caving?

There are other groups that go caving you know!! - like bushwalking clubs, S.E.S. groups, C.E.B.B.'s and groups of friends.

Have your speleo society ask this question to themselves at their next meeting. "What have we done to improve the image of speleology and the knowledge of caving for the other caving groups mentioned above that exist in our area?"

The Illawarra Speleo Society improved that image twice last year. Firstly, we held a weekend at Bungonia for members of the general public which was organised by Dept. Leisure, Sport and Tourism. This proved to be a very successful weekend. Secondly, the South Coast Area of the Scout Association asked us to organise and run a Training program for its Venturer leaders (Adults in charge of male and females between the ages of 15 to 10) interested in caving activities.

With enthusiastic leaders we held 3 training weekends at Bungonia spread over a period of 6 months. Going through the theory, practical and examination sessions these leaders, with various degrees of experience, gained a wealth of caving knowledge. Members of ISS also learnt a great deal from training others interested in caving.

The point of this brief article is threefold:--

1). What has your speleo society done in its region to improve the image of Speleology?

2). Don't knock "them" because we as a Federation (Australia's foremost caving authority) are just as much to blame as we haven't bothered to educate "the masses" in the past;

3). Try contacting "caving groups" in your area, who might only go caving 2-3 times a year and offer them your assistance.

ISS.
Bob Kershaw.

RECENTLY REPORTED BAT RESEARCH

By Roman Lichacz

In Nature (vol 313, 1985, pp477) M.B. Catford, et al have reported that the fruit bat, Pteropus poliocephalus, has some of its somatic (body) sensory areas of the cerbral cortex reversed, when compared to other mammals. They have suggested that this is the reason for the bat's usually adopted position of hanging upside-down when at rest.

The most significant difference between the bat and virtually all other mammals that have had their somatopic map studied is that the mapping of the forelimb digits are reversed in two of somatopic maps, such that the tips of the digits point posteriorly (towards the back), instead of anteriorly (towards the front). The representation of the belly surface of the trunk is also reversed.

Andrew Bell reports in Ecos (Vol 43, Autumn 1985, pp32) about the research of Drs. Dedee Woodside (Zoologist, UNSW) and Ken Hews-Taylor (Physicist, CSIRO) relating to the ultra-sound echo-location of bats.

So far they have recorded sounds from 20 different species of bat. They are conducting these recordings in order to understand the way the echo-location works in bats.

At the moment man-made techniques with ultra-sound can just manage to detect a flaw in a metal casting the size of a finger nail clipping, but not its shape or position. A bat using sound of the same wavelength (about 1mm) would be able to discern the orientation and the outline of the flaw.

They found that bats with plain faces obtain extra information by emitting a vocalisation that sweeps in frequency, while those with nose leaves and other facial features use a constant frequency. Many bats produce signals with strong harmonics (overtones) and a few emit their signals through both mouth and nose. Their frequency ranges up to 200kHz.

There appears to be a good correlation between the type of signal and the areas they forage in. For example in a cluttered area, such as in bushes, they detect prey by uttering a pulse swept quickly in frequency, while bats that prey on flying insects get a good fix on speed and direction by a chirp of constant frequency.

One rare bat, the golden tipped bat (Kerivoula papuensis) emit a very wide-band chirp without harmonics. This type of bat only preys on orb-weaver spiders in the wild. It appears to be able to hover near a web and pluck the spider off without touching the web. It is believed this is because it's sonar is able to detect the web. This also helps explain why this particular bat is never caught in mist nets.

REFERENCES:

Calford M.B.; Graydon M.L.; Huerta M.F.; Kaas J.H.; Pettigrew J.D.; A Variant Of The Mammalian Somatopic Map In A Bat, Nature 313, 477-479, (1985).

Bell A.; Learning From Bats' Ultrasound. ECOS, 43 p32, Autumn, (1985).

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EDITORIAL

Welcome to AUSTRALIAN CAVER - a new name and a new editor. The help I have had so far has been fabulous - many articles have made the first issue a large and hopefully interesting magazine.

There is now a catalogue of back issues which will give an index to articles already published - great help when you are trying to find the right article.

Future issues will cover conference activities (look for your picture), overseas news and any articles or photos you wish to contribute - all would be gratefully received.

Kerrie Bennett

CORRECTION:

Depth of Anne-A-Kananda.

by John Webb.

Over Easter 1984 a combined VSA/ CEGSA team explored a new chamber (Fuligrin) in Anne-A-Kananda, Australia's deepest cave (Gilliat, 1984). Due to a combination of circumstances this extension was not surveyed, but guesstimates of its depth indicated that it could be a new depth record. A sketch map was published in ASF NEWSLETTER 105, p.4, showing a possible maximum depth of about 396m. This depth was partially based on the depth of the adjacent chamber, which was understood to be 366m. However, this latter depth was revised to 342m (Bunton and Eberhard, 1984), creating considerable doubt regarding the true depth of Fuligrin Chamber.

In order to resolve this uncertainty, VSA party returned to Anne-A-Kananda over Easter 1985, and carried out a Grade 5 survey from the lip of the doline (the zero point for the cave depth) to the bottom of Fuligrin Chamber. This survey gave a total depth of 345m for this part of the cave, well short of the 373m depth of the deepest part of the Heartbeat Series. A detailed map will be published in a forthcoming issue of Nargun.

Comparison of the new survey with the published map of Anne-A-Kananda (Bunton and Eberhard, 1984) showed discrepancies in the Dessicator Series. From the top of Rift Pitch (the short pitch immediately above Roaring Forty), depths on the published map are overestimates. The error progressively increases down into the cave, and the bottom of the chamber, marked as 342m on the map is probably 310-320m deep.

This discrepancy does not affect the rest of the cave, and the total depth of 373m remains unchanged.

Bunton S. and Eberhard R. 1984:
Vertical Caves of Tasmania - a caver's guidebook.
Adventure Presentations, Sydney.

Gilliat D. 1984. Anne-A-Kananda.
ASF Newsletter, 105, 4-7.

A LOOK BETWEEN THE COVERS.

"Vertical Caves of Tasmania A Caver's Guidebook."

S. Bunton and R. Eberhard.

Some people might say, "How forteous that this book was published in time for all the mainland cavers who attended the conference in Hobart!"

Bob Woodhouse would have liked more reliable information about Kubla Khan printed, to encourage conservation within this marvellous cave!

Nick White on behalf of V.S.A. claims that the authors have breached copyright and used one of V.S.A. maps without their (V.S.A.'s) permission. Where is the I.S.B.N.?
Is it "the first book of its kind to be published in Australia?" (foreward by Alan Warild). Maybe, for caves in Tasmania but notfor Australia. (What about Bungonia?).

All these criticisms aside, Vertical Caves of Tasmania does provide cavers with the basic information to tackle the best sporting caves in Australia.

The four main caving areas of the Apple Isle area covered - Mole Creek, Mt. Anne, Ida Bay and Junee Florentine area. Each area is briefly described with travelling and camping; food quantities for journeys and how to get access to particular caves.

A brief summary of Tasmanian caving conditions is printed in the first few pages. Caving in Tassy is not for the foolhardy or tourist caver! (except for the tourist caves!).

Each cave has a general description, pitch details, time for the trip and a sketch map.

To tempt you there are a few pictures, black and white, provided by S. Bunton and A. Briggs.

So why not purchase a copy and keep the royalties pouring into the Authors! This reviewer, is not receiving any commission for this article but I did it out of the kindness of my heart for the new editor, who wanted some articles for her first "Australian Caver". Hang on, her first "Australian Caver" was born last year and is named Robert.

Bob Kershaw I.S.S.

NOTES ON THE ASF Inc

COMMISSION ON BIBLIOGRAPHY: INVITATION TO ABSTRACTORS.

In what may yet prove to be one of the greatest comebacks in Australian speleological history (no, it's nothing to do with NIBICON) Australian Speleo Abstracts is going back into production.

At the recent ASF Committee Meeting in Hobart I was re-appointed Convenor of the Commission on Bibliography on the understanding that I would start compiling abstracts again and resurrect A.S.A. It is my intention to bring the publication up to date by publishing three combined issues, 1976-79, 1980-82 and 1983-85. By being somewhat more selective than has previously been the case. I hope to keep the size (and price) of the publication within reasonable bounds.

To help me in this task I hope to enlist the support of a personal computer and a team of dedicated abstractors around the country. Hopefully there will be one abstractor per club but it also helps to have people covering specialist areas. (eg: EHS will continue to cover biological material) and non-society publications (say, one in each major city).

So far the following have kindly offered their services in the fields indicated.

Peter Dykes:	O.S.S., StG.A.C.T., H.C.G.
Ross Ellis:	S.S.S., N.S.W. General.
Ken Grimes:	U.Q.S.S.
Elery Hamilton-Smith:	biospeleology, cave management.
Norm Poulter:	S.R.G.W.A.
Andy Spate:	C.S.S., A.S.F., Helictite, International Journals.
John Taylor:	K.S.S.
Sue White:	V.S.A., Vic. General.

If you would like to join this happy band just drop me a line, indicating the club/geographical region/subject you would be prepared to cover. The first task will be to prepare abstracts for the years 1976 to 1979 (inclusive); I hope to complete this within six months and be well into the 1980-82 period by the end of the year.

Details of what is required will be forwarded to those who indicate their interest in the near future. I hope to utilise the format of previous issues as much as possible, though minor modification may be desirable in the interests of economising on data processing.

Greg Middleton
P.O. Box 269
Sandy Bay Tas. 7005

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LIBRARIANS REPORT.

The last year has been relatively quiet for the ASF library with only two requests from outside bodies - both satisfied from my own resources. Club newsletters and journals continue to come in for inclusion in the National Library collection; some of these are highly irregular. The clubs concerned are CEG(SA), CCC, KSS, VSA, TCC,NSWITSS, MUCG, SRG(WA), MSS, and UNSWSS.
English language material from overseas (chiefly from the UIS, NSS and BCRA) is also lodged with the National Library. Foreign language and "exotic" publications are retained as the National Library is not keen on this material.
Following suggestions made at the last Committee meeting in Wollongong I have been abstracting material for the UIS Bibliographic Commission which has been duly forwarded to that body; copies have also been made available to the ASF Newsletter. The material abstracted is the more solid/significant of the material that crosses my desk and may not be representative of the full range of Australian speleological writing. Some copies are available here.

A.P. Spate
ASF Librarian.

DOWN UNDER ALL OVER

UNSWSS:

Some people believe that all UNSWSS does these days is nothing and whilst this applies some of the time it isn't entirely true. UNSWSS continues to be active in the Cliefden area and along with OSS and BMSC things are really getting done there. An interest is being maintained in other areas and at present a swap of maps on Cliefden is being made with SUSS in exchange for maps on Jenolan. Ernie Holland wants a grade 6 map of Bottomless Pit at Jenolan and so this gives us something to do when we're after a break from Cliefden.

It seems right now as if UNS WS is becoming a highly computer-ized club with three Apple 11e's being used to produce the club journal as well as handling our correspondence and filing. A journal list has been produced on the system for 1984 which is available at $2 a copy. This is not like Speleo Abstracts in as much as it simply presents infor-mation in the form of a table of contents for each journal produced 1 st year. At present there is communication between us and Greg Middleton on the subject of Speleo Abstracts 1985. Anyone purchasing a copy of the 1984 journal list will receive a sample copy of the 1985 dump to show the radical difference.

Anne Williams, our Speleo Council rep assures me that Speleo-tec is looking good already and UNSWSS is hoping that all going to plan, a handbook on Cliefden should appear at about the same time to let everyone gain the most from this area.

To close, UNSWSS is currently involved in something that we at least consider quite exciting. Nothing can be said at present although we can say that it does involve Cliefden and that if you watch SPAR, as well as this space an interesting story is about to unfold.

Parties interested in coming on UNSWSS trips or attending our stimulating meetings can obtain information from either of the following people.

Rob Whyte - (02)-623 5967 or
John Williams - (02)-671 4365.

UNSWSS - NOTICE

A recent confusion saw the University Union close our mail box in mid--April and some of our mail returned. No record was taken of what was returned and so we have attempted to contact all those who may have sent us mail in this period.

If you sent mail in this period and are concerned that it did not get through, please get in touch with us. Our address is still BOX 17, THE UNION, UNIVERSITY Of N.S.W.

In case anyone is wondering, it was all the University's fault and nothing to do with us.

Rob Whyte.

CSS Inc:

"C.S.S. has joined the increasing number of societies that have incorporated. Other cavers, though may be reassured that this will not affect our traditional approach to caving. In fact, in the last couple of months, C.S.S. Inc., has walked Cooleman Plain, climbed the Australian Alps, restored Harris Hut - a slab hut at Cooleman and endured two heavy photographic sessions at Narrangullen Cave. There was also a serious attack on the"Visbook" data collected over recent years, made possible by the recruitment of a computer wiz to the Society. Surprisingly, we still found time to enjoy the usual pleasures of Christmas and New Year.

Rosemary Nicholson.

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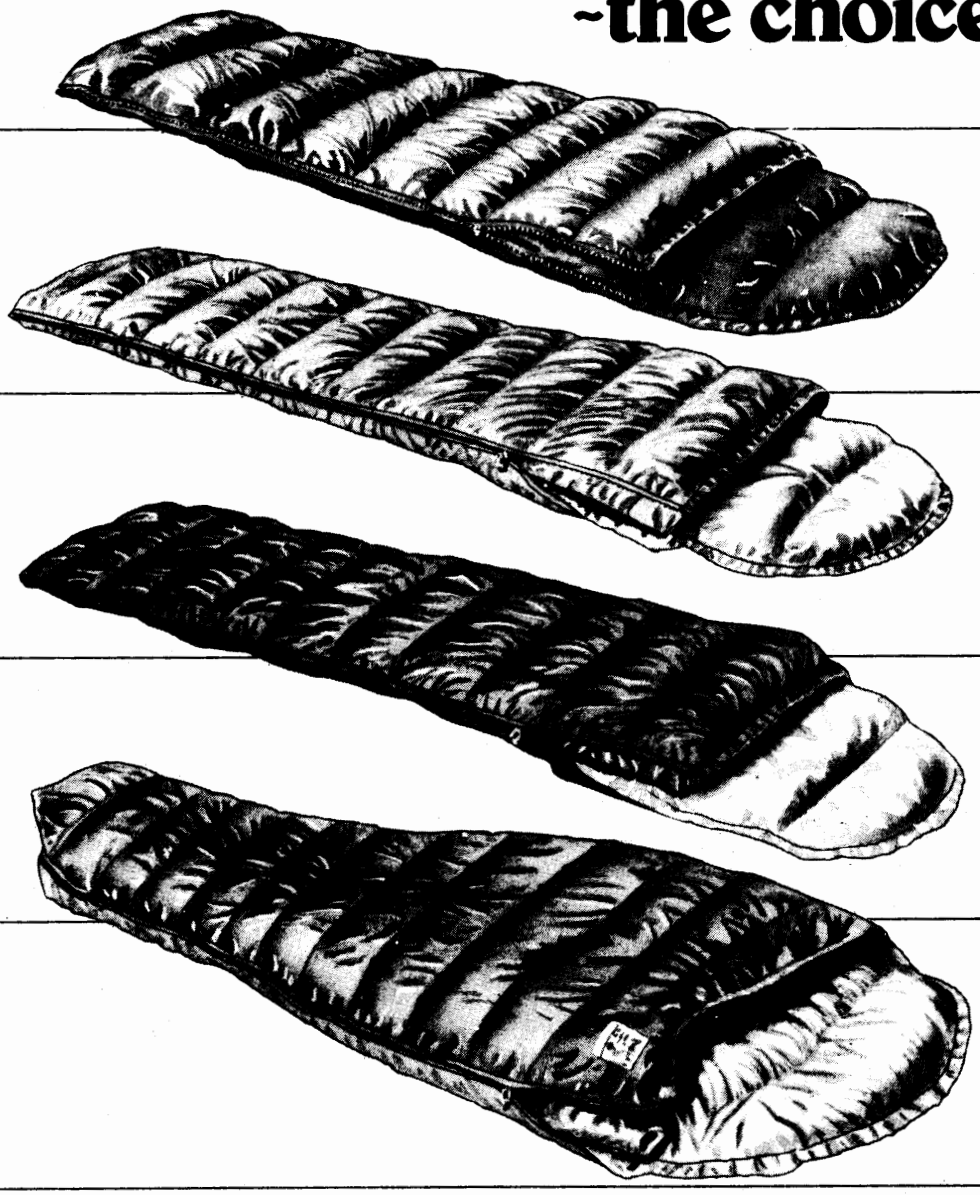

KIANDRA — *compact!* Mini size, mini weight with high quality and high comfort. Kiandra is a "3 season" semi-rectangular down-filled bag with ripstop nylon outer and cotton inner lining which ensures unlimited comfort. Able to mate with similar Paddymade bags. Kiandra's so small, ten will fit into an average size rucksack.

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PADDYMADE SLEEPING BAG COMPARISON CHART

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BIMBERI	1.00 kg	Box Wall	550 g	550 Loft Down	−5°C	Side Zip	30 x 17
HIGH PLAINS	1.80 kg	Box Wall	1100 g	Featherdown	−5°C	Full Zip	34 x 23
HOTHAM	1.60 kg	Box Wall	700 g	550 Loft Down	−5°C	Full Zip	34 x 23
MELALEUCA	1.55 kg	Box Wall	800 g	550 Loft Down	−15°C	Side Zip	34 x 23
BOGONG	1.60 kg	Box Wall	900 g	550 Loft Down	−15°C	Full Zip	34 x 23
SNOWLORD	2.00 kg	Slant Wall	1100 g	550 Loft Down	−25°C	Side Zip	37 x 27

All bags fit people to 190 cm (6ft 3in) tall; bags to fit people 205 cm (6ft 9in) are available in most models.
*Temperature Ratings are a soft measurement — they represent an average expected performance level for a standard person although individuals will differ by up to ± 10°C. Paddymade reserves the right to alter these specifications without notice.

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