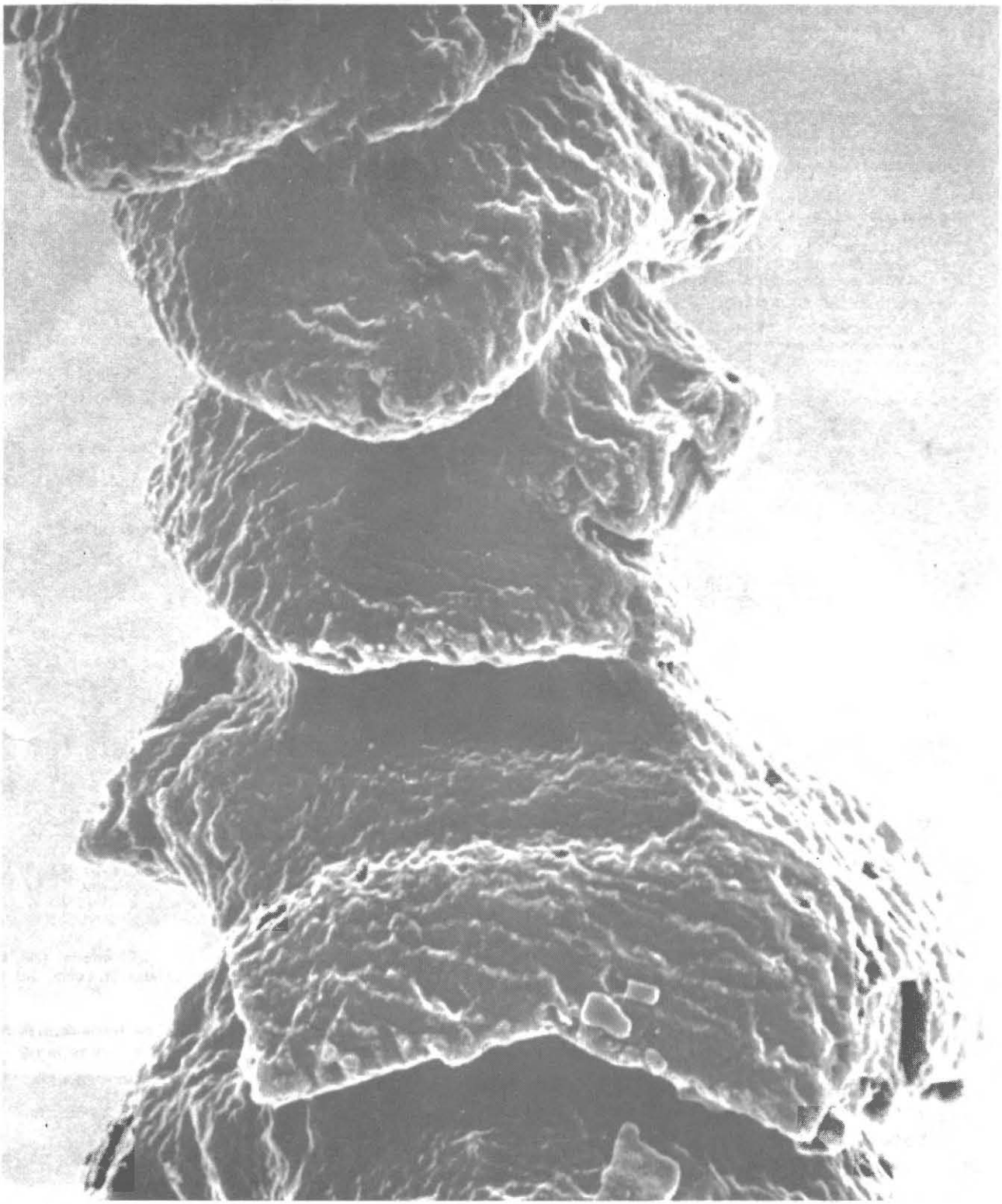
ASF NEWSLETTER

Summer, 1979, No. 82



THE AUSTRALIAN SPELEOLOGICAL QUARTERLY

Photo by Stephen Kempe and Dr. C. Spaeth of the Geol-Pal Institut, University of Hamburg, Germany
(Detail of a Cappillary Cast, length 0.15 Millimetres)

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EDITORIAL

As you can probably see from the list of contents above, most of the regular features are missing from this particular issue. I realise that a majority of our readers/contributors were either in the midst of exams or setting out on their annual holidays but I did expect some reaction for the Down Under All Over section which has been a consistent feature over the years. I received absolutely no club news whatsoever!- Rather disappointing really, seeing that this is the last newsletter I will be editing.

Nevertheless, owing to a small backlog of material which I manage to accumulate from time to time, I have been able to compile a normal sized magazine. Most of the articles appearing in this issue are related directly or indirectly to aspects of cave safety. Admittedly several are reprints from various club journals but I feel that they are well worthy of mention on a national level.

The post of Editor, ASF Newsletter has been accepted by Rosie Shannon of UQSS. I would like to wish her every success and I feel sure that she will provide readers with an added degree of efficiency. Therefore, as from this issue, all contributors are asked to forward news, articles, etc. to Rosie's address which you will find beneath this editorial.

I would also like to take this opportunity of thanking all those people who have assisted me with their contributions over the last four years. A special note of thanks is extended to Tony and Pat Culberg who have handled the distribution side of things over this period of time.

Lastly, due to my inability to attend the various interstate Conferences, I have been unable to meet many of the mainland caving fraternity. However, from time to time I have been fortunate enough to meet the odd one or two who have been in Tasmania for a fleeting visit. These associations have all been happy ones and I'll always remember them. In September of 1979, my family and I will be touring VIC, NSW, ACT & SA by car for four weeks. Don't be surprised if there's a knock on your door and I'm there to say hello! My tour will be restricted to tourist caves only so don't expect me to go clambering down any muddy little drainpipes! Cheers!

Laurie Moody.

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GUIDELINES FOR NAMING CAVES AND CAVE FEATURES

Albert Goede

DISCUSSION DOCUMENT (Second draft, 1/8/1978)

Albert Goede (Convenor), Department of Geography, University of Tasmania.

Introduction

Since the publication of the first draft of this document in December of last year it has been drawn to my attention that the ASF has previously been served by a Committee of Nomenclature and that the convenor, Elery Hamilton-Smith, prepared a report which was published in the ASF Newsletter No.38 in December, 1967. Many of the suggestions made have been incorporated in this draft.

Comments on the first draft have been minimal. I am very grateful to Greg Midddleton, Elery Hamilton-Smith and Peter Matthews who made numerous valuable contributions which have been taken into account in the redraft. I also received comments from my fellow members on the Nomenclature Board of Tasmania and the Blue Mountains Speleological Society. The latter were the only speleological society to respond. Either delegates at the committee meeting at Wollongong did not take copies of the document back to their respective societies or the average caving society has no interest in matters concerning nomenclature. This document will be mailed directly to all member societies and it is hoped that it will generate a better response.

Increasing concern with nomenclature should stem from a number of causes. Clearly as the number of cavers, clubs and caves has grown in recent years there is an increasing likelihood of duplication of names and conflicts about naming. Many of these problems have surfaced recently as a result of the cave documentation required for the compilation of the cave index to be included in the second edition of the ASF Handbook. In fact, the publication of the index should play an important role in rationalizing nomenclature. For example, such a computerized index can readily be used to provide alphabetical lists of cave names (both approved and suggested) for each state so that the duplication of names can be avoided.

As any member of a nomenclature body can testify the average person is not particularly original when it comes to proposing new names. The same applies to caves and karst features, e.g. Bone Cave, Main Cave, Bat Cave, Cathedral, etc.

In Australia the official naming of natural features (and many man-made ones) is the responsibility of the individual state governments. Hence, in every state there is a government appointed board or committee to deal with nomenclature problems and to make decisions on names.

In Tasmania, the state with which I am most familiar, this is the task of the Nomenclature Board of Tasmania which was set up in 1950 as an Advisory Board to assist the Surveyor-General on matters of nomenclature. It was formally recognised in 1953 and established on a permanent basis by an amendment to the Survey Co-ordination Act. The board consists of a number of representatives from various government departments together with four outside members appointed by the Minister of the Lands Department.

In Queensland the Queensland Place Names Board was established in 1958 as the official naming authority. It also consists of representatives of government departments together with outside members from several boards and learned societies as well as two members nominated by the Senate of the University of Queensland. I am not familiar at this stage with the situation in other states.

If names of caves and other features are to be officially recognised it is important for speleologists to be aware of the rules of nomenclature that are generally accepted by such boards and to abide by them when new names are proposed. It is also important that there should be channels of communication between speleologists on the one hand and nomenclature bodies on the other. In states where there is more than one speleological society such contacts are best maintained by state liaison councils. In states where no such council exists the State Cave List Coordinator is at present the obvious person to fill the function of communication between speleologists and nomenclature bodies.

An ASF Committee for nomenclature must concern itself with numbering as well as naming of caves as the two processes are closely related and overlap in function. In the first draft I attempted to cover both. However, since Peter Matthews has had much more experience with cave numbering problems than I, we agreed that the second draft would consist of two documents: the one presented here dealing with the proposed nomenclature code while Peter has prepared a separate document dealing with the numbering code.

Purposes for Naming

The naming of natural features serves several purposes.

(i) Identification A name provides a means of identification which serves to distinguish a feature from all other features. The more widely known the name, the better the purpose is served but also the more difficult it becomes to substitute another name. Identification does not require a name. The purpose is also served by an identification system of codes usually consisting of combinations of numbers and letters. Such a system has grown up piecemeal in Australia and was

GUIDLINES FOR NAMING CAVES AND CAVE FEATURES Cont;

formalised by Matthews (1974) as a requirement for cave documentation. An important and well-known cave system is much more readily identified by a name than by a number (e.g. JF4 - Khazad dum, etc.). On the other hand small caves of little or no significance are much better left unnamed to prevent undue proliferation of names.

(ii) Description A good name often embodies an element of description. Triviality in naming should be avoided. Names suggested by some peculiarity or outstanding attribute of the feature to be named are generally acceptable. Even names such as Croesus Cave and Kubla Khan are in a sense descriptive as they hint at the richness of formations found in these caves.

(iii) Commemoration Names may commemorate historical events or a prominent person. In caving, historical events are not necessarily remote in time as most of the country's caves have been explored in the last thirty years, e.g. Rescue Pot in the Junee Florentine area commemorates the rescue of two novice cavers who came to grief here in 1968. Names such as Good Friday Cave (S.A.) and Easter Cave (W.A.) are other examples of commemoration.

Names of prominent persons still living are generally acceptable to official nomenclature boards only if the features are named after royalty or representatives of royalty (e.g. in Australia a state governor or governor-general). Politicians most definitely do not come into this category.

Recommendations

We must consider two sets of guidelines. The first set is concerned with the proceedures which ASF should consider adopting in order to formalize naming of caves and related features and to provide formal communication channels with the appropriate state and federal statutory authorities for geographical nomenclature. These will be referred to as proceedural guidelines. The second set of guidelines are concerned with the actual naming process and are designed to ensure that new names will be generally acceptable if the need should arise to submit them for formal approval. They will be referred to as naming guidelines. The federation is urged to consider the following sets of guideline rules for adoption.

Procedural Guidelines

(1) Speleological societies in each state and territory should establish formal procedural bodies for the naming of caves and karst features and the recording of existing names together with adequate descriptive and locational details. Such bodies should also have the task of maintaining liaison with the ASF Cave Documentation Committee and with the relevant state and federal nomenclature boards.

Comment: Where state coordination councils exist as in N.S.W. they could take on this responsibility. In states where more than one society exists but where there is no coordinating council, a representative inter-society organisation should be established. In states with a single caving society, that society should take the responsibility.

(2) The ASF Handbook should be regarded as the standard reference on the nomenclature of caves and karst features unless the entry indicates that a particular name has not been accepted or is not generally acceptable.

(3) Individuals, societies and nomenclature bodies associated with the ASF should do all within their power to limit the submission of names to official naming bodies, to the necessary minimum for the sake of cave conservation.

Comment: Official acceptance of a name will inevitably result in its publication in Government Gazettes with grid references indicating its location. Once approved, names may be indicated on official maps.

Naming Guidelines

The following set of naming guidelines were originally developed from the following sources: Anon, 1968 and Wilcock, 1968. In the second draft presented here the following additional sources were used: Hamilton-Smith, 1967 and Middleton, 1978 together with comments from a number of individuals.

(1) Persons assigning names to caves, cave features or cave related features should try to be descriptive, constructive and original in their choice of names.

(2) New names should be used or published only where the locationand nature of the feature have been accurately recorded in society records.

Comment: All too often in the past, names have been approved without adequate descriptive and location data. This causes lasting problems if a cave is subsequently 'lost' - a not uncommon happening in the dense Tasmanian bush or the wide expanse of the Nullarbor. When rediscovered years later, the identity of such a cave may be almost impossible to establish with certainty.

GUIDELINES FOR NAMING CAVES AND CAVE FEATURES Cont;

(3) The same name should not be assigned to more than one feature, particularly in the same region. Where duplication is discovered it may constitute adequate grounds for changing one of the names.

Comment: See comment after rule 18.

(4) It is preferable to create a new name for an un-named feature rather than to adapt an existing name of a nearby feature by addition of 'north', 'south', 'central', 'no. 2', etc.

Comment: A particularly bad example of this practice is found in the Mole Creek area of Tasmania where we have Honeycomb 1, Honeycomb 1½, Honeycomb 2 and Honeycomb 3. Less extreme examples can be found in most states.

(5) A name should be concise, euphonious and not such as might give offence.

Comment: This may rule out some apt and witty names. Names such as Lillians Rift and Devils Earhole (Mole Creek) sail close to the wind and a name such as Sharlands Organ (a formation in Kubla Khan, Mole Creek) is definitely not acceptable to any nomenclature body - even allowing for a sense of humour.

(6) Names should not be applied to trivial or insignificant features.

Comment: If in doubt err on the safe side. It is easier to apply a name at a later stage than have to withdraw a name applied in haste.

(7) Caves should not be named after temporary features.

Comment: A South Australian example is Haystall Cave, so named because its entrance was located close to a haystall. The haystall was moved a week after its discovery. (Incidently, as the cave's location had also been described by reference to the haystall, it took some years to rediscover.)

(8) Caves should not be named after living persons unless in very exceptional circumstances. On no account should a cave be named after a caver or speleologist during his or her lifetime.

Comment: In recent years a number of caves at Colong in N.S.W. and along the Gordon and Franklin Rivers in Western Tasmania have been named after contemporary state and federal politicians. I am personally strongly opposed to this practice which I believe to be a means of attracting cheap publicity for the cause of conservation which might be better served by a proper evaluation of the scenic, sporting and scientific values of the caves and limestone areas concerned. However, the viewpoint has been put to me by one well known caver that the phrase 'exceptional circumstances' in the above guideline should include the possibility of "the naming of a cave which is in iminent danger of destruction after a politician who could act to save it, so as to draw public attention to the cave's existence".

If the above guideline is accepted, ASF will have to interpret the term 'exceptional circumstances' in relation to this practice.

(9) Caves should be named after deceased persons only when they have made some major contribution to the community or have some link with the cave or area or have played a significant part in exploring, conserving or researching a particular cave or area.

Comment: In Australia features with personal names are often given the name of the person to whom the original grant of the land on which the feature occurs was made.

(10) Where features are named after persons, it is customary not to involve the use of both christian and surname or a combination of the two.

(11) Where personal names are used, the possessive 's' is omitted unless this destroys the euphony or descriptive application of the name. If the possessive 's' is used, the apostrophe should be omitted, e.g. Scotts Cave not Scott's Cave.

(12) Use of Hyphens should be avoided in new names.

(13) Names composed of a large number of words should be avoided.

Comment: An official nomenclature body might take a dim view of a name such as 'Tower of London Cave' at Chillagoe, Queensland although they would probably approve it if it were well established. 'The Cave with the Thing that went Thump' at Mt. Etna would definitely not be approved.

(14) Combinations of unrelated words, anagrams or words which are too close in spelling or phonetics, should not be used.

Comment: At Mole Creek, Tasmania three originally separate caves were subsequently linked by further exploration. The combined system has been referred to as the Spider-Pyramid-Cow System

GUIDELINES FOR NAMING CAVES AND CAVE FEATURES Cont;

by combining the three names. In this particular case such a combination groups unrelated names and seems undesirable.

(15) Long and difficult aboriginal, botanic or scientific names are best avoided. If an aboriginal name is used, it should be in the language or dialect appropriate to the region and should follow the standard spellings now in use by aboriginal linguists.

(16) Corrupted or modified names should not be used unless such forms are well established by local usage.

(17) Names that can be construed as advertising a particular commercial or industrial enterprise are not acceptable.

(18) If more than one name is available for a cave or feature, the historically prior name should be accepted unless either (a) another name is well established in local usage or (b) a change has to be made to eliminate confusion.

Comment: An example of (b) is Federal Cave at Murrindal, the name of which was changed to Anticline Cave to eliminate confusion with Federal Cave at Buchan, only a short distance away.

(19) Changing an already accepted name should be avoided unless there are very compelling reasons for doing so. Where an existing name has been used in a scientific description, e.g. to name a geological formation or as the type locality of a new species of cave fauna the name should never be assigned to any other feature.

(20) Where two or more caves, originally thought to be physically separate, are subsequently connected the use of different names for parts of the linked system should preferably be discontinued.

Comment: In the naming of caves a problem often arises in that two or more caves, regarded as distinct and named as such, may subsequently be linked to one another by further exploration. One possible solution would be to assign the name of the longestcomponent cave to the whole of the system unless there are compelling reasons for not doing so, e.g. if one of the smaller components is a type site for geological or biological description.

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New Knot

There's a new knot. Say that to a lansman and he'll say "So what?" Say it to a seaman and he'll say "Show me."

There hasn't been a new knot in 20 years. That was the Tarbuck knot, an adaption of the bowline that has saved many a mountaineer from nastiness. Now we have Hunter's bend, after Dr. Edward Hunter, a peripatetic physician who has been a missionary in Nigeria, a ship's surgeon and a consultant physician.

It ties lines of both even and uneven thickness quickly and securely and is easy to untie, thereby filling every requirement. All you have to do is line up the rope ends, twist in a bight, tuck the tails on the standing parts through the loop from opposite directions and pull.

Extract from "The Sun", Friday October 27, 1978. Page 52.

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THE SPELEAN SHUNT - A DISCUSSION

by John Webb

Recently, Phil Toomer and Bruce Welch have developed a new abseil safety device, the Spelean Shunt (Toomer & Welch, 1977). Although it appears to be very good, several additions to/and clarifications of statements made in their article are necessary.

Abseiling belays that consist of a device trailing along the rope above the abseil rig fall in two broad groups. The first includes ascenders, e.g. Jumar or Clog, in which the cam is held open; in the second, the device, e.g. Gibbs ascender or Petzel Shunt, is held so the sling connecting it to the abseiler is slack. Both types are activated by releasing either the cam or the device itself. Unfortunately, they are all subject to a severe problem which makes them virtually useless: in an emergency situation most people freeze and tense their muscles, and are unable to consciously open their hand and let go of the belay (Davidson, 1976).

To prove this, Meier (1965) developed the 3-rope test (Fig.1), in which 3 ropes are rigged over a free fall of about 30 m. The abseiler has his abseil device on the short rope A, his trailing belay on rope B, and is tied onto the end of C. The last-mentioned rope is locked off at such a length that if the abseiler falls on it, he will be stopped 8 - 10 metres off the ground. The idea is that abseiling off the end of A simulates an accident; the abseiler must release the trailing belay before being caught by C. Most experienced cavers were unable to accomplish this, especially when closed eyes were required. Furthermore, several abseiling accidents have occurred where cavers have slid out of control down the rope for distances of up to 35 metres, unable to let go of their trailing belay (see N.S.S. News 35(6), p.128 and 35(1), p.6).

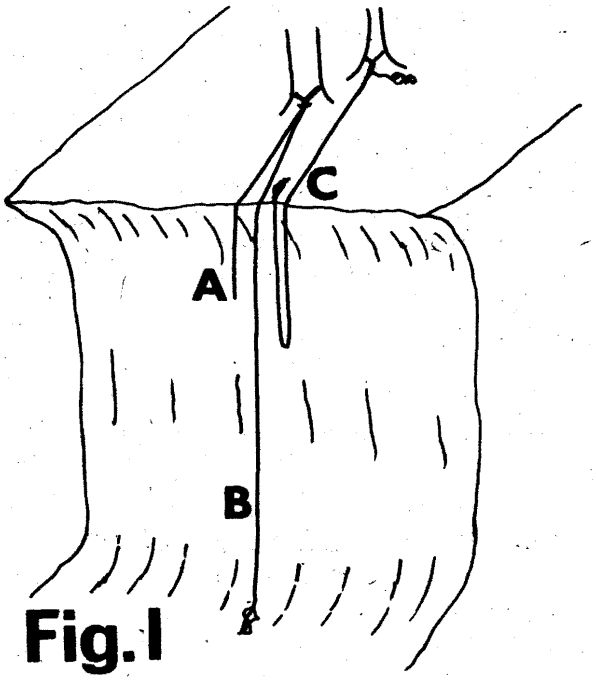

Fig.1

Two systems have been developed to get around this problem; the Spelean Shunt and the Safety Rappel Cam (Davidson, 1976). The latter is a complicated modification of a Gibbs and is activated by hitting the sling joining the device to the chest harness of the abseiler. This positive action is supposedly easier to perform under stress conditions than the negative one of releasing something. To my mind, they are both positive actions and I suspect they could be equally difficult to perform.

The Spelean Shunt (Fig. 2) is considerably simpler in design, and is meant to be activated by leaning backwards, thus tensioning the connecting sling and locking the cam onto the rope. According to Toomer and Welch, if the abseiler was to "lose control, he would naturally move to a more stable position (which means he would lean back) and the device will lock on". The Shunt is passive, and should ride down the rope of its own accord, resting on top of the abseil device (see Fig. 3 next page).

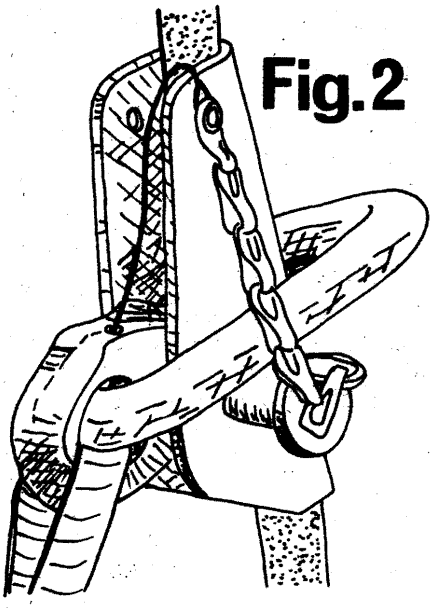
Fig.2

To test the Spelean Shunt, several friends and myself used it with the 3-rope system. The results are far from conclusive, but they give certain indications. To begin with, it was found that the Shunt is designed for use with long abseiling devices like whaletails or rappell racks. When Toomer and Welch say that it "would be most useful when using an abseil device such as a brake bar rig", they

(Cont; Page 11)

ACCIDENT REPORT

ACCIDENT AT WILLYABRUP - WHAT WOULD YOU HAVE DONE?

On the 5th June (1978) there was an accident at Willyabrup climbing cliffs near Margaret River in the south west. I would like to tell you this story in detail and relate some of the earlier incidents that caused the accident as well as helped after.

A month before the above date, I received a letter from an Englishman called Kip Ryan, asking me to teach him to rockclimb. I took him to various quarries and outcrops and the climbing wall at Cottesloe in the evenings. He proved to be a very keen and fast learner.

On the long weekend I wanted to go caving in the Witchcliffe area; so we decided that Kip would come down with Eve (Ozdolay) and I and we'd cave for two days and climb on Monday. Sunday found us at the Boranup campsite working on the car. It needed a tune-up as there was some difficulty in starting other cars in the morning. So, after caving, we tuned ours using a damp cloth to wipe the points.

At eleven o'clock Sunday evening there was an alert as some of the cavers hadn't returned on their ETA. After calming the keen spirits down I decided to go and see if the cars were in the car park near the caves. But the (my) car wouldn't start. As I was about to get another car, the missing cavers turned up safely. I explained to Kip the need for a bit of calm on alerts and rescues as speed could cause other accidents (ie. hitting roos) - far better to go calm than to race and not get there. The trouble with the car was rectified when I ran a dry cloth through the points.

Monday morning was wet, so we hung about at the campsite waiting for it to clear which it did about ten o'clock. Hurriedly we went off to the cliffs and started climbing. "Orrijohn" was done in fine style amongst showers; and four shorter climbs fell to Kip's good leading.

Late in the afternoon, Eve said she was tired, had a headache and didn't want to climb anymore. So she took some disprins and Kip and I decided to do more climbing on our own. This was to be "Elephants Ear" on Bay Buttress. Having left Eve about 50 feet away, Kip started climbing while I belayed. Eve was sitting by the sea under a large rock reading a book. She had no helmet on and she was completely out of range. Kip took quite a while on the crux, but finally managed to get onto a ledge above it. By this time I had called Eve up to stand under an overhang nearby as the spot where she was, was in the shade, where it was sunny where I was at the bottom of the rocks.

At this time we felt great as Kip is a relative newcomer to climbing and he thought he had done well in getting over the crux. After the crux the climb peters out to nothing. As I thought this was disappointing, I suggested that he move along the ledge right and find something a bit harder on 'crab slab'. This he proceeded to do. I think it was at this point that I started to relax as far as this climb was concerned and asked Eve to roll me a cigarette. To do this she came out from beneath the overhang and was standing directly under Kip. Owing to my relaxed state (not completely relaxed as I was still belaying), I did not realise this and so the scene was set for the accident.

Kip leaned back on the ledge to look around the corner and the outer part collapsed! He immediately shouted "Look out below" and I looked up to see the rocks coming down. I shouted to Eve to move but she was standing still without looking up as I had taught her to when under rocks with a helmet (if you look up a rock may hit your face instead of your helmet). I shouted a second time but it was too late, she looked up, threw up her arm, ducked her head and a rock larger than a soccer ball smashed into her head and right shoulder, pitching her down the slope out of my sight!

I wanted to throw everything down and rush to her. Both Kip and I were sure she was dead, but I forced myself to stay belaying Kip while he made himself safe. As soon as he was safely tied on, I untied and dashed down the slope to Eve's aid. What I saw stunned me! Eve was lying crumpled up with blood coming out of her right ear and her nose. Her face was a horrible grey colour. As I got down beside her I realised that she was still breathing, so I stripped off my warm clothing and covered her up. While I was doing this she came to and spoke to me and I was very relieved. I asked her how she felt and she said that her headache was worse! I told her that a rock had fallen onto her shoulder and she was to lie still while I got Kip down. This she said she would do.

I tied myself on again. Kip climbed to the top, untied and started to walk around the side of the cliff to rejoin us. I went back to Eve as she was calling me; and asked her where she was hurt. She didn't answer but said she was slipping down the bank. So, I broke some branches off a bush and put these under her to stop her from sliding. Kip was approaching and I shouted for him to get my rucksack and everything he

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could find that was warm. These had been left about a ½ mile along the cliffs, under the lower climbs we had been doing. While he was gone, I examined Eve a bit closer.

From the blood coming out of her ear, I suspected a fractured skull, her eyes were very dilated and she didn't really know where she was. I asked her to "wiggle your toes" - this she did. "Move your feet" - they moved. "Any pain in your back?" "No." "Are your feet cold or warm?" "Warm." "Where do you hurt?" etc. Twice I asked her - twice the same answers. I tried to trick her thinking she was saying she was alright for my sake. "Where is the pain in your back?" "What pain?" she answered. I was satisfied she had no back injury, so as soon as Kip returned we put her in a large plastic bivvy bag to keep her dry and warm. It was just in time, as the rain started to pour down.

I asked Kip to go up to the car, get the keys and drive to Margaret River to ring the police so as they could get in touch with Roger Scott or John and Frank Yates. As he went I shouted, "Hurry, but don't hurry, if you know what I mean". He shouted, "I know" and away he went, two kilometres to the car across rocks, stream and a paddock where he found the key (I always hide it and show the party where - just in case anything should happen to me). He got into the car and tried to start it. It wouldn't start. He looked for the choke, "none, must be an automatic choke, keep trying", he thought to himself. After a few tries it started and away he went, up the winding, one car wide, sandy track to the road. Looking left along the road he saw the lights of a house and decided to see if they had a phone. They had and he was soon onto the police and an ambulance.

The police tried Roger but he wasn't in! Frank Yates was and it was left to him to alert any of the other cavers he could find. They all met on the road at the end of the track where Kip and the man from the house were waiting. An ambulance, a four wheel drive and another car then went down the lane and stopped at the small car park. Kip and Terry Scott from the ambulance went ahead of the main party. The rest went a bit slower with the doctor as it was dark now and dangerously slippery in the rain.

Meanwhile, back with Eve, I had a miserable, lonely feeling as I watched Kip go for help. I've waited on rescues before and it always seems a long time, but I knew that I was so close to Eve, this wait would seem longer. I pulled myself together and decided to work. I found more clothes and laid them over and around Eve to keep her warmer and got the spare rope and placed it under her legs to stop her from slipping further. She was covered from head to foot with a hole just around her face, so she could breathe and I could check her now and again. There was no more I could do but wait, or was there? I found my torch as it was getting dark now and went and collected some driftwood. Ripping the book up that Eve had been reading, I finally got a fire going. I had been very cold myself and was worried that I might get hypothermia but the fire soon made us both a bit warmer. I tried to encourage Eve, so I told her everything I was doing just so she knew I was near.

Suddenly, there were lights coming along the rocky coastline. Tears came to my eyes as I thought how quick they had been. Before I knew where I was, the ambulance man and Kip were there. After a quick glance, the ambulance man stepped back for the doctor who had arrived with the main party. He examined Eve and told us she had a suspected fractured skull, a badly damaged shoulder, a suspected lower spine injury and other damage. I was surprised at the spinal fracture but I said nothing as he knew better than I.

The ambulance men and the police then started to build the stretcher around her. I'd never seen this type of stretcher before and was quite interested to watch in spite of everything. Two metal poles were laid, one each side of Eve, on the ground. These poles had knobs sticking up every six inches. A frame was placed at the top and bottom to fit into the two side poles, making a long thin oblong. Thin strips of plastic with holes in each end were passed under her body and the knobs were located into the holes making a platform under the person for lifting. The only thing wrong with this stretcher is that once its picked up it can't be put down until in the ambulance, as it will fall into pieces because the weight of the body holds it together.

The doctor was an extremely robust, happy man and I was quite pleased to leave it all to him and the ambulance men. Then Eve was ready to be carried out! There were the two ambulance men, Terry Scott and Rex Dyer, the doctor, two policemen, the man from the house, three cavers, Roger Scott, Dave Graves and Frank Yates, Kip and myself. It was raining and the journey over the difficult terrain was slippery and full of traps for the men carrying the stretcher. We took it in turns, while six carried the rest shone the torches, carried the doctor's bag and generally helped. At bad places, the stretcher was chained from the six men carrying to the six men in front - they held it while the first six scrambled to the front to retake it, and so on. Every so often the men changed sides to relieve aching finger and arm muscles. The journey was extremely tiring but everyone stuck to it for the common cause and it was very moving to see. As we struggled across the paddock in the lashing rain, I tied to take myself

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up above the party and look down. The small band of men I saw, looked very grand carrying that stretcher up the wet grassy hill from the sea, surrounded by gradually dimming torches.

At last the ambulance! Eve was thrust inside and taken to Margaret River, where it was decided to send her up to the Royal Perth Hospital. I was allowed to go up with her and during the two hour twenty minutes journey, I had plenty of time for "ifs"!

If only I hadn't called her up into the sunny spot with me!

If only I hadn't asked her for a fag!

If only I'd made her wear her helmet like I always do!

If only I hadn't relaxed and had stayed alert instead!

And then I thought:

We were lucky to have someone with us who could stay calm in such an emergency. We were lucky too, that I'd tuned the car as it would've never started without the choke!

We were also lucky that the policemen, cavers, the doctor, ambulance men and general people of the Witchcliffe/Margaret River area were willing to put their lives in jeopardy to save an injured climber from what could have been certain death without their help.

For all their pains and perils of that night, Eve will soon be caving and climbing again but most of all, she'll be well enough for both of us to go and visit all the people who helped us in our hour of need.

Eve was lucky. She had a fractured skull, broken shoulder and severe bruising to her thighs and leg. There was no evidence of back injury.

In writing this to catch the deadline, I've tried to relate it as I saw it but I think a few safety points came out of the incident. What would you have done on that lonely coast if you were in the same situation? Prevention is better than cure.

Lastly, there was the inconvenience caused all round - the folks on the rescue, Kip taking a day off work to collect all the abandoned gear and bring it and the car home, the nurse and the ambulance drivers who got Eve up to Perth so quickly, people like Ken Lance of W.A.S.G. and Robin McArthur of C.A.W.A. who manned the phones and chased about for the latest information to keep people informed, the money this has cost in ambulance and hospital fees, lost weeks from work. Think about it yourself!

Eve and I would like to take this opportunity to thank everyone who helped. The response has been wonderful and as I write at the end of this narrative, Eve is sitting up in bed eating cheese cake and cream and making me feel very hungry.

Dave James.

This accident report was reprinted from The Western Caver, August 1978.

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AUSTRALIAN SPELEO ABSTRACTS 1975 ISSUE

The 1975 issue of A.S.A. has been published and is available from Ross Ellis for $3.50 (plus 75c postage). Ross' address is:

11 Arkana Street,
TELOPEA, NSW 2117.

A.S.A. provides a comprehensive guide to Australian caving literature; with this its 9th issue, it is building into an invaluable reference compendium. The 1975 issue contains 92 pages and references some 947 articles published in that year. With this issue the publishers have returned to the earlier practice of using different coloured pages to identify the six sections: caves (arranged by states), biology & anthropology, physical & earth sciences, conservation & tourism, technique & documentation, and miscellaneous. This makes finding articles very much easier.
Issues are available back to 1970, plus an index 1970-72. The complete set, posted, costs $26.00. Prices of individual issues available on application to Ross Ellis.

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THE SPELEAN SHUNT - A DISCUSSION Cont;

are presumably referring to a rack, because the Shunt is unsuitable for short brake bar assemblies, as well as sticht plates, Hoff rings and figure-8 descenders. This is because it is meant to ride on top of the abseil device, so for short rigs this means that the Shunt is below chest level, and the connecting sling hangs downwards holding the cam open unless the abseiler turns upside down. To hold the Shunt at about the right level on the rope with the free hand, is awkward and tiring. As discussed later, the best position for the hand on the Shunt is with the index finger horizontal on the karabiner, however, this causes the lower fingers to rub against the rope, and becomes painful unless gloves are worn. Thus the Spelean Shunt was difficult to use with the 3-rope rig, as it had to be held at the right level on rope B (see Fig.1).

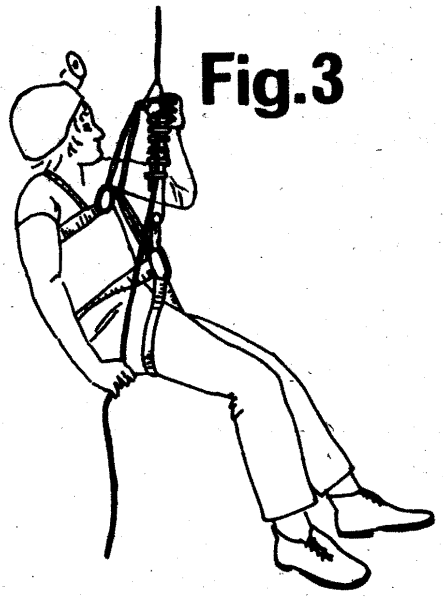
Fig.3

Nevertheless, one point became immediately obvious from our tests. Everyone held themselves upright by clutching the Shunt once they had abseiled off the end of the short rope - no-one leaned back! Thus it is unlikely that a caver in an emergency situation will naturally lean back, unless they are unconscious, contrary to Toomer and Welch's earlier quoted statement. The Shunt must be activated some other way.

Fortunately, it is very sensitive to any load on the connecting sling. If this is short enough (Fig. 3), the weight of the karabiner joining the sling to the abseiler's chest harness will lock the Shunt onto the rope. In this case the free hand must be used to hold the Shunt karabiner down (Fig. 3), otherwise the abseil will be very jerky because the device must be continually knocked free. If this hand is held so that it slips off the karabiner in an emergency, then the problem is solved, because the Shunt will immediately activate.

So the position of the hand is critical. Our tests showed that if it is placed around the back of the Shunt with all fingers above the karabiner and the weight of the hand holding it down, the Shunt cannot lock on the rope unless the abseiler leans heavily backwards. A much better arrangement proved to be having the index finger horizontal on the karabiner, with the lower fingers resting on the abseil device. If the index finger covers only the lower two-thirds of the karabiner, any involuntary clenching of the hand should cause the finger to slide off the karabiner and the Shunt will automatically activate. This is in effect a "hair trigger"; our tests verified Davidson's (1976) conclusion that in an emergency situation it is very difficult to perform a conscious act like releasing or hitting something, and the belay is best activated by an involuntary movement on behalf of the abseiler, e.g. clenching the hand. This is only necessary in free-fall situations, because if an accident occurs when abseiling against a cliff, the abseiler will almost certainly stumble and thereby lose his grip on the Shunt.

Several further points need to be made. Toomer and Welch recommend that the sling connecting the cam, chest harness and sit harness should be short. This is essential, otherwise the abseiler will hang from the chest harness rather than the sit harness if the Shunt locks on, and slowly strangle.

The Spelean Shunt is quite easy to release, even when full body weight is on it - its most advantageous feature! It is also better than all other abseil safety devices because of the strength of the Gibbs. On Jumars the rope channel breaks at 450 - 550 kg. (Scott, 1974; J. Toop and C. Parr, pers. comm.), on Petzels and Cloggers the rope may slip through or the rope channel bend open and the cam swing through at 360 - 630 kg. and 380 - 520 kg. respectively (Eavis, 1974; Thrun, 1971; Petzel leaflet; D. Gillieson, pers. comm.; the Clog Expedition may be stronger), wheras with Gibbs the cam breaks at 920 kg. (Bluewater leaflet).

Since the karabiner used in the Shunt does not grip the rope, its strength and the presence or obsence of a screw-gate are immaterial. The gate must always open forwards, but in fact it cannot be rigged any other way. I use a "Big D" steel Stubai - its heaviness and asymmetry mean that there is more weight behind the rope than with a symmetrical alloy karabiner. Thus the Shunt is slightly easier to hold open. However,

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THE SPELEAN SHUNT - A DISCUSSION Cont;

a steel karabiner is thicker than an alloy one and is more difficult to manoeuvre through the eye of the cam; only tape can be used for the connecting sling as 7 mm and even 5 mm rpoes are too thick to fit through the hole with the karabiner. This also means that it is better to feed one end of the tape through the eye (Fig. 2) rather than loop it through as illustrated by Montgomery (1977), as there is less thickness of tape involved. A further consideration is strength - Table 1 (see below) shows that the weakest tape is stronger than the strongest 7 mm kernmantel. Since the sling may have to support a considerable shock load in the event of a fall, I feel tape is safer.

So in terms of strength, ease of triggering, ease of releasing and simplicity of design, the Spelean Shunt seems to be the best abseil belay device available at the moment, provided it is used as indicated in the preceding paragraphs. Its worst drawback is its restriction to whaletails, rappell racks and abseil rigs of similar length.

TABLE 1

Brand	Material	Static tensile strength (kg)
Forrest	25 mm flat tape	1800
"	25 mm tubular tape	1800
Chouinard	25 mm flat tape	1360 - 1600
"	25 mm tubular tape	1800 - 2000
Troll	25 mm flat orange tape	1365
"	25 mm flat blue tape	2500
Mammut	26 mm tubular tape	1700
Edelrid	25 mm flat tape	1500
"	25 mm tubular tape	1800
Chouinard	5 mm kernmantel	550
"	7 mm kernmantel	890
Mammut	5 mm kernmantel	550
"	7 mm kernmantel	900
Edelrid	5 mm kernmantel	620
"	7 mm kernmantel	1335

Derived from the Forrest (1974), Chouinard (1976), Troll (1977), Mammut (1975) and Edelrid (1976) catalogues. The figures in the Chouinard catalogue are listed as "kiloponds" but are in fact in pounds; they have been divided by 2.2 to give the above strengths.

ACKNOWLEDGEMENTS

Thanks are due to Simon Jolly, Owen Dixon, Ron Farmer, Rob Elvish and Jackie Miles for help with the testing. Figures 2 and 3 are modified from Montgomery (1977).

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THE CARE AND FEEDING OF NYLON ROPE

by Kyle Isenhart

(Reprinted from NYLON HIGHWAY No.1, February 1978)

With the tremendous number of cavers doing vertical pitches these days, it is very important safety-wise to understand some things about the rope to which we all entrust our lives.

What is Nylon?

Nylon is a generic term for a family of polyamides and is defined as: "Any long chain polymeric amide which has recurring amide groups as an integral part of the main polymer chain." Commercial nylon polymers vary not only in molecular structure but also by molecular weight within each particular structure. Some of the common nylon types are 6/6, 6/10 and 12. Within each of these types are high and low molecular weight grades. While the physical properties of these different nylon polymers vary widely, their chemical properties are very similar.

The name applied to nylon polymers in Europe is "Perlon". It is from the misunderstanding of meaning of this term that people often refer to the dynamic ropes manufactured in Europe as perlon ropes. While they are made from perlon polymer, they are kernmantle construction. Different rope manufacturers use identical nylon filaments and produce ropes with different elasticity and strength. The selection of a proper type rope depends upon its intended use but for most caving activities ropes such as Blue Water are best.

Care and Grooming of Nylon Rope

After purchasing a new rope and before its first field use, it should be washed. This should be done for two reasons: to remove the oil and other lubricants that inadvertently remain on the rope filaments from manufacture, and more importantly, to "set" the rope. This pre-use treatment of the rope is very important as it can increase the usable life of the rope many times.

The first time a rope is washed it will shrink a considerable amount. This shrinkage is very important for several reasons: (1) It stabalizes the elasticity of the rope, (2) in laid ropes (e.g. Goldline) it tightens the strands, (3) on braid over braid ropes (e.g. Sampson West 707) it closes the openings in the inner braid and tightens the outer braid somewhat, and (4) on ropes of kernmantle construction (e.g. Blue Water, dynamic climbing ropes) it tightens the sheath over the inner core and closes the openings in the braided sheath enough to prevent almost all penetration by mud and dirt to the inner supporting filaments.

While the problem of abrasive particles penetrating the sheath and cutting the inner strands is not completely solved by pre-treatment and frequent laundering, it can be slowed sufficiently to make kernmantle ropes usable for the life of the outer sheath. Allowing nylon ropes to become extremely dirty and using them in that condition not only destroys the rope but causes severe damage to expenisve descending and ascending equipment. A dirty rope is NOT a status symbol. It generally denotes improper care. While all ropes eventually become dull-coloured and fuzzy from use, there is no excuse for a 5/8" diameter mud rod with a 7/16" nylon core. Due to the fact that internal damage cannot be inspected in braided ropes, it is extremely important to protect this type of rope from unnecessary exposure to dirt.

I have heard many types of rope cleaning procedures recommended and most had some merit. I have seen ropes pulled up rivers behind power boats, and I once met a young couple washing their most prized possession - a new 350' Blue Water in a creek with toothbrushes! It worked well but was a little slow. The most practical way to wash a nylon rope is in one of the big round front opening commercial washers at a laundromat. They have a large round sight glass in the door. Make sure it is glass instead of plastic as it is possible with a plastic window that during the spin cycle, the rope could be rubbing against the window enough to generate sufficient heat to fuse a portion of the outer surface. It is best to put the rope in the washer in a loose bundle instead of a tight coil because it cleans more efficiently. Another important point is to make sure all the rope is inside the drum of the washer and not hanging out around the edges. Lengths up to 600' can easily be washed in this manner. Upon removal from the washer the rope will be tangled but patience and a little help from your friends will usually prove superior to the snarls. Washers with central rotating agitators should be avoided as the rope tends to become very tightly entangled about the agitator.

The proper water temperature and cleaning agent for nylon rope always brings up great controversy especially among those who know very little about cleaning agents and nylon chemical structure. Nylon polymers can withstand 180°F immersion indefinitely with no degradation of the polymer. Immersion in liquids above 300°F for more than a few minutes should be avoided. Water boils considerably below this temperature so what all this means is that it is best to wash your rope in HOT water. At most commercial laundries hot water is about 140°F, which is sufficient to do an excellent cleaning job.

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THE CARE AND FEEDING OF NYLON ROPE Cont;

The next question is what kind of cleaning agent to use? Our research department (Marbon Chemical Division of Borg-Warner) decided not long ago that the company should enter the soap business so we did extensive investigations on commercially available cleaning agents. I am not pushing any products, just sharing some results of our research work.

Some purists recommend natural soaps like Ivory. Their fault is that the natural soaps lack the necessary additives to keep the removed dirt suspended in the water so it settles back on the surface of articles being washed. The result is that while they don't hurt anything, they don't clean very well either. All detergents when dissolved in water are alkaline, and clean by the action of either phosphates or carbonates. Nylon is not affected by such alkaline conditions. All soaps and detergents available at the grocery store for laundry use can be safely used on nylon. The best liquid cleaning agents for nylon are the detergents such as Wisk, and Liquid All - the best powder detergent seems to be Tide. The use of special pre-soaks such as Axion and Biz before washing is of little value. If you have a white nylon rope and want to bleach it, that is all right also. Do NOT use chlorine bleach, but try one of the others available at a grocery store for nylon. There has been some question raised about Borax. Borax will NOT harm nylon. You can even use a little Bo-Peep ammonia if it turns you on.

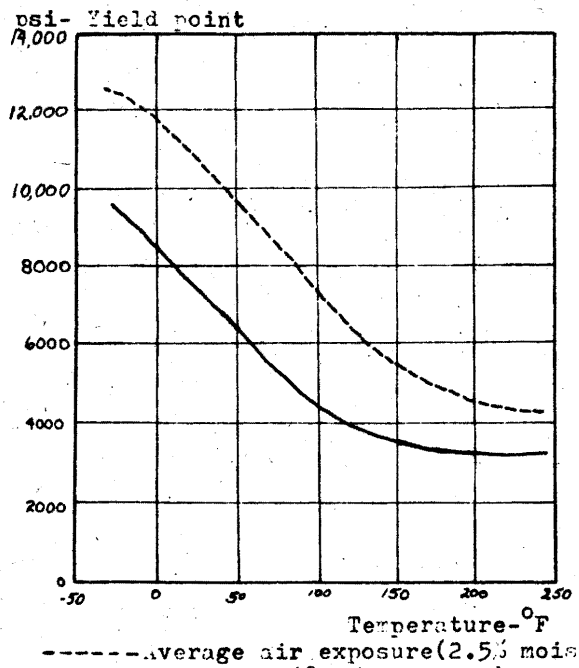
Since some ropes tend to become very stiff after extended use, everyone sooner or later ponders whether to use fabric softener on their rope. Softeners work by the action of Quaternary Ammonium Salts. These salts adhere to the surface coating. This coating is very slick and allows the fibres to slip past each other with very little friction. This lubricating effect increases the flexibility of the material which people interpret as being softer when in reality it is only more flexible. These ammonium salts have no harmful effect on nylon and the use of fabric softener on rope is quite advantageous.

The softener's coating on the outer surface of the rope causes it to feel waxy but it wears off very quickly. The first person to rappel on a rope treated with fabric softener will notice that it is quite slick but by the third rappel, it will not be noticeable. Besides making the rope more flexible, softeners have other advantages. That portion which penetrates to the core of kernmantle ropes lubricates the minute filaments and helps keep them from abrading on each other while the rope is flexing. The softener also forms a barrier between the rope's nylon fibres and dirt particles. All the good quality softeners (e.g. Downy) are effective on nylon. If you are afraid you will miss the final rinse cycle use a softener such as Johnston's Rain Barrel which can be added initially with the soap. After washing, the rope should be dried before storage. While drying the rope in a drier would be acceptable (if the drum doesn't get too hot), it is much better to hang the rope in the air to drip dry.

What Attacks Nylon Rope?

Nylon is an extremely inert polymer. It is resistant to most solvents, alkalies and even weak acids. Nylon is attacked by strong mineral acids such as sulphuric (battery acid) and other strong oxidising agents. It is also degraded by sunlight over an extended period. The type of nylon used in rope will slowly degrade at temperatures above 180°F and will degrade very fast at temperatures above 240°F if exposed to air. Do NOT store a nylon rope on the back window shelf of your car! While nylon melts only at high temperature, its tensile strength decreases rapidly as its temperature increases (see accompanying graph). Nylon is dissolved by liquid phenol and formic acid, neither of which I have ever seen in a cave. Formic acid is in most insect stings and ant bites. Phenol (carbolic acid) is present in most wood preservatives. The nylon used for rope is not attacked by gasoline, anti-freeze, beer, urine, bat guano, whiskey, brake fluid or oil. It is inert to all foods that are edible by humans. It is difficult to find a substance that will attack a nylon rope around your home or while out caving. Specific chemical resistance data on many substances is available from the author if you have any further questions.

Effect of moisture content and Temperature on the yield stress of nylon.



A most appealing feature of nylon ropes to cavers is the fact that they do not rot or deteriorate from exposure to water; however, this is a very misunderstood phenomena! There is an interaction between nylon and water and your nylon rope's physical properties are highly dependent upon the amount of water entrapped within the polymer structure. This may seem confusing, but the nylon filaments have small spaces between the molecular chains that form them. The amide structure has an affinity for water and small numbers of water molecules penetrate the nylon filaments to fill these open spaces. While many physical properties such as modulus of elasticity, abrasion resistance, melt softening temperature, and flexural fatigue are also

THE CARE AND FEEDING OF NYLON ROPE Cont;

affected by the percent of absorbed water, we will dwell mainly on its effect on tensile strength. Nylon has such a high affinity for water that after manufacture it is never dry. The types of nylon used to manufacture rope come to equilibrum in a 50% relative humidity atmosphere when they contain about 2.5% absorbed moisture. This water is absorbed directly from the air and there is no way to prevent it. Most manufacturers' specifications for nylon ropes are based on ropes in which the nylon polymer has 2.5% absorbed moisture. This is about what your rope has if you store it around the house. The problem is that as the moisture content of nylon polymers increase, its tensile strength decrease rapidly. I had not given this much thought until I heard some people advocating soaking ropes in water before doing long rappels to help prevent the rappel devices from overheating. I have discussed this with technical representatives from several major nylon manufacturing firms and they all felt it was a bad idea. The water saturation point of nylon filaments the size used for rope manufacture, is reached in a matter of minutes and the tensile strength of the polymer is drastically reduced (see chart opposite page). Because of this fact, the use of standing ropes in wet drops should be discouraged as well as the practice of saturating ropes before use. It could be that cavers have been very lucky thus far that a water-soaked rope hasn't broken. I hope our rope suppliers will test some saturated ropes in the near future and shed some more light on this subject.

Heat too, is a potential enemy of nylon ropes. People are very concerned about overheating rappel devices on long pitches. The problem is that nylon like most polymers does not have a sharply defined range of temperature at which it is usable. Nylon filaments used for rope manufacture can withstand 180°F air exposure indefinitely without degradation. At 240°F they degrade in a matter of minutes. The real question though is just how hot can a rappel device become while in contact with the rope. This depends on the pressure and time at the point of contact. A 180 pound caver applies almost 70 psi load on the rope in the areas contacted by the brake bars during rappel. At this loading, nylon can withstand just over 300°F before softening to break under the load. The thermal conductivity of nylon rope is so low that if the sheath were in contact with a 300°F brake bar long enough and enough pressure were applied to melt the surface, the rope 1/8" away would still be near ambient temperature. While this in no way solves the heat problem, it does show that if the rappel device overheats and fuses a section of the sheath while moving on Blue Water it still retains nearly 92% of its initial strength. This is considerably more than a water-soaked rope with the same internal temperature. Further field testing will be required before specific recommendations concerning safe rappel device temperatures can be made.

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Reprint from Georgia Underground

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FURTHER EXPLORATION IN KHAZAD-DUM

OR THE RAINS CAME . . .

by Leigh Gleeson

Khazad-Dum was bottomed some six and a half years ago as part of a well-planned exploration bid. The descent involved both Tasmanian clubs and was a gruelling exercise of underground team work and determination as the only shaft descent techniques used then were ladders and belay ropes. The trip was necessarily long and involved a large support team.

After the original descent the cave was left largely unvisited until more recent times, during which a spate of SRT trips have made the descent of this Australian classic a regular "tourist trip" for the real enthusiasts. In the last couple of years, two or three successful trips a year have bottomed the cave. For some time it was assumed that exploration possibilities for extending the cave downward were exhausted, however, this was a mistaken belief. Fortunately some local cavers remained optimistic that new leads might well be found in the enormous basal chamber and in particular in the narrow passages behind the terminal sump. This optimism led directly to a well-planned exploration trip by a team of Sydney cavers in 1976 (see ASF Newsletter, Spring 1976) which resulted in an extension of the depth of the cave by between six and fifteen metres. An additional two sumps were discovered on that trip and some potential leads were left unchecked.

One of the problems exploration teams were up against in seeking to extend the system was simply the sheer difficulty and time required in getting into and out of the cave. On a typical K-D trip one would only spend an hour or two at the bottom before starting

(Cont. on page 16)

FURTHER EXPLORATION IN KHAZAD-DUM Cont;

the ascent and even then the round trip would often take fourteen hours.

It was against this background that a few of us thought that a sloution to K-D exploration difficulties lay simply in establishing an underground bivouac in the basal chamber for a few days until a lead was found. The theory was that a small team could quietly slip down the JF 14 vertical entrance into K-D, stroll down to the sump with hands in pockets and casually check out the various leads between regular pots of tea and lemon pancakes. In other words, all energies could be devoted to exploration without having to trouble oneself with the problem of getting out of the cave in the same trip.

So it was then that Lindsay Wilson and I were escorted to the entrance of JF 14 in early May by a team of cavers from the society (SCS). We were to be underground for three days and our objective was clear-cut - a no-nonsense K-D extension.

Well, never in the history of the Society has such a thoroughly prepared trip had an outcome that was so far removed from the predicted sequence of events as did this jaunt. Unfortunately for us the JF 14 creek was running fairly high after a week of rain up in the Junee area. Furthermore, some of the recent snows were beginning to melt. This meant that four out of five of the shafts (70', 90', 180', 120' and 220' respectively) were carrying water (cold and nasty). Despite the fact that we were in waterproofs from head to foot, we were soon wet to the skin.

It took us over six hours to reach the bottom with what seemed to be a mountain of gear, spare fuel, lights, etc. Wet and (Censored), we happily escaped from the waterfalls to a dry campsite high up in the basal K-D chamber. We got to bed that night about 10.00pm., lullabied to sleep by the thunderous roar of the entire K-D stream bilging down the 100' waterfall into the final chamber, to our front, and the hissing sound of water raining down from near the 220' shaft to our rear.

We did not wake up until 8.00am. the next day, and during breakfast we were forced to face the reality that our eventual ascent was going to be a much more serious matter than we had imagined given the high water levels and the increasing weight of our gear. We thus planned to spend only about three or four hours in exploration and retire early in order to be up at 2.ooam. on the following day to start our ascent.

Our few hours of exploration on the bottom came to nothing. We hauled all our SRT gear and ropes down through the narrow crawls against the possibility of any new leads. Kicking and thrashing about in the mud and squalor got us nowhere. It all became rather frustrating. Wet and miserable, with carbides choked up with mud, we ceremoniously checked out a few leads, but were quietly wishing we were somewhere else. Frustrated, we re-treated back to our camp and prepared for bed, quietly wondering how it was possible that we could come down here for three days and achieve absolutely nothing.

Our ascent the next day was indeed a nightmare. It took us three and a half hours to get ourselves and our gear up the 220' shaft alone. The cold waters sapped our energy and left us with frozen hands. For hours we painfully hauled the water logged gear foot by foot up the shafts. There was physically too much work for the two of us, the loads were just too heavy especially as we were often standing under waterfalls or in their spray. By 2.00pm. that day we had to abandon all our gear at the bottom of the second pitch in order to meet our surface arrival deadline for search and rescue purposes. A return trip was thus necessary to recover the gear.

So there you go . . . the best laid plans of mice and men can go astray. In retrospect we achieved nothing - no extensions, and it wasn't even pleasant. In fact, it was bloody awful. Funny thing though, in some strange kind of way, these are the trips that remain in ones memory as the classics.

Now we are having a rethink on the best way to approach another K-D exploration trip. Maybe it would be more realistic to wait for the drier months of summer. Certainly the possibilities for extension still exist for those who can't gainfully use their leisure time somewhere other than in the bowels of the earth.

Reprinted from Southern Caver, July 1978.

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ACCIDENT REPORT FORMS

Gray Wilson advises that all club should now have their "accident report forms" and should feel free to inform the Safety Commission of any accidents that take place, via these forms and FREE OF CHARGE!

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