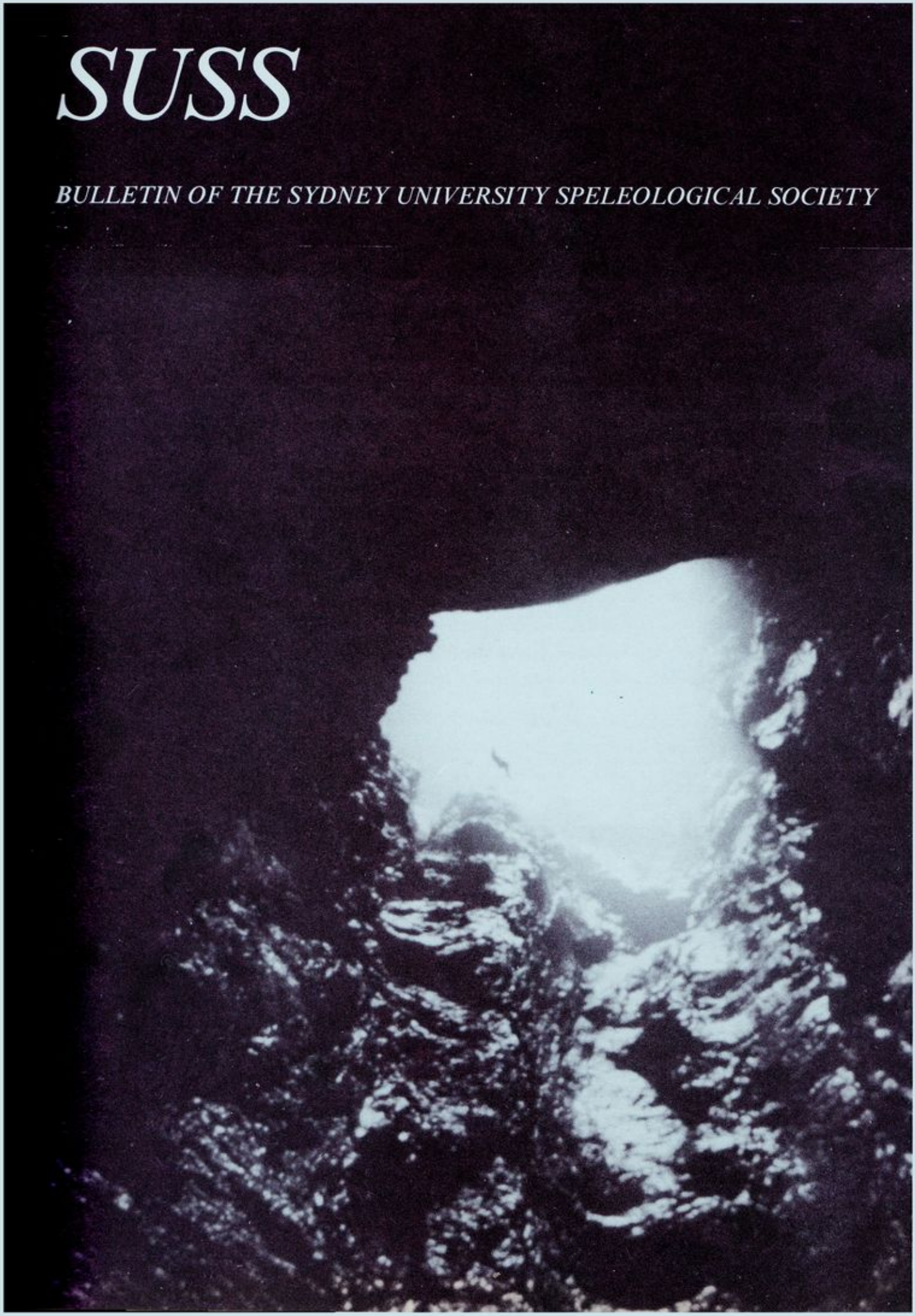
SUSS

BULLETIN OF THE SYDNEY UNIVERSITY SPELEOLOGICAL SOCIETY



SUSS TRIPS AND MEETINGS

SEPTEMBER	2-3	Jenolan Caves - Igor Jazbec 569 7276h
	7	SUSS MEETING - 7.30pm, Common Room, Holme Building. Mike Lake digs into his archives of slides.
	9	**HUGE SUSS PARTY. BBQ,DRINKS FREE!** 6.30pm 22 Yarrabung Rd, St.Ives. Mike Gibian 660 2782h 858 8186w. If you get too drunk you can stay at Mikes place for the night.
	16-17	Jaunter - Stunning formations, new caves, vertical pitch, numerous digs and leads plus unsurveyed caves, with the added bonus of luxurious accomodation. Also climbing (for those inclined) and canyoning at Chardon Canyon and Tuglow Falls. Martin Scott 4494092h.
	23-24	XC skiing Beginners Trip. Mike Gibian 660 2782h 858 8186w.
	28-29	Jenolan Caves - Permit pending for mid-week uni holidays trip. Mark Staraj 799 9438h.
OCTOBER	30-4	Yarrangobilly - Permit has arrived for long weekend-uni holidays. Keir Vaughan-Taylor 692 2770uni, 5199769h
	5	SUSS MEETING - 7.30pm, Common Room, Holme Building. Ian Haughton, well travelled English (becoming Australian) caver will show slides of expeditions with Oxford Univ. Caving Club to Austria, Spain, China, etc. "Almost as good as going expedition caving, without having to leave the comfort of your chair"
	7-8	
	14-15	Wellington Caves - Permit being organised. Keir Vaughan-Taylor 692 2770uni, 5199769h
	20-22	"Bungonia Picnic" organised by the Macquarie Uni CG for all cavers. Sarah Gillis 4385662h.
	28-29	Wombeyan Caves - Permit pending. John Oxley 816 2136h, 218 4886w
NOVEMBER	2	SUSS MEETING - 7.30pm, Common Room, Holme Building. A new super 3D photograhy show by Robert Brand. "Better than Jaws in 3D". Don't miss this, or the chance to wear those groovy glasses.
	4	Speleosports - Macquarie Univ. Time we won it back again!
	5	Canyoning - Martin Scott 449 4092h
DECEMBER	7	SUSS MEETING - 7.30pm, Common Room, Holme Building. Organising trips for the holidays.
	9-10	Jenolan Caves - Mark Staraj 799 9438h.Permit pending.
LATE DEC-JAN		Vertical caving in NZ. Martin Scott 449 4092h.

More trips being organised all the time.

The Cavers Annual Dinner is being organised for sometime soon.

A St. Johns First Aid course orientated to cavers is being organised. Take note all trip leaders and those wishing to become trip leaders.

Watch out for the SUSS Christmas Party

Cover Photo: Mark Pollinger abseiling the entrance pitch of Kellar Cellar, Mt. Anne - photo Phil Cole.
(not Rolf Adams etc. as recorded in SUSS BULL.28(2))

EDITORIAL & INFO

Hello and welcome to my first bulletin! As you can see slackness has resulted in another bumper bulletin. Fortunately I also know of quite a few promised articles that have not been received and so there is no excuse that another bulletin shouldn't soon follow.

You might notice that the majority of this bulletin is composed of trip reports (7 to be precise). This is excellent. However there are only three authors! So not all that much has changed, except that without any prodding an authoress come cartoonist has appeared! Its definitely nice to have someone new and different on the scene (remember when Rolf-flavoured trip reports were the fad!) and hopefully more members will be encouraged to put pen to paper.

The other major piece is an article on Central River by myself that has been evolving for some time. The only reason this article could exist was for detailed trip reports written by people past and present, and for the material gathered and presented in the Mammoth Cave book. A paragraph in the preface to this book eloquently put this important point: " In the meantime, we record our indebtedness to, and commend the practise of lengthy, observant trip report writing."

The best place to follow up one's observations is the club library where one can find all sorts of interesting maps, reports and books. Careful appraisal of this material can lead to startling revelations and even the odd cave discovery (at least one discovery was made this way at Jenolan, of Twiddly-Om-Pom in Mammoth Cave). It is from the library that the reprints from NSS NEWS on the Speleo Technics FX-2 and Hypothermia were found for this bulletin. Both topics are of great importance to cavers. About the FX-2, it is possible to obtain these from Wildsports for $189.50 (complete, May 1989) and before purchasing you should see if others in the club also want to buy from Wildsports as there is a 10% discount for total orders over $1000.

On the subject of books, the Society sells copies of the Mammoth Book and the Jenolan Book, both selling for $7. Of the Mammoth Book we have less than 10 copies and I understand that Wildsports have only 2 left. THIS EDITION WILL NOT BE REPRINTED. It has been decided (with some reluctance!) that it should be resurveyed, partly to redress some inconsistancies and for completeness, but mostly to take advantage of Keir Vaughan-Taylor's unique 3D survay plot program. (This will also make it part of a permanent Jenolan database.) Therefore the text and format of the second edition is likely to be completely overhauled. The Jenolan Book is somewhat outdated but still forms the ESSENTIAL reference work on the Jenolan Underground River and we still have many copies for sale. (You will notice that extensive use of both books is made in just this bulletin alone.)

IMPORTANT! THE PARTY IS HAPPENING ON THE 9TH OF SEPTEMBER! The details appear in this bulletin. Don't miss it! It is free!!

In Tasmania the hotbed of caving activity has shifted back to the Junee-Florentine area. About a year and a half ago this area recaptured the Australian cave depth record with a dive in the Coelacanth Sump of the Ice **Tube-Growling Swallet** system. This was followed up last year by large and deep extensions to **ThreeFortyOne** and **Rift Cave**, two caves that were first pushed and explored many

years ago. The very latest news has it that **Cauldron Pot** has also fallen victim, with another streamway discovery that possibly related to that from **Khazad-Dum**. The extension has not yet been fully explored or surveyed. A recent compilation of deepest caves in Tasmania is reproduced below.

DEEPEST CAVES	DEPTH (m)	AREA
1. Ice Tube-Growling Swallet System	375	JF
2. Anne-A-Kananda	373	MA
3. Khazad-Dum (Dwarrowdelf)	333	JF
4. Serendipity	278	JF
5. Cauldron Pot	263	JF
6. Owl Pot	244	JF
7. Tassy Pot	238	JF
8. Arrakis	235	MW
9. Mini Martin (Exit Cave System)	220	IB
10. Milk Run	208	IB
11. Sesame Caves	207	JF
12. Flick Mints Hole	204	JF

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13. Midnight Hole (Mystery Creek Cave)	203	IB
14. Porcupine Pot	202	JF
15. The Chairman	197	JF
16. Threefortyone	193	JF
17. Cyclops Pot	192	IB
18. Big Tree Pot	189	IB
19. Deep Thought	187	MA
20. Peanut Brittle Pot	186	JF
21. Udensala	181	JF
22. Rift Cave	180	JF
23. Lost Pot	175	JF
24. Dribblespit Swallet	166	JF
25. Splash Pot	160	JF
26. Three Falls Cave	158	JF
27. Kellar Cellar	155	MA
28. Niagara Pot	149	JF
29. Satans Lair	139	JF
30. Victory 75	130	JF
31. Warhol	130	JF
32. Gormenghast	128	JF
33. Little Grunt	128	IB
34. Chicken Bone Pot	125	IB
35. Revelation Cave	125	IB
36. Thun Junction Cave	120	IB
37. Col-In-Cavern	119	MA
38. Hobbit Hole	118	IB
39. Herberts Pot	116	MC
40. New Order-Bauhaus	115	PB
41. Bone Pit	113	JF
42. Yodellers Pot	110	IB
43. Rescue Pot	107	JF
44. Devils Pot System	105	MC

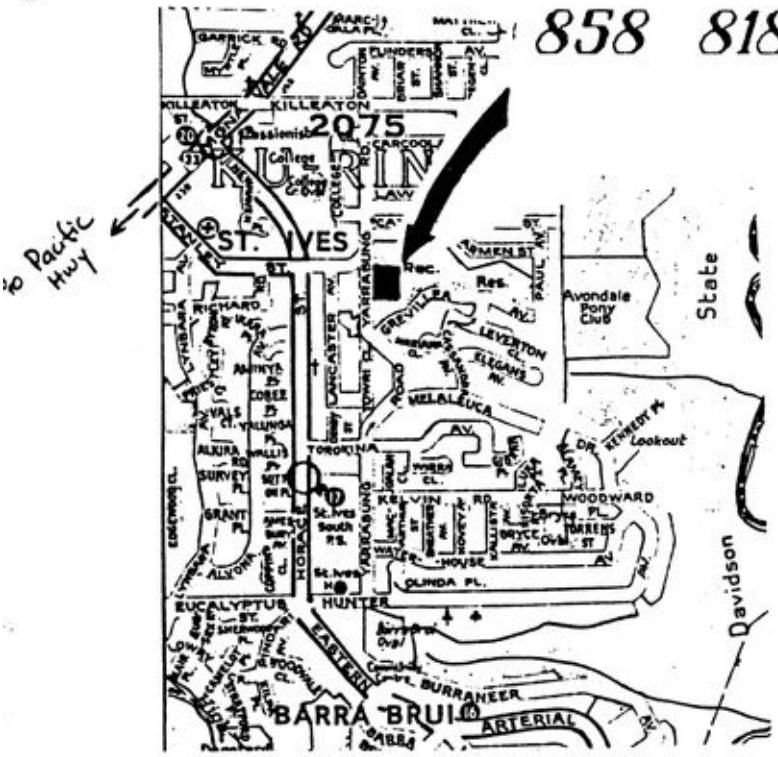
Mark Staraj.

FREE FREE FREE FREE

PARTY

THE GREATEST CLUB AT SYDNEY UNI HAS BEEN GIVEN $300 TO HOLD A HUGE PARTY. SO HERE IT IS:-

SEPTEMBER 9
FROM 6.30pm
22 YARRABUNG RD, St IVES
BBQ, DRINKS PROVIDED
ph MikeGibian 660 2782 (h)
858 8186 (w)



FREE FREE FREE FREE

SUSS COMMITTEE : 1989

On behalf of the Society I wish to thank the outgoing Committee on a job well done, in particular their effort in making the SUSS 40th celebrations an outstanding success. At the last AGM hats were swapped, people made fun of, and the upshot is the 1989 committee:

PRESIDENT:	Martin Scott	ph 449 4092
VICE PRESIDENT:	Patrick Larkin	ph 960 4726
SECRETARY:	Jill Rowling	ph 888 2927
TREASURER:	Chris Young	ph 949 3913
LIBRARIAN:	Mark Staraj	ph 799 9438
SAFETY OFFICER:	Mike Lake	ph 524 5229
EQUIPMENT OFFICER:	Alan Skea	ph 550 5457, 697 4875(uni)
EDITOR:	Sarah Gillis	ph 438 5662
ASF REPRESENTATIVE:	Mike Gibian	ph 660 2782
MINUTES SECRETARY:	Igor Jazbec	ph 569 7276
GENERAL COMMITEE MEMBERS:	John Morris	ph 84 0291
	Tony Allan	ph 949 1991
	John Oxley.	(w)ph 218 4825

LETTER TO THE EDITOR

Dear Sir,

I feel I must both commend and criticise Jill Rowling for her humorous but inaccurate Jenolan trip report in the May bulletin. Living as I do, at the far end of the world, I enjoyed reading the report, and offer the following corrections to right the injustices therein.

1) Brad is not called David. He is called Brad.
2) Brad and I did get to GNC and back in a respectable 4 hours 15 min.
3) We did go canyoning the next day before returning to the sunny Garden State.

- Richard McNeall

[ED. The offensive portion of Jill's report is probably the following:

" Some weeks later, I heard again from Richard that he and David didn't get to GNC; they got so tired by the time they got part way (Thud in the Mud?) that they returned and didn't even go canyoning the next day! "

Distance may be in Jill's favour here, as it is seldom wise to question a caver's manhood.]

WHERE IS ROY WINSTANLEY?

Late last year I received a letter addressed to Roy from a British author, who is putting together what seems to me to be an exciting and worthwhile book on cave exploration in PNG. I have made some enquiries but it appears that he no longer lives in Sydney.

If anyone can help, they may like to contact myself or the author Howard Beck (42 Stony Royd, Farsley, Pudsey, Leeds, WEST YORKSHIRE, ENGLAND, postcode: LS28 5JA).

Mark Staraj, LIBRARIAN.

HOW MANY CAVERS DOES IT TAKE TO CHANGE A LIGHTBULB?

EIGHT.

One to apply for the permit;
One to buy the bulb and leave it at home;
One with a car to go and buy another;
One to come along for the trip;
Two to rig the ceiling;
One to hang from the ceiling whilst changing the bulb
and one to write the trip report.

Jill Rowling (15/6/89)

(ED. Unfortunately, the last caver is rarely used)

LETTER TO THE EDITOR: REPLY

Richard, I'm very sorry for calling Brad - David, and for the other inaccuracies. I also forgive you for persistently calling me Jane throughout the trip.

Jill Rowling.

OF BATS AND CAVERS?

Some scientists have suggested that human beings and bats might be distant cousins who share the same primeval ancestors?

Is there a Batman or Count Dracula lurking in each of us?

A bat expert at the US's National Zoo, Dr John Seidensticker, said it was an intriguing theory, one you could sink your teeth into, but he is not sure he believes it. While other scientists at the Smithsonian Institution scoff at the idea.

Dr Seidensticker said brain studies have yielded evidence that certain kinds of large bats found in Africa and the South Pacific may be descendants of prehistoric primates akin to lemurs or mouselike shrews.

He said: "The theory is that these bats are really flying primates," and connected somehow in the evolutionary chain to the early primate ancestors of monkeys, apes, gorillas – and humans.

But Dr Charles Handley, a leading authority on bats and other mammals at the Smithsonian's National Museum of Natural History, said this theory was a "hot potato" of scientific controversy that has won few adherents.

"We do not know what the ancestors of bats really were," Dr Handley said.

Dr Seidensticker said bats "are not mice with wings, they are bats," and people should not be afraid of them.

Keeper at the National Zoo, Ms Carol Prima, said the bats have never bothered her "They are not aggressive. If anything, they are just curious."

They hover watchfully while she scrubs the cave walls or delivers their meals. The bats, three species of fruit eaters, consume 14 kg of grapes, melons, bananas and a gruel of peach nectar and vitamins every day.

The rest of the time they fly back and forth, socialise in their "harems" and just hang out. Or, more precisely, hang down. They also have active sex lives.

"They are continuously producing babies," Dr Seidensticker said.

Ms Prima said she had never felt threatened working in the bat cave. "They never touch me, and they have never flown into my hair. They keep their distance. They know you are there, but they are not interested in coming near you."

Tourii Jenolanus Stupidicus et Profundicus
(and pardon the Latin)

On the way to or from caving trips at Jenolan, it is common to find groups of tourists strolling up the valley. Sometimes one wonders about their sense of surface navigation:

Tourist at the Serpentine area:
"Which way is it to the Grand Arch?"

During a recent cave rescue training day with the Jenolan Guides, some of the guides recalled the more common silly sayings of tourists:

"Excuse me, but what time does the 2:30 tour start?"

"What does that stalactite look like with the lights off?"
(Guide switches ALL the lights off)
"..Umm...Did I ask a silly question?"

"Are there any lights in the caves?"

"If you touch the stalactites, do they melt?"

"Is there any air in the caves?"

About quarter way through the cave:
"Are we underground yet?"

and the "Oh Dear" question:
"Are there any toilets in the caves?"

Even cavers are not immune to slips of the tongue. Once, during an exceptionally rainy period this year, water was pouring through the Devils Coach House presenting an entertaining obstacle to everyone.
Later, one of the cavers was describing the spectacle:

"There was water everywhere, McKeowns Creek was right up to the Carlotta Arch!"
[for those who don't know, the Carlotta Arch is something like 40 metres above McKeowns Creek]

Reminds me of one Jenolan Guide who had a religious fundamentalist on the tour, insisting that the Rillenkarren was formed by the fingers of the Damned during Noah's Flood, clawing at the rocks.

The guides also run adventure tours, generally into Mammoth cave. One guide recalled that it was quite common for someone to "pike" at the entrance, saying: "Oh I didn't know that we were going UNDERGROUND..." and having to be shown which way back to the Grand Arch.

The electrician recalled a Departmental Inspection of some new wiring into the caves. The rules state that high voltage cable is to be buried about two feet underground. This becomes very difficult to do in small cave passages without ruining the cave, so the cable is run out of the way in a shielded duct.

Inspector: "That cabling is not correct. It's not two feet underground."
Electrician: "How many feet underground do you think we are?"

John Oxley, describing someone he met: "This fellow... had to be one scaling pole short of a full pitch!"

– JR

National Parks Association of NSW Inc.
State Council
P.O. Box A96
Sydney South 2000
Telephone: (02) 264 7994
Facsimile: (02) 264 7160

July 15th, 1989

M E D I A R E L E A S E

CAVES HOUSE TO BE SOLD - CAVES NEXT?

The State Government has taken another step towards privatising Caves House at Jenolan Caves in the Blue Mountains of New South Wales.

A public notice in today's press indicates that the Jenolan Caves Trust has voted to sell land occupied by Caves House to the NSW Tourism Commission.

The Director of the NSW National Parks Association, Mr Grahame Wells, warned that the way would then be open to the Tourism Commission to dispose of Caves House by way of sale at some time in the future.

Mr Wells said the decision by the Caves Trust to sell off reserved Crown land was further evidence of the Greiner Government's intention of selling-off Crown land in New South Wales.

"There is now a danger that the Reserve and the famous caves themselves will be sold off to developers."

In a news release of February 10th, 1989 the Minister for Tourism, Garry West said that the Peppers Hotel Group had been selected as the preferred tenderer to lease Caves House.

Mr West said "the Reserve, which includes the Caves, will remain in [the] care, control and management of the Department of Natural Resources (sic)".

The National Parks Association says the Government has obviously now reversed that undertaking of February 1989.

In September last year the National Parks Association called for the Jenolan Caves Reserve to be added to the nearby Blue Mountains National Park.

In a submission on the Draft Plan of Management for the Jenolan Caves Reserve the Association said the area should come under the responsibility of the National Parks and Wildlife Service.

Background:

The Jenolan Caves comprise one of the larger inter-connected cave systems in Australia.

It was one of the earliest cave areas to be placed under public management anywhere in the world - in fact six years prior to the dedication of the first National Park.

The first record of European knowledge of the Caves area is from the 1830's. James McKeown, a runaway convict, used the area as a hideaway until captured by Tarana pastoralist James Whalan. With expansion of settlement increased visitation to the area occurred.

The area was gazetted as the Fish River Caves Reserve in 1866. This was six years before the dedication of the world's first national park.

In 1867 Jeremiah Wilson was appointed the first 'keeper' of the Caves. In 1872 laws were passed making destruction of any of the formations an offence and in 1879 a keeper was formally appointed to supervise the Reserve. It's significant that a colonial government more than 100 years ago, led the world in providing for management of special natural areas.

Caves House

Caves House is a well known limestone masonry and timbered building the first stage of which was completed in 1898.

Also of historical significance are the developments that took place from 1896 to 1923. Early in this period there was a trend towards developing the Reserve as a resort for the wealthy elite and even to satisfy a small international tourist market existing at that time. After the fire of 1895 which destroyed many of the buildings on the Reserve, Caves House was built to the architectural specifications of W. Vernon. This was added to over a period of years. The design of various wings of Caves House, in four stages over 27 years, show a remarkable degree of stylistic continuity.

Caves House may well have been amongst the first attempts by a government authority to promote, and regulate tourist development in an area of acclaimed heritage value. The managerial style adopted for the hotel was also unusual for these times in that hotels were usually private, didn't provide for accomodation of people over a range of income levels, and had profit as the primary motivating factor in their establishment.

These buildings were constructed at a time when transport standards meant that some type of accomodation was necessary if people were to visit the Reserve. They reflect an attitude towards the environment that typifies the late 19th and early 20th century rejection of much of city life by the middle and upper classes. This incorporated the notion of the goodness of nature and country life. Jenolan Caves Reserve not only represents an area of great natural richness but also an area that exhibits historical evidence of different cultural attitudes towards the environment.

Ends.....

Peppers withdraws from Jenolan deal

By LIBBY MOFFET

The upmarket Peppers Hotel Group has withdrawn from its agreement to lease Jenolan Caves House from the NSW Government, blaming a 30 per cent blow-out in the project's estimated cost and high interest rates.

However, the group has written to the State Government and expressed interest in being involved in any new leasing negotiations.

The group's general manager, Mr Philip Riley, said yesterday Peppers was interested in a lease which would allow it to manage the Tudor-style hotel — built on a limestone cave site — and provide the option to develop it at a later date when the economic climate improved.

The company's original development cost estimate had blown out from $25 million to $33 million, due to the unusual nature of the site.

The company felt it could not afford this increase as well as current high interest rates.

Peppers — which now manages its original Hunter Valley hotel after selling the property last year — has recently opened a new complex, Peppers on Sea, at Terrigal on the Central Coast and is planning another complex at Port Stephens.

Mr Riley said Peppers had been unaware of all factors involved in the Caves House development when it signed a deed of agreement with the Government in March this year.

After spending more than $500,000 on consultants to examine the site, the group decided to pull out before the negotiation period expired on July 31.

"Basically you are building an hotel on a fault-line with limestone caves underneath," he said.

"We're still very keen to do it but we can't do it under the current leasing arrangements.

"We'd like to manage the house then develop it at a later date."

The acting chairman of the NSW Tourism Commission, Mr Peter Wills, said yesterday the commission would consider new leasing arrangements in the next few weeks.

"All our options are open about how we proceed from here," he said.

The Peppers group had planned to restore Caves House to its original condition and build an extension at the back of the building.

Each of the 100-odd guest rooms was also to be fitted with private bathroom facilities.

Financial Review, Thursday, July 20, 1989

CENTRAL RIVER MEANDERS

1.INTRODUCTION

Central River is the current central pillar of Mammoth Cave hydrology. Although but a tributary of the Jenolan Underground River (JUR), it or its feeders are responsible for forming the bulk of Mammoth's 4km of passage by length. As can be seen from the map, it underpins most of Mammoth Cave like a backbone.

Central River, like most cave features, has its own intriguing riddles and enigmas. In spite of its nearness to the JUR it has managed to develop considerable length and an extensive inflow network. This seems to be primarily tied to dominant geological factors. Its ultimate source and destination are both unknown with any certainty: somewhere upstream is its first tributary, and somewhere downstream it joins the JUR.

In character Central River has a small base flow of 1.5 millicumecs when compared with the JUR (140 millicumecs at its appearance in Mammoth) (Shannon, 1976). It responds readily to heavy rain, and has been known to dry up completely in severe drought. For the most part Central River flows through low and inaccessible passage.

This article will reveiw the known sections of Central River, and make some conjectures about the River and further potential from these sections. It is an overveiw of facts and observations about the River and contains recent material and perhaps other unknown material for some. Hopefully it will stimulate further thoughts and perhaps a few projects.

2.SOURCE

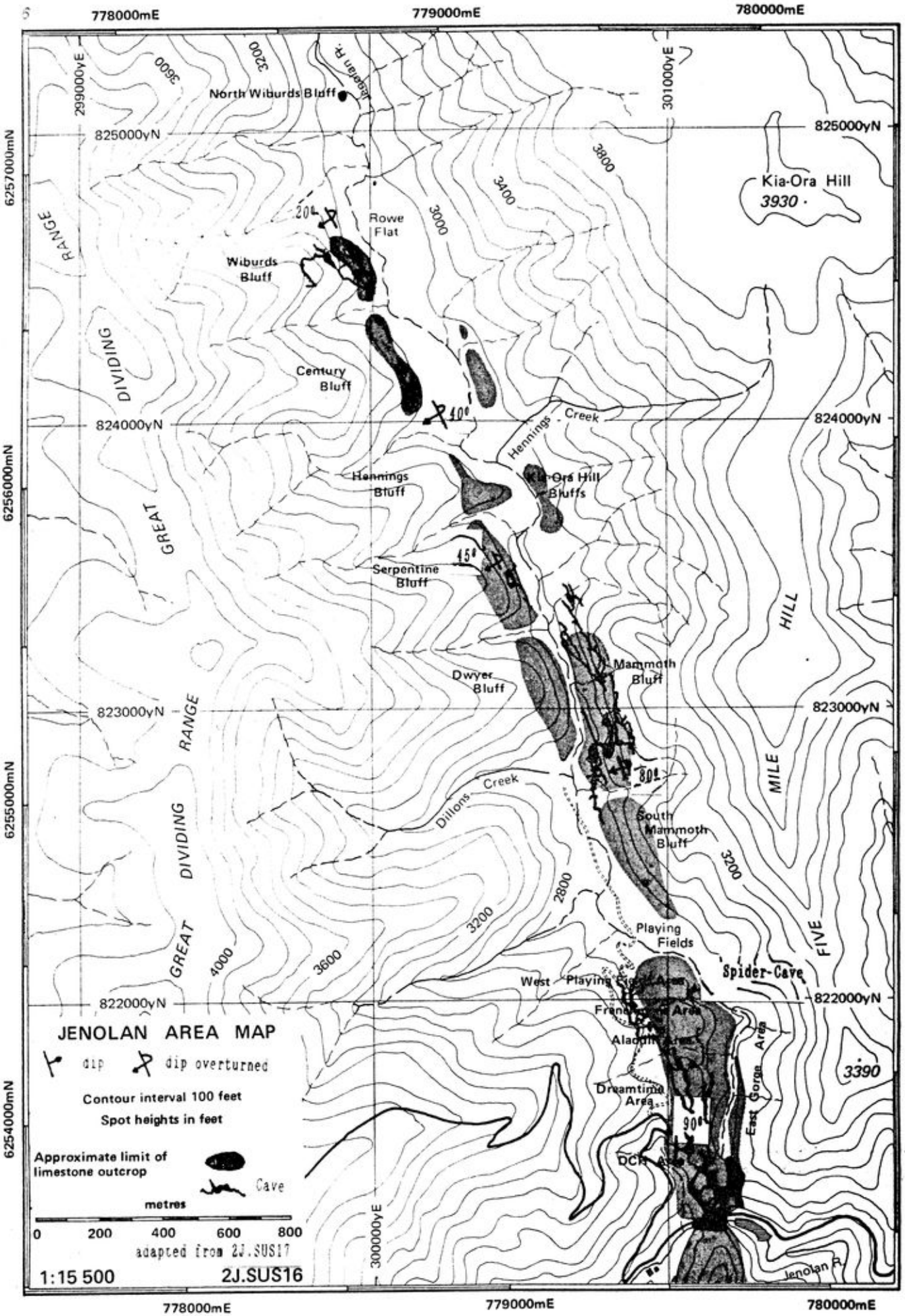
The source of Central River is conjectured by H. Shannon (Shannon, 1976) to be **Hennings Creek** and associated alluvial storage. This is based upon the following observations: rises in Central River coinciding with advances of Hennings Creek or of the Jenolan River to the Serpentine area, the sinking point of Hennings Creek (see map), and the tracing of flourescein from "a surface tributary opposite Serpentine Cave" in August 1972 to Central River (Shannon, 1973a).

Finding cave extending to this source would **double** the distance to Mammoth's most northerly point from its entrance! A very long and arduous trip it would be too without a second entrance. To find such a beast would require the digging of potential caves near Hennings or in between, or the pushing of passage from the Great North Cavern area or alternatively upstream from the Second Crossing.

Other known tributaries of Central River are the stream from **Waterfall Passage**, floodflow from the **Infinite Crawl**, and possibly the stream appearing in **Twiddly-Om-Pom** and that appearing in flood in **Great North Cavern.**

3.TWIDDLY-OM-POM

Twiddly-Om-Pom is a fairly large cavern situated below and to the east of **Great North Cavern.** Reaching it is the hardest trip in Mammoth Cave. At its most northerly point, beyond Mud-in-your-eye squeeze, is a short portion (6m) of stream. It is reported as unpushable in either direction. Almost any rise in the stream causes it to overflow down


778000mE
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6254000mN
299000yE
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825000yN
824000yN
823000yN
822000yN
North Wiburds Bluff
Jenolan R.
Rowe Flat
Wiburds Bluff
Century Bluff
Kia-Ora Hill
3930
Hennings Creek
Hennings Bluff
Kia-Ora Hill Bluffs
Serpentine Bluff
Dwyer Bluff
Mammoth Bluff
South Mammoth Bluff
Dillons Creek
Playing Fields
Spider-Cave
West Playing Field Area
Frenchmans Area
Aladdin Area
Dreamtime Area
East Gorge Area
DCH Area
3390
Jenolan R.
GREAT DIVIDING RANGE
GREAT DIVIDING RANGE
HILL
MILE
FIVE
3600
3200
3800
3400
3000
2800
4000
JENOLAN AREA MAP
dip
dip overturned
Contour interval 100 feet
Spot heights in feet
Approximate limit of limestone outcrop
Cave
metres
0 200 400 600 800
adapted from 2J.SUS17
1:15 500
2J.SUS16

through the squeeze and sump Twiddly-Om-Pom at its southern end, and is joined by other streams arising out of other parts of the cavern.

The stream itself was dye traced in Jan 1973 to Central River, however in Shannon's opinion it represents less than half the flow into Central Lake (Shannon, 1973b). Thus it may represent a major tributary of Central River only (or even an anabranch).

Apart from finding passage to bypass the obstructions in the stream passage, the best prospect is to follow the course of the overflow, as it is certain to rejoin Central River further south. The connection may provide the route required to follow Central River further north, providing the Twiddly-Om-Pom stream does not represent the main portion of Central River.

4.GREAT NORTH CAVERN

This is quite a large cavern containing a normally dry stream passage: Cycloidal Passage. During flood, water has been observed pouring out of avens in the roof of the cavern and vanishing in the floor near Cycloidal Passage. Successfully following this may also lead to an upstream section of Central River.

5.SECOND CROSSING

The Second Crossing occurs near the heart of a complex nexus of streams, The Junction. It contains about 35m of Central River. Downstream it can be followed through a tight series of joints, and upstream over pools and small waterfalls (1'-2'), with both becoming impassible after 50' or so. During flood Central River overflows into The Junction from where it fills the Dry Syphon and drains to the Overflow (see map).

The best prospect is apparent from the map, that is to push upstream from Second Crossing towards its source. While the going might be hard along the River itself there is always the chance of breaking through to extensive, drier, upper passage, which so far has been found to reach the furthest point of Central River (Twiddly-Om-Pom).

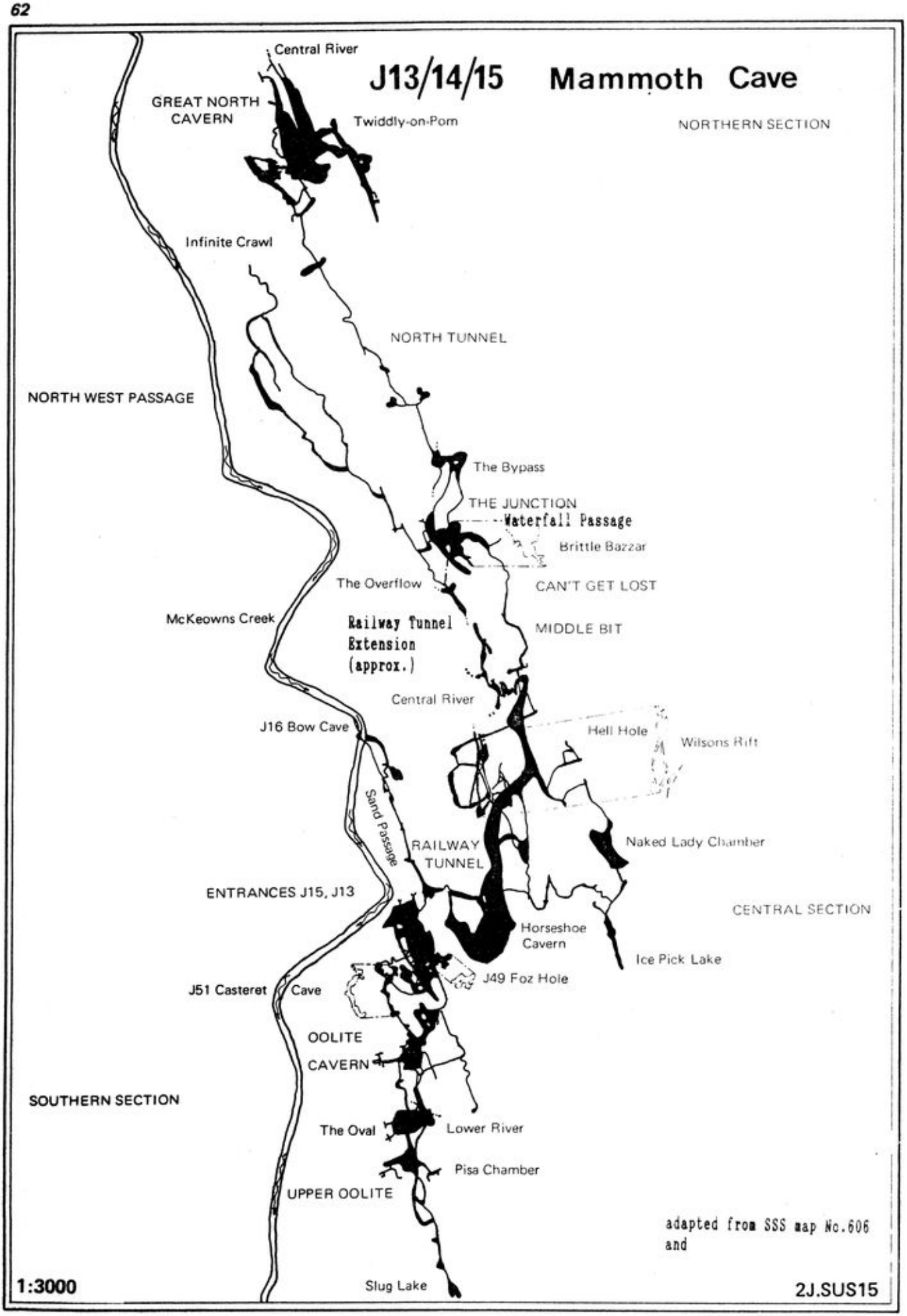
6.CANT GET LOST

Cant Get Lost is the most northerly known continuation of the same large passage as the Railway Tunnel, seperated from it by a very big rockpile. During the successful climbing attempt to reach Brittle Bazaar located above Cant Get Lost (King, 1975), one of the climbers dropped something at the base of the pitch and in a search for it Randall King found a hole amongst rocks at the bottom of the pitch. Through the unnegotiable hole he could see Central River some 80'-90' below.

This section of River lies exactly where it would be expected. It has very limited prospects as a short distance in either direction the River appears in Second Crossing and the Overflow.

7.INFINITE CRAWL

During conditions of high flood the Infinite Crawl carries water to Central River via the Overflow. In April 1972 flourescein placed in Wiburd's Lake Cave was detected in Lower River (JUR appearance in Mammoth Cave) and was concluded by Shannon to have also appeared in


J13/14/15 Mammoth Cave
NORTHERN SECTION
Central River
GREAT NORTH CAVERN
Twiddly-on-Porn
Infinite Crawl
NORTH TUNNEL
NORTH WEST PASSAGE
The Bypass
THE JUNCTION
Waterfall Passage
Brittle Bazzar
The Overflow
CAN'T GET LOST
McKeowns Creek
Railway Tunnel Extension (approx.)
MIDDLE BIT
Central River
J16 Bow Cave
Hell Hole
Wilsons Rift
Sand Passage
RAILWAY TUNNEL
Naked Lady Chamber
ENTRANCES J15, J13
CENTRAL SECTION
Horseshoe Cavern
Ice Pick Lake
J49 Foz Hole
J51 Casteret Cave
OOLITE CAVERN
SOUTHERN SECTION
The Oval
Lower River
Pisa Chamber
UPPER OOLITE
adapted from SSS map No.606 and
1:3000
Slug Lake
2J.SUS15

the Infinite Crawl and hence Central River (Shannon, 1973a). (This is based on the likely and uncontradicted assumption that water flows in the Infinite Crawl only during flood and did not flow between August 1972 and January 1973.) Since tracing done directly in Central River has never indicated an upstream link between Central and Lower Rivers then Shannon came to the important conclusion that the *Infinite Crawl is directly linked to the Woolly Rhinosceros* (JUR upstream of Lower River)!

Although it sounds promising, exceedingly hard work is required to realise the link. The passage has been pushed some 300m and is increasingly low and tight. An occassional mild breeze and the presence of sand support its promise, but Dick Williamson who is said to have penetrated the furthest found it so tight that he had eventually to be hauled back by a rope!

Easier upper passage as an alternative is still possible, but most (if not all) of the avens nearby have been climbed and proved blind.

In February 1972 another flourescein test was performed where it was placed in the stream sink of the Jenolan River opposite the upper entrance of Serpentine Cave (Shannon, 1972). The Jenolan River was sinking only as far as the scour hole opposite Little Canyon Cave, just south of Serpentine. Inside Serpentine no stream was flowing. It was later detected in Central River and is hypothesised to have reached there via the Infinite Crawl. The Infinite Crawl itself was found to be flowing but not directly into the Overflow.

8.WATERFALL PASSAGE

Usually a trickle and at most a little stream exits this passage from the Breezehole, flows to form a pool in the Dry Siphon and thence joins the nearby Overflow. The breeze in the lower part of the passage is persisent and of moderate strength. It has fuelled expectations of an upper entrance in the vicinity. The stream is followed upwards to a high cleft in crumbly rock. This is the limestone-shale interface. The stream is thought to derive from a surface tributary. The top of the cleft is some 30-40m above the Breezehole. While the prospects are good of attaining the fabled upper entrance of Mammoth, in reality they are defeated by the unsafe nature of the shaly rock.

9.THE OVERFLOW

The Overflow carries floodwater from the Infinite Crawl and possibly even from the Second Crossing via the Junction in very high flood. The chamber at the end of the Overflow contains yet another section of Central River (about 10m length). Upstream is impassible and downstream the River sumps to a depth of 10'+. Near here another stream enters the sump. In Jan 1973 dye placed in the stream in Twiddly-Om-Pom was observed in both the streams in the Overflow, proving one to be the anabranch of the other (Shannon, 1973b).

Water also enters the Overflow directly from the Junction.

10.RAILWAY TUNNEL EXTENSION

This is a rather spacious series of passages and chambers and containing about 25m of Central River (Bonwick, 1979). It is reached by a couple of pitches from the northernmost part of the Railway Tunnel. Both ends of the River end in sumps.

Not far from the downstream sump lies the upstream sump of the **First Crossing** and little would be gained here. However some 50-70m still seperates the upstream sump and the sump in the **Overflow** and so substantial passage can yet be found. However the biggest prospects may rest with more Railway Tunnel as a portion of the Extension reaches rockpile at the same height as the rockpile at the end of the Railway Tunnel and approximately half way between it and the start of the **Cant Get Lost** section.

11.FIRST CROSSING

Central River issues from a rockpile and flows from here to **Central Lake**. Depending upon water level, it is possible to push some distance down the passage, and during drought Central Lake can be reached. Upstream the River can be pushed under the rockpile, past where an aven connects to the Ninety Foot shaft in the Railway Tunnel above, through more very unstable rockpile to 7m of stream passage and finally a 3m deep sump (Cox, 1977). This is close to the downstream sump of the **Railway Tunnel Extension** and so has no prospect.

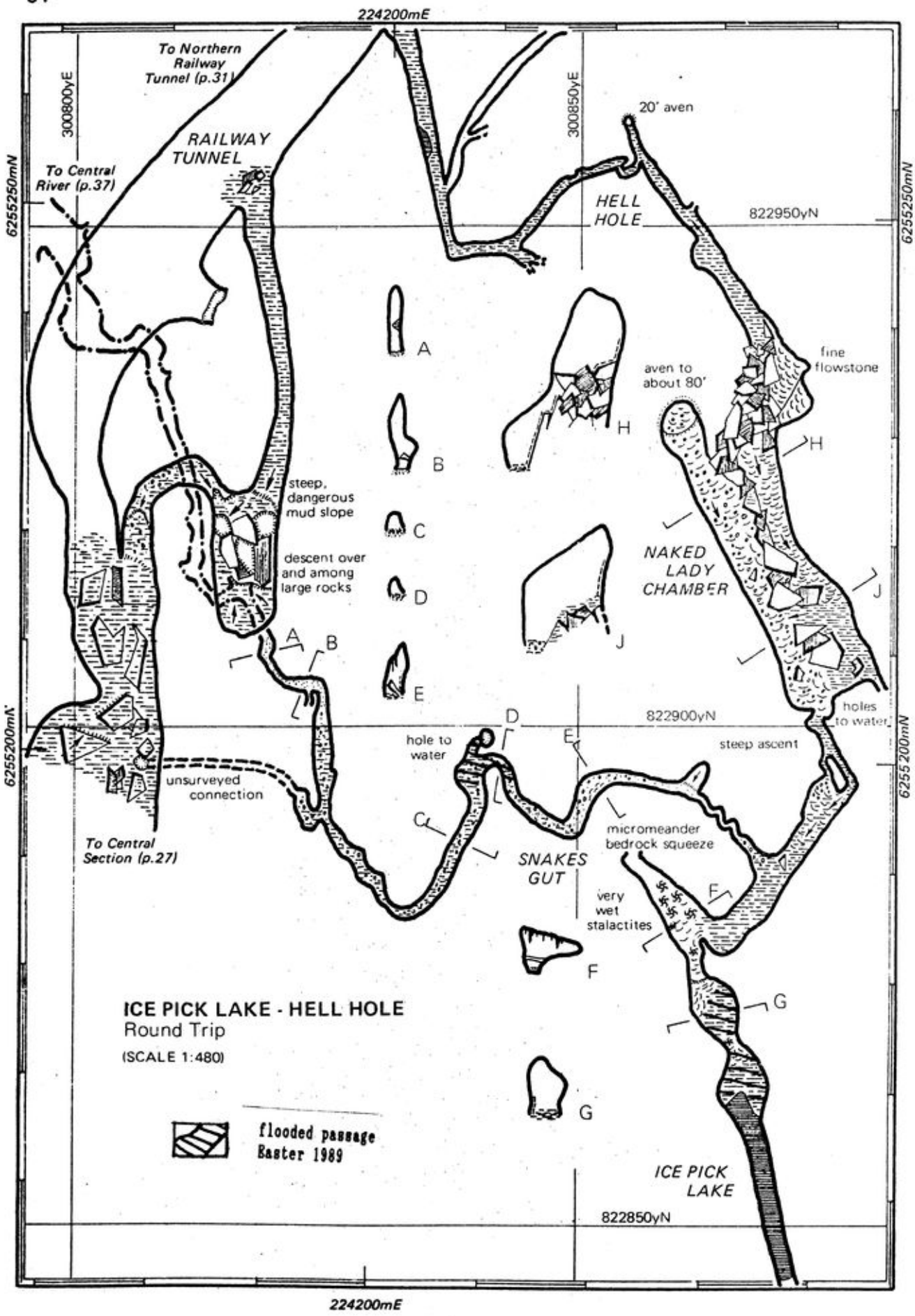
12.CENTRAL LAKE

Until very recently this would have been considered the southernmost known appearance of Central River. The lake is very variable in height and responds rapidly to increases in Central River. At its lowest it is but a sump pool. Normally it is a lake seen to be a few metres below holes in the floor of the passage connecting the start of Snakes Gut passage to the **First Crossing**. In high flood it emerges from the holes and floods a portion of this passage, with the lake extending as far back as the First Crossing. In extreme floods it is now known to completely submerge the passage producing a spectacular waterfall into the Snakes Gut Passage (Staraj, 1988). At such a time the First Crossing would be submerged to a depth of 5m or more.

13.ICE PICK LAKE

Refering to the waterfall mentioned in the section above, all this water disappears along the Snakes Gut passage in the direction of Ice Pick Lake (IPL). However prior to reaching IPL it must flow into the "hole to water". On a trip in 1987 the water level in this hole and IPL were at normal levels (ie. those shown on the map) (Staraj, 1987). It appeared at the time that these levels were the same. On a recent trip, with no flood occurring, the level of IPL was about 2m higher than normal and then the level in the hole was found to be up about the same and sumping the passage (Staraj, 1989a). *The conclusion is that the hole and IPL are hydrologically connected and part of the same body of water.*

A dive in IPL in 1980 by Ian Lewis of CDAA (Lewis, 1980) found "a series of small passages linking larger chambers for a distance of 70m and 17m depth, but had to turn around due to using up his air - the passage just kept going." Thus the IPL system both holds and can recieve a lot of water (after an extreme flood in 1975 (Welch, 1975) and after the waterfall had operated (not realised at the time), the level of the IPL system had risen to just 4m below the top of the waterfall). In time the levels return to normal and is not known to drop much below this even in drought.


224200mE
To Northern Railway Tunnel (p.31)
300800yE
300850yE
20' aven
RAILWAY TUNNEL
To Central River (p.37)
6255250mN
HELL HOLE
822950yN
A
B
C
D
E
H
J
fine flowstone
aven to about 80'
steep, dangerous mud slope
descent over and among large rocks
NAKED LADY CHAMBER
822900yN
holes to water
hole to water
steep ascent
unsurveyed connection
6255200mN
micromeander bedrock squeeze
To Central Section (p.27)
SNAKES GUT
very wet stalactites
F
G
ICE PICK LAKE - HELL HOLE
Round Trip
(SCALE 1:480)
flooded passage
Easter 1989
ICE PICK LAKE
822850yN
224200mE

This raises the following question: *Where does this excess water from the IPL system drain to?*

From inspecting the map it seems most likely that it in fact drains back into Central River downstream of Central Lake. Supporting this is the observation above of increased levels without a flood. It seems that the level of the IPL system is not so much related to the level but to changes in level of Central Lake. This implies that the outflow of the IPL system is connected with another and perhaps smaller sump (in terms of outflow or capacity) of Central River downstream of Central Lake. IPL is then a permanent lake with an open water connection to this hypothetical sump. In times of flood this sump banks up, to overflow into and raise IPL, and maybe in part to cause a corresponding rise in Central Lake.

As for the origin of the flooded chambers making up the IPL system, one explanation could be as follows. These chambers are in the phreas zone. That is they are flooded because they lie below the water table. In the absence of a geological anomaly, the water table would be defined as the approximate height above sea level of the JUR (ie Lower River). I have not seen or heard mention of the relative levels of IPL and Lower River, but experience indicates they would be very close. *Central River would then represent a seperate JUR.*

On a seperate note I should mention that on the trip in 1987 in the rising passage just as you pass the "hole to water", I experienced the strongest breeze I have ever felt anywhere in Mammoth, literally blowing the hair back from my head! No where have I heard a mention of airflow here. It is worth noting and thinking about. Possibly cooler air descending from the high avens in Naked Lady Chamber nearby.

These conjectures lead to the next topic...

RIDDLE ONE: DESTINATION UNKNOWN

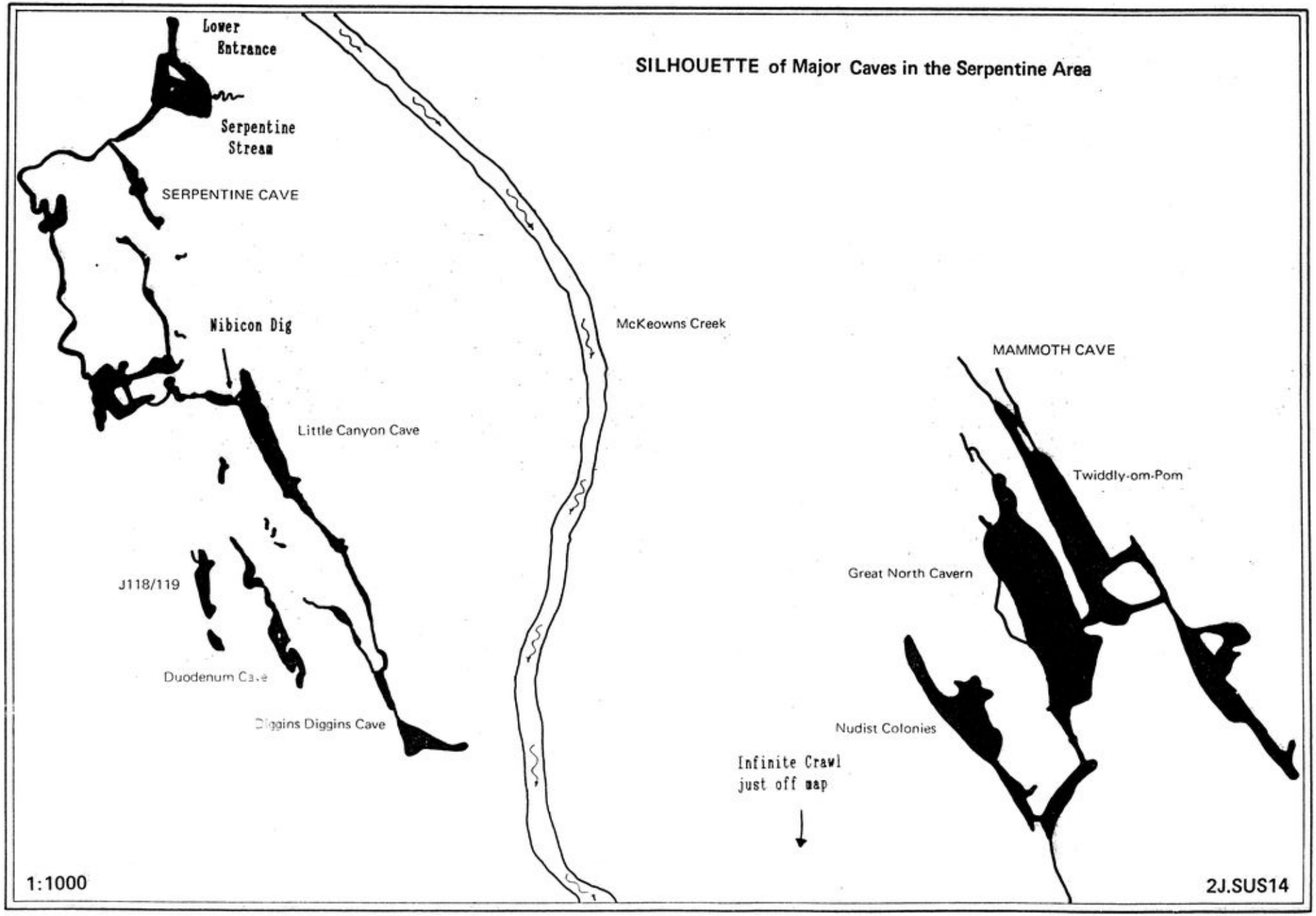
Where does Central River join the JUR?

We know from the results of a number of dye traces and a comparison of water chemistry (Handel and James, 1977) that Central River does join the JUR and does so south of Lower River. Knowledge of the Imperial Divers Extension and Spider Cave infers it joins the JUR upstream from Spider Cave. The only known tributary, occuring downstream from Spider Cave, is not a candidate as it is normally static. The JUR is not seen between Spider Cave and Lower River, representing a distance of some 500m. Therefore the downstream section of Central River has excellent potential for extensive cave.

How much of this potential could be realised? Note that the overall trend of passage and Central River in Mammoth is NW-SE along the strike. IPL occurs at the easternmost point of Mammoth and must lie near the shale contact, seen to the east in Waterfall Passage. It is then a good chance that Central River reaches the contact, and with a dip in the limestone increasing from 80^0 (see map) it can be expected to remain there for quite some distance.

RIDDLE TWO: SERPENTINE STREAM

During floods a stream, sometimes quite large, appears from beneath a rockpile near the lower entrance and flows through the cave to disappear into sinks within the cave system.


SILHOUETTE of Major Caves in the Serpentine Area
Lower Entrance
Serpentine Stream
SERPENTINE CAVE
Wibicon Dig
McKeowns Creek
Little Canyon Cave
J118/119
Duodenum Cave
Diggins Diggins Cave
MAMMOTH CAVE
Twiddly-om-Pom
Great North Cavern
Nudist Colonies
Infinite Crawl
just off map
1:1000
2J.SUS14

Where from?

Just some thirty or so metres across an alluvial flat from the cave is the normally dry bed of the Jenolan River: McKeowns Creek. When sufficient water flowed in this creek it was believed to give rise to the stream. This has proven false. *The stream in Serpentine Cave is not derived from any water flowing in McKeowns Creek!*

This startling fact was drawn from recent observations. In 1988 I happened to be present during a large flood where water sank as far south as Spider Cave (Staraj, 1988). At this time a very large stream was observed flowing in Serpentine Cave (Larkin and McCartney, 1988). This year a flood again was occuring although it did not rain all weekend. It flowed just as far south and with the same if not a bit more volume...but no stream at all in Serpentine Cave (Staraj, 1989b)! The conclusion was then obvious.

Possibilities:

1) Surface tributary upstream.
This would seem to fit the evidence but can it supply all the water seen? I think not. But mark it down as a good prospect.

2) Intermittent stream in Hennings Cave.
No. While Serpentine was dry, this stream was seen flowing.

3) Overflow conduit from another cave system.
This also fits the evidence. In 1988 when the Serpentine stream was flowing, Central River was in extreme flood. So perhaps it responds to the flood pulse only.

Of course when McKeowns Creek is high enough some water joins the Serpentine stream directly through the lower entrance and a nearby surface sink.

Where to?

The trip in 1988 confirmed that the Nibicon Dig in Little Canyon Cave was the primary sink for the Serpentine stream. Whether it goes from there to the JUR or into northern Mammoth Cave and so to Central River is unknown.

Dye tracing has connected both a sink in McKeowns Creek just south of Serpentine Cave and a tributary opposite the cave to Central River (Shannon, 1972 and 1973a). On this basis Central River would certainly seem to be the destination. However we now know that some obstacle prevents water in the Creek reaching Serpentine to the west. So it is quite possible the same prevents the stream going east to Central River. *Hence it is now probable that it flows to the Woolly Rhinosceros!* Supporting this possibility is that the dip of the limestone is here 45^0 to the west which gives impetus to cave development in this direction. Also studies of Wiburds Lake Cave to the north (Chatterton, 1984) and a dye trace from it to Lower River (Shannon, 1973a) indicate that the JUR lies to the west there and may still do near Serpentine Cave.

IMPORTANT PROJECTS

1) Mapping of the Ice Pick Lake system.
   (Attention Simon McCartney!)
2) Dye tracing from the Nibicon Dig.
3) Dye tracing Central River to the JUR in Spider Cave.

4) Dye tracing during a moderate flood from Central River to Ice Pick Lake.
5) Investigation of rockpile at the Serpentine lower entrance.
6) Verification of Shannon's Wiburds Lake Cave to Infinite Crawl trace.

Mark Staraj.

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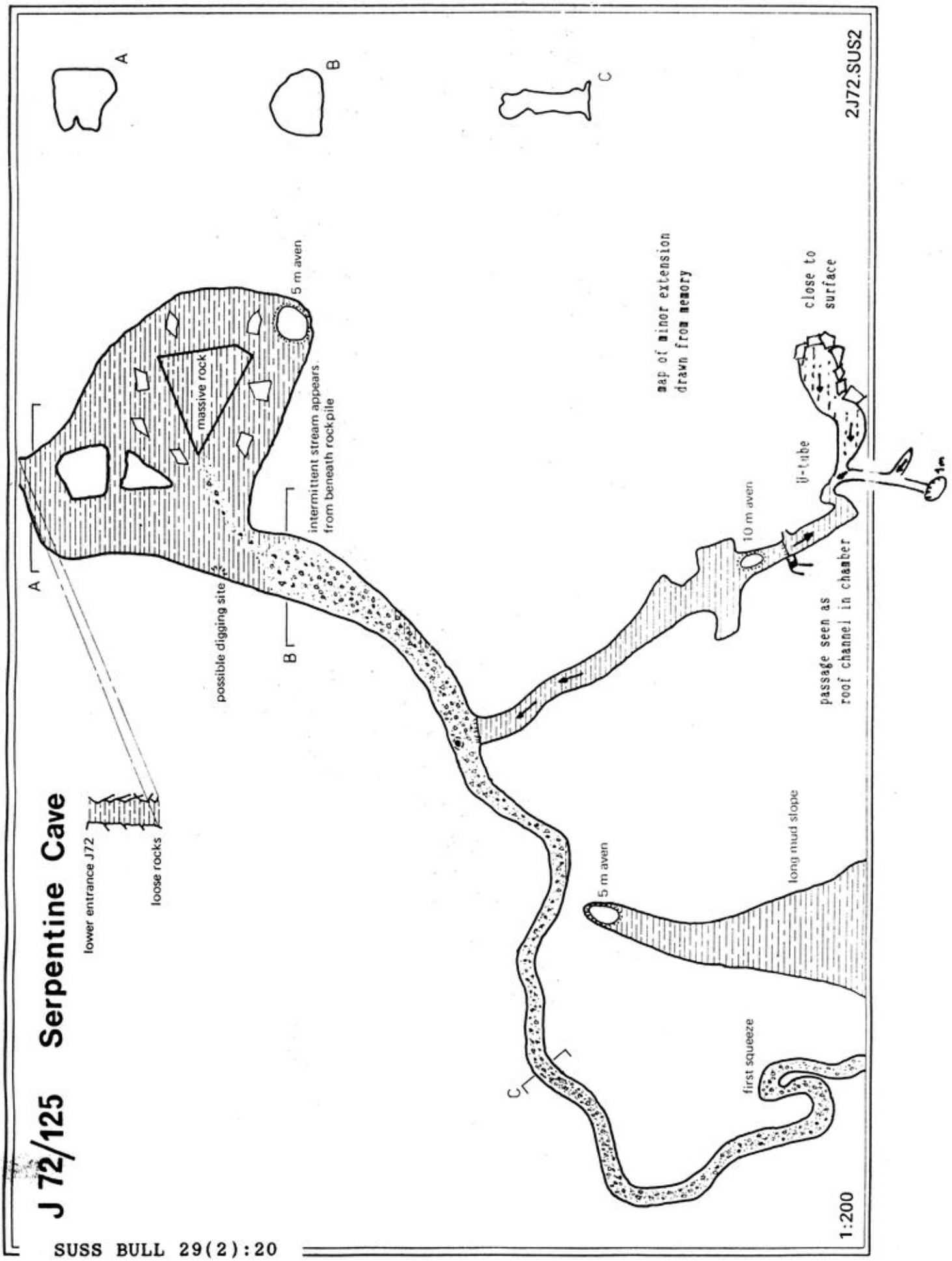

A BLIND DATE WITH B.M.S.C.

1-3 OCT-1988

PRESENT: Mark Staraj(T.L.), Warren Cole, Heather Cole, Tony Allan, Mike Gibian, Guy McKanna, Chris Young, Ian Gordon, Mark ?(British caver), Pal Fekete.

We had arrived at Jenolan eager and happy, greeting people we hadn't seen for a while, enjoying the beautiful spring sunshine and in the mood to tackle some absorbing exploration. So the bemused expression on Ernie Holland's face as he looked at all of us crammed into the guides' office was the sign of a party-pooper.

He decided to become irritating. "Which of you has the permit?"

Whoops! I hadn't had a chance to pick it up, said as much and so of course I looked expectantly at the others, but no-one had done the good deed. But why should it matter? He must know who was suppose to be here. Unless...

" Our books show that B.M.S.C. has the permit for this weekend, and there is no mention of S.U.S.S. at all. "

Well that was a right bottler, so long and thanks for all the fish,etc. Of course I had said to everyone else that the trip was on and here they were. If memory was failing me it looked like the Six Foot Track to Katoomba. Time to divert some attention. "But when I spoke to Pat, he said that the permit had been confirmed."

"Bloody Pat!"

"Typical bloody lawyer type. Left hand doesn't know what the right hand is doing."

"Say, get Larkin on the phone!"

Fortunately the story had a happy ending. Pat vindicated me and Ernie let us cave away from B.M.S.C. in the Southern Limestone. Sometime later, like any good lawyer, Pat faxed a copy of the permit to Ernie.

This turned out fine as the burn-rope brigade wanted to tackle the Bottomless Pit. Upon the way it was neccessary for Guy to lure hapless victims with the promise of Hobbit Hole. Having read the discovery trip report, not to mention 'The Hobbit', I was quite capable of remaining in the sunshine while one-by-one the rest were cajoled or tricked into entering. Besides I was certain I could see it all from where I was.

Further on I was side-tracked and began combing the bluff for caves. Anything interesting always turned out to be a cave remnant of less than 3 metres. Walking the top of the bluff I was surprised when I found myself looking down to the floor of a huge doline 7 metres below and perhaps 10m by 20m across. Entering from the far side I explored and found two crawly holes of any note. The first, near where I entered and a few metres above the lowest point continued after a couple of metres as an impenetrable slot, and the second began near the lowest point and spiraled for about 7m and closed out with no prospect. The floor was entirely composed of broken rocks sucking in a cool breeze everywhere. As far I could determine the feature is unnamed and untagged but surely this is not the case.

Shortly after the doline the bluff ends and drops toward a tributary. Soon I came across a wombat hole about a third of the way down. Looking inside established it to be a cave with an entrance

squeeze, negotiable for 3m. It continues into the hillside but requires digging to go further. It is in an excellent position with respect to the doline and will be checked for a breeze come winter. It is untagged.

Here I met Chris Young, then Heather (who still had not been in a cave) and Warren. Chris went on ahead and then I showed the others the doline. Hearing there was a cave here Warren was keen for Heather to try it out. Of course all beginners should try out 7m crawls to see if they would enjoy less interesting caves such as Mammoth. Wisely, Warren lowered himself into the cave first to assess it for Heather. At this point a subterranean monster seized him, dragged him down into the lair where could be heard screams, snarling and gobbling noises. Horrible as this spectacle was, it paled to daisies compared to the sight of the hiddeous beast itself: a Young Chris monster! However Warren had managed to tame it with a boot, and Heather enjoyed her first cave.

After joining Pal Fekete we decided to show Heather some worthy caves. First was Serpentine Cave with its superb meanders. Then it was time to put Warren to shame with a look at the Phallactite of Hennings Cave. (Sorry, no comparison Warren!) [ED: Ah, to be Editor and Author!]

Minor Extension to Serpentine Cave.

Although it was almost dark I persuaded Pal to help me explore an interesting hole found in Serpentine. A high chamber is reached after a slippery climb just before the start of the meanders. At a saddle point at the back of the chamber the floor descends into an uninviting 6m pit. To the west of the point is a 4m climb into the continuation of a roof channel, discovered and explored on a trip on the 31st March-1st April 1984 by Peter Northfield, Glenn Dawes and Ken Wallace (amongst others?, Peter Northfield, pers. comm.) that connects to the Upper Serpentine Section. At the bottom of the pit is a short U-tube leading to an additional 15m of cave. Unexpectedly we could find no signs of previous entry. The lower part consists of a short passage and a small pit, which by the lay of the mud has drained a static pool of water. The upper part consists of two low chambers ascending to a rockpile. It is obvious that this is very close to the surface and we attempted for some time to burrow a way through. The mud in the upper section was that sticky light orange stuff, in contrast to the rich brown of the lower section, also found in the entrance chamber.

The pit is shown on the map but not the extension at its base. This fact and the lack of bootmarks in the orange mud (which is capable of holding boots let alone marks) leads me to question whether this U-tube has been recently opened up by stream action, and if so where is its source?

Conversation with B.M.S.C.

Returning to the hut, at 8pm we encountered a truly grotty bunch of B.M.S.C. cavers, no less. Filthy, obviously worn out, and a dreary sight in the spitting cold rain, one had to ask,

"Where have you been?"

"Dwyer's Cave"

All is explained! Well almost..

"Where are you staying?" (It puzzled me that they had the permit but not the cottage).

"Oh, the boys like to camp, so we are at the pig farm."

Dwyer's Cave, rain and cold showers to boot. Authentic mountain men.

Sometime later after a hot shower, hot meal and congenial company I was not at all sorry for the soft city life. Outside it was raining.

The next day I sat across from the guides office, sheltering from the cold rain. Nearby two miserable, muddy figures could only be the remnants of B.M.S.C.

"Good Morning!", I said cheerily."The hut is nice this time of year!"

Unfortunately this seemed to be the end of conversation with B.M.S.C.

Minor Extension to Mammoth Cave.

On Sunday, Warren and Heather, Pal, Mark, Ian and myself took the scaling poles for an attempt on a shaft near Lower River. On a trip with Martin Scott earlier in the year I noticed a hole in the ceiling. The hole occurred at the start of a false ceiling and it was possible that it concealed an aven. Climbing into a larger, more stable hole Ian and Martin indeed found a shaft and signs of previous entry.Features include a crystal cascade and pool, and flowstone and mud. With this in mind clean gear was brought for the attempt.

Using the scaling poles, Ian, Pal and Mark explored the shaft but failed to find anything. A map has been drawn up by Ian Gordon.

Mark Staraj.

THANK YOU IAN GORDON! (but the cave was dark...)

THE STC COLUMN

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"Safety Through Knowledge, Awareness and Attitude"

Hypothermia—A New Field Treatment

By Frank Hubbell and Buck Tilton

Edited by Mike Fischesser
Reviewed by the STC and Dr. Noel Sloan

The definition of hypothermia is "a decreased core temperature of 95° F." This occurs whenever a human body starts to lose more heat than it is producing. That human is now at risk of developing serious, possibly life-threatening problems.

As human beings we survive because of our mental prowess, not our physical prowess. We constantly rely on our brain to keep us out of trouble and warn us of potential dangers. Hypothermia eventually affects all body systems, but the first and most important to be impaired is our mental processes. It is this decrease of mental abilities that causes so many people to become lost, benighted, injured or killed in the wild outdoors. As a result it is probably the single most important area of human physiology for the avid backcountry user to understand. It is an understanding of the physical limitations implied on us by evolution and nature.

As a species we evolved in a warm, moist climate, and today most of us retain qualities that allow us to survive and thrive in relatively temperate environments. Most of us, therefore, do not have a very acute defense system against the cold.

The principles that we need to understand are:

1) How the human body produces heat and loses heat, and how the thermal regulatory system works.

2) How the body reacts to a drop in core temperature, and the body's natural defenses against the cold.

3) How to recognize the signs and symptoms of hypothermia.

4) How to prevent hypothermia.

We are warm-blooded animals constantly burning up calories to produce heat in order to maintain a constant core temperature. The advantage of this system is a consistent performance in a variety of environmental conditions. Unlike cold-blooded animals, reptiles, we do not have to descend into our burrows whenever the temperature begins to fall. Instead we are able to maintain our normal core temperature by utilizing several metabolic pathways.

We produce or gain heat through: basal metabolism, nutrition and digestion, exercise and shivering, and external heat sources.

The basal metabolism is the heat that is constantly being generated as a by-product of the reactions occuring all the time in every cell. This metabolic rate can be speeded up if needed to increase heat production.

Food supplies us with energy and heat two ways. First, when we eat the process of digestion produces heat that is picked up by the arteries surrounding the small intestines. The heat is then distributed to the rest of the body via the circulatory system. Second, the process of digestion supplies nutrients that our circulatory system absorbs and sends to our cells where they are used in various metabolic activities producing cellular products and heat.

Exercise produces heat as a result of increased cellular activity in the muscles. The more active you are, the more heat you produce. This heat is absorbed by the circulatory system and distributed throughout the body. Shivering is an involuntary form of exercise controlled by the brain, and utilized to help control core temperature.

Finally, we gain heat from external sources. Whenever we are close to an object warmer than we are, our body absorbs some of the heat that object is giving off, this method of heat gain is very ineffective.

The mechanisms for losing heat are conduction, convection, radiation, evaporation and respiration.

Conduction is where energy, heat in this instance, is transferred from one object to another. Heat always moves from the warmer object to the colder objeect.

Convection is heat transfer directly into the air surrounding an object. The heat may be carried away by wind, or the warm air rising in a thermal current.

Radiation is the loss of heat via infra-red energy. Any object warmer than absolute zero gives off infra-red energy, and the warmer the object the more radiation it gives off.

Evaporation of water takes energy. Our body uses this principle as its main mechanism for getting rid of excess heat. We sweat, the sweat evaporates off our skin, and we cool off.

Respiration is a form of heat loss through evaporation. We warm the air we inhale, thus losing heat in the air we exhale. The colder the air, of course, the more heat loss.

The brain computes the messages from these various mechanisms to balance heat production and heat loss to maintain a normal core temperature. If the core temperature begins to drop, the brain has methods it can employ to return us to normal.

When our internal thermometer begins to drop, our body responds by decreasing that rate of heat loss by limiting the quantity of blood flowing to the skin. This is known as peripheral vasoconstriction. By vasoconstricting the blood vessels in or near the skin, we stop potential heat loss at the surface and turn the skin into an insulating layer.

If this alone does not prevent the core temperature from falling, the brain will increase heat production through involuntary exercise (shivering) and increased metabolic activity. Most people begin to shiver continuously when their core temperature drops to approximately 96° F.

So far we have discussed how the body produces and loses heat and how the body reacts to the cold. But how do we recognize hypothermia as it occurs? As our normal 98.6° F begins to drop, a series of signs and symptoms manifest themselves which lead to impaired performance and death if not interrupted.

The first sign is a loss of judgment as the brain becomes dull with cold. The victim drops gear without noticing it, loses direction without caring, feels cold but decides to do nothing about it.

Next the victim loses control of fine motor skills. He cannot tie a knot, button a shirt, put on vertical gear, strike a match. The brain is trying to save itself and does not want cold blood returning from the extremities. It shunts blood away from hands and feet, willing to sacrifice less important parts to save the whole. While the body's core may have dropped 2 or 3°, the hands could have plummeted 10 times that amount.

Now the body begins to shiver in an attempt to rewarm. Shivering can effectively produce five times as much heat as standing

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still. Unfortunately, that much shivering needs five times as much energy to continue. If the victim is unable to drink or eat, he soon runs out of food reserves and stops shivering while body temperature keeps dropping.

Next, gross motor skills begin to fail. The victim stumbles, eventually cannot rise, slips into a stupor, and the body becomes more and more rigid. This profound state of hypothermia where the victim is cold to the touch, blue in color, stiff, unconscious, with no detectable pulse or respiration, used to be thought the end of the line. Now we know people in this "metabolic icebox" may be saved. Quality emergency care is critical.

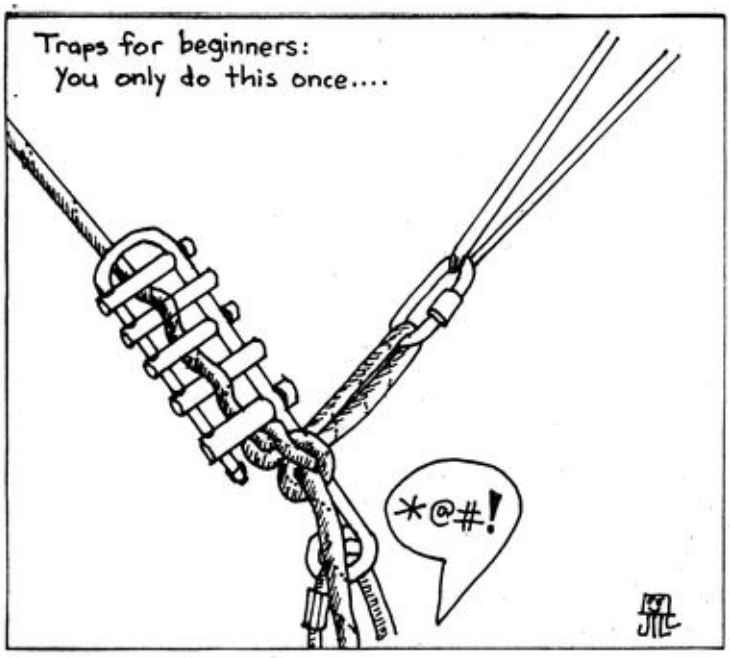
With hypothermia recognized, and the sooner the better for the victim, it is time to begin treatment. In the case of mild hypothermia, where the person is still actively trying to rewarm themselves, the best aid they can receive is to change their environment so the heat they produce is not lost. Get them out of the wet and cold and wind and into something dry. Cover their head and neck where as much as 80% of their heat can be lost. If they can exercise encourage them to do so, but do not force them. If they can feed themselves, give them something to eat and drink, the sweeter the better, to feed their inner fire. Fluids are more important in the cold, easier to digest. A warm (not hot), sweet drink such as jello would be ideal, but the victim must be able to drink it themselves. Trying to pour fluid down the throat of a partially conscious person can result in aspiration of the liquid with deadly results.

If the victim is immobile, put them in a "hypothermia wrap." Surround them with multiple layers of dry insulation. Remember to insulate them from the ground. Add a windproof, waterproof layer of plastic or coated nylon. Be sure all the possible places that heat could escape are sealed. The final result is a coccoon that is only open to the mouth and nose.

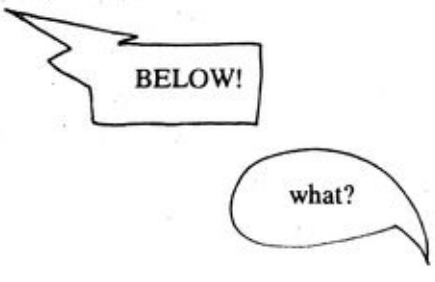
Though it is still popular to put a hypothermic victim naked in a dry sleeping bag with a healthy person, that is not the best idea for a very cold patient. The problem is this. First, the cold person is massively vasoconstricted so that it becomes impossible for them to absorb heat through the skin. Second, the warm person usually overheats and begins to sweat which puts us right back at the beginning with a damp victim. It is next to impossible to rewarm a very cold person unless they are bone dry.

What about the profoundly hypothermic victim, unconscious and no longer actively trying to rewarm themselves? Begin by handling them gently. Roughness can bring on ventricular fibrillation because the heart is in a fragile state and the blood is growing syrupy and difficult to push around. Get them into a shelter and into a hypothermia wrap. If they cannot be immediately and carefully moved to a medical facility, warming the air they breathe can help. Sometimes the only way to do this in the field is to breathe the air you have warmed in your lungs directly into their face. Avoid rapid rewarming as from an external source. The toxic buildup brought on in the extremities by inadequate circulation can stop the heart if it rushes into the circulatory system all at once. As with hypothermia's cold weather companion, frostbite, massage is a bad idea.

Do not be deceived into thinking hypothermia is isolated to cold weather. Most victims are struck down by air temperatures around 50° F in combination with contact with water, the ground, and air movement. As always an ounce of prevention is worth untold pounds of cure. 1) Wear the proper clothing and wear it correctly (clothes that retain body's heat even if they get wet, like wool and synthetics). Wear it in layers and take off the outer layers before you heat up and sweat, put them back on before you cool off and get chilled. 2) Stay well hydrated. The colder the weather, the more water your body needs to stay warm. Monitor your urine output. It should run clean and copious. Drink 3 or 4 liters each day. 3) Eat plenty, especially quick-burning carbohydrates. Consume a hearty breakfast, and nibble away at snacks all of each day. 4) Do not overexert yourself in the cold. Work at a pace that does not wear you out, one that allows you to stay active but not sweaty. 5) Understand your own circulatory system and how the "enemy" affects it, watching for the early, tell-tale signs of hypothermia in yourself and others. If a companion appears to be hypothermic, always examine yourself for the same signs. 6) Carry the extra gear and clothing and food that will allow you to build a shelter, create a hypothermia wrap, and treat the problem in the most effective manner.



Heard at Mount York, a rock climbing area:



FUN IN ARGYLE HOLE

Trip Report: Argyle Hole, Bungonia.

Saturday 21st January, 1989.

People: Guy McKanna (TL), David (friend of Guy), Mike Lake, and Jill Rowling.

Mike and I drove to the Argyle car park (via the Lookdown car park: one of Mike's devious routes ...), arriving at 11 am and waited for Guy. Presently he arrived in the 4WD. Then followed a flurry of activity as everyone got their gear together. We entered Argyle Hole at about 11:30am.
For a moment, I thought I might have to abandon my trip at the bedding plane squeeze near the entrance, but perseverence and a change of angle won. Then there was a bit of crawling and down the corkscrew, after which Mike became temporarily disoriented.
When we caught up with Guy, he was trying to rig the first pitch using the jug-handle in the roof up the passage and a dynamic rope of wonderous history, but to hang the rope free was going to involve some thought. Getting oneself rigged in the low passage was also entertaining.

The pitch edge was a sod to negotiate, having a floor canyon which was just too narrow for my hips and just too deep for my legs. The re-belay was easy; (I'd been practising) but about 3 metres from the bottom, I remembered something...

"Mike!"
"Yes, Jill."
"Can you see my yellow pack up there?"
"Yes."
"It's most important that you bring it down with you!"
"Yes, OK, but why?"
"It's got my Jumars in it....!"

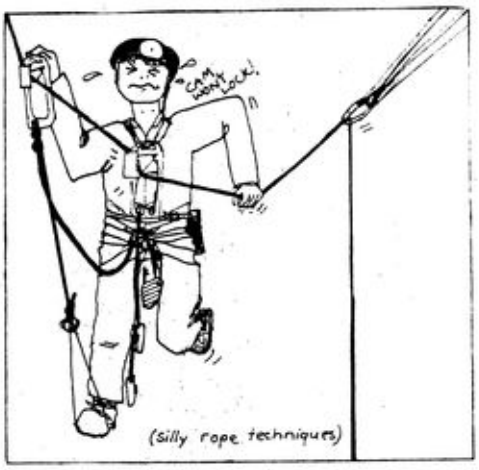
Next there was a 3m climb down some tape, because the rope did not reach. I thought this could be fun on the return.

On the right, we passed a rather elegant chamber ("the Alcove"), then climbed over & under some boulders to the start of the next pitch.

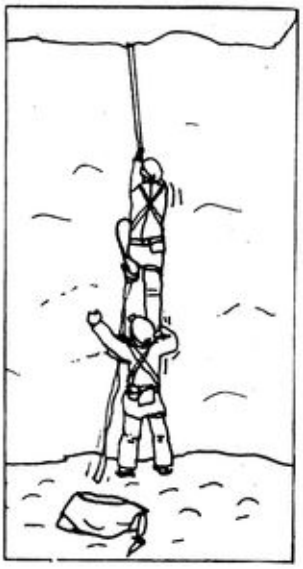
Guy had put a wire trace up to a bolt, as well as using the chockstone in the passage. The start was tight, as the Bungonia Book says.
I was curious as to why I was descending at a not-so-constant rate: ah! Guy's 9mm static rope! It had dark patches, light patches, flat spots, fluffy spots...
Guy had rigged a re-direction part way down which was fairly tight. Because he didn't think he had enough rope for the next pitch, he had tied the rope off at the bottom, forming the start to the next pitch. This meant that I had to feed the rope through to get down, and Mike kept asking me to get off the rope even when I was not near it. (Mike had warned me that Guy rigs tightly).
On the next pitch, Guy had rigged another re-direction with an even sharper angle, necessitating the use of a cowstail to prevent the re-direction krab from escaping.
Guy need not have worried about not having enough rope: there was a heap of it in the puddle at the bottom of the pitch!
At this point, David and Guy complained of headaches, so Guy decided to return to the surface to "meet Mike Gibian at 5 o'clock". Of course, he waited for Mike to abseil down before telling him that we had run out of time (and maybe air) and that we were all just coming back up. Mike didn't mind; he rather enjoyed the abseil.
We all had something to eat, then Guy disappeared up the pitch. David started to follow but his

prusiking system was set up so inefficiently, he would have been climbing twice as much as was needed. Turns out this was David's first vertical cave. While Mike helped David, I explored to the start of the junction of the two sumps, noting a fine bunch of helictites near the roof. All effort was resulting in a feeling of breathlessness and I began to lose enthusiasm to explore any further. Back to where Mike and David were, I set up my own prusik rig, which Mike said also needed some adjustment. After cutting some cord to length, I wanted to melt the end to stop it fraying, but the waterproof matches would not stay lit after the phosphorus burnt off in the high CO_2 atmosphere.

After David climbed up, I followed and got myself well and truly hung up on the re-direction.
No, Jill, you do not cross a re-direction like a re-belay.
I could not get the chest jumar cam to shut on the tight angle, nor could I reach the rift walls like Guy could!
Gymnastics eventually won.
(I've since learned the correct way!)
The next pitch was not technically difficult, but I thought I would expire just before the re-direction: I seemed to not be able to breathe (try going slower).



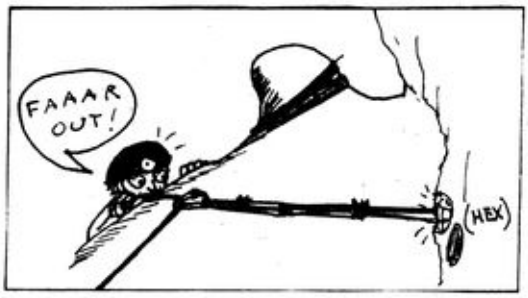
Then it was up into the slot with the re-belay on the wire trace. After I crossed this, Mike should have been able to start climbing, but his actions only pushed me impossibly into the slot. Again, brute force and gymnastics won.
I had just climbed up a squeezy bit (near "the Office") when Mike called for assistance. Back down again. There was Mike, a bath of perspiration, struggling with the rope sack. Apparrently the last bit of de-rigging had proved difficult, involving lassoing a projection to avoid a pendulum.



Together we got the rope sack to the base of the tape climb. The hand and foot holds were remarkably absent on the smooth, wet flowstone. We tied a few loops in the tape, then Mike climbed onto my shoulders like a totem pole and hauled himself up the rest of the way. Next, I attached the rope sack and he pulled that up. We put more loops in the tape and I climbed up using them. Future trip leaders note: use a rope, not a tape. This climb is a pain.

Before he left us, Guy had said that he had re-rigged the last (top) pitch. "Oh dear," said Mike.

Sure enough, as Mike reached the top I heard: "Jill, you're going to LOVE this last bit!"
Guy's dynamic rope had less spring than the static ropes. I wondered about its history. I crossed the re-belay and was just peering over the top edge when I saw Guy's creation.
"Faaar out!"
The rope was re-directed by: krab, bodgy bit of knotted purple tape, another bodgy bit of knotted purple tape, some cord, and a hex in a hole.
I was even more impressed when I de-rigged it all and found out how easily the hex came out.
On the way out, we were "temporarily disoriented" in the low passages before the entrance squeeze.



Outside, Mike's surface navigation had him heading West before he was gently reminded that the sun sets on that side and the cars were the other way (I believe he's done that before ...). It was about 7:30pm but still light.

Back at the cars, where Mike Gibian was waiting, we were changing when a group of girls passed by and Guy chatted with them.
We went back to find a campsite and Guy went to look for the girls (unsuccessfully). At dinner, Guy asked who wanted to do Spring Creek Canyon that night. I said I was too tired; Mike Lake was unsure of the weather. Guy had not brought any camping gear and had to work the next day. I think Mike Gibean was somewhat disappointed. So Guy and David left.
It rained a little that night, and we all slept in.
The next morning we were awoken by the sounds of people learning how to prusik in a tree, so we went over to watch them, laugh and give a hand. There were the girls that Guy had been looking for: they had camped next to us!
After breakfast we looked at all the lookouts and walked down to the Efflux. The shale scree slopes were entertaining, complete with stinging nettles (we were wearing shorts). I had a small torch and crawled into the Efflux, but it looked all rather wet in there. We ate dried figs under the shade of the sandpaper fig tree and looked at the old Cedar Wattle with its trunk diameter of approximately 2 metres.
On the way home, we stopped for Devonshire Teas in the Mittagong Bank Tea House. How civilised!

Jill Rowling, June, 1989.

SUSS COMIC CLASSIC
PART 1 : THE TRIP REPORT

TRIP REPORT: Kalang Canyon, Kanangra Walls,
March 22nd 1980

-OUR ROPE WAS CLEAVED IN TWO !-

Present: Mike Lake(T.L.), Ian Mann, Ivan Desailly, Judi Strickland.

From the car park at Kanangra, 10 minutes of easy walking leads one to the first abseil pitch. As with many other canyons the belay points were obvious and dubious to say the least.

The canyon only contained a trickle of water, just enough to sustain the algae, and make the rockface slippery, and all went well until the 3rd pitch. Ropes were lowered over the edge but a 10' ledge lower down precluded us from seeing if the rope ends reached terra firma. Ivan singled down first on a harpoon, and when he reached the ground back came the unforgettable words:

"There's three ends down here!"

The rope that he didn't abseil down on was 60' short of the ground with the remainder of the rope lying at his feet.

The entire rope was hauled up and examined as it was fed down again. Apparently a rock had been knocked loose which, hitting the rope, severed it into two. The rope was retied and tied off at the bottom of each subsequent pitch for the last man down. The incident highlights the necessity for always checking that a rope end reaches the ground.

Another party, rovers from Gymea, passed us soon after. The climb up Murdering Gully was relatively easy and only takes around 2 1/2 hours before one reaches the cars again.

Michael Lake.

AROMATIC JENOLAN

Easter 1989.

PRESENT: Mark Staraj, Keir Vaughan-Taylor, Igor Jazbec, Jenny Mee, Jane Howes, Jenny Tainsh, Chris Ward, Anthony Hotop, Kevin Moore.

Well, another trip looked destined for chaos. Igor had picked me up and we both were hanging around Strathfield station trying to find Anthony. But neither of us knew what he looked like! we waited in the central area, occasionally checking both entrances. An hour later we decided to cut our losses and headed for the car. And then we knew we had found him... a dejected and lost person with a large rucksack. Now for Jenolan.

Arriving at the Caver's Cottage, everything was silent. No one was there and neither was the key! Time to use the ladder. heading around the side of the house we were practically flattened by a smell most putrid. Guarding the hut was the carcass of a 4ft roo! The bugger had snuffed it half way under the hut. And it stank! This was not looking good for tonight. And where were the others? Keir should have been waiting for us. I had spoken to him in person just the day before and told him that I would meet him at the cottage.

Back at the Guides' Office I found Keir and the others were retrieving piping used and left on an aborted attempt to lower the syphon in Water Cavern. Shortly, outside, Captain Chaos appeared, and in file behind were the obedient, muddied freshers carrying the piping.

Keir: "I'd forgotten you were coming."
Indeed.

Mentioning the roo, everybody said how they had noticed the abominable smell and the concensus had been that it was Keir's socks! (If Pat had been there I would have put it down to his thermals, but that was another story !?)

Having made introductions it was time to cave. Back at the cottage we decided upon an Ice Pick Lake round trip. It would contain a good mixture of scenery: Railway Tunnel, Naked Lady Chamber, Ice Pick Lake, high rifts, formation, crawls and a couple of squeezes.

Just as we were to setting out, a keen figure bearing a heavy rucksack appeared trudging up the hill. It was Chris Ward and he had just walked up from Caves House after catching a tour bus into Jenolan. Not wanting to arrive too late he had asked the operators if it went directly to Jenolan. Yes ,was the reply. Some scenic drives, lookouts, and Devonshire teas later he arrived!

Inside Mammoth we oohed and aahed our way through the Entrance Cavern, Horseshoe Cavern and Railway Tunnel. Time for a sideshow, so we all attempted to climb the big mudslope. At the top of this another went almost as high to the left. Upon Keir's instructions we checked it out. At the top behind some rocks was a shaft of some 5m depth. A job for someone with long legs I thought. So Keir followed it down and the re-emerged into the Railway Tunnel. Then it was back down the slide and off to look for the turnoff to Hell Hole.

Keir had been this route before but could not remember it (apparently). I knew it only from countless readings of the Mammoth Book. Sounds promising doesn't it?

Hell Hole Variations.

The turn off was soon found. Keir darted up a left-hand passage that led to an awkward sloping squeeze. Meantime I continued to the end of the passage where I spotted a small, fiddly hole into a narrow descending rift. Getting into this I found the rift dropped about 4m in height and then rose back to the same height steeply to where it became a tubular passage of enticing proportions. It started at shoulder breadth width, but as I climbed up the other side it narrowed so I had to switch to sideways and below it was unnegotiable. this was rapidly becoming a unhappy situation. Trying to chimney up in a rift that is just wide enough to admit you sideways is very difficult as it is very hard to acheive a stable wedge and doubly hard to push up from without a very real risk of slipping and becoming jammed for all time. Igor's appearance at the top of the rift provided enough encouragement to succeed. The tube opened onto a pair of parallel passages. sometime later we found that the avens leading from above the tube was the route to Naked Lady Chamber. Opposite these at the other end of the passage was the sloping squeeze and after some time Kevin was able to get through. He had had a similar problem to me in that being quite a broad fellow he could fit into the squeeze but with not enough room to let him push upwards from. The parallel passage led back past the squeeze as a rift (stay high). This dropped into a small room with an aven and a passage leading off. I attempted climbing the aven but the presence of crumbly shale in the limestone saw me abort just below the top where a low crawl led off. Keir then successfully cliimbed it and found the crawl continued a few metres till it became too narrow. no prospect. Meanwhile Igor had pushed up the other passage to a small room where a small passage 2m from the floor had stopped him. I managed this climb and pushed up the snug passage to an aven that appeared unscalable and probably petered out. The whole of this section was floored in loose shale and so this area must represent another part of the shale contact seen in Waterfall Passage.

Naked Lady Chamber is quite large and well worth a visit, but take care with the formations. It should be investigated and mapped more thoroughly as some avens and shafts and passages exist only partly mapped and explored. At the very bottom of the chamber a 5m uninviting chimney drops down and the second of three passages provides a route down via a rockpile to the floor of a chamber below. Nearby we all clambered down a short passage to view Ice Pick Lake except that it was up so high (look at map of area in the article "Central River Meanders" in this issue) that only a pool could be seen. Of peculiar interest was the colour of the lake: deep green like GI cordial. Is this result of flourescein or what? Not at all the aqua/blue colour one would expect.

The increase in level gave me grave doubts about the possibility of completing the round trip and indeed the water had risen from the "hole to water" to a similar height and sumped the passage. So it was back to the 5m laborious chimney as the Book puts it. After a long wait it was my turn. "Mark is not getting any help", said a grinning Keir. Obviously I was to provide Entertainment this Week. A case of stage fright however saw me up in a few seconds to the disappointment of the assembled crowd. Attention switched to Anthony, who was lucky last. After many minutes and some assistance and frequent comments from Keir, "No, I tried that one. And that one...", Anthony made it up. Did I miss the Keir Vaughan-Taylor Show?

The next day, Sunday, it was a visit to Oolite Cavern and Lower River, which was enjoyed by all. Thanks go to the Guides for promptly removing the carcass on a very busy Easter weekend. And congratulations to the freshers for coping with a challenging trip on the Saturday and for making the weekend an enjoyable one for everyone concerned.

Mark Staraj.

Kevin Moore

DANGER - GRILL CAVE, BUNGONIA.

PRESENT: M.Staraj, I.Jazbec 29-30th July

On a very recent trip to Bungonia I ventured into Grill Cave, for the first time in two years. Towards the end of the "Safe From the Russians Chamber" is a sign before a rockpile upon the lefthand side (going in). The sign says something like "Danger. Unstable rockpile beyond this point." Some 10m beyond this can be seen obvious holes to the next level. Being a little hazy of memory at this point I carefully picked my way over three or four very large rocks to where they perched over the steep canyon that is the continuation of the cave. Looking back to my companion Igor who was awaiting instructions I noticed this very alarming point. A HEAD SIZED KEYSTONE FOR THESE LARGE BOULDERS IS SPLIT INTO TWO BY A 3MM CRACK. THEREFORE THE WHOLE ROCKPILE IS DUE TO COLLAPSE AT ANY TIME. It is only held together by the weight of the rocks pressing down upon it. If it is neccessary to pass the rockpile a relatively safe route is to keep to the right of the rockpile and you will find a roomy hole leading directly into the canyon.

Mark Staraj.

ELLIS BASIN EXPEDITION - 1987, NEW ZEALAND

Danielle Gemenis, Martin Scott (SUSS); Oz & Alice Patterson, Fred Kahl, Peter Braggins, Arthur Freeman, Chris Pugsley, Paul Woperers, Ian Millar, Kathy Lynch, Bruce Mutton, Greg Pickford, Jane Rogers (NSG) and Graham Peters(MSG). November, 1987.

INTRODUCTION

Danielle and I were in New Zealand to go caving for a whole month. As it turned out Danielle ended up staying 3 months. After flying into Wellington late at night, we spent a terrible night in the airport and day wandering around this wind infested city. Finally we found the sanctuary of John Lewin's house with beds for the night and carbide that was packed for the bus trip to Waitomo Caves the following day. My memories of Wellington are not good, and although this is supposed to be the capital of New Zealand, all it conjures up is a great big transport terminal - aeroplanes, buses, trains and ferries. Don't believe the (tourist agent) hype! Despite this, getting around is quite a problem when there are 4 heavy packs and only two of us. Soon the number of packs were to grow in number as the size of the packs shrunk, or was it when we decided to buy some food.

A hitch from the bus stop soon had us at **Waitomo** where a tourist guide, probably having pity on us, gave us lift up to the cavers cottage, come Youth Hostel. This is the most palatial caving hut probably in the Southern Hemisphere with hot showers and drying rooms, never ending numbers of bunks, a big kitchen and lounge room, and is surely a tribute to the Hamilton Tomo Group (HTG) who built it. And you thought the accomodation at Jenolan was good! Waitomo Caves is an extensive area of flat lying limestone with heaps of horizontal caves with BIG streamways and BIG dolines. New Zealand is wet, and its caves are wet. The next week or so was spent caving in Urenui Cave (a narrow urenary tract-like cave with entrance and resurgent orifices, although near caving hut), Mangawhitikau (from Deodoriser to Long Tomo entrance), an excellent through trip as is Lost World-Mangapu, and floating through Ruahkuri Cave. The main caves and their access are described by Rolf Adams(1985), and should be looked at before going to Waitomo.

The packs brimming with 400m of largely unused rope were picked up with all the other packs and put on the bus with us back to Wellington. Another night later and we were off to the South Island on the ferry, and then another bus to Nelson. More boring travelling. Unless you stay at the one area the whole time in NZ, there is a lot of time between caves particularly without a car. A couple of days were spent in Nelson with Arthur Freeman, a friendly gnome-like ex-Welsh caver and then president of Nelson Speleo Group(NSG). Luckily, we had arrived just as they were in the final stages of planning a mini-expedition to the Ellis Basin karst, which sits up to 1500m above the entrance of Nettlebed and the Pearse Resurgence. The potential for a new high entrance to the ever growing Nettlebed Cave was in the back of everyones minds. The Ellis Basin had not been looked at seriously by cavers since the early 1970's, when Julia James lead the last expedition to the area, and so was considered to be a good possibility for finding new deep caves. Previously they had camped beside Grange Slocker, a large doline in which a sinking stream has been dye traced to the Pearse Resurgence just under 1000m below. Thanks to the Forestry Service there is now a hut in the Ellis Basin for cavers who prefer who go caving in comfort. With about a week until the Ellis started, Danielle and I headed up to the Mt. Arthur karst to look at **Nettlebed Cave**.

From Nelson another bus took us to Motueka, and then a ($45) taxi took us to Flora Saddle, from where we lugged most of the gear up to the Mt. Arthur Hut. This is a small 6 bunk hut which is the base used by cavers exploring the Mt. Arthur karst. The following morning we set off down the Whiskey Creek track to Nettlebed Cave, and arrived at the Pearse River to find it to be a lot of water. It had been raining that and the previous days, so it was in fact in flood, and the track along Pearse River normally used by cavers to get to Nettlebed would of been impassible. As we didn't have a car and planned to do the through trip in Nettlebed, the Whiskey Creek track option taken proved to be the only one anyway. We tentatively crossed the Pearse and wandered up the Eyle Creek track to Nettlebed, and entered the cave at about 4pm.

It had already been a long day before we got to the cave and we still had to navigate through the maze of Nettlebed before we could stop at the Salvation Hall underground campsite. With the aid of photocopied maps of Nettlebed, we slowly navigated through the cave, past a pool which we had to roof-sniff through, the gale force winds of the Hinkle Horn Honking Hole squeeze, ladder

climbs, pitches and also along many of the wrong passages until realising we were off the track. The cave is track marked along most of the Overland Route, but it is still easy to lose the way. At 12pm we reached the campsite, and collapsed into the many (8) sleeping bags, perhaps too many for the two of us, but why leave some unused when we were pretty cold. The next day was spent around the campsite, before heading out along the same route to the entrance of the cave, and then back up 1000m to the Mt. Arthur Hut arriving late at night again. At this stage we decided to pike on the through trip, and Danielle hitched into Motueka to get some more boots as her old ones had died. I climbed up Mt. Arthur to check out the views over the karst including the adjacent Ellis Basin.

ELLIS BASIN EXPEDITION Thursday 19/11/87 - Sunday 28/11/87.
Grid references from the Mt.Arthur 1:50,000 topographic sheet M27.

Danielle and I walked over to the Ellis Basin Hut along a poled track which gets pretty steep in places, especially with heavy packs. The hut has 6 bunks, a fireplace and an outside dunny and wood hut, making it an excellent base for the expedition. Before NSG arrived, Danielle and I went looking for caves on the eastern side of the Ellis River. Along the Arthur Fault is a small cave (GR840970) with a two shafts dropping down about 10 metres choked with snow in the bottom. Water draining off the phyllite on top of the ridge to the south of the Arthur Fault sinks into many choked dolines, except for one with a large slotlike entrance pitch(GR839967). I rigged the first pitch partway down, but left it until the following day as it was getting late. Kathy and Peter arrived with the gear and boxes and boxes of food, and were still sorting it out when we returned to the hut a couple of hours after the helicopter drops.

On the Saturday, most of the NSG cavers walked in the Ellis, while Peter and Kathy went searching for **Blackbird Cave** with a grid reference from Fred Kahl, who had not been to the Ellis since the expeditions of the late 1960's and early 1970's. Danielle and I returned to the undescended cave, rerigging the pitch which turned out to be about 60 metres, opening into an large chamber filled with rock breakdown, and an old slit garden hose pipe used as a rope protector by cavers many years ago. This archaeological treasure was left for researchers to determine the brand of pipe and the time it was dropped down the pitch, to remind us of the past technology of the rapidly changing vertical caving. Besides which, we couldn't remove the find, as it gave the cave a name - **Lost Hose Pipe.** By climbing 5m down the high vadose passage that leads off the chamber, a passage with a small stream is met. The roof drops down to the floor forming a squeeze which should be pushed with a hammer and more determination, as it is a promising lead with a good downward draught and continuing passage at -90m. The next valley to the east was searched, finding only a stream emerging from a spring in slate (GR844965) and it sinking some way downstream in the gravel. Peter and Kathy had not found Blackbird as they were looking in the competely wrong position, thanks to an erroneous GR given by Fred, but had found a cave with 2 short pitches that lead to a pitch with a six second bouncing rock drop! This cave sounded like a real goer, so instead of spending the week with most of the others in Blackbird, I decided that this was a far better prospect. Just before dusk Fred Kahl lead a few cavers to the entrance of Gorgoroth Cave (-346m), which is not far from the hut.

Oz collected ropes for each of the pitches in Blackbird Cave (-316m) and assigned a few to everybody so that we could take them to its entrance to push the strongly draughting rockpile at the base of the cave. Fred Kahl had been to the cave some 15 years ago and we were relying on his memory (which has quite a reputation for being poor) to refind the cave. Doubtful cavers were strewn across the karst, as Fred lead us into the distance with a conviction that he knew where the entrance was even though his grid reference was wrong. It wasn't long before Fred came up trumps, much to everyones disbelief. Wow, finding two caves in two days, and straight to the entrances first time. Blackbird Cave has remained elusive for some time, as discovered before by Rolf Adams and Anne Gray who spent their three allotted days for caving in just finding the entrance. Peter, Fred and I returned to the new cave (see map), which was later called Falcon by the NSG for reasons unknown to me, and proceded to rig the large undescended pitch, first a 40m pitch to a ledge part way down, then another a short 13m pitch parrallel to the gaping shaft. A fifty metre rope and a 30 metre rope were joined and I started rigging into the darkness, but left it for the following day as the others wanted to have some dinner.

The 3 of us returned with some more rope and an earlier start, and after 2 redirections I managed to reach the bottom after crossing the knot about 10 metres from the base of the pitch,

which turned out to be 55m long. I quickly scouted around the base of the pitch in a large boulder strewn chamber, finding a passage leading off down to a small streamway. The streamway was followed as far as practical through a rockpile until it there was no obvioius way on, so I returned to the base of the pitch to shout to the others that they needn't bring the extra ropes down. They descended and found another pitch almost immeadiately, along the margin of the rock filled shaft. Looking down the pitch, a streamway could be seen downstream of the rockpile. We returned to the rockpile, and Peter found a way through an awkward squeeze into the open streamway with high vadose roofs but only 1/2-1 metre wide in very cruddy rock - shale with thin occasional bands of marble. It was amazing that there was any cave in this insoluble and crumbly crud at all. The streamway was followed until a pitch in the crud was reached- a small 5m waterfall. No rope (and I thought it didn't go), so we surveyed out to the base of the big shaft. It looked like this cave was going to go! That night I spent an unsettled night thinking not about undecended shafts, but the poor state of my stomach which I finally succumbed to, having to run outside of the hut into the cold to get rid of my dinner. The lurgy had struck! No caving for me the following day.

Fred and Peter returned to the cave the following day, rigging the small cruddy rock pitch belayed to a boulder jammed in the narrow streamway. The streamway was followed until it dropped into an enormous pit, with the pitch head still in the cruddy shaley rock making rigging a serious problem. With a little bit of imagination, and by climbing 10m high up the narrow vadose passage, the pitch was rigged to some rocks caught in the crud. Peter descended a short distance down the pitch pulling slabs of rock off the walls, getting very scared. A lack of rope meant instead they surveyed back to the limit of our surveying the day before.

With a shortage of rope, the base of the 55p was rerigged with some 5.5 mm diameter KZ 7(Americas Cup) rope. This rope was developed (copied?) by Donahys, the local maker of ropes including the fairly average 10mm caving ropes used almost exclusively by NZer's. The thin rope was taken by the Kiwis to China on an expedition, thinking they needed lots of rope to fit into their small bags. The rope was not used in China so was actually initially used in a cave on this expedition. The new rope does not take any shock loading being non-stretchy, and so was rigged on the end of a normal static rope hanging free with no risk of abrasion. Any shock loading could therefore be taken by the upper rope. Abseiling on the rope was not too fast with a rack over a small distance and ascenders still worked on the rope. I can't see the use of small diameter non-shock loading ropes taking off as they are not designed for caving, with abrasion (it wouldn't take long to cut through 5.5mm) and shock loading commonplace in caving.

I was feeling better the next day, and the others decided to take a rest day, so I returned to the cave with Danielle. She was not really in the mood for caving, so we surveyed out from the boulder strewn chamber up to the entrance. Bruce pushed the data into his computer when we returned, and came up with a depth for the cave to the top of the large undescended pitch : -234 m and still going!

Peter, Fred, Paul and I returned the with some more rope on the Thursday although the weather was not particularly good. The rock on the undescended pitch improved part way down, back into marble. This pitch was a real bastard, being rigged with 3 ropes, 2 knots and many rope protectors making descent slow, before bottoming at 81 metres. This should be rigged with a single long rope and a bolt placed in the marble below the lip. The 81m waterfall sank into boulders at the base of the pitch in an large chamber filled with a deafening roar from the waterfall, but an old streamway was downclimbed until a short climb/pitch about 3m long. Past this small pitch the streamway was followed along a constricted passage with a pool and strong downward draught to the top of another pitch. The next pitch, about 10m, was rigged with our last rope. At the base of the pitch, another short pitch emerged, but with no more rope and rising water levels in the streamway meant it was time to leave.

The next day it was raining and snowing around the hut, so everyone decided to stay in their pits or around the fire eating and keeping warm. Chris Pugsley made an attempt to go home over the snow covered Mt Arthur but the weather and snow covered track drove him back.

Saturday, was the second last day so we had to derig the cave and get things organised for helicoptering out on the Sunday. Chris, Greg, Danielle, Jane, Bruce and Paul walked out over Mt Arthur as the weather cleared in the morning, allowing Fred, Peter and I to derig the cave. The cave was descended to the top of the large 81p whereupon it was decided to leave the following two rigged pitches and the surveying gear at the bottom of the cave for another attempt. The cave

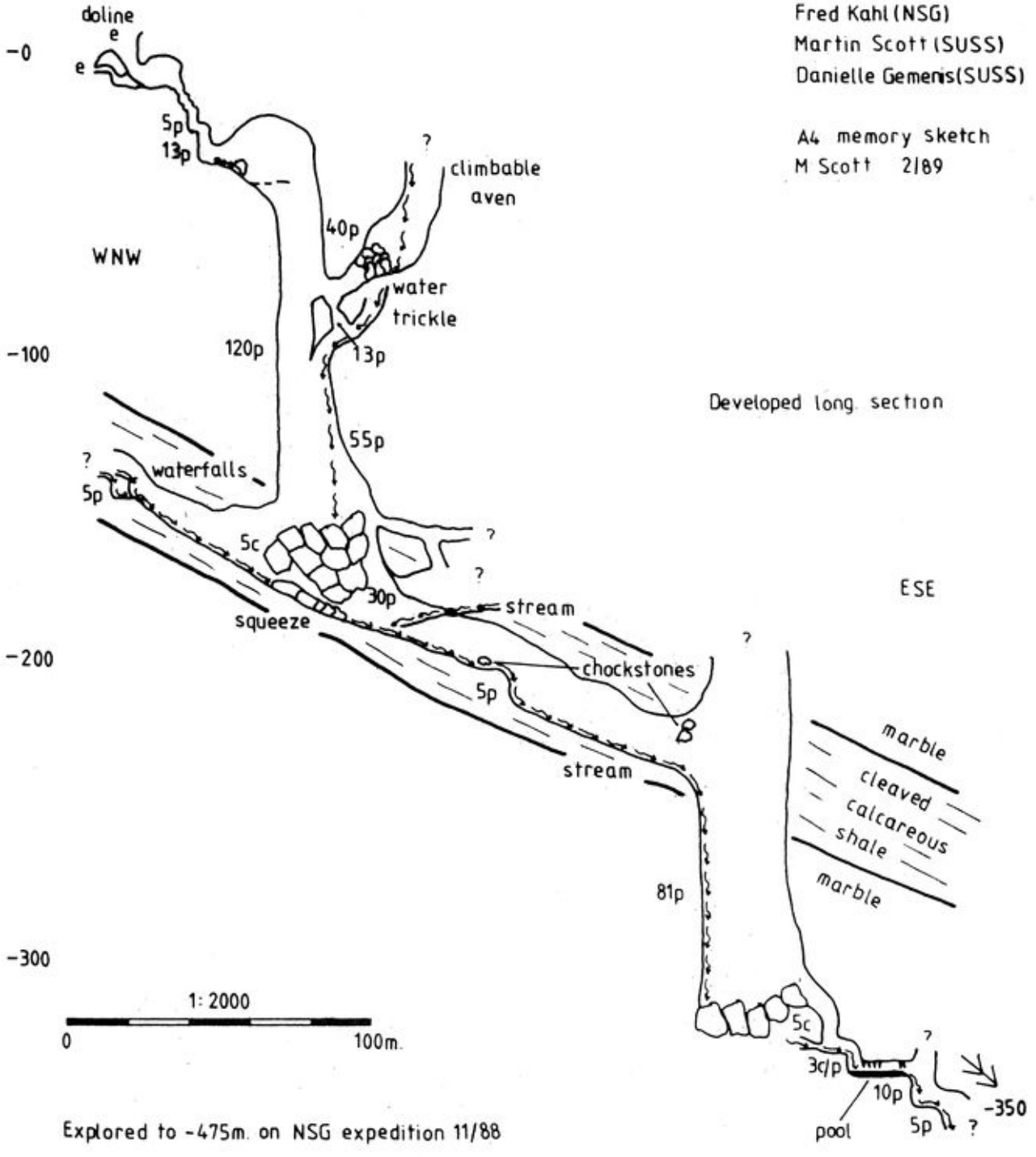
FALCON

Ellis Basin N.Z
GR 831967 Mt Arthur

Nelson Speleological Gp.
Expedition 11/87

Surveyed by
Peter Braggins (NSG)
Fred Kahl (NSG)
Martin Scott (SUSS)
Danielle Gemenis (SUSS)

A4 memory sketch
M Scott 2/89



Explored to -475m. on NSG expedition 11/88

was derigged out, with the water in the stream rising although not to life-threatening proportions The length of the 81m pitch was measured from the rope length, making the surveyed depth of the cave 243+81=324 metres, with at least another 25 metres odd below the base of this pitch. The cave was therefore about 350 metres deep and still going making it the seventh odd deepest cave in NZ at the time (Worthy & Worthy, 1985).

Fred, Arthur, Peter, Oz, Graham and I left the hut on the Sunday heading down the Ellis River track, not via the usual exit over Mt Arthur which was covered with cloud and snow. Nearly 4 hours later we reached the cars waiting for us at the end of the track. A shower back at Arthurs place was most welcome after 2 weeks in the bush, as well as the roast dinner - yum!

I left Arthurs cosy house in Teal Valley on the Monday morning for Nelson to get some money, my last double scooped ice cream and then off to the Nelson airport. A cheap student standby took me to Wellington (cold and windy again), before my flight back to Sydney in the afternoon. From the snow covered Ellis Basin, to the steaming hot and humid Sydney on the following day!

It looks like this is going to be a real classic cave in NZ. The entrance to the cave is at a height of 1305metres and has a depth potential of close to the magical 1000 metres down to the Pearse Resurgence. This is the highest entrance of any of the significant known caves in the Mt Arthur karst and is close to the Mt Arthur Fault, along which the nearby Grange Slocker drains to the Pearse. The cave also heads towards Gorgoroth, the entrance of which is some 200m below. Dye tracing of the stream in Falcon to the Pearse and Nettlebed may prove to be interesting. Falcon was reexplored by the NSG a year later and they managed to get down to -475m to a rockpile, making it the fourth deepest cave in NZ as predicted by Scott(1988). The others that were exploring Blackbird were not able to get past its so-far terminal rockpile during the week.

The calcareous shale bed encountered in Falcon is interesting on speleological and geological viewpoints. The shale is an inhibitor to the development of caves within the marble, as shown in the cave Falcon where the gradient of the stream parrallels the apparent dip of the shale before plunging over the 81m pitch. Steep to vertical development of the cave has occurred above and below the shale bed, but the stream takes on a gently gradient while it flows over the shale. The shale bed may also prove influential in the development of other caves in the Ellis Basin. The mapping of the surface outcrop of the marker shale bed could be an easy way to determine the structure and stratigraphy of the marble. By using geological mapping the pathways of the underwater drainage (eg. Grange Slocker) and cave development (or blockage) could be suggested.

ACKNOWLEDGEMENTS

Before we left, discussions with Phil Cole, Anne Gray and Dave Martin about caving in New Zealand were particularly helpful. At Wellington, John Lewin gave 2 complete strangers a room when it was much needed. Barry Were, John Maunsell and Peter of Blackwater Rafting who took us to Mangawhitikau, Lost World and Ruahkuri Caves respectively at Waitomo. Barry Were deserves special mention for leaving the pub at night, to drive along the road to Mangawhitikau to pick us up in the middle of nowhere. The HTG for their hospitality at Waitomo, including the unexpected bonus of a "hangi" at 10pm after a very long day in Mangawhitikau. Arthur Clarke and family looked after us at Nelson, although we are saddened to here that his lovely A-frame wooden house burnt down recently.

The Nelson Speleo Group who took 2 unknown Australians caving into one of the best and most prospective karst areas in NZ, with the added bonus of exploring a new deep cave. Thanks.

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NEW ZEALAND UPDATE

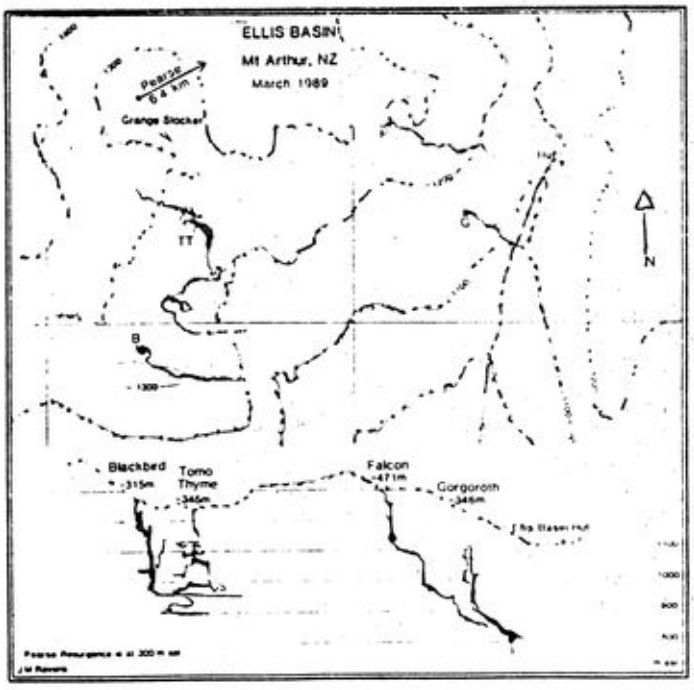
from Caves and Caving.

Ellis Basin — Mt. Arthur

A trip in early December pushed the November '88 discovery (Falcon Cave) to –470m which is still going with plenty of draught and water. This cave has been temporarily shelved however with the re-exploration of Tomo Thyme — the original explorers (1970) only descended the first pitch and deemed the second too loose. But after a little bit of gardening we descended to -120m where the shafts intersected a deserted phreatic maze area — very surprising so high up on Mt. Arthur. With pitches and avens going off all over the place it took a little while to find the main way on — a 50m wide breakdown passage. A lot of 45 degree phreatic descent eventually popped out in the roof of a dry streamway, followed to the head of a pitch (still undescended). A traverse leads into yet more phreatic stuff and after running down a few railway tunnels this was left for the lure of a roaring stream. So far this is a one hour sporting walk to a rockfall — with the usual howling gale.

The big problem with this unusually enjoyable cave is — where does all the water go? The obvious answer is to the Pearse Resurgence — next to Nettlebed, 6.5km to the North-east — as no other large resurgences are known (this doesn't necessarily mean they aren't there though).

Exploration to date in the Ellis basin is summarised in the accompanying area map and elevation. Gorgoroth and Blackbird were 1970/72 explorations, Gorgoroth to a sump and Blackbird to a very strongly-draughting rockfall. Grange Slocker has been positively tested to the Pearse Resurgence (but may go elsewhere as well), and both Falco and Tomothyme are still being explored. The whole area is full of half-pushed shast systems.



Other Mt. Arthur Exploration

In the depths of last winter while battling through deep snow (the usual scene for half-witted Wellington cavers) we espied a patch of dripping wet green. As it was a mere 5 paces from the track we decided it was probably worth a look. The draught was so (relatively) warm it was like walking into a sauna room. So far only 120m deep, and horribly loose, the cave is still going and only a few hundred metres from Nettlebed. If it does connect then Nettlebed will be around 1210m deep, with a through-trip of 1180m. Rattite's Resthome is so-called because of the great quantity of moa bones.

Nettlebed is enjoying a rest as everybody has got pissed off with the hassles of commuting to the back. There aren't many obvious leads left anyway, only one rockfall, three climbs and a streamway.

Mt. Owen Summer Expedition

This fourth Christmas trip found 6km of passage, making Bulmer Cavern the longest in NZ at 27.4km. Twenty-one cavers took part in the two week expedition, and the major discoveries were extensions to the lower levels; two strongly-draughting caves just above the resurgence and extending Gormenghast to –525m where exploration was stopped by a pitch.

In Bulmer, a side passage off the southern end of the Speedway gave access to a major extension (Late '88), incorporating over 2km of passage. A further 1200m of oxbows and side-passages was surveyed off the Speedway. From the northern end of the Speedway, a crawl gave access to a large breakdown passage, which eventually linked back to the streamway about 50m upstream of the waterfalls which had so far barred northward progress. Both upstream branches of the stream eventually sumped, but 2.3km of passage was surveyed (including a lot of dry passage) and many leads remain. Smaller extensions were also made in the Labyrinth and in Close Encounters.

SUSS COMIC CLASSIC
PART 2 : THE EDITOR'S COMMENT

Pardon - is my Slip showing?

(Mr.Bunsen's retort to the President (ie Mike Lake-ED))

Yet again SUSS has chosen its President wisely. For one, he is an active caver, which is a real bonus, and two he is a student. This is a fine SUSS tradition which has led so often to the vocational demise of the Grot of Honour, and one which must continue. Lord only knows what would happen if a lot of horrible cavers were success stories and started affecting the lives of other people and influencing the thoughts of their children.

Another thing in our President's favour is that he is prominent in the literature, as indeed most Presidents used to be. This creates a good impression, and most people would, until they meet him, believe him to be a giant of a man by his exploits. Except that by reading these, one realises that he is obsessed by small places and I'm sure that there are some big people who, twisted fools, prefer to lose weight by abrasion-I don't share their passion.

Mike is sensible and indeed a stickler for detail, as one gathers from his writings and the article I have just perused is no exception. Now Presidents aren't fools, well not after only three months; besides, Mike let Ivan abseil the pitch first. Ivan himself knows the long and the short of things and abseiled down the correct rope. He is also presidential material since he can count - yes, even SUSS passes motions (except at Bungonia, where they are taxed).

The happy crowd still managed to descend Kalang Canyon safely. How is not really explained and from this one can deduce that generals didn't understand the movement of their troops or they would have been included in the log. Still, a good leader always records the events for posterity and this is where we realise what a gem of a President we have.

The lesson from this scenario of clobbering your rope with a gooley, causing its midriff to dislocate is not, As I would have believed "look after your rope" BUT, as Mike says, "always check that a rope end reaches the ground." Very thoughtful of the boss for unlike him the troops can't walk without their feet touching the floor.

Steve Bunton.

MOVE OVER JEAN BERNARD!

Deepest Caves in the World — March 1989

1.	1535	Gouffre Jean Bernard	France	1975
2.	1508	V. Pantjukhina	Russia	1986 (1)
3.	1408	Laminako Ateak (BU56)	Spain	1980 (2)
4.	1381	Sima del Trave	Spain	1984
5.	1370	Sniejnaya-Mejennogo	Russiaa	1979
6.	1353	Sistema Huautla	Mexico	1980
7.	1342	Reseau de la Pierre San Martin	France	1966
8.	1248	Gouffre Berger	France	1956
9.	1240	V.V. Iljukhina	Russia	1986 (3)
10.	1219	Schwersystem	Austria	1981
11.	1211	Gouffre Mirolda	France	1986 (4)
12.	1210	Complesso Fighiera-Antro del Corchia	Italy	1983
13.	1180	Dachstein Mammuthohle	Austria	1981
14.	1173	Jubilaumsschacht	Austria	1980
15.	1169	Sima 56	Spain	1983
16.	1159	Anou Ifflis	Algeria	1985
17.	1159	Riviere de Sudet	France	1986
18.	1149	Sistema Badalona	Spain	1980
19.	1135	Akemati	Mexico	1988 (5)
20.	1135	Pozu Xitu	Spain	1981
21.	1110	Kujbysevskaja	Russia	1986
22.	1101	Schneeloch	Austria	1978
23.	1098	Sima Gesm	Spain	1978
24.	1078	Jaberbrunnentrogsystem	Austria	1982
25.	1040	Oblastl	Mexico	1987 (6)
26.	1040	Sotano de Ocotempa	Mexico	1987
27.	1026	Meanderhohle	Austria	1986
28.	1022	Torca Uriello	Spain	1982
29.	1020	Siebenhengste-Hogant-Hohlensystem	Switzerland	1988
30.	1018	Reseau de la Coume di Quarnede	France	1979
31.	1005	Lamprechtsofen	Austria	1979 (7)

Notes on changes, recent additions etc.

(1) V. Pantjukhina
Continued exploration by Ukranian cavers increased the depth from 1024 to its current depth, making it the second deepest in the world.

(2) Laminako Ateak (BU56)
Continued exploration beyond the previous terminal sump has resulted in this increase in depth.

(3) V.V. Iljukhina
Depth increased from –1220m.

(4) Gouffre Mirolda
An increase in vertical extent due to climbing upwards above the entrance.

(5) Akemati
A major new discovery not far from the area explored by the last British Mexico expedition. An amazing push by small parties on 8mm rope in a remote area. GSAB again proving that they are one of the foremost caving groups in the world.

(6) Oblastl
A new discovery reported in Spelunca, however no other information. Another report describes the discovery of Sistema cuicateca in the Huautla area at –1038m, perhaps these are one and the same.

(7) Lamprechtsofen
Still no consensus of opinion for the height of this amazing resurgence cave.

Steve Foster

Exciting Discoveries in 1988 in the USSR

Recorded by A. Klimchouk and V. Kisseljov of the Soviet Speleological Association

1. **In the Western Caucasus**
Bzyskij Ridge
VJACHESLAV PANTJUKHIN CAVE — NOW SECOND DEEPEST IN THE WORLD
Ukranian cavers continued the exploration this summer and following three new surveys of the system it was found to be 1508m deep. During the expedition flooding raised the water level in the lower sections by 120m. One of the team was trapped at the bottom of the system for 52 hours, due to flooding.
In the same area cavers from Tomsk extended the Grafskij Proval Shaft from 700 to 780m. Cave divers from Tomsk, Tbilisi and Rjazan dived three sumps at 400m depth and pushed the Vesennjaja Shaft on the far side to a depth of 550m. They stopped at the next sump.
Arabika Massif
Cavers from Kiev pushed the Genrikhova Bezdna Shaft to a constriction at –780m. Minsk cavers extended MN–53 shaft from 250 to 450m depth. Two Krasnojarsk divers joined forces with a Moscow diver and explored three complex sumps in Jubilejnaja Cave. The cave was extended beyond by 150m depth at –450m.

2. **In the Western Ukraine**
Optimisticheskaja Cave (the second longest in the world) was extended by L'vov cavers to 165km long.

3. **Central Asia**
SW Gissar Mountains — the Bajsuntau Ridge
Caves from Sverdlovsk made a number of extension and discoveries:
Festival'Naja-Ledopadnaja Cave — extended to 10km and –580m
Isetskaja Cave — explored to –280m
Boj-Bulok Cave — extended to 65km and –870m following a 4m free dive at –600m. This cave is still going and only has two 25m pitches in it.
Kap-Kutan-Promezhutochnaja system was extended to 50km length.
Eastern Pamirs
At an altitude of 4,400m Rangkul'Skaja Cave was surveyed by Moscow cavers to give a depth of 240m.

4. **Siberia**
Siberian caves extended Bol'shaja Oreshnaja Cave (Sajany) to 41km. This cave is formed in conglomerate. Zhenevskaja cave and Partizanskaja caves in Sajan were both pushed repsectively to 6 and 7km length.

longer than 100km = 2; 40km = 5; 20km = 6; 10km = 14; 5km = 33; 3km = 60

LARGEST CAVES OF THE USSR (up to 1.12.1988):

The longest		The deepest	
1. Optimisticheskaja	165 000m	1. V. Pantjukhin	–1508m
2. Ozjornaja	107 300m	2. Sniezhnaja-Mezhonnogo	1370m
3. Zolushka	82 000m	3. V. Iljukhina	–1240m
4. Kap-Kutan-Promezhutochnaja	50 300m	4. Kujbyshevskaja	–1110m
5. Bol'shaja Oreshnaja	41 000m	5. Kievskaja	–990m
6. Kristal'naja	22 000m	6. Moskovskaja	–970m
7. Mlynki	19 100m	7. Napra	–956m
8. Sniezhnaja-Mezhonnogo	19 000m	8. Boj-Bulok	870m
9. Kulogorskaja-Troja	14 100m	9. Pionerskaja	–815m
10. Krasnaja	13 700m	10. Grafskij Proval	–780m
11. Gaurdakskaja	11 010m	11. Gennikhova Bezdna	–780m
12. Vorontsovskaja	10 640m	12. Forel'naja	–740m
13. Jashchik Pandory	10 100m		
14. Festival'naja-Ledopadnaja	10 000m		

from Caves and Caving.

A MAMMOTH CRAWL

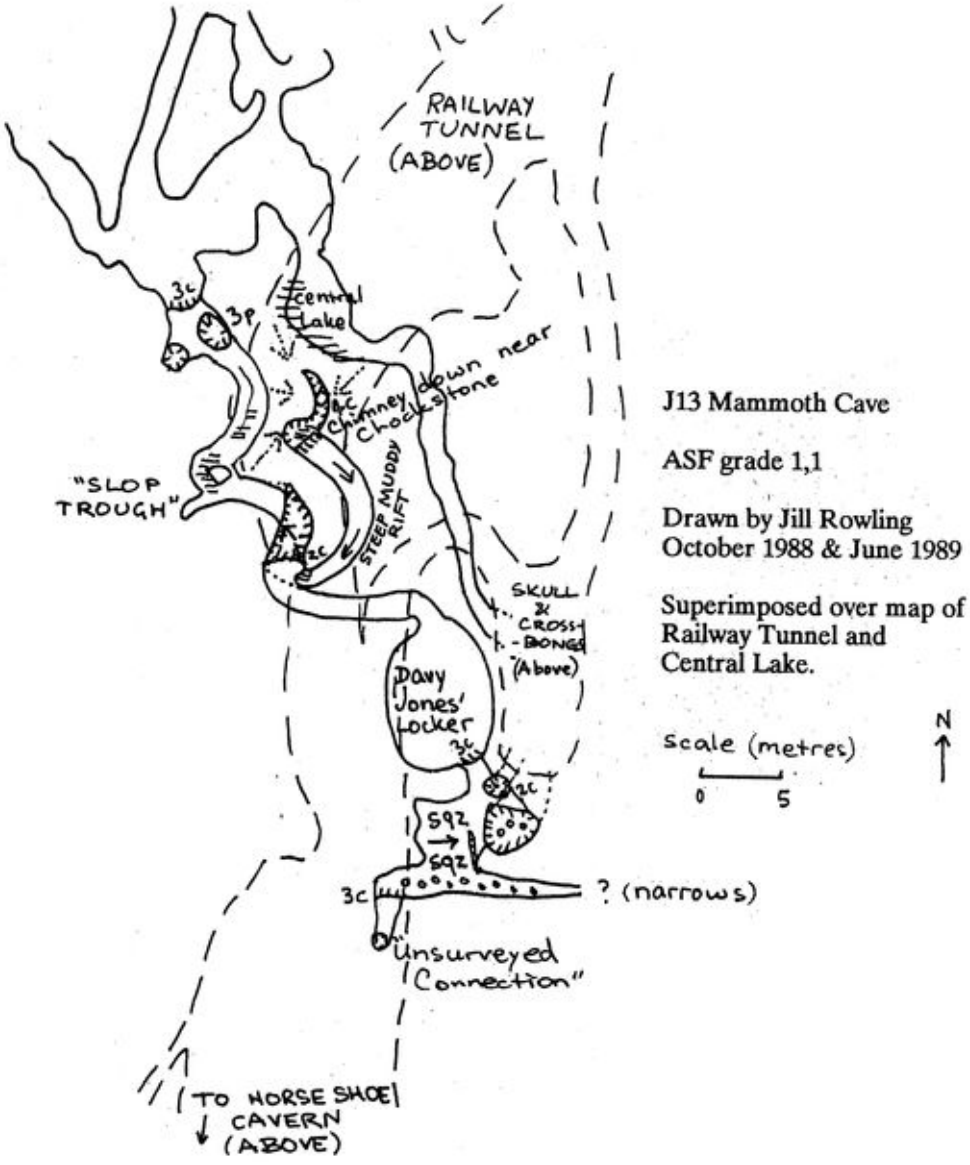
Trip Report: Jenolan; Labour Day long weekend.

I picked up Mark Staraj on Friday night and headed off to Jenolan Caves in the trusty Barina, almost getting run off the road by a truck at Katoomba.

Saturday 1st October, 1988: **Mammoth Cave**
(Debouchement Detour, North West Passage, Infinite Crawl)

People: Mark Staraj (TL), Jill Rowling, Paul Jones, Pall Fekete, John Oxley, Steve Keenlyside (for a while).

While we waited for Mark to get the Mammoth key from the guides' office, Pall made himself a big salad roll to take on today's caving trip.
We walked from the cottage to Mammoth Cave and entered at 11 am, making our way down to the Railway Tunnel. Here, Mark showed us a new way down that avoided Skull and Crossbones. This route, called Debouchement Detour, is useful to know because when Central Lake floods, the normal way down Skull and Crossbones may become impassable. I have sketched my memory of this route (see fig. 1). You may wish to compare it with the map Mark drew in SUSS BULL 28(1) Mar-Apr 1988.
[NB since this trip, I've been through this section of the cave with both SSS and SUSS people. The map is shown modified to reflect this.]



To take Debouchement Detour, we continued along Railway Tunnel, past the turnoff to Skull and Crossbones, and then turned right. We chimneyed down a rift containing a chockstone with loose rocks on top of it, taking care not to dislodge them. The bottom of the rift was incredibly slippery with mud.
We followed the rift passage down, losing a lot of height (no, we did not shrink). At this point, Steve Keenlyside decided to return to the land of sunlight, so he cheerfully wished us well.
The next delight was a slither through a low slot which I called the "Slop Trough", where I tried not to get too much glutinous mud into my boots. The passage then widened and became higher.
Although there was water on the floor, there was a little ridge running the length of the passage upon which one could walk.
This passage ended at a set of large mud holes characteristic of the area near Central Lake. These were rather tricky to cross over. We then climbed down an overhang into a chamber with muddy rocks on the floor. This was a tricky climb with muddy boots!

Fig. 2
"Slop Trough"

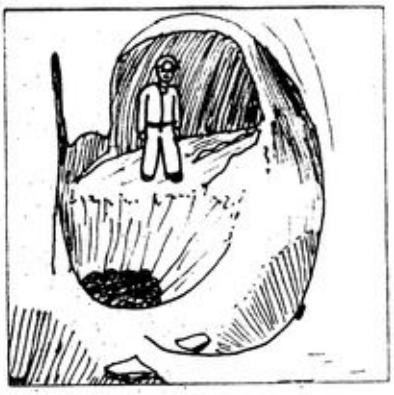


Fig. 3
Negotiating large mud holes

We then crawled down a low passage with pleasant (to the knees) consolidated mud on the floor, coming to a junction of three tunnels. Mark chastised me for not keeping up with the group. We went down the left-most tunnel (apparrently the others lead to surprising drops). This led to Central River. Here, Paul Jones' light gave out and he had to use another battery. For a while we thought it was raining tiny mud balls until Pall Fekete was discovered making them. (While this was extremely funny at the time, it should not be encouraged because of the possibility of eye damage: one's eyes are wide open in the dark, you don't blink when you can't see flying objects, and clear, fresh water is often hard to find. In this case, Central River was close by, but this does not make the "game" any safer.)

At "Campsite, Easter 1961" we saw some old tins, presumably from 1961.

We stopped just before Dry Siphon while Pall investigated a vertical shaft opposite Waterfall Passage. I crawled into Waterfall Passage and we concluded that Pall's "aven" probably connected to Waterfall Passage, ie above the main passage.

We continued through the (wet) Dry Siphon and Mark convinced us to leave our packs at The Junction. I loaded my pocket with various bits. Thus unburdened, we continued up North West Passage.

I was really impressed by the general beauty of North West Passage. It's definitely worth the effort. The dark, almost black limestone walls have white calcite veins, formations, scalloping, and the odd fossil. Except for one short grovel through sand, N.W. passage is walk-through, with numerous formations (Mark was naturally concerned that someone might accidentally bump them).

Eventually, we reached The Guzova and had a little difficulty climbing up the slippery mud slope into which someone had cut foot holds. We did not descend to the Guzunda because Mark was not sure that we could climb the slope again, if the way on was blocked for some reason. I remarked that I had brought a nice, long tape .... but it was in the pack that I'd been told to leave at The Junction! We decided to go back down North West Passage and approach the Infinite Crawl from the South end. Mark was again extremely concerned as we passed by the formations.
Whilst Mark shepherded the last of our party through the formations, I walked on ahead for a leisurely look around. Presently I discovered a passage leading off to the left (ie East). In the roof was a nice stalactite under which I quietly passed. Further down the little passage, I found a wonderful piece of scalloped rock that must have broken off somewhere long ago. It was black with white veins in it, characteristic of the walls.
But the little passage beckoned on, over cobbles of various colours.....
I called out to the others: "I've found a passage here. Do you know whether it goes anywhere?"
Mark arrived on the scene quickly.
"Stop! Stop!" he cried, "I have to go first, because I'm the Trip Leader! I'm sorry, but I can't have people just running everywhere."
I looked at him, thought for a while, then said:
"Well, yes, of course, because if I cocked something up, you'd be to blame and you'd get justifiably cut-up about it, whereas if it was you that caused the cock-up, you'd still be to blame, but you wouldn't feel as bad."
I can't remember what he mumbled in agreement, but at that stage Pall Fekete became fascinated by another small passage that continued East, then branched North and South. By now we all knew we were at the start of the Infinite Crawl. Pall started digging the gravels by hand, until he could fit in and described the passage (see fig. 4). Both its North and South ends needed digging out, but we decided to leave it.

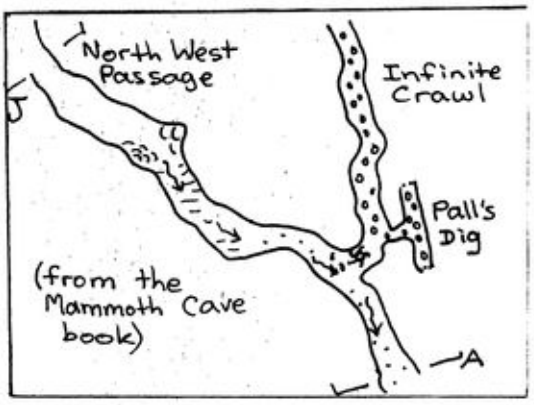


Fig. 4: At the South End of Infinite Crawl.

Mark then set a cracking pace up the Infinite Crawl proper, followed by the rest of us.
The next memorable hour or so was spent in the Infinite Crawl, and went something like this:

```
for(length_crawled=0; length_crawled<max; length_crawled++)
{
        for(pain=minimum; pain<maximum; pain++)
        {
                crawl();
                observe_cobbles();
        }
        turn_onto_other_side();
}
```

Programmers will understand that () means no arguments!

Part way the passage went three ways. Mark took the left-hand branch, I went through the middle and no-one went through the right-hand branch because it was too narrow.
Also, in the Crawl there are the odd broken stals and even a wet puddle just for added interest.

Eventually we got to a spot where we could stand up, except that everyone wanted to sit down. This is the section marked "D" in the Mammoth Book. Mark called it "The Inn of the Dammed" (something like Hotel California in the song...). After chatting for a while we continued crawling.
I think elbow pads are a good idea for this part of Mammoth Cave.
Presently we came to another stand-up section. This is not marked in the Mammoth Book, and comprises a section of rockpile to the west of Infinite Crawl. We explored it briefly, before deciding that it didn't "go" (no-one felt like climbing much). We decided to continue North. Pall was not so keen, and preferred to stay where he was. "Give me a call if you find anything interesting," he said. So then there were four. After a while, there was a bedding plane squeeze and then we were into a rockpile with a high roof. I climbed up this for a little, while Mark looked for the way on to the Guzunda / Guzover connection and Paul rested. Eventually, Mark came back; he had found a way through the rockpile. Could someone go back and get Pall?
Everyone looked at each other....
I must be a masochist. I went back down the Infinite Crawl. After about ten minutes or so, I saw a long, dark thing on a long, dark rock. Pall on a slab.
"Pall?" There was a rustle. "Mark's found a way on to the Guzunda / Guzover connection. Would you care to join us?"
"OK".
Back up the Infinite Crawl.
We met Paul and headed through the rockpile. Some of the climbs were novel. Eventually we all stood in a muddy rift passage. There appeared to be two ways up. While John and Pall climbed around and Mark watched, I went exploring down the Guzunda. That way I missed out on having dislodged rocks fall on my head. The Guzunda was all muddy and sticky and got lower, muddier and stickier at its south end. I returned to find Pall and John had made it to the top (ie to the Guzova) but Paul had climbed down, finding it too tricky, maybe even dangerous, without a handline on the wet, muddy rocks. So we left Pall and John to make their way happily down North West Passage while we went back through the rockpile, down to the Infinite Crawl (I think I should have been getting used to it by now). Mark found another way that bypassed the bedding-plane squeeze, but I found it a problem and got my hips stuck ("Oh bother me battery ...")
When I came to the slab, I really thought for a moment that Pall was lying on it again. I must have been tired.
On the crawl back, Paul found some interesting items: some matches... an AA cell... another one... "Oh dear," I said, and checked my pocket. Sure enough, everything was missing. Velcro is defeated by the Infinite Crawl! It was easy to find all the items on the way back: the floor is so close to your nose. You also get to see lots of rocks close-up. Mark said: "Here's a pretty purple one. I'll put it in the path for you to see." I'll be blowed if I could distinguish it from any other. Must be a Mark joke. I could not keep up Mark's pace, but didn't worry because there was nowhere else to go!
All things come to an end. Back to North West Passage!
Paul left us to join Pall and John at The Junction. I noticed an interesting passage to the right (West) and called Mark to have a look. It's not marked in the Mammoth Book but appears to be as I have drawn in fig. 5.
This passage becomes squeezy but has possibilities of leading on (or leading you astray).

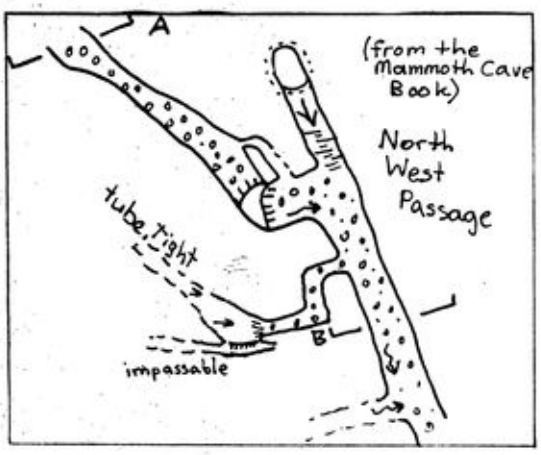
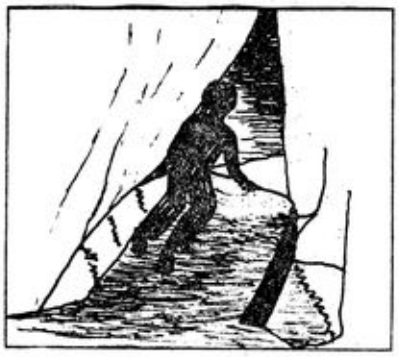


Fig. 5: South end of North West Passage

Mark and I joined Paul and Pall at The Junction for a very late lunch. Pall's salad roll had aparrently survived quite well.
We walked up to Central River for a drink and a look around. I followed it upstream for a while, over little waterfalls and pools and gurgly bits until the passage was too small. It's hard when you are holding yourself in a pushups position with a pool of water underneath you and a low roof above you, with bits of formation here and there to avoid. I backed out. We made our way back along the narrow passage. Mark cracked open a mint chocolate bar and offered everyone some, but did not trust me enough to let me pass pieces to the others in the narrow passage!
We continued through to the Dry Siphon. Mark thought it was very funny that I took ten seconds to negotiate it, then spent two minutes wringing the water out.
We went through the Middle Bit rockpile.
Mark intended to take us out the normal way (Skull & Crossbones), but Central Lake was very high and it covered the normal route with a few metres of water. It would have required a champion broadjump to cross it, possibly breaking an ankle in the process, or at least a cold swim. That seemed Far Too Hard, so back we went until we came to the Debouchement Detour.

Fig. 6: Contemplating the flooded route.



The eventual climb up the slippery muddy rift to the Railway Tunnel was interesting. The chimney was carefully climbed: it's amazing how adrenalin gets your strength back when the chockstone you're hanging on moves above you!
Once up at the Railway Tunnel, we heard voices. At this time of the night! It was 8 p.m. Who could that be? Turns out, it was the Jenolan Guides, just out for a quiet trip, and were trying to find the Unsurveyed Connection. Mark showed them, and when they heard we'd been caving for 9 hours they understood why we were keen to leave! Paul and I had been fantasizing about a Lasagna or something, but I had to content myself with a fruit drink.
We left Mammoth at 8.30 p.m. and walked all the way back up to The Cottage. I nearly expired on the hill. In The Cottage, Pall Fekete went to sleep in front of the fire, in the middle of a leg-stretch exercise.
Things to do:

1) Survey Debouchement Detour and print the map in the Bull.

2) Check out the passage (fig. 5) in North West Passage to see if it goes anywhere.

3) Check out the one in Infinite Crawl (go via North West Passage so you're not wrecked).

4) Make elbow pads.

References:
1. John Dunkley & Edward Anderson: The Exploration and Speleography of Mammoth Cave, Jenolan.

2. Mark Staraj: Mammoth Cave: Uncharted Regions.
SUSS BULL 28(1), Mar-Apr 1988.

Jill Rowling, April 1989

JENOLAN : WHERE IT NEVER RAINS, BUT IT FLOODS!

1st-2nd JULY 1989

PRESENT: Mark Staraj (T.L.), Jill Rowling, Mike Lake, Mike Gibian, Tony Allan.
Saturday only: Phil Cole, Guy McKanna, John Oxley.
Sunday only: Steve Burns, Mark Squire.

TRIP REPORT

It hadn't rained in Sydney for a couple of days prior to the weekend and thoughts of my upcoming 3rd GNC trip were almost edible. It had been too long.

Jenolan was unbearably warm, sunny, golden, and altogether far too pleasant. All in all, an excellent weekend. So why was the Jenolan River chattering happily away, sunbaking, in the normally dry bed of McKeowns Creek? In fact it was sinking as far south as Spider cave or thereabouts, and had as much flow if not more than when I saw it during a flood in April 1988 (Staraj, 1988). At that time some amazing and unique watery scenes were observed in Mammoth Cave especially, as well as Serpentine and Imperial Caves. It was almost certain that the Dry Syphon would be full to near the brim and GNC postponed yet again.

However I was keen to see what was happening in Mammoth, and welcomed the chance to shed some light on a number of questions arising from last years trip. Firstly we went further upstream to see how much water was flowing into Bow Cave, a flood swallet for Mammoth. A large bank of debris and sand partially blocked the cave and no water could be seen entering.

Inside Mammoth, John and I first visited Mammoth Squeeze (the others had gone to visit Wiburd's Lake Cave). Last year this had been flooded but this time only a smidgeon of a pool was to be seen in the squeeze itself. John did find a leech, though whether it was transported in by caver or water it is not possible to say, but probably the former is true.

Next was a visit to the Cold Hole-Sand Passage area. No stream was flowing to the Forty Foot this time and a mere trickle came from the source identified last year. In Sand Passage, the passage was sumped just where the first short side passage is shown (ie. slightly higher than the sump marked for Oct 1973 on page 18, Staraj 1988). This enabled us to investigate the side passage which was identified as the source of the water heard falling into the sump of April 1988. The steady trickle was followed up a short 3-4m aven, along an awkward, low 2m passage to another aven of about 5-6m height where it appeared to close out.

A visit was then made via Davey Jones' Locker and the deep rocky chamber beyond Skull and Crossbones to Central Lake. This time there was no impressive waterfall but apart from this the lake was up higher than I'd ever seen previously, having started to flood the approach passage. Central River was then reached via the Debouchement Detour. The lake itself had backed right up to the rockpile at the First Crossing to a depth of about a half metre. However by an easy crossing over some boulders we remained totally dry and this offers a passable route even if the water level had been up to perhaps a metre higher.

From here there was no further drama until the flooded Dry Syphon was reached. I must say that with 3-4" airspace we considered it a possibility for some time. Since being totally wet and cold for a further 4hrs including a refreshment after 2hrs did not appeal we concentrated on nearby Waterfall Passage. A persistent breeze into this passage was felt and is the basis for speculations of another entrance to Mammoth Cave. Shortly after entering this section the little stream and the draught and the passage was found to share the same squeeze. Having just demonstrated our fondness for the soft side of caving (warm and dry) we applied our engineering expertise to channel the stream away from the centre of the squeeze. Satisfied, I gave it a go only to find the squeeze was a bit of a rib crusher and needed digging in the centre and so converting the nuisance stream into a nuisance pond. Realising the inevitable John pushed through and I followed. There is a distinctly unpleasant bit where your body occupies the whole squeeze with the water building up around and then pouring down through the open neck of your top.

The passage then slopes upwards for about 20m till it opens up and is blocked by a rockfall. Passing through the little waterfall and into an obscured hole brings you out at the top of the rockfall. From here a sloping orange mudslope leads upwards or the rockpile may be climbed a few metres higher into a large, high and very steep cleft. The cleft is the source of the stream and is on the order of 20-25m tall. All the rock here is shaly and crumbles in the hand. Extreme caution must be used. After some exploration it appeared only one lead remained, requiring a hammer, and it follows the stream. The mudslope led into rockpile. An arduous effort was required to reach the highest point as the mud here was of the classic, heavy and sticky sort that makes you feel you're climbing in Perkins paste. Skillful climbing and persistence meant that no leads were left unchecked, and no potential remains. On the way out other leads were looked for but not found. Coming back through the squeeze I must have set up a bow wave as the water suddenly surged to the top of my lower lip but stopped there!

Meanwhile the others had found Wiburd's Lake Cave again with an impressive lake. A stream was found flowing at the back of Hennings Cave and none at all in Serpentine Cave. Mammoth Cave was entered and Lower River visited. No stream was flowing down the Southern Section, Oolite Loop was flooded and a stream was heard in a possible lead in Oolite Cavern.

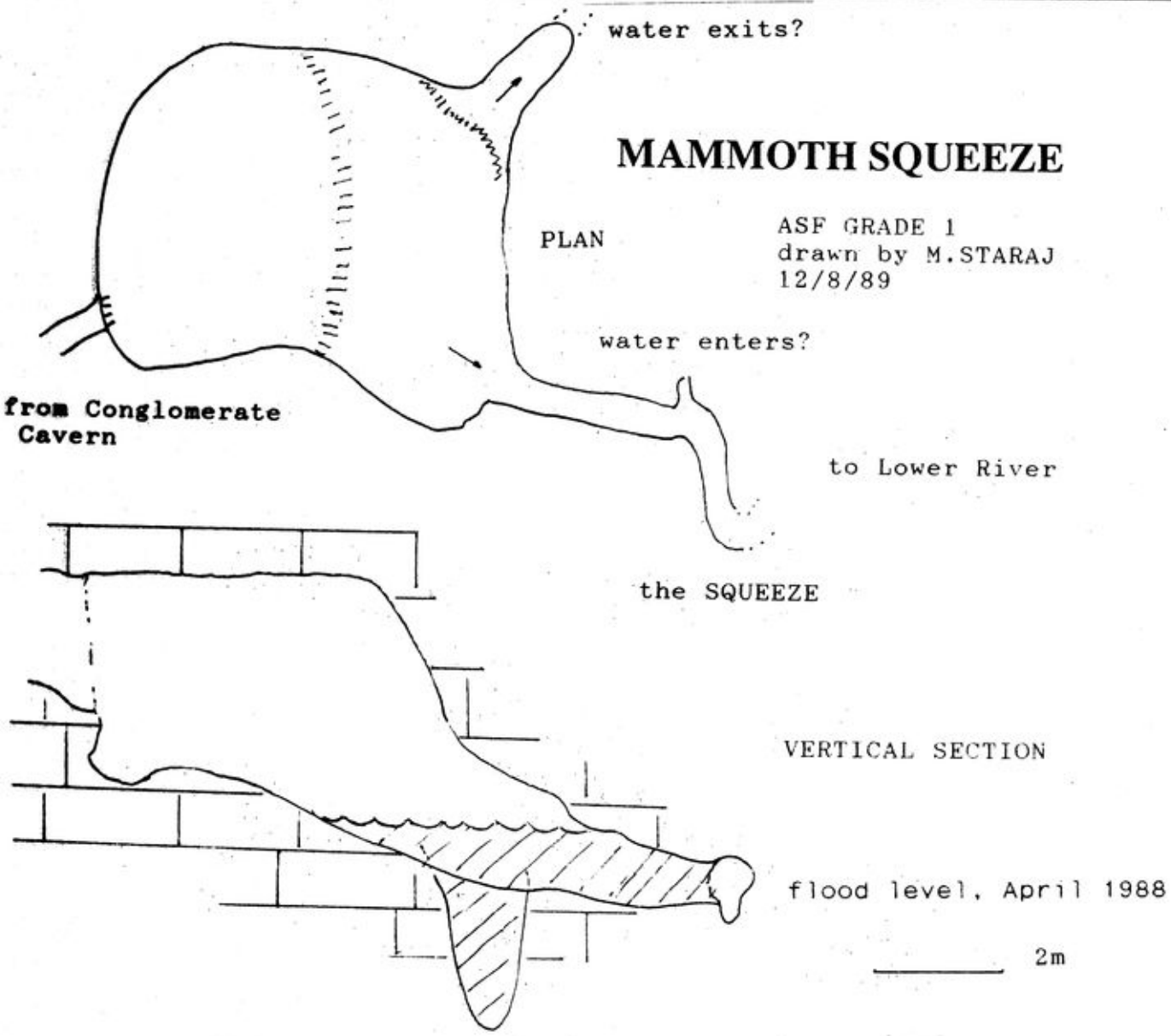
The next day those of us remaining went back to Lower River to check out the situation and introduce Mark Squire to caving. He seemed to enjoy it thoroughly and hopefully we will see him again.

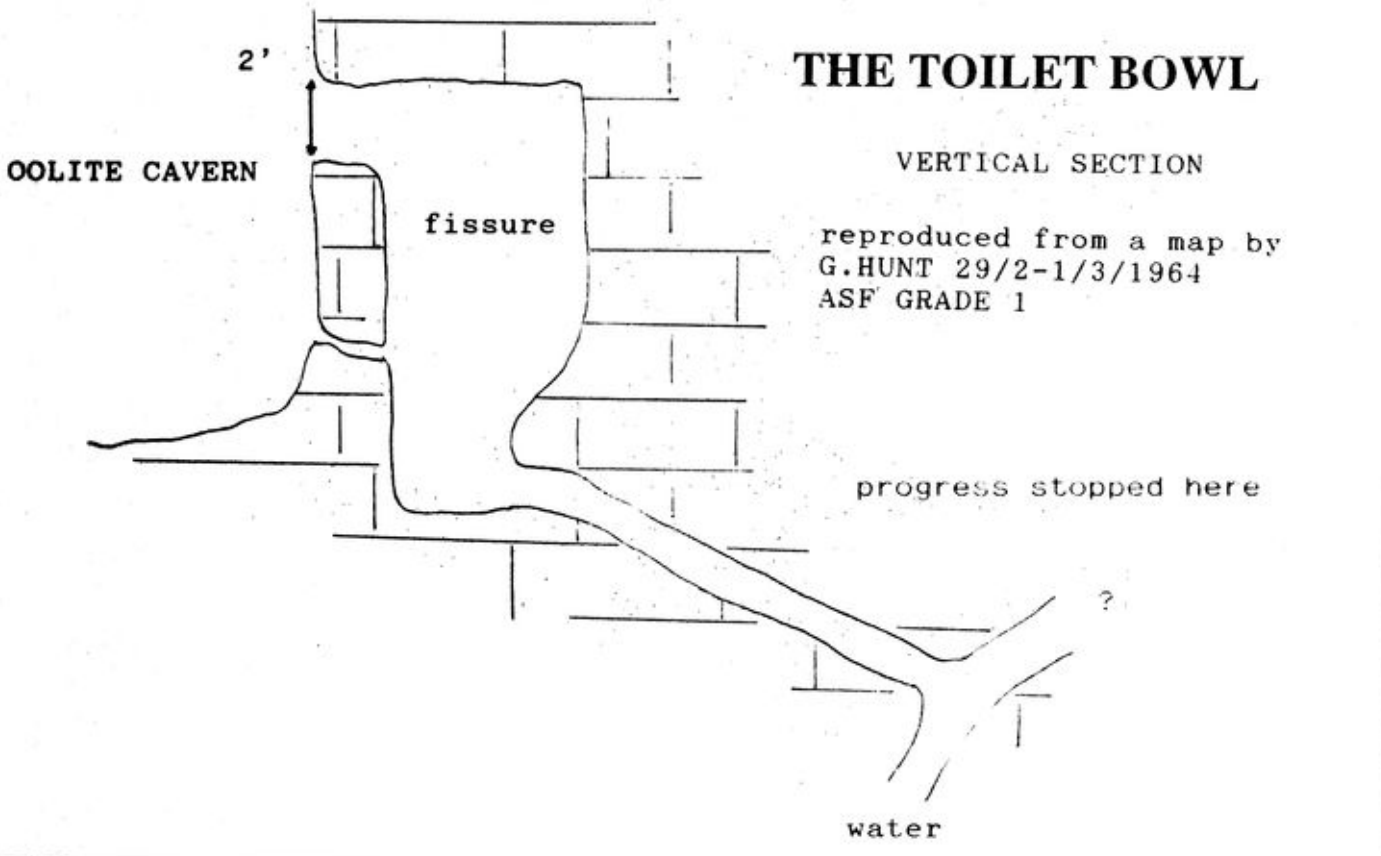
CONCLUSIONS

Some of the observations above are dealt with below. Other matters are dealt with in the article "Central River Meanders" in this issue.

1.Mammoth Squeeze

Seeing the squeeze dry confirmed that it had been flooded last year by a very considerable volume of water but that the favoured theory was invalid (Staraj, 1988). This theory supposed that a sink had opened in McKeowns Creek and that therefore under the condition that the creek flowed past the entrance to Mammoth Cave water would find its way to the Squeeze. It is inconceivable that such a sink


water exits?
MAMMOTH SQUEEZE
PLAN
ASF GRADE 1
drawn by M.STARAJ
12/8/89
water enters?
from Conglomerate Cavern
to Lower River
the SQUEEZE
VERTICAL SECTION
flood level, April 1988
2m


2'
THE TOILET BOWL
OOLITE CAVERN
fissure
VERTICAL SECTION
reproduced from a map by
G.HUNT 29/2-1/3/1964
ASF GRADE 1
progress stopped here
?
water

should close so emphatically in such a short period, some water should have been present. The tiny amount seen is more than accounted for by seepage. The accompanying map serves to give some idea of the situation. Located on it is a possible entry point for a stream (remember that the Squeeze has the classic keyhole shape of a phreatic passage invaded and modified by stream action), and a choked tube as the exit point for this water.

Instead then of the above theory I propose a modified version. Water seen in Mammoth Squeeze is a spillover of a stream whose source is possibly a sink in the Creek (reasoning by location). Reasonably we would expect the stream to merge with that seen issuing from the Rockpile nearby (10m or so) but since the Rockpile and the Southern Section route contained no stream one has to question the source as being the Creek. A further possibility is Bow Cave, which took no water directly from the creek this time but has on all previous mentions of a stream issuing from the Rockpile. Last year in April flow into Bow Cave and into Southern Section other than via the Forty Foot was not checked. To negate this is to see flow into Bow Cave with no flow from the Rockpile

2.Bow Cave, Sand Passage and Southern Section.

Although no water was seen flowing into Bow Cave I still assumed that water was sinking in its vicinity and finding its way into Sand Passage lying below it and the Creek bed. Finding the sump in Sand Passage seemed to confirm this. The lower sump level compared with April 1988 by about 1-2m would account for the disappearance of the stream flowing into the Forty Foot.

It has been generally assumed that if water enters Sand Passage it then makes its way into Southern Section, especially as the stream issuing from the Rockpile. So the absence of this water implies two things:

a) the stream from the Rockpile comes from elsewhere, perhaps Bow Cave, which would also indicate that alot of the water going into Bow Cave does not go into Sand Passage. The water in Sand Passage goes by a different route to Lower River.

b) the sump of Sand Passage at the point seen is perched and is no indication of the amount of water further into the passage. A likely source for the sump would be the trickle from the aven nearby. It is necessary to determine from the passage whether such a sump can form here and I do not remember enough to say without seeing it again with no sump present. To judge from the map... well I wouldn't as I can categorically state that the direction of the two downward slope arrows closest to cross-section B are pointing the wrong way.

The level of Lower River had reached just past the passage to Oolite Cavern furthest from the River. Very high indeed. The flooding of Oolite Loop from no observable stream may be directly related to the level of the River and thus makes *Denzdig a very promising chance of gaining the Wooly Rhinosceros*. Previous attempts have been defeated by the instability of the dig which had a habit of refilling itself after any period of time.

3.The Toilet Bowl

This is the dubbed name for the lead in Oolite Cavern marked as a "small hole to water", following the flushing sounds of water coming from it. Mike Lake attempted to enter it (he just can't resist an unpushed toilet bowl!) but decided he needed the backup of a ladder to get himself out again.

The only reported push of this passage (complete with vertical cross section) was by Bill Crowle who was stopped by a length squeeze (Hunt, 1964). It was observed that increased levels in Lower River seemed to bring water up to just below the fissure but which in dry spells was considerably lower (tested by dropping a rock). This must also be marked as a good prospect of gaining the Wooly Rhinosceros but whether it actually bypasses the sump or not, who knows?

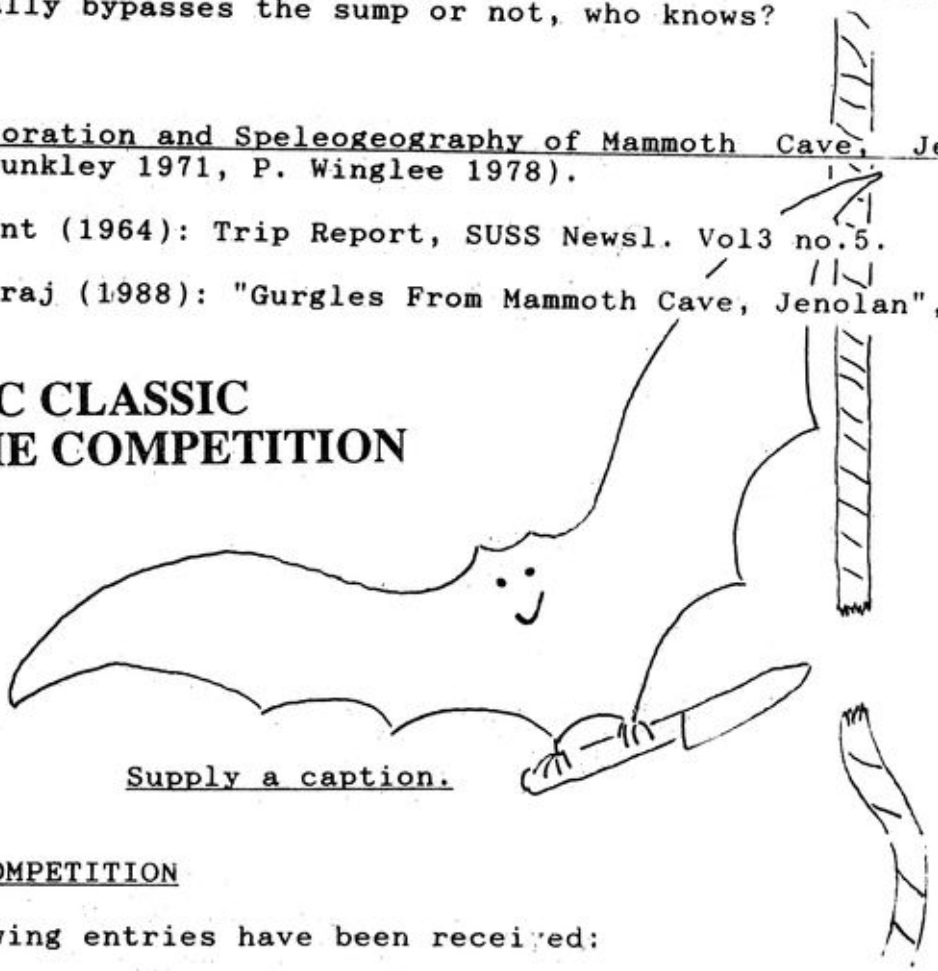
REFERENCES

1. The Exploration and Speleogeography of Mammoth Cave, Jenolan 2nd Edition (J.Dunkley 1971, P. Winglee 1978).

2. Glenn Hunt (1964): Trip Report, SUSS Newsl. Vol3 no.5.

3. Mark Staraj (1988): "Gurgles From Mammoth Cave, Jenolan", SUSS Bull. 28(2).

SUSS COMIC CLASSIC
PART 3 : THE COMPETITION



Supply a caption.

CARTOON COMPETITION

The following entries have been received:

1. (to the tune of "The Harems of Egypt")

(But the cream of this joke,
When apart it was broke,
Was laughed at for years by the czar.)

For Abdul, the dope
Had left half the rope
With Ivan Desailly - skavar. Mark Twigg.

2. You'd have to be bats to do Kalang with Mike! Anon.

3. "Well, Mike, I've heard some excuses, but I must say....." Anon.

The prize goes to Anon. for No.2, and has been drunk by the editor on his behalf.

The Speleo Technics FX-2 Lamp

By John Ganter

The Speleo Technics FX2 lamp is a relatively new entry in the field of electric lighting for cavers. Developed in Great Britain, the lamp is significant in three respects. First, the power pack is completely sealed in a resilient plastic, virtually eliminating the danger of electrolyte leakage and giving exceptional durability. Second, the problem of charging connection fouling has been greatly reduced by the use of a reliable plug connector between power pack and headpiece. And, the lamp system is about one-half the size and weight of traditional "industrial-duty" caving lamps like the Wheat and MSA.

Figure 1 shows both the FX-2 and Wheat Lamp in front and side views. In the discussion that follows, I will compare the FX-2 with the model 5200 Wheat Lamp (the modern slide-on charging clip version), but many observations also apply to the MSA (Mine Safety Appliances) and other electric lamps.

I might also note here the emergence of both sealed lead-acid batteries and "Gell-Cells" for the Wheat and MSA lamps. While these technologies are well-proven in other applications, my impression (mostly on the basis of gossip and anecdote) is that they are not working too well for cavers. (On the official side, see "Equipment Problem," Letters to the Editor, *NSS News*, September, 1985, p. 276.) To avoid complicating the issue, I'm going to ignore these batteries completely, but the reader should keep in mind that they theoretically are a means of overcoming the electrolyte leakage problems of vented batteries.

The FX-2 Power Pack

The heart of the FX-2 system is an innovative power pack consisting of two 1.2 volt, 5 amp-hour sealed nicad cells, wrapped in an aluminum mounting bracket, then completely inundated in liquid plastic. When the plastic cures, the result is a power pack which is distinctly brick-like, but at the same time resilient. It reminds me of a hockey puck. The possibility of damage or leakage is very remote, unlike the Wheat battery which loves to weep acid from its vents, or smash its binding posts through its case if dropped upside-down.

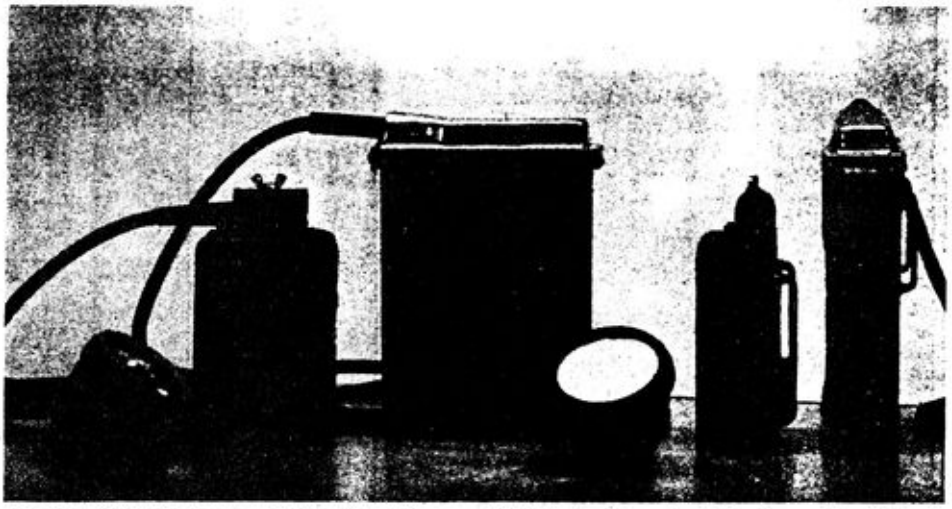


Fig. 1: Left, FX-2 Lamp. Right, Wheat Lamp. FX-2 is about one-half the size and weight of the Wheat.

The power pack is about one-half the size and weight of the Wheat. Part of this difference is because the elaborate vents and airspace allowance above the Wheat cells is not needed with the sealed nickel-cadmiums. The other reason, alas, is that the FX-2 pack has less than one-half the capacity of the Wheat, about 18 watt/hours as opposed to 52. But the result is not quite as bad as it sounds: due to some basic laws of energy (and use of a halogen bulb), the FX-2 will produce an amount of light comparable to the Wheat for 65% as long: 9 hours vs. 13 hours. More about this comparison later.

The 2-pound power pack sits easily on one's hip, thanks in part to the aluminum belt loops which protrude just enough to stabilize the pack on the hipbone, but not enough to be uncomfortable. I've noticed that the FX-2 pack is less inclined than the Wheat battery to dangle in one's crotch during crawls, even when worn over a slick wetsuit. The loops accommodate a 2-inch belt, but most people seem quite comfortable with a piece of 1-inch tubular webbing and a Fastex buckle. Spare power packs may be carried in a cave pack, or slung bandolier-style on the belt. A "dummy plug" (available as an accessory) protects the jacks and the plug mounting post when the battery is not hooked up to a headpiece.

Figure 2 shows the simplicity of the power pack connection: you can literally change packs while moving, but don't drop that little stainless-steel wingnut! I try to always carry an extra, since dropping things into tiny cracks is one of my chief pastimes while caving.

Since many cavers are most familiar with lead-acid batteries (like the Wheat), I will give some information about those nickel-cadmium cells encased deep in the FX-2 power pack. The nicads have a fairly level discharge curve: they will produce a steady light, until the very end, when they die abruptly. The lead-acid, on the other hand, reduces in brightness gradually throughout its burn-time. One should therefore be

Fig. 2. Detail of molded plug being attached to power pack. Stainless steel wingnut holds the plug firmly in place, the resilient rubber-like plastic keeping the wingnut from turning.

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ready to change nicad power packs as soon as the bulb looks dim.

Nicad cells take longer to charge than lead-acid: 1.5 times their rated capacity, as opposed to 1 times the rated capacity. So a dead Wheat Lamp and a dead FX-2 take the same time to charge (about 15 hours), but the Wheat gives more hours of light. Nicads can be charged for long periods of time with no damage, and can also sit dead. They tend to lose charge fairly rapidly if they sit around, particularly in high temperatures, so charging before use is a good idea. Nicads also may build up a "memory" if they are partially discharged several times, and then they won't hold a full charge. This situation can be corrected by fully discharging the power pack several times with long charge periods in between.

Keith Lewis, of Speleo Technics, reports that the manufacturer of the cells used in the FX-2 specifies a life in excess of 500 charge/discharge cycles. He also remarks that some FX-2 power packs have been in constant use (about 3 times per week) in commercial "hire-pools" in England for two years and are still giving excellent service. (Caving gear "hires" (rentals) are a big business in England, which has about 3 times as many cavers as the U.S.)

The Headpiece

In such matters as currency, rules-of-the-road, dialect and even electric lamps, British and Americans are similar, yet different. An American will first notice that the FX-2 has **two** bulbs where we normally have one. The center bulb is the main light source, while the one at the top is the "Pilot Bulb," rotating the switch lights each bulb in turn. The Pilot Bulb supplied draws 0.3 amps and provides fairly dim illumination which is good for small passages, digging in one's pack, etc. The other noticable difference is that the FX-2 cannot be focused "on-the-move" like the Wheat: the headpiece must be opened and the bulb screwed in or out to focus at the desired beam width. I have had little trouble getting used to this, and like the fact that the FX-2 headpiece is slightly smaller, lighter and simpler without the machinery inside which cranks the Wheat reflector fore and aft to focus the bulb.

It occurs to me that if one can't bear the thought of giving up his Wheat headpiece, he doesn't have to. The FX-2 cord and molded plug assembly can be purchased separately at a reasonable price and attached to the Wheat headpiece. But the FX-2 bulbs are 2.5 volt, with a miniature screw base: this won't fit the big bayonet-mount Wheat socket. Unless, that is, one fabricates a screw base-to-bayonet-mount converter (from the carcass of a Wheat bulb and some other parts), as developed by Tom Kaye. (See *D.C. Speleograph*, "Special Issue on Electric Caving," Vol. 34:7, Mid-June, 1978, p. 8. Also in *NSS News*, Vol. 40:6, June, 1982; the *1978 Speleo Digest*, p. 225; and the *Caving Information Series*, #38.)

Other, perhaps less noticable, differences are the left-side exit of the cord from the headpiece and a tempered-glass lens which is fully twice as thick as the Wheat lens. I might mention at this point my disagreement with the oft-made suggestion that a glass lens be replaced with plastic: I prefer the strength and scratch-resistance of glass and carry spare lenses with complete safety in a flat, aluminum, military surplus sunscreen lotion tin.

The switch on the FX-2 turns easily...so easily in fact that some care must be taken to avoid accidental movement when the lamp is carried in a pack or other situation where it may be jostled. This can be a real problem if one goes caving unaware that the lamp has been on and is partially discharged! A simple fix is to flip the molded plug upside-down on the power pack and secure it back in place with the wingnut.

The FX-2 headpiece seems to leak a little less enthusiastically than the Wheat, but preventive maintenance is absolutely essential to operating any electric lamp in conditions where it will get submerged. Get in the habit of opening your headpiece after every wet trip, shaking out the water, and spraying liberally with WD-40 or other water-displacing substance. Otherwise, your terminals and bulb bases will become corroded, your lamp's operation will become erratic, and I shall have no sympathy when your carbide-equipped companions laugh uproariously at your plight!

The specific FX-2 headpiece has varied. Early in production, an Oldham model G (see Fig. 3), the venerable equivalent in the British colliery (coal mining) industry to our Wheat headpiece was used. This model has a major weakpoint in the form of the wire that grounds the main bulb to the headpiece: it tends to break. I solved this problem by substituting a piece of braided steel motorcycle throttle cable, but this will be a hassle for some, as it requires both a donor motorcycle and soldering ability.

The current headpiece supplied is the custom-built Speleo Technics model P: see Figure 4. On this model (which sports a designer "Speleo Technics" label), both bulbs reside in the headpiece shell, which also benefits from all-stainless-steel fittings. Pilot and Main bulbs may also be substituted for each other without problems in lens clearance, unlike the Oldham model G. The trade-off is that no focusing at all is possible: the beam stays in a tight spot-pattern.

The model P has a more rounded switch knob than the Oldham G: as a result it may become somewhat difficult to turn under extraordinarily muddy conditions. I solved this problem the same way as on my Wheat Lamps: drill a very small hole through the knob (being careful to go right through the metal shaft molded inside), then stick a thin cotter-pin through and bend it over. This makes the switch easy to operate even with muddy gloves.

My understanding is that the model P headpiece is now standard issue, but it would not hurt to state any specific preferences when ordering.

Bulbs

The range of bulbs available for the FX-2 is not very wide, as shown in Table 1, which is taken from information in the Inglesport catalog. There is a distinct gap between the 23-hour burning time of the 0.3 amp Pilot Bulb and the 10 hours of the 0.75 amp tungsten bulb. It would be handy to have more choice: checking commercial bulb supplier's catalogs might be fruittul.

I have been pleased with the intensely white light of the halogen bulb and its 9-hour burn time. The amount of light produced is comparable to the 1.0 or 1.2 amp Wheat filament. The bulb has a rated life of 100 hours: my first one went for 122

Fig. 3. Oldham model G headpiece. Note that ground wire [arrow] connecting reflector to headpiece shell has been replaced by steel cable. The glass lens is twice the thickness of the Wheat's.

Fig. 4. Speleo-Technics model P headpiece. Both bulbs reside in the headpiece, which has all stainless-steel fittings.

Table 1. FX-2 Bulb Characteristics

Bulb	*Approx. Burn Time*
0.3 amp, tungsten	23 hours
0.75 amp, tungsten	10 hours
0.8 amp, halogen	9 hours
1.0 amp, tungsten	8 hours
1.25 amp, tungsten	6 hours

hours before passing away conveniently as I crawled out of a cave entrance. Remember to always carry two spare bulbs, so that you can continue caving with a spare if the first one goes out.

Charging

The FS-2 attribute that I value most highly is the ease of charging. You just unscrew the wingnut, pop the molded plug off the battery pack and stick the charger on (see Fig. 5). If caked mud can be cleaned off, so much the better, but it's not required. The reason I like this is my experience with Wheat Lamps. I have many fond memories of performing surgery with paper clips, pipe cleaners, old toothbrushes, allen wrenches, etc. in attempts to get enough silt and grit out of my slide-on (model 5200) charging clip to allow connection to the charger. (Note: If you frequent clean caves, simply dismiss this as lunacy and skip on to the next paragraph.) This accomplished, I would naively go to sleep, only to wake up in the morning and find that the silt had mischievously broken the connection again, and I had an uncharged battery.

The FX-2 Mobile Charger (see Fig. 5) is an elegantly simple little device, made from a length of one-inch aluminum box tubing, with circuitry inside, an LED indicator, and cooling holes. The LED indicates not whether power is being supplied the charger, but whether the charger is supplying power to the battery. So a proper connection can be confirmed. The charger (which is protected against reverse-polarity) gets quite hot, so some care must be used in placing it. Mine has flopped over on nylon carpeting a few times with no damage, but will make you yelp if you touch it. When the charger is removed from the battery, it shuts off: you don't have to unplug it from the power supply. Charging time is 15 hours (1.5 times rated capacity of the power pack in amp-hours), for a fully discharged battery. Partially discharged batteries should be charged for 50% longer than they were used.

A home charger ("mains charger") is available, but it only works in British homes, which are supplied with 220 VAC electricity. I suppose you could hook it up to an electric stove outlet, but an easier solution is to buy a cube-charger which plugs into a wall socket for charging 12 volt motorcycle batteries. These cost about $6.00, and with a female lighter socket attached will replace your vehicle nicely in operating the "Mobile" charger.

The low voltage (2.4 v) of the FX-2 power pack suggests to me that solar charging might be practical and relatively cheap, since solar cell cost depends largely on voltage. This would be handy for backpacking/caving trips, as well as expeditions where large numbers of electric cavers gang up on vehicles which are often stationary for long periods.

Personal Evaluation

Everyone has their own choices in illumination, so I'm not going to try and sell anything. Let me instead describe how I use the FX-2, in the hope of giving you an idea of its applications. For caves where lots of tight passages (without white water or low airspace) are expected, I use a good old Autolight carbide lamp. There is just no need for an electric lamp, although the FX-2 power pack does go through tight stuff a lot easier than my Wheaties. For average trips in the 10 to 15-hour range, I'll take an FX-2 with one or two power packs, and backup carbide. It permits me to do things without the interruption of carbide changes and fiddling, gives tons of light for sketching, and really earns its keep when waterfalls or low-airspace work come along. For trips over 20 hours, I'll usually go all carbide, with an FX-2 headpiece (and probably just one power pack) thrown in if waterfalls or other nastiness are expected. I've pretty much adopted the FX-2 as my electric lamp. I like its size and weight (I never complained about a Wheat lamp on my hip when I wore one), the ease with which it connects to that great little charger, and the joy of not finding pools of acid in the bed of my truck from leaking wet-cells. Because of this I've been willing to give up the additional burn-time of the Wheat, and its focussing headpiece. If I caved mostly in pleasant conditions, I'd probably just stick with my Wheat Lamps or use one of the cheap electrics.

Fig. 5. The FX-2 Mobile Charger. Clever design utilizes a sturdy piece of aluminum 1-inch box tubing, with holes for cooling and an LED to indicate when the unit is charging. Disconnecting the unit from the power pack turns it off—no need to unplug the power supply.

Availability

Ian Ellis, of the Speleoshoppe, is presently the only U.S. dealer for the FX-2 lamps. He indicates that despite considerable importation hassles, he will attempt to keep the lamps in stock. Prices, as of August, 1985, are as follows: Complete FX-2 Lamp, with halogen bulb: $95. Vehicle Charger: $22.30. Extra Battery: $50.95. Dummy Plug: $2.25. (The Speleoshoppe, P.O. Box 297, Fairdale, KY 40118, 502-367-6292)

Depending on the current U.S. British exchange rate, one may occasionally save money by ordering directly from England. One dealer whom I can recommend is Inglesport, The Square, Ingleton via Carnforth, LA 6 3EB, United Kingdom.

Acknowledgements

Thanks go to Peter and Terri Sprouse, and Paul Fambro, who first turned me on to FX-2 lamps. Dave Black wrote a very informative article on the FX-2 (*Central Indiana Grotto Newsletter*: July, 1985), which provided useful information. Ron Simmons explained nicad technology, and articles by Ray Cole, Tom Kaye and Tom Reinbold in various sources (see "Cave Lights Special Issue," *NSS News*, June, 1982) were helpful in this respect also. Keith Lewis (co-proprietor of Speleo Technics) supplied valuable information in response to my queries.

Ed. The NEWS welcomes and encourages submission of new product information from manufacturers, dealers, and individuals. Send to: NSS News, P.O. Box 12334, Albuquerque, NM 87195

JENOLAN : TRIP REPORT

Trip Report: Jenolan; Labour Day long weekend.
Sunday, 2nd October 1988: **Little Canyon Cave - Serpentine Cave** through trip; **Hennings Cave.**

People: Chris Young, Mark Staraj, Jill Rowling, Paul Jones, Julie-Anne, John Oxley.

The Infinite Crawlers groaned when they were awakened by Chris Young's bright and cheery group that morning.
Breakfast was organised and after much deliberation it was decided that a stroll up the valley was in order. As there were freshers in the group, Chris thought it would be a good idea to have a look at **Little Canyon Cave** and **Serpentine Cave.**

Snacks were packed and everyone walked to Mammoth Flat. On the way, we passed the remains of a shelter that presumably formed part of the Koala enclosure. All that was left was some brush fencing/thatching and some aluminium foil.
"That looks like a solar collector," I said. "Maybe it's for collecting souls!" No-one liked my joke.

We then continued up the valley. Those who knew the area soon found the Serpentine Cave entrance, then the Little Canyon cave entrance.
I peered down and realised that I would not be able to reach the floor without jumping, so I tied some tape around a chockstone. The floor was very muddy.
When we arrived at the junction between Little Canyon Cave and Serpentine Cave, we all pondered the nasty muddy climb up. The most intrepid person went up first with a long (10m+) tape and tied it on well back up in the passage.
The climb was a chimney against mud for most of the way, with a sense of exposure because you start on a narrow ledge between two flakes above the canyon leading to the Nibicon dig.
Then followed a bit of crawling and a rather tight squeeze (which I botched-up first and had to back out), then a fun scramble / slide down a mud slope using a doubled tape (use the conglomerate jug-handle near the roof). (I've since found out that the top of this climb also leads to the upper Serpentine entrance).
I had just continued through a squeeze hole in the floor into the serpentinous section of the cave, when: "BELOW!" >>BANG!<< as a football-sized rock was dislodged by one of the party. Fortunately everyone had taken shelter before so there was no one in the way.
Continuing through the cave, we Oohed and Aahed at the serpentinous passages and I took a couple of photos. The next squeeze was negotiated with a bit of grunting. We all admired the truncated meander and the bit of formation and exited the cave via the not-so-obvious lower entrance. When we emerged from the cave we found that our surface party had constructed a log "mantrap" over the entrance and were teasing us to see if we could negotiate it without dislodging the little logs. This was fun, but what was even funnier was watching other people barging straight out, logs going everywhere.
After sharing some snacks, we then continued North to **Hennings Cave** where we all giggled at the Phamous Phallactite, observed the oolites and were generally impressed. There is evidence of graffiti in a couple of places, but I don't know how old it is.
While others looked at formations, some of the more enthusiastic crawled through water to discover very little. On the way out, we noticed some aragonite in the roof. In summary, Hennings Cave is quite well decorated and certainly worth a few photographs.
Outside, Mark and I climbed up Hennings Bluff to see what we could find while the others went to Wiburds Lake Cave. We found stinging nettles, rillenkarren, a useless hole (I think it was J188: two "entrances" and about body length way up on the hillside) and a magnificent view up and down the valley via a somewhat exposed scramble. We did a "line search" of the Northern side of the bluff but did not find anything of interest. A little further North I investigated a long narrow slot in the Western hillside at valley floor level, but it got too tight and the others had returned from Wiburds Lake Cave, so it was back to the cottage for dinner and discussion.

Monday 3rd October, 1988: **Southern Limestone Walk.**

People: Paul Jones, Pall Fekete, Jill Rowling.

Since everyone else had either gone home or gone to climb the Three Sisters, Pall said he would like to have a look around the Southern Limestone and see the Bottomless Pit and Heffalump Trap.
It was a hot day and we should have taken more water than we did. First we saw the **Heffalump Trap** with its magnificent nettle collection and lack of a tag. The we climbed a steep hill to the **Bottomless Pit** which we peered into using my feeble torch, shouted into and dropped a pebble in to hear the clatter. We were generally impressed by the depth and the lack of obvious good belays [I have since been told that one may use a medium sized hex]. The steep hillside was covered in flowers, grass and obscured rocks. Pall felt it would be easier to abseil down the hill!

Must go back there some time...

Jill Rowling, June 1989

ATTENTION MEMBERS

IMPORTANT NOTICE TO SUSS TRIP LEADERS AND GENERAL MEMBERS

Trip Leaders

SUSS trip leaders have a responsibility to ensure the safety of each member of their party.

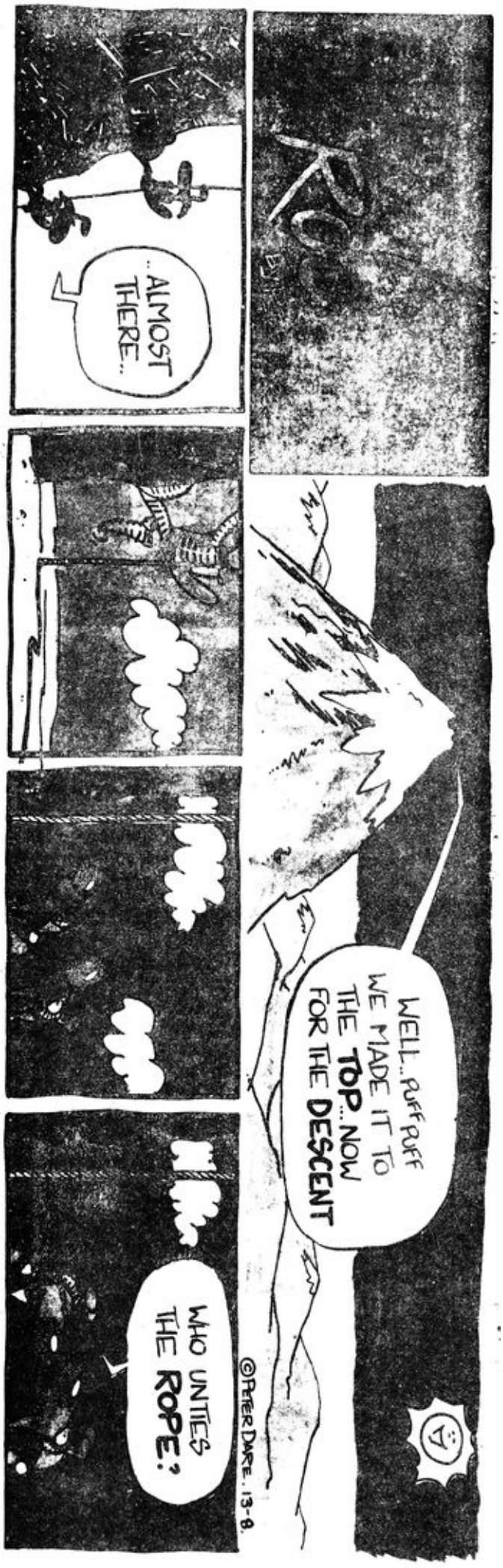
To carry out this responsibility, trip leaders need to ensure that sufficient equipment is carried on the trip to enable each member of the party to safely negotiate any part of the cave that the party intends to visit. If by chance the equipment available is insufficient then the trip leader must ensure that only those members that feel capable of proceeding do so.

Suitable arrangements must be made for any members that do not proceed.

General Members

If any member does not feel comfortable, from a safety point of view, then he/she should not hesitate to inform the trip leader. Chances are that others in the group feel the same.

Michael Lake,
SUSS Safety Officer.



SHAME FILE

BARRISTER DOES HAROLD HOLT AT FOREST LODGE HOTEL

MONDAY, 21st AUGUST 1989

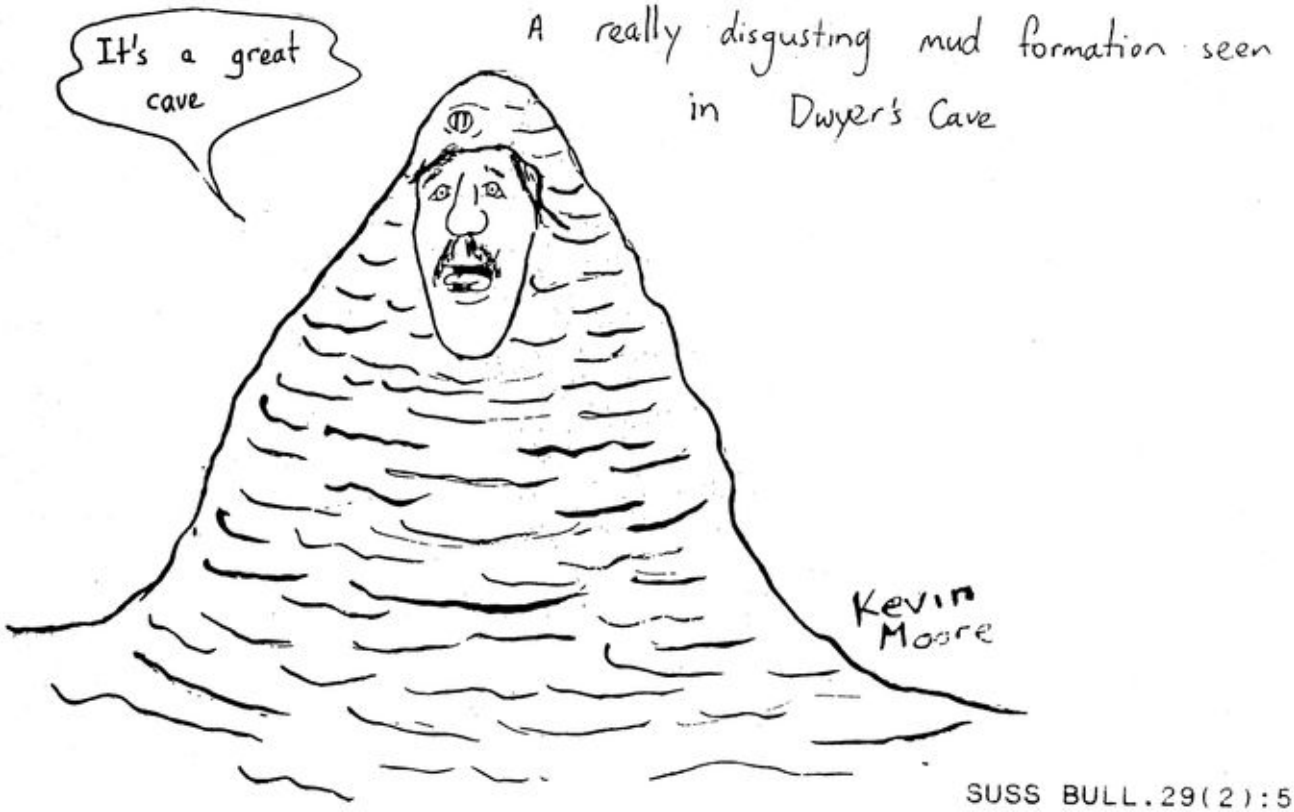
Monday night and the Forest Lodge Hotel was the setting of a most disturbing incident. Patrons are still shaking their heads in disbelief and angrily waving fists in the direction of Mosman where its generally accepted the culprit came from.

A group of Forest Lodgers were having their customary get-together over a quiet meal and drink, renewing those vital acquaintances that help these over worked and disadvantaged people through the hardships of their lot. Witnesses later recalled the presence of the rogue in their midst:

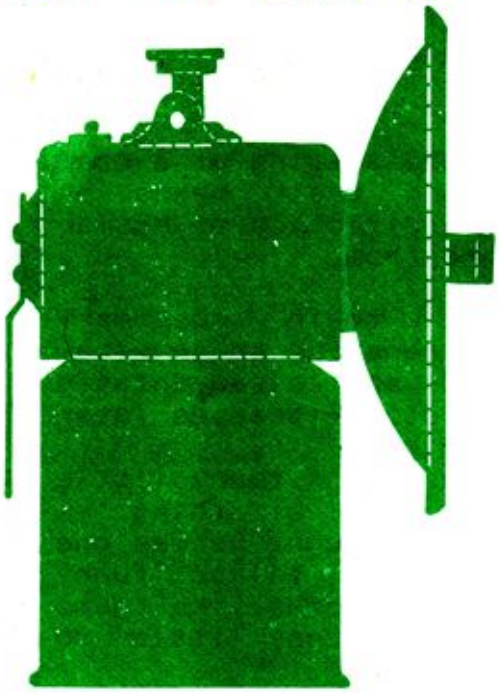
"Yeah, now I think of it, I'm sure I saw him. A funny little man he was. All dressed up in suit and tie sort of thing. I didn't think nothing of him at the time, mind. Thought he was one of us. You know, Vincent suit and all that. He talked funny though. You know, using them long, flowery words like thems people that read the paper and wear a wig. Had a funny little mo too, like he'd missed it when shaving."

At closing time the close knit group of mates forked out their dues to the hotel and discovered that they were $10.40 short for a meal that no one had ordered. It was then realised that the suspect had disappeared from their midst. As a result one of these poor people, a Mr. John Oxley had to part with the difference. Food and shelter has now been found for this victim of evil and greed. Yes, victim, as it has been established that the culprit is a practising barrister, a man of means, money and plastic credit for whom the sum of $10.40 is but a tip for the bar tender.

Hopefully the travesty of justice can be redressed. A photo of the scoundrel has been uncovered from the archives and serves to emphasise his unsavoury character.



Lumen in Tenebris



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