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E D I T O R I A L

So begineth another Volume of the SUSS Bulletin - Volume 17. And a mighty issue this one is to be sure.

In reply to Peter Campbell's article on the proposed new ASF Code of Ethics, Guy Cox has written a reply and airs some slightly different views. Guy's comments are both realistic and to-the-point and may induce those who missed reading Peter's article do dig it up and give some serious thought to the hole issue. (woops - whole issue).

On a more scientific front, this issue of the Bulletin contains a very good article on the geology & geomorphology of the Bungonia Caves area. While I admit that this is a 'heavy' article, it will nevertheless be of interest to most members of the Society as this is one of the areas most often frequented by the Society. A trip report of a Bungonia trip also written by Geoff Francis.

In his continuing series on Single Rope Technique, Peter Campbell looks this time at descending devices. I think that this series is a good one and one of it's aims is to educate & thus avert accidents. One point which comes out of recent Cave REscue Practices is that there is still a general ignorance of SRT - even by those people using SRT. We all must realise the limitations and proper uses of the equipment that is sold to us. Looking at recent SRT accidents, both in Australia & overseas, it seems that most accidents are caused by ignorance, carelessness, stupidity; or a combination of these. Remember, we don't want any SRT fatalities in Australia.

You can have a look atthe contents page and read this Bulletin yourself - I won't elabotate further on the articles contained herein. Good articles are always welcome & I will endevour to get them printed as soon as possible.

The Society has many projects going and it is good to see members and prospectives working hard to achieve their goals. Jenolan work has lagged a little (mainly the after-efects of the JENOLAN BOOK) but It has been mainly Peter Campbell who has kept things going on this front. Unfortunately I have not had the time to run many tripssto Jenolan recently, however in future months there will be quite a few, so come along. Remember, members are encouraged to carry out their own projectx at areas such as Jenolan, and not just to be a slave to some taskmaster such as myself & Peter.

Anyway, happy reading & see you at the next meeting and on a trip

Bruce Welch.

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MORE ON THE ASF CODE OF ETHICS

Guy Cox

When Adrian Davey's proposals were read out to the ASF Convention they aroused such derision that I didn't believe that anyone would take them seriously. It appears, however, that Peter Campbell at least (SUSS Bull 16 (8):111) does take them seriously, so I will add some personal comments of my own. The first question that must be faced is: what use is any ASF code of ethics if ASF maintains its present exclusive membership policy? At present only 'responsible' clubs can join ASF; their members must agree to abide by the Code while members of 'irresponsible' clubs are under no such obligation! We say to them, in effect, "You can't join our Federation, but please obey our rules". Perhaps it is time to come down from the clouds !

Some comments on specific points:

1. Camping in caves. Most cave camps are both unnecessary and counter-productive - if you load yourself down with camping gear you will almost certainly need to use it. But sometimes - very rarely - pushing or surveying a 'world class' cave will need a camp. Thus far I agree with Peter. But to suggest that a Niugini expedition which has just found a potential depth-record is going to radio back to Australia for permission from their club's Committee to camp is scarcely realistic. I suggest 'Members shall not camp overnight in a cave unless unavoidable; the Code's provisions concerning removal of litter and waste still apply".

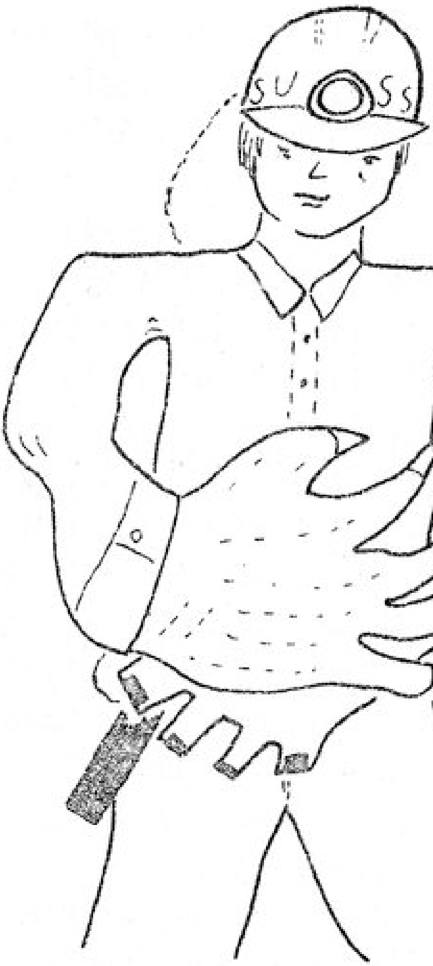
2. Smoking. Peter does not smoke; neither do I, and nor, I suspect, does Adrian Davey. However, it is utter hypocrisy to suggest that air pollution from cigarette smoke is going to harm the cave when magnesium flares are still permitted (and were used recently by an ASF club on a major filming project). Even carbide lamps are much worse polluters than cigarettes are likely to be (unless a caver chain-smokes for the whole length of a trip - in which case he is unlikely to be fit enough to get far anyway). Of course a container for ash and ends must be carried by any smoker - the present ASF code implies this in any case, and the few responsible cavers I know who do smoke always use such a container. If non-smokers in a party find the fumes objectionable I am sure they will be quick enough to complain !

4 & 5. Digs and explosives. These are really one and the same problem: how far should you go in removing obstacles to further

THE FEDERATION CAVER

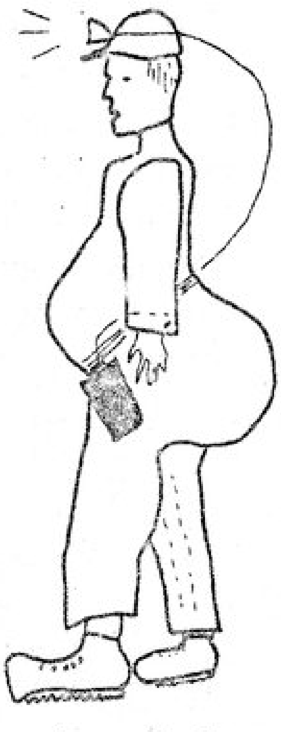
IN THE PAST, CAVERS HAVE OFTEN BEEN SELECTED FOR THEIR SLIM BUILD, GREAT STAMINA, STRONG ARMS . . . . .

THE LATEST ADDITIONS TO THE ASF CODE WILL ENCOURAGE THE DEVELOPMENT OF A NEW BREED OF CAVER . . . . .



THE DIGGER

THE ROCK SPLITTER



THE TOTALLY CONSTIPATED LONG-TRIP CAVER

exploration ? Explosives, used sensibly and on a small scale, do much less harm to the environment than conventional digs on a massive scale (and vice-versa). In Australia, big digs do not generally ssem to have achieved much, but this is certainly not the case overseas. The vast majority of known cave passage in Britain today has been discovered as a result of digs of a larger scale than would be permitted by these amendments, often involving the use of explosives. MANY OF THESE CAVES WOULD HAVE BEEN QUARRIED AWAY BY NOW IF THESE DIGS HAD NOT BEEN CARRIED OUT. I could fill the Bulletin with examples, but I will cite just two: Ogof Fynnon Ddu - longest and deepest cave in the UK. Opened by digging to find the cave behind a surface resurgence (Ffynnon Ddu - the Black Spring). Several sites were dug, on a large scale; one eventually broke through. Further large digs within the cave led to a sump. This was eventually passed by divers, who discovered the major part of the presently known cave; further digs made this accessible to non-divers, and thus made possible the surveying of 20-odd miles of passage. Needless to say both 'illegitimate tools' and explosives were used in these digs. The survey showed that a large part of the cave was within an area for which quarrying permission had already been granted (and which was being quarried on a major scale). Almost the whole cave lay within the quarry's proposed future expansion. Much agitation by speleologists saved the cave - we hope. Adrian Davey would have had us scratching at a quarry floor with our fingernails and wondering if there had once been a cave there ..... (it would have gone in 1970 ...) White Scar Cave, Yorkshire. Opened by a truly heroic dig in the 30s (described in Caving - Episodes of Underground Exploration, by E.A. Baker). Several tons of material were removed - implements included a makeshift railway ! A major stream cave, superbly decorated. Postwar the first part of the system was opened as a show cave. The cave was always close to the quarry of the same name, and in the 60s the quarry company bought the cave, closed it, and proposed to remove the rock around it (a cave is a space ...). Permission was refused, as a result of heavy pressure from speleos and conservationists, and the cave was sold again - now it is a show cave once more, and cavers are surveying and researching in the further parts.

It is almost impossible to conserve undiscovered caves. My suggested amendment would be "Digging should be restricted to the minimum needed to provide access. Methods - mechanical or chemical - should be chosen so as to cause least damage at the particular site."

A GEOLOGICAL AND GEOMORPHOLOGICAL RECONNAISSANCE OF THE BUNGONIA AND SHOALHAVEN GORGES

11-12 December, 1976 G. Francis

Present: Malcolm Handel, Randall King, Geoff Francis (S.U.S.S.), Julia James, Les Field (S.S.S.), with a cast of thousands from S.S.S. and the Turramurra Drinking Club.

Since work in the deep caves has been impeded by high CO_2 concentrations and it was lazy summer weather, we decided to do some canyoning. However the abseiling trip down Bungonia Creek provided a good oppurtunity to examine rock sections and stream profiles in a relatively inaccessible area where previously no field traverses appear to have been made. The investigation was also timely since Julia and Joe Jennings are currently preparing a short section on geomorphological problems for the supplement to the Bungonia book.

On Saturday morning a party of five headed south from Adams Lookout road for a few hundred metres and then dropped down into the valley of Bungonia Creek. Descending the valley side we passed over outcrops of iron-stained quartzo-feldspathic sandstone belonging to the Tangarang Volcanics. The sections of the Tangarang Volcanics exposed in the creek bed and canyon below consisted largely of greywacke and tuffs with interbedded mudstones. The greywacke has angular grains of feldspar with subordinate rock fragments and occasional quartz in a matrix of chloritic clay which makes up to 20-30% of the rock. Both vitreous and crystal tuffs are present, the former type being similar in appearance to bedded cherts.

The clastic and pyroclastic rocks are locally well bedded but individual beds are usually lenticular and can rarely be traced laterally for distances of more than 60m. At the second waterfall and in the reach below,Bungonia Creek is flowing alongthe axis of a syncline which plunges gently in a northerly direction. Further upstream and downstream the creek flows on the western limb of the syncline and the strata have moderate easterly dips. This syncline has not been previously reported in the literature though the great stratigraphic thickness (4270m) which Gould (1966) estimated for the Tangarang Volcanics implied that there could have been some some repetition of the beds through folding. The Tangarang Volcanics were thought to be of Lower Devonian age but palaeontological evidence was lacking. Since the strata are synclinally folded the Tangarong Volcanics are in part a lateral equivalent to the Siburian Bungonia Limestone Group. At the northern end of the spir which runs down to Bungonia Creek from Adams Lookout calcerous sandy siltstones of the Sawtooth Ridge Limestone dip westwards and pass laterally into greywacke.

In the gorge area the Tangarang Volcanics are intruded by a number of dykes. The top waterfall on Bungonia Creek has formed on a 10m thick dyke of quartz porphyrite which strikes E.N.E. and dips vertically. Up above the creek a small cave has formed by weathering along the contact between the dyke and country rock. The dyke rock is porphyritic with 2-4mm phenocrysts of plagioclase, quartz and hornblende in a fine grained dark grey groundmass. Further downstream a 1.5m thick dyke of porphyrite has been emplaced along a normal fault which bears E.N.E. The fault has a displacement of at least 30cm, but possibly much more than this. There are also thinner dykes of basalt which run north along the strike.

The second waterfall on Bungomia Creek has near vertical segments at the crest and base developed on beds of tuff and grewacke about 3m thick and a stepped but generally concave middle segment formed on beds of less than 1m thick. At the top of the third waterfall there is a gently sloping section developedon sandy mudstone with beds only a few cm's thick, with thw fall itself developed on a thick level of greywacke. At the base of this bed the creek flows N.E. along a bedding plane which dips about 25° E and plunges gently to the north then drops over the edge of the underlying bed of greywackeinto a deep pool. Just upstream from the junction, Jerrara Creek drops over a fall of about 90m developed along a fracture which tends east. Jennings and others (1972) suggested that irregularities in the long profile of Bungonia Creek were due to varying rates of uplift and attempted to explain horizontal passages in the deeper caves by slackening in the rates of gorge cutting after uplift. However, the evidence now available indicates that most of the irregularities in this part of the creek profile result for local variations in lithology.

At the northern end of the spur which comes down from Adams Lookout the stream swings to the east and flows across the strike to the limestone inner canyon. Some time was spent trying to locate the Reevesdale Fault which was originally postulated by Flinter (1950). Flinter considered that this fault ran N.N.E. along Breton's Creek but petered out before reaching the inner canyon. Counsell (1973) on the other hand believed that the fault curved N.E. past Frome Hill At the upstream end of the slot there is a prominent near vertical fracture in the position where Counsell has mapped the fault. However bedding is not visible in limestone at this point so the displacement of the strata cannot be proven. Attempts to find the fault further uphill near the zig zags on the Efflux track were also unsuccessful since outcrops here are obscured by talus. About 60m N.N.E. of B24 there is no evidence of faulting along the contact between the Folly Point Limestone and the Cardinal View Shale. If the fault is present in this locality it must lie within the Folly Point Limestone. To the south of B24 the limestone-shale contact is mantled by alluvial fill but appears to bear about 355° magnetic. The strike on the limestone to the west is 012° whereas the strike on the shale ranges from 017° to 023°. This provides some evidence for faulting.

On the following day, a party of 17 did a lilo trip down the Shoalhaven from Tolwong Mines to the Bungonia Creek confluence. The river passes alternately through straight reaches where the gorge walls are relatively symmetrical and bends with gentle slip off slopes and steep meander scars. On the eastern side of the river about 1.5km upstream from the confluence with Bungonia Creek is a prominent terrace, the top of which lies about 14m above the present banks. The river has cut into the side of the terrace, exposing a sequence of crudely bedded muddy conglomerate, iron cemented quartz-lithic sandstone and grey mudstone. The conglomerate is poorly sorted with subangular to rounded clasts ranging from boulder to pebble size. In places there is crudely developed grading in the sizes of clasts and the conglomerate is locally manganese cemented. The clasts include quartz veined sandstone, greywacke, siliceous mudstone, phyllite, quartz, porphyry and hornblende-biotite granodiorite. Most of the granodiorite is so heavily weathered that it can be crumbled by hand. The sandstone grains are angular to subangular quartz, phyllite and slate, cemented by limonite. It is not as strongly indurated as the iron cemented sediments on the plateau surface at Bungonia Caves. At one spot near the base of the section the mudstone has a yellow-brown and white mottled appearance caused by alternate leaching and deposition associated with the phases of wetting and drying. The terrace deposits extend up into the valley of an ephemeral tributary off the Shoalhaven for a distance of at least 80m.

There is a smaller area of iron cemented sediments at the confluence of Bungonia Creek and the Shoalhaven. Here a deposit of sandy pebble conglomerate a few metres thick extends along the Shoalhaven side of an outcrop of slate and phyllite which lies betw een the two streams. The clasts in the conglomerate are locally derived slate and phyllite, embedded in a quartz-lithic sand which includes some subrounded quartz grains transported by the Shoalhaven. In places the conglomerate is overlain by more recent talus.

Ferruginous cements were deposited in porous sediments during the Tertiary era when sesquioxides were mobilised under certain conditions of intense weathering and subsequently precipitated. In several parts of the Southern Tablelands, the ages of these sediments can be estimated by their stratigraphic relations with radiometrically dated basalts. The inferred ages for the iron cemented sediments range from upper Eocene to middle Miocene, and it seems likely that the sediments descibed above are of similar age. This implies that the Shoalhaven Gorge and the lower reaches of Bungonia Gorge were cut down to their present depth by the mid Tertiary. One of the most striking features of the Bungonia landscape is the lack of cave and underground drainage development in the lower part of the limestone mass. Jennongs and others (1972) have attributed this to a rapid and recent phase of rejuveh ation in which cave development was unable to keep pace with valley incision. In view of the evidence for the antiquity of the gorges presented above an alternative explanation for the lack of cave development at lower levels in the limestone seems to be neccessary.

Svenson(1950) suggested that marked changes of slope on the spurs to the north of Bungonia Creek were caused by varying rates of uplift and valley incision. We did not have time to investigate this area, but on Mt Ayre Spur to the south of Bungonia Creek the main breaks of slope coincide with facies changes in the Tallong Brds. The steep lower section of the spur which runs down to the Shoalhaven - Bungonia Creek confluence has formed on closely cleaved slates and phyllites whereas the more level section above has developed on quartz veined quartz sandstone with more widely spaced planes of weakness. This latter rock has been described as a quartzite by Flinter (1950) but in hand specimen it showed no evidence of solution and rewelding in the detrital grains, though it was very tightly cemented. Further upslope the steeper section just east of Mt Ayre has also formed largely on slates and phyllites with only occasional sandstone intervals.

Slope profiles have also been influended by lateral cutting of the Shoalhaven River at its present erosion level. On the other branch of Mt Ayre Spur just upstream from the 14m terrace there is a prominent meander scar with near vertical cliffs. The slopes to the north of Bungonia Creek confluence cited by Svenson also have steep lower facets developed on the outside of a river bend. To the east on the opposite side of the Shoalhave the slopes have concave profiles with gentle gradients down near the valley floor. Apart from the variations on the slope form on opposite sides of the valley there are substantial differences in slope profiles further upstream or downstream in the Shoalhaven Gorge. Thus on present evidence it seems more likely that changes of slope in the gorge result from lithological variations and differential lateral erosion by the river, rather than varying rates of uplift.

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SRT DESCENDING DEVICES I.

Peter Campbell.

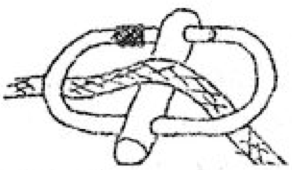
In this section I will present and discuss the various devices available. Perhaps the most serious deficit of our knowlege is the fact that the systems' (I.e. rope & descender) strengths are not known. We do not at what UTS the device or rope fails.

1. Classic Abseil: This technique was used by the alpinists first as a method of escaping bad weather. Today it is useful for short easy descents with extreme caution and with a belay on longer descents in an emergency. This is a potentially dangerous method because it is possible to come off the rope, but is the only one that I will discuss that is suitable for manilla ropes; so if you must abseil on your tow-ropes then this is the technique. It requires a slow descent, and plenty of protective clothing. It is important to use large diameter or doubled ropes, or 2" tape since it is otherwise painful, and potentially tragic (wink wink, nudge nudge, say no more Do not try to bottom belay a person using this technique- you will pull them off the rope. Drops over 5m & free hangs should be avoided.

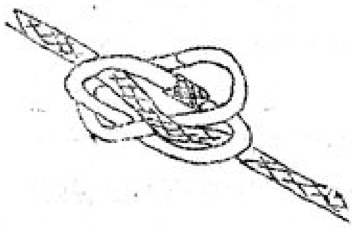
Classic Abseiling (after Unsworth)

2. Brake bar, Crossed Karabiners, Crossed Pitons

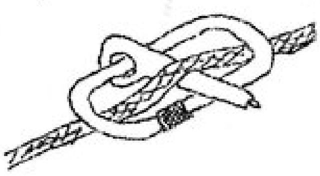
These are called mechanical abseiling devices, and must only be used on synthetic ropes. The advantage of these systems is that the abseiler is permanently attached to the rope, and that the speed can be controlled from below, and longer pitches with free-hanging sections can be tackled. My suggestion is that 50m is the upper limit to abseiling with these devices. If knots are crossed, longer pitches are possible, but if one abseils very fast, then shorter pitches may become dangerous due to the poor heat dissipating quality of these systems. Certainly if a single rope is used on longer pitches, very slow(but no stops) careful descents must be made and if the pitch is 70m or more then the risks of getting out of control or melting the rope are unacceptably high. Another disadvantage of this type of device is that one cannot control the omount of mechanical friction applied, and so depend entirely on the amount of friction of the controlling hand. Some degree of control can be used by incorporating another crossing device parrallel to the other (NOT OPPOSITE) if the rope you are using is a particularly fast one (e.g. new Bluewater, Interalp Static) Mountaineers have had fatal accidents due to the rope melting on long abseils using these methods, and the Americans have had some accidents unable to stop at the bottom.



BRAKE BAR



CROSSED KARABINERS

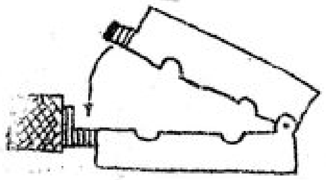


CROSSED PITONS

John Bosler notes (2) that Krabs wdre not designed to take the non-axial loads that are put on these systems, but no accidents have been attributed to this cause as yet.

It is important to remember that the gateless side or the long axis of the krab(i.e. the one without the gate) is the one that the rope runs over. The karabiner common to all systems(i.e. forms the span that the other krabs, brake bars, or pitons cross) must have a screw sleeve since it is possible to pull the other devices through the gate.

The karabiners for abseiling should be made of steel or chrome vanadium. Alloy wears rapidly in muddy conditions. If pitons are used, they must be of the "angle" type as illustrated. Care with pitons and brake bars is required since it is theoretically possible that if your weight is taken off the rope during the abseil, these could fall out leaving you unattached to the rope.



Dave Creed SUSS has developed a new descending device as illustrated. It has good heat sink properties, is made of "blued" mild steel is very strong. Its limitations are that will only fit the karabiner that it is designed for, and provides no more control than the devices that I have already mentioned.

3. Figure of Eight.

The Clog brand is by far the best, being the largest and made of aluminium alloy. They are not very good heat sinks although probably better than the devices that I have already mentioned. They are not variable friction devices.

They are light and cheap, but since they are not any better than crossed Krabs, I can see no real advantage in using them. It has been suggested that these devices are dangerous in that it is possible for the rope to form a slip knot around the top of the big circle and so have the rope running on itself. This could be dangerous due to the friction produced, but has to my knowlege never occurred.

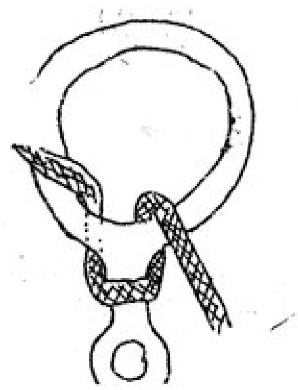
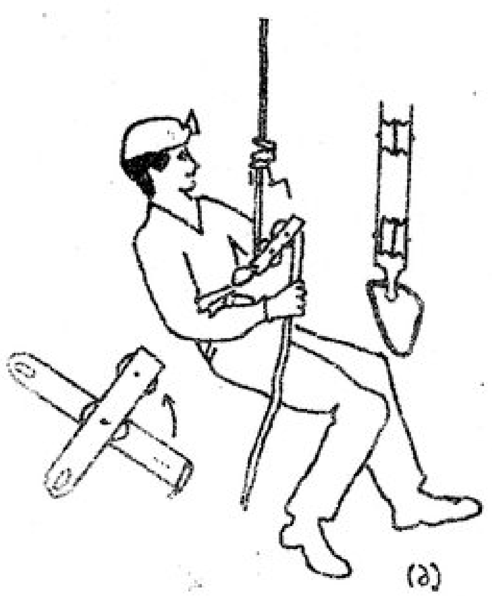


Figure of Eight.

4. A new device has stirred up considerable comment when it was presented at Cavconact by Cris Parr of C.Q.S.S. This has a variable stepless braking device built into it, but is still in the production stage. It will be interesting to see what it finally becomes.

5.Petzl Descenders: Pavey discusses these in his article on European Techniques (7) They seem to be very kind to the rope, havlarge radii of curvature, and big heat sink fixed (non-rotating) pulleys. The device splits open to allow one or two ropes to be threaded through. A karabiner holds it shut andattaches it to the seat sling.

There is no way of varying the mechanical friction, and so the device is limited in use to drops of 60m or less. (7) The pulleys areused in one position and when wear occurrs can presumably be rotated by loosening the bolt to increase the life of the devise. This system has never been used in Australia to my knowlege.



(8)

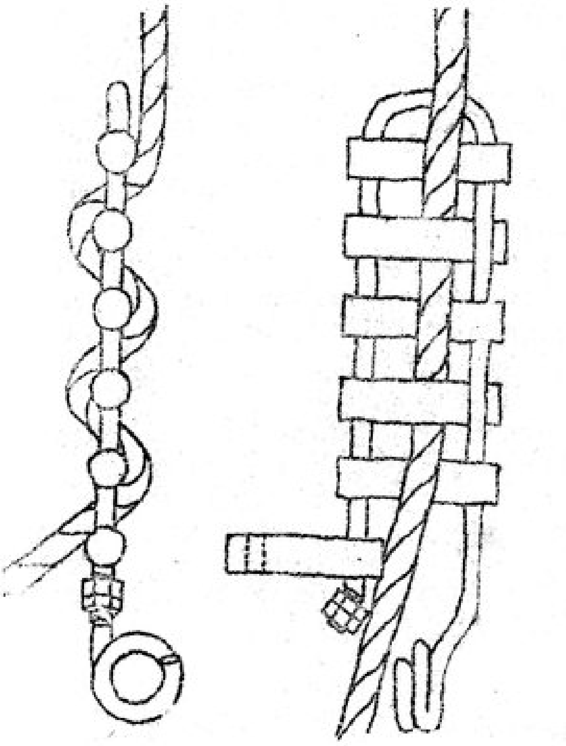
6. The Rappel Rack: (rappel is the American word for abseil)

In 1966, John Cole of Huntsville Grotto in the U.S. of A. developed the first of a new generation of abseiling devices that had the capability of varying the mechanical friction of the device. As John Cole said "Often a caver experiences control difficulty when rappeling distances in excess of 200 feet. Initially he must lift and "feed" the rope until its weight below him allows a free ride, then he must brake very hard before reaching the bottom.

This variable dilemma has prompted the development of the rapell rack. Unlike the usual rappel devices (brake bars, carabiners, ets.) which are limited by their own inflexibility, the rack affords incremental friction at the cavers option."

Although this device has not been used in Australia, I have devoted some space to it because it has many desirable features. Despite the fact that it is like a cross karabiner system, the rappel rack seems to be a good heat sink. This is because the brake bars are made extra large. This devise has been used to make some of the longest descents in the world.

Bluewater make 3 lengths of rack. the best length to get is 14-14½" long and can be used on descents up to 606'. The brake bars are bought seperately but must be for the rack that you buy. You need 6 brake bars, and they can be replaced when they wear out.



The Rappel Rack

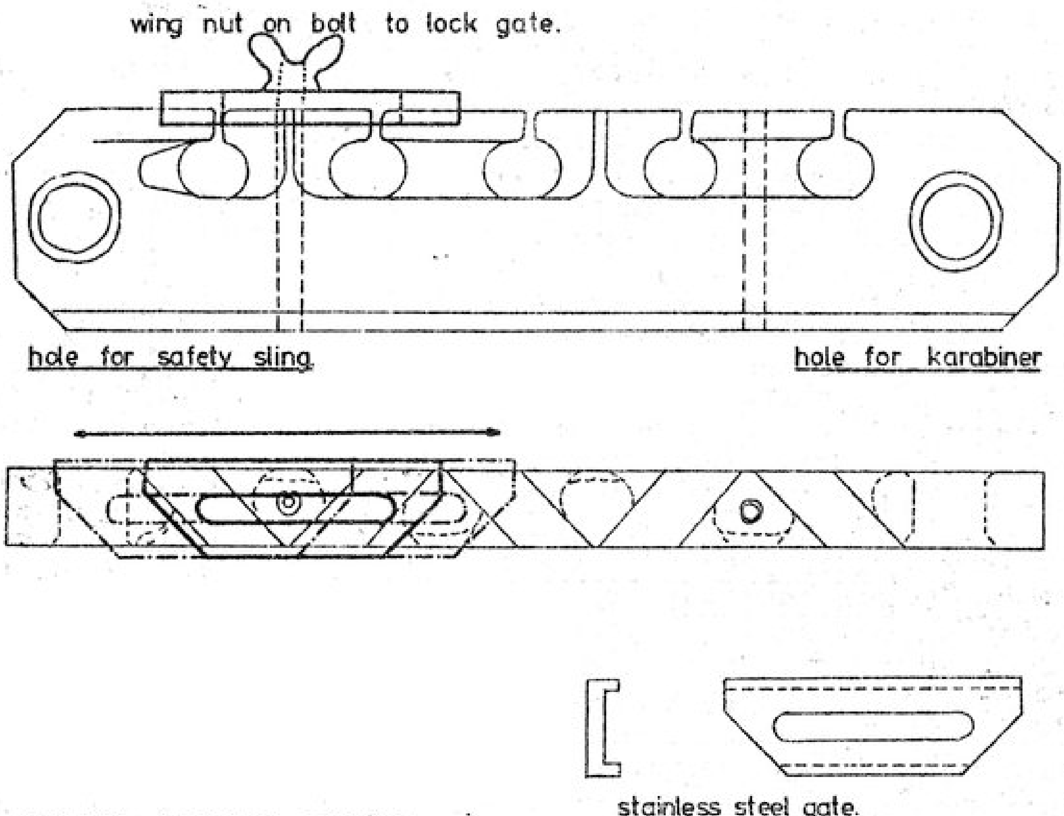
(based on a diagram by John Cole)

Note how, in the diagram, the rope does not run on the steel of the rack since this generates too much heat and wears out the steel frame. The long rack (longer than 14½") must be used when the weight of rope used in the pitch exceeds 55lb(9). The eye at the end of the rack must wrap back around itself. The best racks are made of stainless steel.

A warning (8) "not for a novice-- a certain amount of practice is required to master the technique of engaging and disengaging brakebars to attain the desired control" Needless to say, some people did not heed this warning (5). The top bar requir-s replacing the most since the wear decreses logarithmically from the first bar downwards.

7. The Waletail: This is the most popular device for serious S.R.T. in Australia at present. In 1967 Gerald Wood (N.S.S.) introduced this device in the N.S.S. News. He saw problems with the currently used devices: "The long, long rappels now in vogue have produced a number of new problems not encountered on shorter drops. Several rappel devices have been developed to eliminate the problems, but, unfortunately none have been completely satisfactory. To be completely satisfactory the device must have the following characteristics:

1. It must allow incremental increases in friction to compensate for the decreasing weight of the rope and



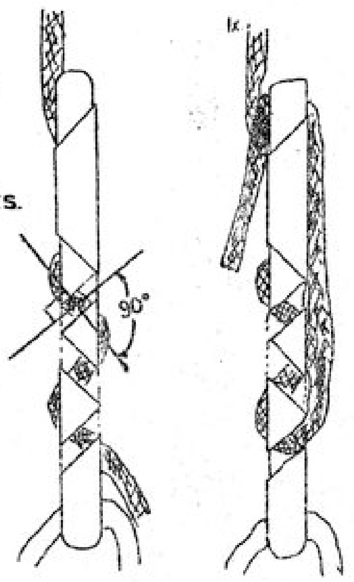
THE WHALETAIL after Gerald Wood [1967] and Neil & Geoff Montgomery [1972]

1:2

The diagram is based on one appearing in J.S.S.S. 16(7):185-190. [SSS plans 334-335.]

THREADING

note the correct method so that the rope runs perpendicular to the slots.



LOCKING THE ROPE

these changes must be easily made even if the caver has lost sufficient control to to stop.
2. It must not contribute to spin and kinking, as do spools and hooks etc.
3. It must in some way lessen the heat problem that has been experienced with devices using brakebars.
4. It must have a wide safety margin, be simple in design, and be of reasonable size and weight.
5. It must be made of inexpensive materials and easy to make with basic tools..........
.... in general, devices that depend on moving parts are more likely to malfunction, thus should be avoided...........
...... I submit for public criticism a device called the "Waletail" (don't blame me for the name. My "friends" insist on calling it that, much to my disgust). It appears to fu;fil all the requirements listed above..........The one piece, all aluminium construction means that the rather massive backbone acts as a heat sump, so the heat is transferred away from the areas in contact with with the rope more effectively. This does not eliminate the problem, but lessens it considerably.(my emphasis P.C.)..........
..... I do not know its ultimate strength, but it was tested to 1500lb (pull on rope over one bar) without damage. Test would have been completed, but the machine operator was afraid that the ½inch Goldline was going to break." (10)

In 1971 Neil and Geoff Montgomery produced their first whaletail based on the N.S.S. article previously quoted. They wrote an excellent article for the "Journal of the Sydney Speleological Society" which provides all the details necessary for the production of a whale tail with the exception of their more recent introduction of double-ended whaletails that enable extra life to be obtained by changing ends.(see figure 1.) Their most important innovation was the addition of a safety gate to the design. (see figure I.)

Gerald Wood claimed that the system was safe but as Montgomery states "Being safe, and feeling safe however, are two different and important things. The gate certainly gives great comfort while using the descender, and its simple operation and installation make it a must as far as we are concerned."(11)

Bosler (2) states that a gate must be able to withstand 250lb loads, this being the load of the average 250lb speleo which could possibly be applied to the gate if the device got jammed horizontally during operation. To my knowledge, no such test has been performed.

Recently Andrew Pavey has started producing some cast aluminium whaletails, and these appear to be working just as well, despite the prophets of doom. Just the same it should be borne in mind that S.R.T. is one area in life in which we do not "live and learn".

Whaletails have only one failing if it can be called that. To get the desirable characteristics of heat conduction, and acceptable weight it has been necessary to sacrifice the quality of resistance to abrasion. Whaletails actually wear out although no satisfactory criteria have been worked out. The important thing to remember is to change ends before the notch is completely worn away, and to remember that you have already changed ends once!

The waletail has been used in some of the deepest caves in the world and on some of the longest abseils ever performed. It has had an accident free record with the exception of one rather fast abseil when the rope was fed in the wrong way (i.e. parallel to the notches not perpendicular to them) and is highly recommended.

(1) Unsworth W. The Book of Rock Climbing 1968 (published Barker)
(2) Bosler J. Spar 39:3-8.
(3) Welch B. pers comm.
(4) Caffyn P. J.S.S.S. 18(4):83.
(5) Accident American Caving Accidents 1967- 1970 p37.
also p29 (accident on 510 ft Fantastic Pit)
(6) Urbek B. Speleolog 1974-1975 (XXII-XXIII) p 14.
(7) Pavey A. Spar 53 p11 April 1976 from Petzl Brochure.
(8) Cole J. N.S.S. News 24(6):154-155.
(9) Davison D. N.S.S. News 34(11):208.
(10) Wood G. N.S.S. News 25(12):215-216.
(11) Montgomery N. & G. J.S.S.S 16(7):185-190.
(12) James J. et al. Papua New Guinea Speleological Expedition NSRE 1973.

"It's very interesting, but it just doesn't seem important."

REFLECTIONS ON SAFETY

by Jacky ESTUBLIER

from SPELUNCA 1976 No.3, translated by Guy Cox.

Wherever you are, whatever you do, there is a risk of accident. In this context, the idea of safety has no meaning. I shall therefore define safety as an acceptable level of risk. A subjective enough definition: what is acceptable to some people may not be acceptable to others, and in any case the level of risk in a game of cards (unless you play with some very aggressive people) is lower than in caving.

I shall now define the level of risk as being: probability of an accident x seriousness of the accident (it is better to sprain your ankle ten times than to kill yourself once).

One can without too much difficulty establish a scale of seriousness of accidents (for example, from insurance tables), but it is necessary to specify what makes up the probability of an accident.

Let us consider three sources of accidents:

1. Negligence, carelessness, errors, fatigue (termed subjective risks)
2. Tackle failures
3. Flooding, collapses, foul air (termed objective risks).

The 'objective' risks are subject to the subjective appreciation of the caver ("I know that that might fall, but perhaps if I cross quickly....") - here it is experience that counts.

In spite of appearances, the other two types of accident are very similar. The essential difference is that one can, to some extent, protect oneself from human failure, but often one cannot protect oneself from equipment failures. If there is a risk of slipping, one uses a line, but if you are in the middle of a pitch and the belay fails, what do you do ? *

I hope you will forgive me if I try to formalise the above (Fig.1). Let us take an element (a krab, or a caver); we will subject it N times to the same test made progressively more severe (increasing load or a 'straddle' traverse which becomes progressively wider), and we will count the number of failures at each level of severity (number of krabs that break or number of cavers that fall).

From curve II:

- at point A the element is hardly stressed; the risk of failure is slight. (Of 1000 krabs tested, only 1 failed at 1000 kg);
- by the time we get to point B half the elements have failed, and it is here that failure is most probable;
- very few elements were able to pass point C, and those few failed immediately afterwards (it is beyond their possibility).

The element is 'sold' by its mean value - the krab as failing at 3000 kg, the caver as able to straddle 1.50 m. (A serious manufacturer should sell such krabs as 2000 kg, but unhappily this is not always the case). The usefulness of an element is limited by the threshold of safety; the value below which the risks of failure are minimal.

More precisely, this curve gives the frequency of accidents as a function of difficulty. According to the gravity of the possible accident resulting from a failure, the threshold will be increased or reduced.

- Crossing a ledge 10m wide and 50 m high: risk level = probability 0 x risk 1 (risk of death if you fall) = 0 - you cross

=========

* I'm told that there are some very effective books of prayers on the market.

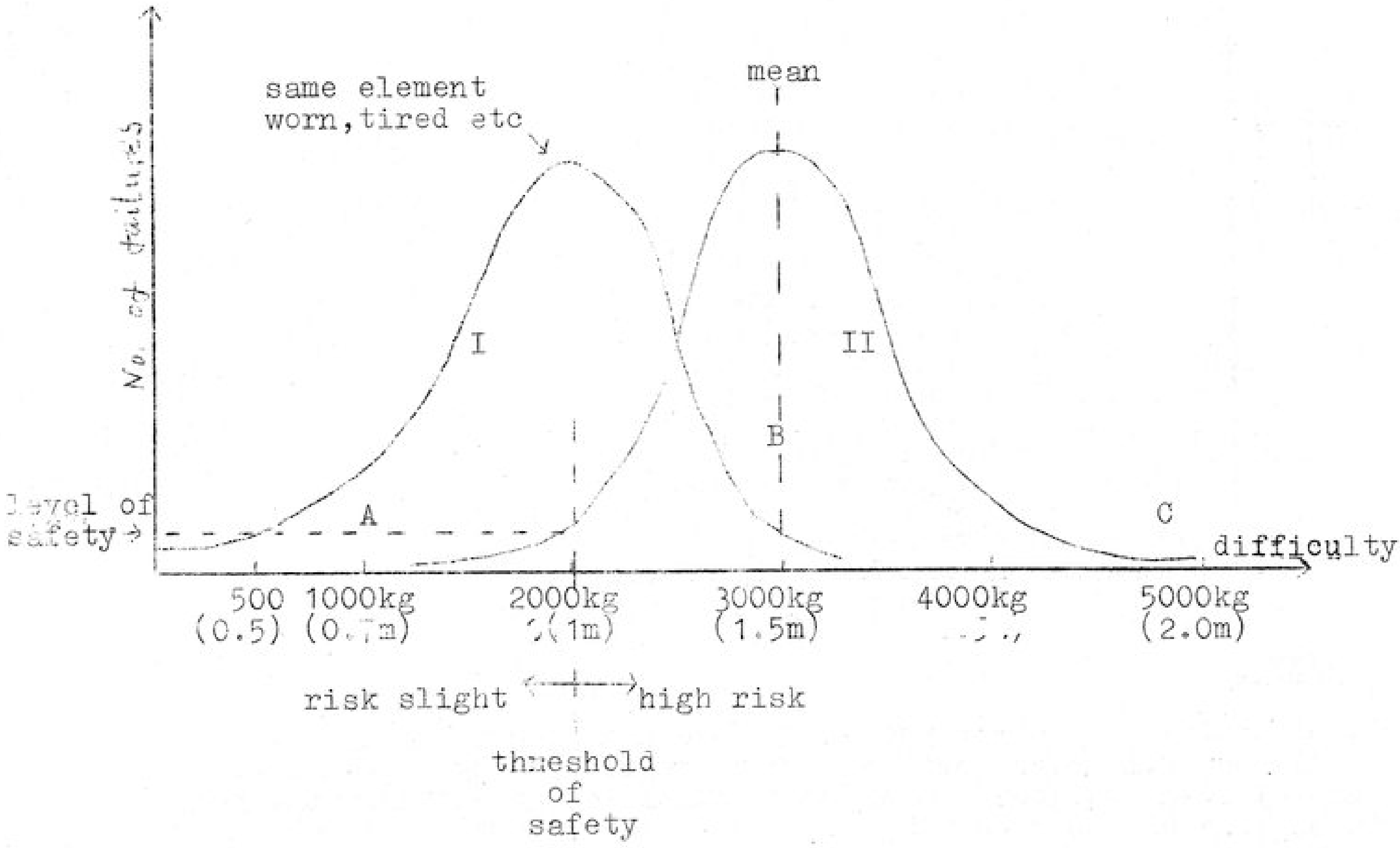


FIGURE 1

- Crossing a ledge 1m wide and 50m high: risk level = probability 0.01 (1 chance in 100 of falling) x 1 (risk of death) = 0.01 - too high; one must take precautions to reduce the risk.
- Crossing a ledge 20cm wide and 50cm high: risk level = probability 0.8 x risk 0.000001 (very little risk) = 0.0000008 - you cross, carefully (especially if there is cold water below).

There is a second factor to take into account: wear (or fatigue). This shifts the curve to the left; the safety threshold is lowered to 500 kg, or a straddle of 0.5m (curve I).

Moral: if you expect to return "shattered" , the easy straddle of 1m had better be rigged, since when you return it will no longer be easy for everyone. You should buy a "3000 kg" krab in order to be sure of always having 500 kg. If you do long pitches on 5mm rope (450 kg) you are not safe at all -- unless you use new rope each time.

REGULARITY & TRUSTWORTHINESS

Are all krabs equal? Are you on form every day? This is in fact the most important criterion: can I be sure of the element ? This bolt - can I be sure that it will take the claimed 2000kg ?

This factor deals with the regularity of construction and with the checks that are made (X-ray; dimensional checks, etc) on the technical methods used (rolled sheet - e.g. Petzl descender - absence of flaws; casting - e.g. Jumar. - risk of defects, scale, blowholes).

Let us consider three types of bolt of the same mean strength:
A. Bolts made by a mate of yours
B. Ordinary bolts
C. Bolts of good quality checked by X-raying.
Probable test results are shown in Fig. 2.

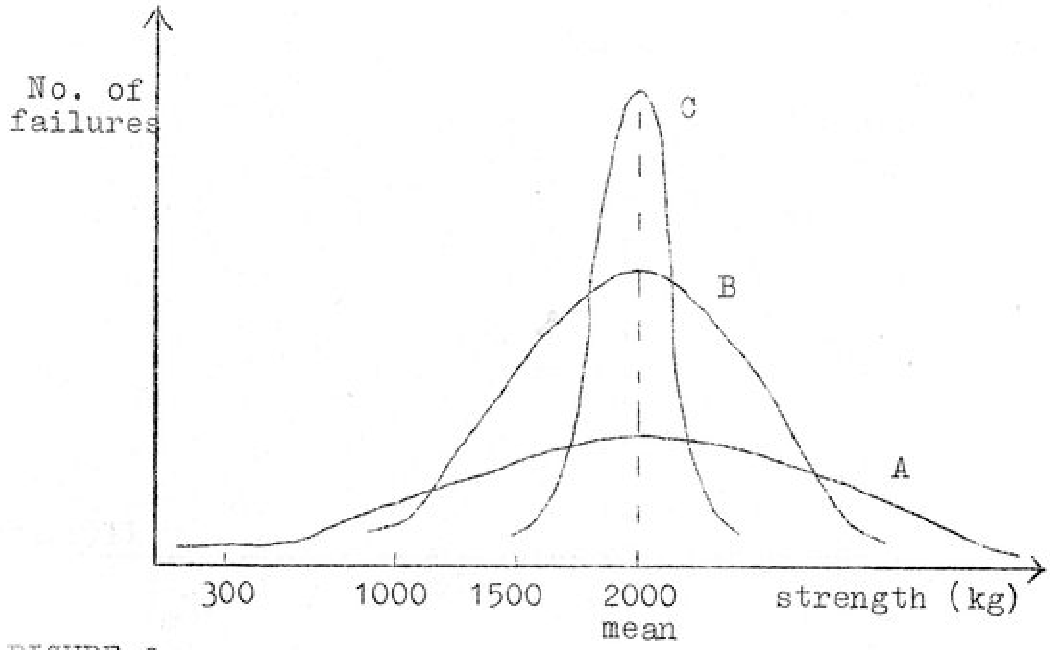


FIGURE 2

A. According to whether your mate made a stroke too many with the file or not the bolt might fail at 150 kg or at 3000 kg; in fact, one can have no idea how good one of these bolts is, even though the mean is as good as the others.
B. The curve is classical, but rather wide in spite of a good mean; quite a few bolts will fail under quite modest loads.
C. All the defective bolts have been withdrawn; you are "sure" that the bolts will stand at least 2000 kg.

Thus, even more than the mean, quality control is vital. Imagine someone said to you "this rope has a breaking strain (new) of 2200kg but there are defects in places, as you can see ...". Personally I should use it as a clothes-line ! The problem is identical with worn ropes . . .

I fear very much that the curve for a caver would be type A (you can easily crack your skull on a pavement and that is equivalent to a bolt breaking at 40kg). This implies that, in spite of appearances, when the gravity of the possible accident is important one should always protect oneself because it is impossible to be absolutely sure of yourself and others.

DOUBLE SECURITY

Are you sure, when you belay on a bolt that the taper is fully home ? That it isn't in a fractured block ? That the thread isn't stripped ? These are all factors which make the safety term never equal to 1.

If the probability of breakage is 0.001 (one in 1000, which is high !), if you place two bolts you will have a probability of 0.001x 0.001 = 0.000001 (one in a million), which is infinitely preferable. But the rule of using two bolts has no significance in itself; a good natural belay is better than two bolts in rotten rock (and a doubled natural belay is even better).

The security of a caving trip can be approximated by the integral of the curve of risks taken at each instant, in other words the sum of risks taken.

In fact, the safety is that of the weakest element (it is no use descending on double 11mm belayed on a tiny flake !) Experience has shown that with well-treated ropes there is "never" a breakage and that the element rope is a "sure" element; consequently, a single rope is sufficient. One should first concentrate on belays, on SRT technique, on exhaustion . . .

I do not believe that there is a golden rule valid everywhere and for everyone. I would like simply to draw your attention to some simple points:
- nothing is absolutely certain - least of all yourself
- use tackle which wears well (a stainless krab lasts well, a tubular tape which is a little 'grotted' will unravel like an old sweater)
- pay attention to the care which has been taken in the manufacture of the equipment which you use (rope for boats is not caving rope, even if its breaking strain is 3 tonnes; don't buy your bolts from the ironmonger; don't trust tackle cobbled up by your neighbour).

And in any case, you are certain to die of something . . . .

*　　*　　*　　*　　*

SOME NOTES ON ROPES

Guy Cox

A recent article by Peter Campbell (1) dealt with the selection of ropes for SRT work. These notes are intended to amplify the information given there on rope materials and construction.

Materials: Polyamide (Nylon, Perlon) - Melting point 220 - 265°C; softening point 175 - 250°C; strength reduced by half through oxidation if heated in air at 150°C for 20-60 hours (2).
Polyester (Terylene = polyethylene terephthalate) Softens 240°C, melts 256°C; serviceable 'for long periods' up to 150°C. (2)
Polypropylene (Ulstron etc.) Melting point 164°C; density 0.905 (the lightest plastic known) (3)
Polyethylene (Courlene)Melting point 115°C (!). Density 0.92 - both Courlene and polypropylene ropes float (can be useful!). (2,3)

Fibre types: Monofilament - each fibre runs the length of the rope. Staple-spun - short fibres are spun together to form the fibres of the rope. Staple-spun hawser-laid ropes have a better resistance to shock loads than monofilament ropes of the same construction. 'Matt-finish' kernmantel ropes (Marlow) have a staple-spun sheath over a monofilament core.

Construction: Hawser-laid. Bundles of fibres twisted together.
Kernmantel (Bluewater, Marlow,etc) Core of parallel, straight fibres; plaited sheath. Better for SRT since you don't spin !
Braided (Braidline, Super Braidline) Plaited core and plaited sheath - like two sheaths with no straight core. Braidline has polyprop. core and Terylene sheath; Super Braidline available in Nylon/nylon or Terylene/terylene.
(Some kernmantel ropes - e.g. Marlow - have 2 sheaths around the core)

Now you too can pose as a heavy technical caving expert!

1) P. Campbell,1977. SUSS Bull. 16 (7) 94.
2) W.J. Roff, 1956. Fibres, Plastics & Rubbers. Butterworths.
3) F.W. Billmeyer, 1962. Textbook of Polymer Science. Wiley/Interscience

BUNGONIA 31/12/76

Geoff Francis

Present: Graeme Smith (S.U.S.S.), Glenn Campbell (U.N.S.W. Zoology Department) and Geoff Francis (S.U.S.S.)

The original intention was to observe silverfish and cave crickets in the entrance passages to Phoenix Cave and examine the banks of sediment in the Grand Canyon Extension. Unfortunately we were stopped at "The Squeeze" by high concentrations of CO_2 and didn't get to the Extension. Nevertheless the bedrock morphology and sediments in the entrance passages proven interestiong enough.

From the entrance the passage slopes steeply southward and widens into a small chamber. Part of the roof consists of rockpile formed by the solution of the limestone along joints, but the resulting blocks appear to be almost in situ. On the sloping bedrock floor there are well developed solution runnels and splash pits, indicating that the waters entering the cave after rain have been aggressive. At the base of this chamber a small intermittent stream coming in beneath the rockpile has deposited a yellow-brown slightly humic muddy sand which contains vein quartz, slate and mudstone and ferricrete pebbles. Some of the quartz pebbles are well rounded and like the ferricate have been derived from the remnants of Tertiary sediments in the small entrance doline. There are also some interbedded yellow-brown muds and slightly pebbly sandy muds in low wall niches. The muds appear to have been derived from the yellow solodic soils formed by weathering of slates and shales in the Bungonia area

From the entrance a passage floored with sandy mud runs south to a small dome with a partial fill of crudely bedded slightly pebbly sandy mud. Crinoids are well exposed in the limestone roof of the passage and calcite pressure solution veins stand out from the rest of the rock. The recessed limestone surfaces between the veins and fossils are heavily weathered and consist of material enriched in clayey insoluble residues derived from the limestone.

Beyond the dome the passage swings west and then southwest into a lower roofed section containing deposits which show evidence of cyclic sedimentation. The sequence grades upwards from grey-brown sandy mud to mud then a thin horizon of charcoal and humus overlain by flowstone up to 2cm thick. In places this sequence is repeated to give two or three full cycles. The sediments may have been deposited under conditions of declining current velocity which allowed successively finer particles to settle out, with the much less dense charcoal and humus being deposited when the water flow ceased. Alternatively the sediments may have been laid down when sediment washed down from the surface and higher parts of the cave entered a passage filled with stagnant water. The flowstone layers represent drier periods when the passage contained little or no water and calcite was precipitated on the cave floor. In places there are pieces of charcoal on the passage roof, indicating that it has been filled with water in relatively recent times.

The limestone roof and walls in this section contain tabulate corals, some of which appear to be in growth positions while others have been transported. Bedding in the limestone is fairly well-defined by mudstone laminae and there is a dip of 20° in an easterly direction. This is in an area where workers such as Flinter(1950) thought that the limestone had steep westerly dips. Counsell(1973) believed that in the Bungonia Gorge area thrusting along the Reevesdale Fault had given rise to gentle and moderate easterly dips in the Lookdown Limestone and Cardinal View Shale. However, he did not think that this fault extended as far south as thePhoenix Cave area.. The observations in Phoenix Cave suggest that the geological structure at Bungonia may be more complex than previously thought, and that further investigations are neccessary. Because much of the limestone is mantled by Tertiary sediment or soil washed down from adjacent areas of slate and shale, the caves often provide better opportunities for the study of geological structures. Since these structures exert considerable influence on cave development, studies of geological structure and cave morphology should be pursued concurrently.

From the sediment banks onwards the passage swings east into a dip tube, a few metres along which a floor canyon has developed along a vertical dip joint. This canyon starts out as a solution runnel and rapidly deepens, intersecting with a similarly emlarged strike joint which bears 350° magnetic. On the other side the cave passes into a north easterly trending bedding plane flattener, which contains low banks of laminated yellow-brown and white clays showing well developed slump bedding. Ther are also fairly recent deposits of charcoal lodged in a roof fissure.

At the end of the flattener a solution runnel in the floor deepens into a canyon abruptly and the passage turns north along a strike joint . Herethe cave has a "keyhole" type cross section with the canyon formed at the base of an older solution tube which slopes downwards at about 15° . Corals project from thewalls of the tube and the upper part of the canyon; in places the canyon has been partially blocked by limestone boulders.

After about 20m the passage swings slightly west of north and ther is an abrupt right angle bend and the cave goes down more steeply to the south west. On the southern wall there is a small alcove containing brown and grey-brown laminated muds with inclined bedding. From here the cave passes into "The Squeeze" , a tight horizontal passage with mudfloor that heads off to the west.

An interesting feature of the cave is the contrast in bedrock solution forms in the active vadose runnels and the higher parts of the passages. These runnels and most parts of the larger canyons have generally smooth surfaces which often truncate fossil structures. This is typical of solution and corrosion by rapidly flowing sediment charged waters. On the other hand, the upper parts of the passages often have irregular surfaces with fossils and calcite veins etched out from the rest of the limestone. Since some of the corallites are fairly delicate and would not resist corrosion, this indicates that these surfaces were formed through solution by slowly moving waters.

Many limestone caves were initially formed by slowly moving water in the phreatic zone but subsequently modified when ground-water levels were lowered, permitting vadose stream action. However, the evidens suggests that Phoenix Cave has not evolved in this way. Firstly the sandy muds in the small dome just in from the entrance chamber contain quartz pebbles up to 4cm diameter. These must have been transported by flowing water and lie above the general level of the passage roof. If the delicately etched corals in this area pre-date the fill in the dome it is surprising that they have not been greatly modified by the higher energy flows which deposited the fill. Secondly, the charcoal fragments lodged in parts of the cave roof indicate that the cave has been completely filled with water in recent times. If these were rapid flows driven by a considerable hydrostatic head then once again the earlier forms produced by sluggish waters should have been modified.

The most reasonable interpretation is that the low energy solutional forms on the walls and roof are no older than the smoother surfaces in the runnels and canyons. Under low stage flows Phoenix Cave usually functions as a vadose system, but blockage by sediments canback up the water, creating sluggish phreatic-type conditions for limited periods of time. The usual site for the blockage is "The Squeeze", which has been found almost filled with sediment on several occasions(Smith,pers.comm.). One factor that favours deposition here is the abrupt change in floor gradient from the sloping keyhole passage to the long horizontal squeeze. Deposition would also be favoured by declining flow after a flood pulse or backflooding in Phoenix caused by greater inputs of water to the other parts of the underground drainage system.

In the remaining time available we took a quick look at the entrance passages to Grill Cave and B50. The entrance chamber to Grill has a large roof cavity developed along an easterly trending fracture which dips steeply to the north. However, most of the roof is sub - horizontal, developed along a slightly curvilinear joint. Near the upper entrance ther is a very interesting sediment sequence. At the base are large limestone collapse blocks, overlain in turn by muddy sandy cobble gravel, sandy mud and finally, laminated clays. The gravel is crudely bedded and shows minor grading of clasts, which include both limestone and material derived from the Tertiary sediments outside the cave. The near horizontal beds laid down on a sloping cave floor, and the well-developed lamination in the clays indicates that the material aqueously deposited. However, this site would not be subject to flooding in the present conformation of the cave.

The entrance to B50 has formed along a vertical fracture which bears 015° . There has been pressure solution along this fracture, forming a layer of grey muddy insoluble residues from the limestone. The limestone here is a dark grey rock coloured by hydrocarbons and sulphides, and has suffered considerable pressure solution. This has left angular to subangular remnants of undissolved limestone surrounded by lighter coloured muddy insoluble residues. The resulting rock simulates a limestone breccia.

At the base of the fissure is a sizeable chamber with a subhorizontal but rather irregular roof containing ceiling half tubes. Near the northern end of this chamber is a 3m thick deposit of poorly sorted muddy sandy conglomerate. The clasts range from pebble to large cobble size and make up about 50% of the rock. They consist largely of angular to subangular ferricrete, limestone and slate. There are some interbedded sandy mudstones and laminated mudstones. The sequence rests on bedrock and is overlain by limestone breakdown. Since the muddy matrix of the sediments has been indurated by compaction, the chamber may once have been filled to a greater depth with these sediments.

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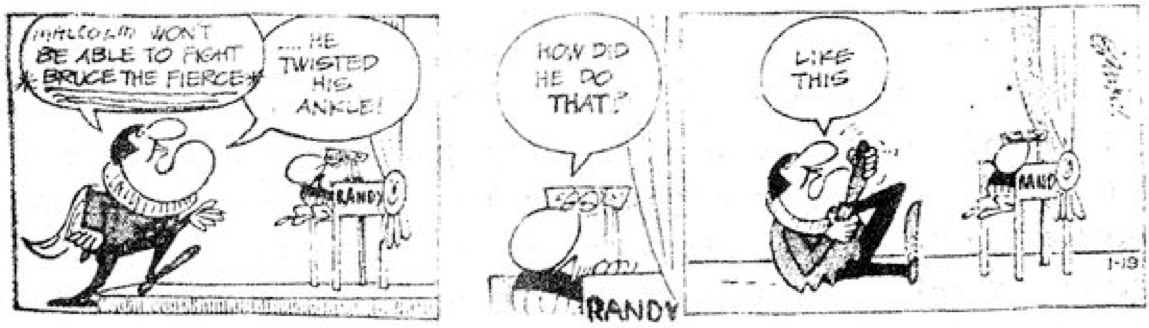
Flinter,B.H.(1950): The Geology of the Bungonia Gorge Area, New South Wales; the Country South of Bungonia Creek unpubl B.Sc thesis, Sydney University.

THE GIZZARD OF IDIOT



BOOMALAKKA WEE PASSAGE SURVEYED - Jenolan NSW 15JAN77

Geoff Innes

Present: G. Innes, J. Masala.

There comes a time in every cavers carreer when he feels the necessity to undertake a chalenge of such magnitude that he often considers the state of his own sanity.

So after seeing the appauling survey (?) of Boomalakka Wee Passage in Wiburds Lake Cave (J58), I thought that I would return to this passage to survey it properly and to set things straight. Since no other SUSS member would come with me on this mammoth tusk (task); they had heard of its reputation; so I finally recruited John Masala (NUCC) to help me do battle with this, one of the finest sperting passages at Jenolan.

So on this Saturday morning we headed off with trusty Suunto, tape, string, cyalume, and with electrical light firmly clenched between one's teeth; we dissapeared underground. Owing to the tight, constrictive nature of the passage, revolutionary new methods of surveying were developed. John squeezed ahead holding one end of 15' of string. To the other end of this was tied the fibreglass tape and a cyalume. When his feet dissappeared out of sight he stopped and pulled in his end of the string until I could get a good sight onto the cyalume. At this stage I could take a bearing and a distance easily and record the data. After this I would squeeze up to the cyalume which acted as the survey station, and once again the process was repeated with john moving on ahead.

This method proved to be quick and efficient, and very simple to use; eliminating the necessity of the man in front to squeeze backwards through the passage. The passage starts out as a joint controlled rift and then forms into a phreatic tube. One finally squeezes up through a dry streamway to emerge in a long narrow mud-filled series of chambers which end in rockpile.

Since water has been encountered in the passage during previous exploratory trips, it would appear that the streamway would take water towards the main passage on Wiburds during wet periods.

After this accomplishment, I will have to find an equally challanging survey to do; perhaps the neverpass into Brittle Bazaar????

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ANCIENT JENOLAN TRIP REPORT (from our fossil caver) - never before published (much to the annoyance of the Editor).

JENOLAN - Semi Flood Report 24-26JAN1976

Peter Winglee

Present: P. Winglee, P. Campbell, V. Morand.

After a few days solid rain the Jenolan River was in full flow, with torrents coming through the Devils Coachhouse. Plenty of photos were taken and the depth of water at the first creek crossing was about 0.75m on midday Saturday after the flood peak.

We waded the creek to detail the Foz Hole map and to complete the J43 survey. After that Peter C. piked out and returned to Sydney rather than spend a wet night at Jenolan, and left Peter W. and Vince to camp in No.2 carpark. Sunday was fine and the cave entrances on the lower part of Serpentine Bluff were tied in, including Little Canyon, Diggins Diggins, Serpentine & McKeowns Hole.

Sunday night was the Smoke Concert which Bruce came up from the ASF Committee Meeting for. On Monday Malcolm and Prue arrived to do more work on Serpentine and to start their week trip.

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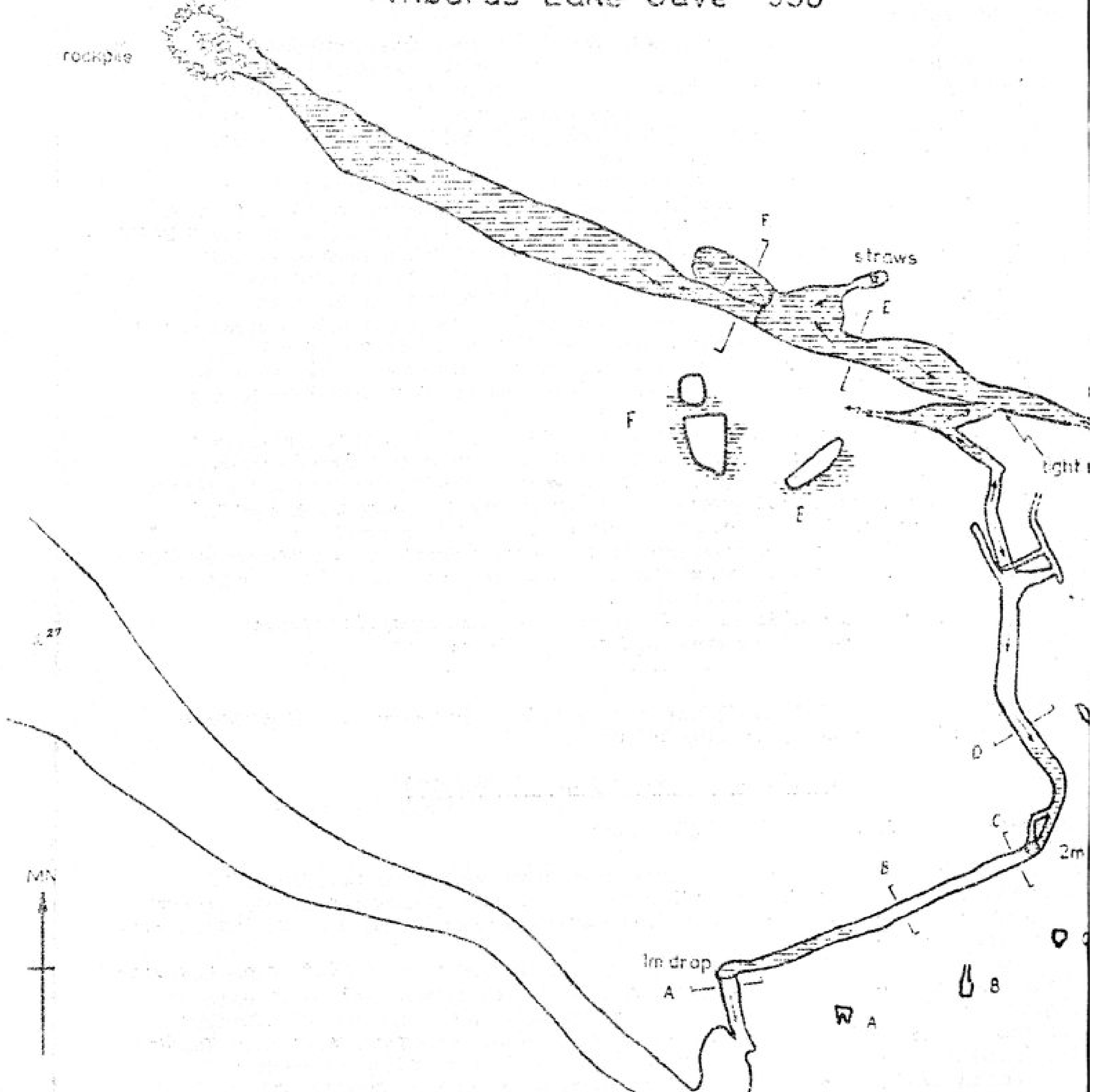
BOOMALAKKA WEE PASSAGE

Wiburds Lake Cave J58



Survey by Ginnes, JMasaia 15-1-77

instruments: suunto compass & tape

Drawn: Ginnes

ASF 43

1:200

2J58.

TRIP REPORT JENOLAN 10-12/4/77 — Peter Campbell

"I was for the first time in my life literally 'scared out' of a cave
Ross Franklin describing his experience in J234/235 Warbo Cave.

<u>Sunday 10th:</u> Ross Franklin and Dave Purvey led Exploration/Surveying trips to Wiburds Bluff and Henrys Hole (J134) respectively, which are covered in the sub Trip Reports. The Results were a promising but suicidal hole at the bottom of J134, & 16m of extension to J202 with a possible dig.

In Mammoth Cave J13, David Walker and David Fleming, two prospectives who are also very capable climbers were conned into traversing across from the top of the Entrance Pitch to the promising hole at the other end of the stream canyon in the roof. This ends unfortunately in a not very promising dig in gravel, but someone may be keen to try it.

The climb itself was quite an achievement, although the climbers considered it more of a grovel than a climb. It would not have warrented a grade on the surface. The ledge on the right hand side was traversed using a running belay of various crack-jambing devices & an etrier on the bolt left there (about ½ way) by Malcolm Handel on his previous attempt.

I led a quick tourist trip whilst the climb was being done, down to Lower River via Mammoth Squeeze, and back via Oolite Cavern and the Forty Foot. Lower River was about 1 foot lower than normal. Ian Lewis appears to have left some diving goggles on the bank nearby, and these were pushed into a cleft in the rock on the left hand wall shortly before the river and about 1.5m up, so that they will not disappear in the next flood.

A tourist trip was led into J154 Spider Cave on the Sunday night and some photography, and examination of the breeze in the first dig indulged in. There was some argument as to which way the breeze was blowing. An interesting cave spider was noted on a ledge in the main chamber-it had long black legs and seemed in very fit condition

<u>Monday 11th:</u> Peter Winglee led a relatively unevevtful trip into J17 (Glass Cave) and refound a minor extension which was suggested to exist by a letter from E.G. Osborne, who caved at Jenolan in 1937. Some signs of flooding may explain why he found a river in this section.

The other groups went to Mammoth Cave (under Ross Franklin) and to the Southern Limestone (led by Malcolm Handel) Upper Oolite was visited and the mud slip was noted to be no further down the flowstone than 1975. Some fallen isolated mud lumps were noted. Ross Franklin noted that the area had seen some deterioration since he first visited it some years ago.

In the Southern Limestone, crowbar & sledge hammer were used to lever up large boulders from a promising hole which opened up into a 50 foot deep cave, J170 which has been called Gibber Cave. This was tagged and tied into the creek traverse. Malcolm explored it to a grotty dig below a well-decorated chamber. A description and grade 1 map will appear in the Southern Limestone issue of the SUSS Bull.

Whilst the digging was going on, I tagged J168/169 and tied it into 14s- location description in the S.L. issue.

<u>Tuesday 12th:</u> Dave Purvey led a tourist trip to Hennings Cave. Some old damage to straws was noted in an upper alcove off the Maze section of the cave. It was interesting to note that this group found J79 by accident- emphasising the need for gating this vulnerable cave, particularly in the light of suspicion of illegal cavers coming down

Kicora Hill, deduced from litter found and brought out of J9. (Wiburds Lake Cave) by Ross Franklin on Sunday (of course ASF members on legal trips would never litter any cave.)

SUB TRIP REPORT HENRYS HOLE J134 DAVE TURVEY.

Early Sunday morning "11 O'clock" we climbed the hill to the entrance of J134. The purpose of the trip was to dig in the terminal rift at the bottom.

A quick painful trip led us to the dig. The dig is a rift blocked by rockpile containing small "fist-sized" rocks filling holes between large collapse boulders.

Digging proceeded quickly with the rocks being placed back up the rift. A sloping passage approx. 2' high by 2' wide was sighted, eureka! Digging abruptly ceased when a chockstone weighing approx. 2 tons slipped down almost crushing my legs, luckily no injury except bruising was sustained.

The rockpile is very unstable and although the cave has a good chance of extension it would be very dangerous to pursue moving rocks in this cave.

SUB TRIP REPORT: ROSS FRANKLIN.

Sunday's mission was twofold; to proceed to Wiburds Bluff area and remove (if possible) a large rock blocking the way on into J202 and survey the cave discovered. the second project was to have a look at the two shafts in Warbo cave J234, then explore and survey if possible.

After a pleasant 25min walk up the valley J202 was located without much difficulty. The known extent of the cave to this time was only 2 meters as a large rock firmly barred the way on. Although the rock would pivot in the channel it was in, it proved to be more difficult than a Chinese Puzzle to shift. Finally after throwing Bill (Worrell) at the boulder head first with a G-Pick and holding his legs so he didn't have a "head on", we were able to manouvre the now much smaller rock out of the channel with the use of a tape firmly tied around it; success!!

Then the race was on. All five of us were in like a shot and following every possible lead off the small cavern behind the rock. After 5 minutes we had to agree that things weren't lokking promising in our quest for the "hairy Dipprotodon" we thought we must find.

We then set about pulling up the very floor beneath our feet(rockpile) but to no avail. That Diprotodon had eluded me once again.

A Grade 4 survey was then completed of the new cave and after 3½ hours underground we emerged for lunch, quite content with our find which we decided to name Tor Hole.

After lunch we climbed Wiburds Bluff to The Big Rift, a very impressive area of limestone pinnacles, boulders of all shapes and sizes and deep holes. Warbo Cave J234 is entered wherer the rift proceeds underground.

Right from the outset we were not too impressed by the unstable nature of the cave but pushed on nevertheless. As we went deeper within the cave it was apparent that no-one had any confidence in the abiliy of the hole to remain together while we were within it. consequently after descending the first of the previously unclimbed shafts to its terminus at approx -50' and descending the second to -70' I was for the first time in my life literally "scared Out" of the cave-no one argued. So much for the survey.

Both Shafts led blindly through broken rockpile and the second showed no signs of petering out. As the Northern Limestone Book Says: "The person who finds the connection through Warbo Cave to Wiburds Lake

Cave will have it posthumously named after him!

Before returning to Mammoth Flat, a jaunt was taken through J58 (Wiburds Lake Cave) and the delights of the famous mud-slide savoured as a distraction to a hard day's "yakka".

Monday saw our team up bright and early (6.15 a.m.) and joined by Rob and Greg. By 8.30 a.m. we were all down the Entrance Pitch into Mammoth (J13). An uneventful trip was made to Oolite Cavern via Mammoth squeeze.

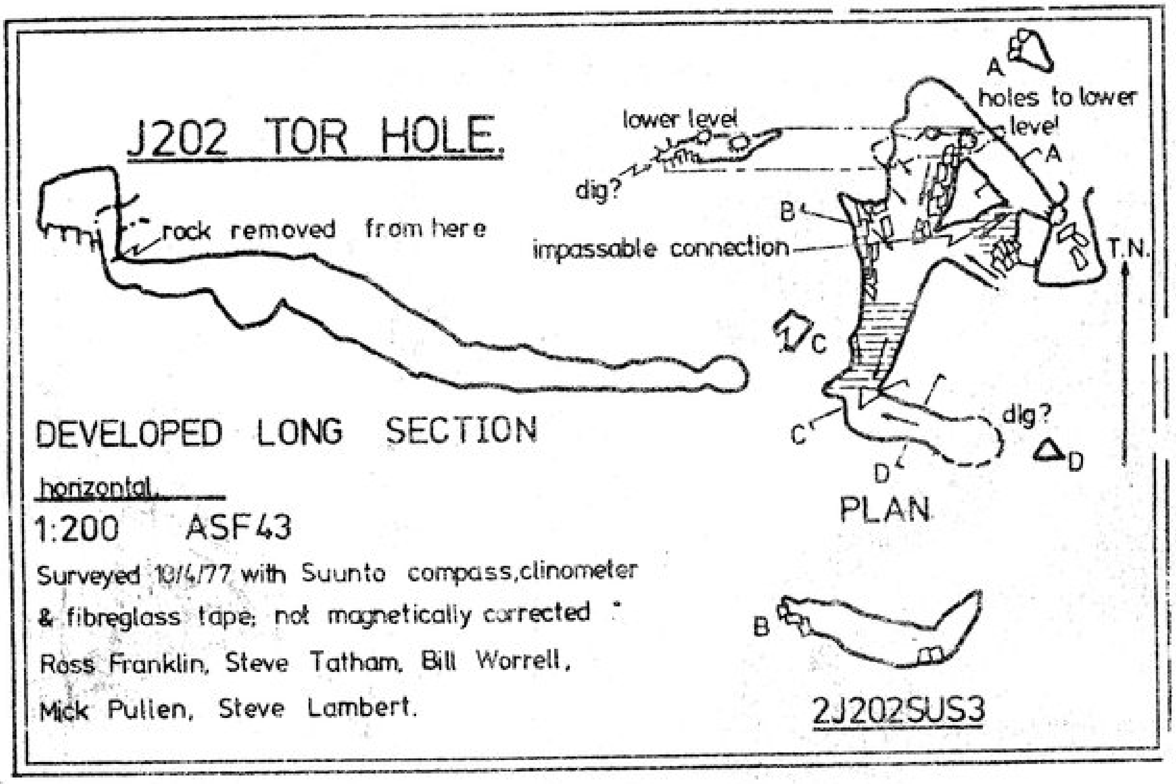
Everyone except Greg made it up the chimney to Upper Oolite. I searched my soul and decided not to proceed past the detrogging point, as I'd been to the Piza Chamber before. (a noble and conservative attitude P.C.) The others took all the necessary precautions and were suitably impressed.

The chimney might have taken 10 min to climb but it only took 1 to descend. The acoustics of Oolite Cavern were brilliant, so 15 min were spent with renditions of appropriate ditties before we left for Slug Lake.

Lower River was passed uneventfully except that Greg took his overalls off because he though he might fall in. (no such luck) Oolite loop is beautiful this time of year (shades of Thud in the Mud). As I'd never been in this part of Mammoth before, all leads were pushed.

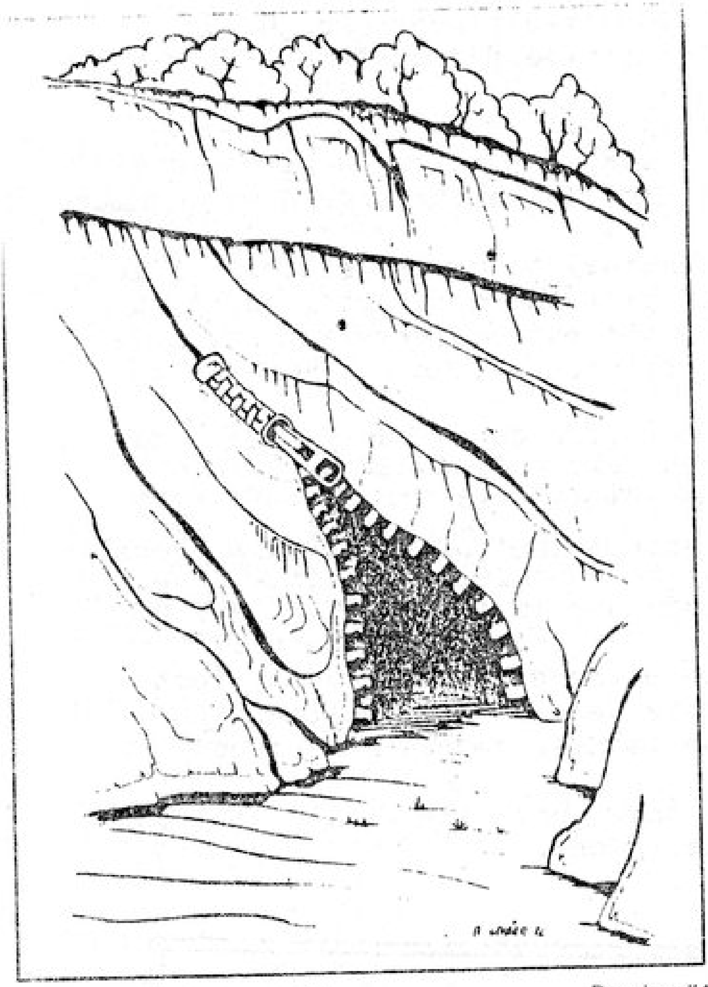
The return trip from Slug Lake to the entrance via the Forty Foot was made in record time, and all bods were back on the surface by 4 o'clock after having spent a most entertaining day in one of New South Wales' most interesting caves.

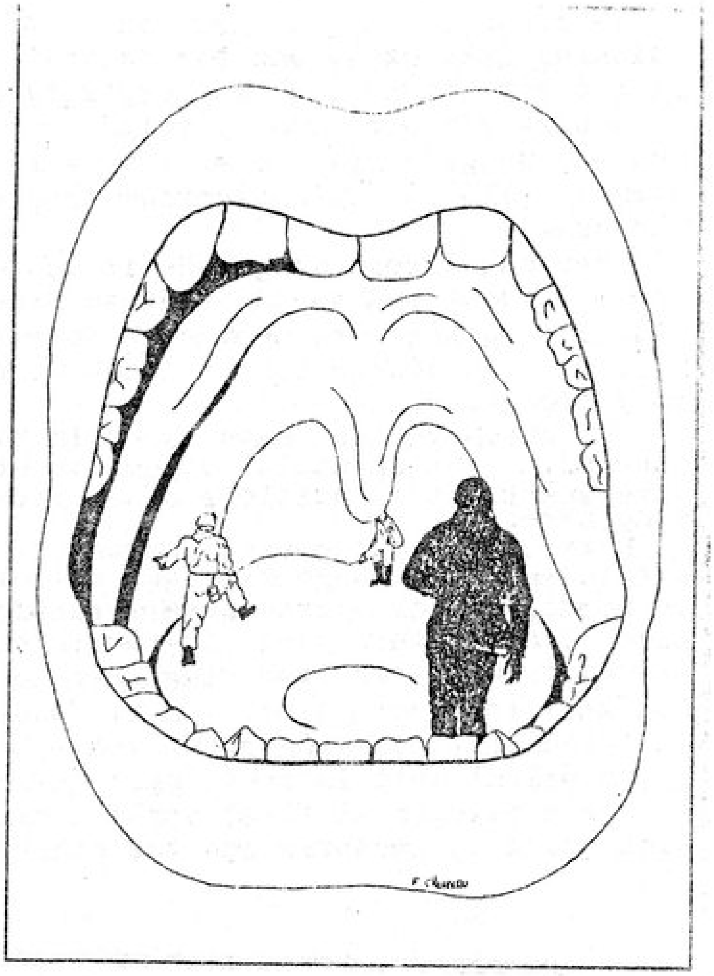
Our contingent left at various times throughout the night, Bill and Mick going to Canberra and the others to Sydney.



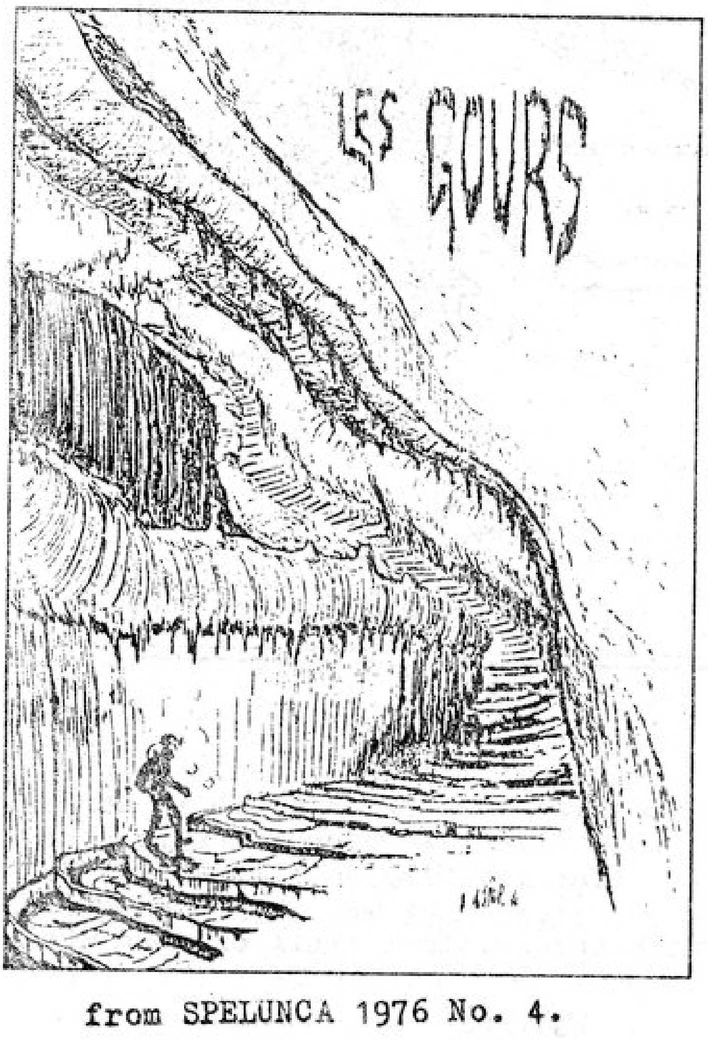
CAVE DESCRIPTION J202 TOR HOLE. Length 18m Depth 6m.

The entrance squeeze is narrow, opening into the main passage, 2m in height the floor of which is composed of loose boulders below which there is a small extension with digging possibilities. The main way on slopes down to a silt floored passage which flattens into a tight squeeze. This continues for 3m to an even tighter sqeeze, which opens into a small chamber with digging possibilities.





Dessins d'Alain GAUTIER
(Groupe Spéléologique de l'Association Sportive et Culturelle de Bonsecours – Seine Maritime)



from SPELUNCA 1976 No. 4.

FUTURE EVENTS

MAY 2 — Committee Meeting. 7.30pm at Malcolm Handel's.

MAY 10 — NSW Cave Rescue Group - General Meeting - Police Rescue Squad Headquarters, Addison Rd, Marrickville.

MAY 14-15 — Jenolan - Lots of caving + JCHAPS Meeting. Phone Bruce Welch 929.0432.

MAY 20-21 — Jenolan - Eastern Limestone Trip - people from all societies required - cave tagging, surface traverse. Bruce Welch 929.0432 .

JUNE 10 - 17 — Jenolan - Weekend + week trip with Peter Campbell 76 8855

Mid June to the end of September — Caving in Central England - Peter Campbell

10-17 September — 7th International Speleological Congress - Sheffield, England (for heavies only).

August - — Last 3 weeks in August, Cuy Cox will be leading a trip to North Spain.

SUSS MEETINGS ?- 1st Thursday of every month.

May 5, June 2, July 7.

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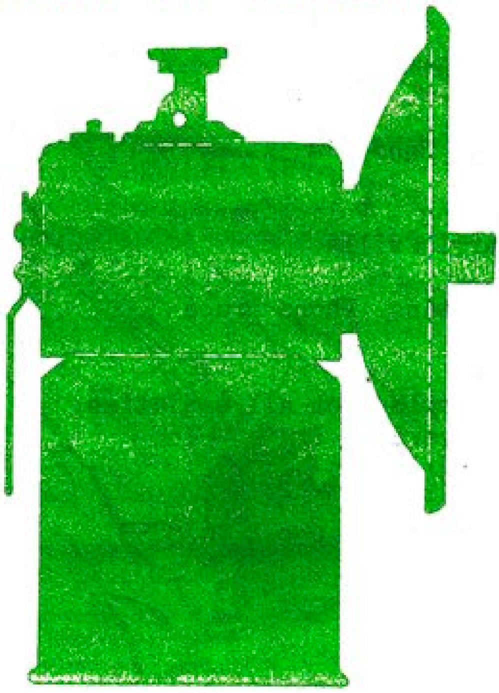
RANDALL THE HORRID AND THE SUSS DINNA!

Lumen in Tenebris



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SUSS

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