

BULLETIN OF THE SYDNEY UNIVERSITY SPELEOLOGICAL SOCIETY



SUSIS

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by the Sydney University
Speleological Society

TRIP LIST

MARCH:

27 - 28th JENOLAN - digging B WELCH
929 0432

APRIL:

1st SUSS Annual General Meeting.
Gladys Marks Room, Manning House, Syd Uni. 7.30pm

3rd Liason Council Meeting - Dapto. B WELCH

3 - 4th JENOLAN - Water Sampling, Come and see M HANDEL
all of Jenolan. 73 2028

7th Barbara Dew Memorial Lecture to be given
by Ilery Hamilton Smith at Stephen Roberts
Lecture Theatre, SYD UNI. 7.30pm

EASTER UNSWSS - trip to CLIEFDEN led by Ian Wood.
Contact Bruce Welch if you want oo go. 929 0432

LATE NSWCRG - Dinner to be held at the 1st Sister
Katoomba. See BRUCE WELCH.

May:

6th SUSS General Meeting.
Gladys Marks Room Manning House, SYD UNI 7.30pm

8 - 9th JEENOLAN - J&HAPS Meeting, some underground
work will be done. B Welch 929 0432

JUNE:

3rd SUSS General Meeting.

If you want a trip to somewhere not listed above or at some other time
you can contact the following people who will try to assist. (They are SUSS
trip leaders.)

P WINGLEE	83 9182	B WELCH	929 0432
R KING	969 4843	M HANDEL	73 2028
P CAMPBELL	76 8855	T AUSTIN	7507785

Speleologists still seem to be confused as to what units they should be using in their hydrological measurements. In this article I will attempt to make the situation somewhat clearer.

The Derived SI Unit.

The derived SI unit is the cubic metre per second ($\text{m}^3 \cdot \text{s}^{-1}$), commonly known as the cumec. It is unfortunate that this is such a large unit, a flow in the order of 35 cusecs. When we are rarely working with flow rates in the order of even 0.1 cumec (more often in the order of 0.01 cumec) one is somewhat reluctant to use such a meaningless unit.

SI Alternatives

Since the Metric Conversion Board prefers the use of prefixes related to the derived unit by powers of 10^3 (this also includes 10^{-3}), then the obvious alternative is the millicumec ($10^{-3} \text{m}^3 \cdot \text{s}^{-1}$).

This unit is particularly useful in that most flow rates measured by speleohydrologists would be between 5 millicumecs and 50 millicumecs. It is important to note here that the Metric Conversion Board does prefer that we use the expression $10^{-3} \text{m}^3 \cdot \text{s}^{-1}$, with the term millicumec as a second preference. So all you SI purists can drive typists mad by insisting on having your flow measurements expressed in the form $10^{-3} \text{m}^3 \cdot \text{s}^{-1}$. (You are not kidding, and if anyone tries it, well..... (ED).)

The litre/second. (l/s)

This term is synonymous with the millicumec, ie it is $10^{-3} \text{m}^3 \cdot \text{s}^{-1}$. It has been suggested that confusion could arise with the use of litres (Toomer 74) since before 1964 the litre was 1.000028 dm^3 , it is now precisely 1 dm^3 (ie 10^{-3}m^3). However I think it is unlikely that measurements in litres appearing in 1976 literature will be confused with pre 1964 values.

The ASF Survey Standards recommend either l/s or cu m/s .

Conclusion.

I think it is up to the individual to decide which unit he uses, however my own recommendation is that the millicumec be used.

Conversion Factors.

1 cumec	=	1000 millicumecs	=	1000 litres per second
1 l/s	=	1 millicumec		
1 cumec	=	35.314 cusecs		
1 millicumec	=	0.03531466673 cusecs	=	1 l/s
1 ML/day	=	0.012 cumecs	=	0.4088 cusecs.

REFERENCES.

- TOOMER P B 1974 A Note on Metric Units for Stream Flow Measurements.
PSG Bull 5 (9):78
- Metric Conversion Board 1973 Metric Practice. Australian Government Publishing Service, Canberra.
- Australian SPeleological Federation 1976 Cave survey and Map Standards Unpublished
SUSS Bull 15(11):234

Geomorphological studies of caves and karst areas depends heavily on a good perception of the relative positions of various features under study. Since caves take an infinite variety of shapes no one system of mapping will satisfy all situations. It is the use to which the map is put which most determines the usefulness or limitations of that map.

A true shape description of a cave shows to what most dominant influence various features can be attributed. Such features being the strike and bedding of the limestone; the nature of the jointing; the passages of underground rivers; any faults which may be present. It usually takes a keen eye and good knowledge of a certain cave to discern features such as the above, on an orthographic projection

Ideally a pictorial overview of the whole cave system can best present a useful picture of the features the geomorphologist regards as important. Such a representation was introduced into Australian caving circles by E. G. Anderson with his "Isometric diagram of Mammoth Cave Jenolan.". The total concept of each feature's position in space was grasped just from looking at the diagram - yes, diagram. Since it only shows features in relation to other features within the cave. If you like it represents the shape of the cave diagrammatically.

Since most cavers when conveying their ideas are far from accurate (most doing so by word of mouth with hand signals or roughly sketched ps, never to scale), the inaccuracy of an isometric diagram can be excused.

Such inaccuracies:

- occur when the plans and elevations of caves are rectanglised; limiting factors in this regard are:-
 grade of survey,
 amount of wall, floor and roof detail available,
 minimum size each passage is resolved to.
- exist due to the fault that isometric drawing entails no perspective and the far corner always appears missed and the front edge shorter than the back. Actually they are the same length.

There is no way an isometric diagram will replace an orthographic projection of the cave. The only purpose of the isometric diagram is to clarify the limitations of a standardised mapping system or to convey more information than that given by the conventional maps.

Reference;

- E. G. Anderson (1971) 'An Isometric Diagram of Mammoth Cave.
 from "THE EXPLORATION AND SPELEOGEOGRAPHY OF
 MAMMOTH CAVE JENOLAN" by J G Dunkley, assisted
 by E G Anderson.

BOOK REVIEW

AUSRRALIAN SPIDERS

by Keith C McKeown

published by Angus and Robertson Ltd. SYDNEY
Sirius Books Edition 1963

This book is exceptionally well written. It is an outstanding account of Australian spiders for both the biologist and the non biologist. The world of spiders is rendered interesting even for those who loath the poor old spider, and much entertainment can be derived in the reading of this fascinating book. For the speleologist who must see caves in every book he picks up, the following extracts can be studied:-

BEGINNING ON PAGE 4;

"The majority of the spiders are exclusively terrestrial, hunting their prey over the ground, building their intricate snares in the trees and herbage, and tunnelling in the soil. Even the caves concealed in the bowels of the earth have their spider inhabitants, which live in perpetual or almost perpetual darkness. Some of these are completely blind, while in others the eyes have degenerated that it is extremely doubtful whether they are even capable of distinguishing between light and darkness. It is an interesting point, and one upon which opinions differ, whether these spiders, together with other cave dwelling animals have lost their sight through disuse, because they live in perpetual darkness underground, or whether their vision was originally defective, so that they were forced by circumstance to take to an underground life in the caves to escape the intense and ever-increasing competition with their fellows in the outside world - to leave the warmth and sunlight and dwell in the darkness and little-fluctuating temperatures below. Much research is necessary before any answer can be given to the question."

"a wonderful example of these cave dwelling spiders is to be found in Tasmania, where a large brown or blackish species (*Ectatosticta troglodytes*), with long sprawling legs, lives in the depths of the limestone caves at Mole Creek in the north of the island. It affixes an irregular snare of tangled threads of a curiously glistening silk among the stalactites hanging from the roof of the grotto. The huge spider usually rests upon one of these pendent limestone formations, awaiting the arrival of some likely victim to entangle in the toils of her snare. What do the spiders feed upon? At Mole Creek there seems to be no reason to doubt that the spiny-legged, blind cave crickets form an abundant supply of food, for they are present in immense numbers, and in some of the caves form a brown tapestry over the rough rock walls - a tapestry that breaks up and scatters in all directions if disturbed; the individual crickets forming the mass leaping away into the most inaccessible situations. The only other life I have been able to discover in these caves is that of the little Dipterous glow-worms, which gleam with a cold blue light upon the roofs."

AND CONTINUING ON PAGES 8 and 9;

"By far the most remarkable of these communal efforts in Australia, and probably in the whole world, are the webs of the gregarious *Ixeuticus socialis* (formerly *Anaurobius*) from the Jenolan Caves. The spider and its enormous webs were described by W J Rainbow, who wrote:

'Some time ago Mr J C Wiburd presented to the trustees (of the Australian museum) two large shawl-like webs, taken from the roof of the grand Arch, Jenolan Caves. Each web was closely and densely woven, and had been fabricated by a large number of individuals living together in a community. No spiders were forwarded with the first sample, but from its folds I picked a quantity of exuviae, which convinced me that the arachnids belonged to the genus *Amaurobious* I thereupon wrote to Mr Wiburd asking him to secure some of the spiders responsible for the construction. This he succeeded in doing so that I am now enabled to describe both the spider and the web.'

'The larger web presented by Mr Wiburd measures twelve feet in length and rather more than four feet at its greatest width, and when hanging in situ was festooned amongst the stalactites depending from the roof of the cave. The webs are full of holes, each of which had evidently been the entrance to a retreat tube. These webs are closely and densely woven, and are suggestive of a fabric - such as a shawl. Scattered over the surface of the huge web are a large number of empty cocoons, or ova-sacs. These are pure white, flat, more or less discoidal and closely woven. Each sac consists of two strong paper like discs -- an upper and a lower - between which the eggs are placed. None exhibited any trace of loose flocculent silk. The discs did not appear to vary in size. A number were measured, and from seven to eight millimetres was the result obtained.'

"DOCTOR SUES OVER CAVE FALL."

The following article has been extracted from a report which appeared in the Sydney Morning Herald a short time ago.

"A Macquarie Street doctor had suffered a severe spine injury in a fall down a hole in one of the Jenolan Caves seven and a half years ago, a QC said in the NSW Supreme Court yesterday."

"Mr Foster, QC, said that Dr Reed had fallen six metres down a sink-hole in a large cavern known as The Devil's Coach House on September 6, 1968."

"He had landed on his left leg and right heel fracturing two vertebrae in his spine and breaking a bone in his wrist. He had also suffered gross bruising on the lower back and buttocks."

"Mr Foster said that the doctor and his family had driven to the caves for a pleasant days outing, with catastrophic results."

"Mr Foster said there had been no danger warning sign or guard rail to prevent tourists going into the Devil's Coach House, although evidence existed that at least one other person had previously had a fall in the cave."

"He alleged that, after Dr Reed was injured, a steel guard had been put across the cave entrance and a sign erected stating Danger - No Entry."

PRESENT: M. Handel, P. Kirby, B. Welch, P. Winglee, + one other.

Prue and I arrived on Monday 26th to join those who had been caving on the weekend. The heavy rains had caused the creeks to flood. The day before I had constructed a "Simple Flow Measuring Device" as described by M. D. Pound in Down Under 11(5) (Dec 1972). The morning was spent racing up and down McKeown's Creek playing with my new toy. Unfortunately the flood had been running for a few days and so the underground watercourses and reservoirs would have been full. This meant that water sinking in the creek bed was not as pronounced as it might have been if the flood had just started. The results of measuring are set out below.

The afternoon was spent on Serpentine Bluff, J81 was located, mapped and described. Descriptions and crosssections were done for Duodenum Cave J120/121/122/123, for J117 and J118/119.

Later on Bruce and I inspected Little Canyon and estimated the flow of water to be between 50 and 100 millicumecs. That night we inspected Spider Cave. The dig was under 2-3 metres of water and the watercourse that feeds it was seen for the first time. The flow was only a few millicumecs.

On Tuesday only Bruce and I remained. We went to Frenchman's Cave (J18/25) and put flow detail on the MSS Map. Notes for the cave descriptions were also made. The cave ends in a large rockpile and a draft could be felt coming out of it.

When we came out of Frenchmen's Cave I noticed a hole in the cliff to the south. This is the same cliff that contains False Frenchmen's Cave. The hole is a vertical slot 3m high and $\frac{1}{2}$ m wide. Its floor is 10m down from the top of the cliff and 20m up from the bottom. Valiantly I took my 12m rope and wearing my jumars abseiled down to the entrance. After swinging into the slot I found it was a cave no more than 8m long, although the hundreds of bones on the floor of the small chamber were interesting to see. I mapped it and retreated up my rope.

It was now about 4pm and the creek which had been flowing only a few hours ago, had almost completely dried up. A small flow was now sinking where the Playing Fields meets the gorge.

FLOW MEASUREMENTS McKEOWN'S CREEK 26th January 1976.

<u>FLOW</u> (millicumecs)	<u>SITE</u>
790	Straight reach upstream from Serpentine Bluff.
580	20m down from bend in creek at start of Serpentine Bluff.
	Water was seen sinking in the hollow on the eastern side of the creek just upstream from J72 (Serpentine Cave)°

<u>FLOW</u>	<u>SITE</u>
440) 520)	Outside the Right Nostril Cave at the downstream end of Serpentine Bluff. The uneven nature of the creekbed and the turbulent water made this measurement difficult.
640	50m down from the southern end of Serpentine Bluff. This point is below where the tributaries come in from both sides of the creek.
	The tributaries were not actually flowing into McKEOWN'S Creek but their waters, which sink further up probably seep through the gravel to join the main creek.
500	20m upstream from Bow Cave (J16). A considerable flow was going into Bow Cave however the debris inside the entrance prevented a flow measurement.
350	Upstream (10m) from Dwyer Creek junction, Mammoth Flat.
(60)	Dwyer Creek at Mammoth Flat.
390	Downstream (10m) of Dwyer Creek junction.
360	In Sevil's Coachhouse, towards the downstream end. An interesting point to note that during the flood, water was forcibly bubbling up out of a hole underneath the road-bridge. This is part of the Imperial Cave resurgence.

The above readings were collected by M. HANDEL, with assistance from P. KIRBY and B. WELCH.

NOTE: 1 millicumec = 1 litre per second
 28.4 millicumec = 1 cusec

COMMENTS:

The Flow Measuring Device was being used by me for the first time. It was constructed according to details given by M. Pound in Down Under 11(5) (Dec 1972).

The measurements at the downstream end of Serpentine Bluff were difficult and inaccurate. This was due to an uneven creekbed and turbulent water. On the other hand the measurements at Mammoth Flat where the creekbed seemed more even, seem quite good.

Flow into junction = $350 + 60 = 410$ l/s
 Flow out of junction = 390 l/s

These figures appear even better when one considers that about 20 or 30 l/s from Dwyer creek was sinking when it reached the dry McKeown's Creek after the flood. This sinking water was travelling through the gravel and reappearing 20m down the creek.

What was learnt was the acute importance of choosing a measuring site where the creekbed has an even cross section. Hydrologically nothing new was found.

MID-WEEK MADNESS

JENOLAN TRIP REPORT.

4 - 5 FEB 19 6
M. Handel

PARTY: M. Handel, B. Welch.

We arrived on Tuesday night and commenced caving on Wednesday morning. We put detail on the map of Dreamtime Cave, J142, and wrote a cave description. Crosssections and description were done for J109. A developed long section was drawn for J168. Complete surveys and descriptions were done for J170 and the J128/129 /130 complex.

That night we finished the survey of the Devil's Coachhouse. This has taken Bruce six months to complete, a tremendous task.

On Thursday we visited the dig in Spider Cave, J 174. The dig itself was dry, however the sump in the chamber past the squeeze/dig was full of water. Some holes on Mammoth Bluff were inspected, but only one, a 5m long crawl, could be called a cave. Before leaving for Sydney, we looked at the spot where the water had been sinking in Little Canyon during the last flood. This was a dig during Nibicon and is still a good prospect. There was a slight draught going in.

SECOND SURFEIT OF SURVEYING - Jenolan TR 10-11 JAN 76

B. R. Welch.

PRESENT: B Welch, (TL), G Innes, D Creed, S Bunton, P Dykes, P Winglee, P Campbell, P Greenfield, (SUSS), C H (Henry) Shannon (SUSS/UQSS), R Murphy.

The activities of the trip included:-

- (1) Surveying of J95, 146, 202, 211, 216, 229, 233, 236, 238, 239, 240, 243, 244, 245, UCL 164, 165, 166, 157, 158.
- (2) Investigation of Oolite Cavern, Mammoth Cave for the purposes of planning the proposed cleaning of this cavern. This project is being carried out in conjunction with the Jenolan Subcommittee and the SUSS Subcommittee on cave Conservation. The chairman of this latter subcommittee is PETER Campbell.
- (3) Investigation of Rho Hole for the possible connexion with Glass Cave, a way through the rockpile in the Second Rockpile Chamber was found to the

top of a 5-10m drop and it was thought at the time that this was the connection sought after, although later investigation revealed that this is simply a drop into Ian Carpenter Cave.

- (4) Photography of the Railway Tunnel by Henry Shannon for the purposes of disproving (or otherwise) Randall King's paper on "The Tectonic Morphology of the Railway Tunnel and Central Mammoth Cave Jenolan." It is hoped that these photographs will assist in the study of the Railway Tunnel, this study is currently being undertaken by Randall and Henry.

HENNINGS CAVE SURVEY COMPLETED. Jenolan TR 14-15JAN76

B. R. Welch.

PRESENT: B Welch(TL), G Smith.

The work done on this mid week trip included:-

- (1) Completion of the Hennings Cave Survey. This cave was surveyed under the leadership of Graeme Smith, and at the time of writing this survey has been completed and a copy lodged with the Senoir Guide, Jenolan.
- (2) Surveying of J14 6, Weasel Cave. This cave was tagged by SSS some years ago however it was only recently that SUSS managed to find the cave. When first seen by myself there was no cave opening, however I happened to notice that all the possible entrances and fissures near the tag had been carefully blocked up. The rocks that had been used were stained orange on the outside, indicating that the blocking occurred many years ago.
- (3) The interesting hole located in Rho Hole on a previous trip was investigated and proved to connect with Ian Carpenter Cave, and not Glass Cave as previously thought.
- (4) A surface traverse of the tags J 20, 24, 19, 17 was carried out to enable the integration of the Glass, Alladin, Rho Hole and Ian Carpenter Cave surveys, All these caves lie very close to each other.

"A TOUR OF TUGLOW" TR 7/8 February 1976.

Randall King.

Present: M. Martyn, S. McCann, N. Hixon, P. Newendyke, M. Walker & others (SSS)
R. King (SUSS).

Finding that SUSS didn't even have room in cars for their President to get to Jenolan this weekend, yours truly deserted onto a trip to Tuglow with SSS. My last trip to Tuglow was 4 years ago, and this was the first time for a few years that SUSS had been to Tuglow Caves, so it was certainly an interesting experience.

SUSS Bull 15(11);241

After 24 hours of getting lost and many, many pubs we arrived at the campsite only to find that meanwhile the rest of the party had gone caving. So back to the Oberon Pub! Finally Sunday dawned (Stuart - "I don't feel too well this morning") and underground at last.

The entrance to Tuglow Main is high on the limestone ridge overlooking the river, and the first few hundred metres or so entails dropping down to the lower river level in the cave. Some parties the previous day had gone to the trouble of rigging ropes all the way down! A visit to the upper levels to the former site of the infamous "Knights Knobbly Knob" revealed that the vandal who 'removed' this unique stalagmite went to great lengths to chip it out carefully. A number of cavers have expressed the desire to be left alone in the same room for 5 minutes with the individual concerned if he is ever found. However, in general, the formation in this area has fared extremely well, considering the usage of the cave, and gives conservationists some faith in human nature yet. Down in the river section, some wallowing and swimming in most of the river passage was attempted before the party exited again.

Both geomorphologically and geologically Tuglow is a goldmine. The Kowmung River has incised its way almost vertically downwards with 300 degree bends, leaving the prominent limestone ridges outstanding. The Tuglow limestone itself is of the same age as the Jenolan series (Silurian) and is the major one of a number of nearby other outcrops - mainly the 'Island' and 'Tricketts Arch' areas at Jaunter where I have done some geomorphological work which has remained unpublished for diplomatic reasons. Within Tuglow Main, many dykes cutting the plane of the river and the greatly changing state of purity of the limestone suggest that the geology has had a fairly dramatic effect on the cave's development. When UNSWSS eventually get around to putting together much of the work they have done here a clearer picture of this aspect should be brought to view.

A two star rating area definitely worthy of further SUSS involvement.

Randall King. 1.4.76

WALLAMGAMBY CANYON

Sunday 28th March 1976

Randall King.

Present: Stuart McCann, Neil Hixon, Julia James, Peter Ruxton, Randall King.

Located in the Blue Mountains near Mt Wilson off the Bell road, this canyon consists of a mile long river section with a few rapids in between. A planned trip to Tomat Falls to abseil the 500 ft. drop was circumvented by rain, so a pleasant lile down the Wallamgamby was done instead.

Two other groups were also met in the canyon, and many offers were received to buy the wetsuits we were all wearing to ward off the 'spanner water'. After a late lunch we walked back to the cars and returned to Sydney via a welcome Pub.

Canyoning can be considered by cavers almost as a second pastime, and some SUSS canyoning trips will be held during the year. Any takers?

Randall King. 4/4/76

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LOST

On the weekend of the 14 - 15 Feb 1976, Steve Buntton managed to lose (misplace or simply forget to pack) A set of maps, assortment of tapes and krabs. They were all packed (he believes) in an Army (khaki green) HIP PACK, and it is believed that they were left in the vicinity of the Mammoth Campsite. So if you know of the present whereabouts of these items will you please get hold of Steve (phone no. 5248116).

FOUND - FOUND BY GUIDEL (THANKS !!)

ADVERTISEMENT

WANTED - Urgently

For destruction testing

SRT Hardware - eg. Karabiners, Jumars Gibbs, Cloggers.

SRT Ropes - eg. Blue Water II, Blue Water III, Marlow,
Kinnears, Super Braidline Terryline.

Other Ropes - eg. Kernmantle, Polypropylene, Polyethylene.
ALSO tape webbing .

If you have any of these items which you have "written
off", please post them to:-

Phil Toomer
Liason Officer, NSW Cave Rescue Group
2/19-21 Tunks Street,
Waverton 2060

or phone him on (02) 929-0432

These items will be used for testing their strength,
abrasion resistance etc. If possible a brief history of the
item should be included. Also, where possible, damaged ropes
should be in multiples of 1 metre, but don't forget, 1 m
is better than none at all.

Testing of new ropes will also be carried out in line
with, and continuing on from, the BCRA Tests.