



The SAG Rag is published bi-monthly by the Shasta Area Grotto of the National Speleological Society. Editors are Jim and Liz Wolff, PO Box 865, McCloud, Ca. 96057. Shasta Area Grotto meetings are held at 7:30 p.m. on the second Friday of each month. Meeting places are announced in the newsletter. Subscriptions are \$4/yr. or 75¢/issue. Grotto dues are \$4/individual and \$6/family.

 **CALENDAR**    

Nov. 14 Grotto meeting in Redding at Claude Smith's (see map elsewhere). Nominations for next year's officers will be held. Those eligible to run for office are:

- | | | |
|------------------|---------------|------------------|
| Glen Everest | Steve Knutson | Mary Belle Smith |
| Mark Fritzke | Jim Kottinger | Neils Smith |
| Al Henderson | Dick La Forge | Mark Stoute |
| Phylis Henderson | Ray Miller | Jake Turin |
| Tom Hesseldenz | Joe Molter | Jim Wolff |
| Norm Jenkins | Tim Rich | Liz Wolff |
| Roger Jones | Claude Smith | |

Nov. 15 Cave trips to Samwel and ????? Anyone got a boat? We'll do Lakelevel or Potter Creek Caves, as well.

Dec. 12 Grotto meeting at George and Dorothy Reel (see map elsewhere). Potluck at 6 pm, short meeting with elections, and party til??

Dec. 13 Cave trips.

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WELCOME to new (Renewing?) member Norm Jenkins and to provisional members:

- | | |
|--|-------------------------|
| Tom Heilman of Mt Shasta CA, 926-3169 | |
| Mark Dawson of Mt Shasta CA, 926-5682 | Give them a call, |
| John Marschner of Weed CA, 938-3347 | they want to go caving! |
| Brent Ort of Ross CA, (415)459-6474 | |
| Jake Turin of Redding CA, 275-4521, a transplanted Arizona caver and NSS member. | |

How Big IS a Cave? By Roger Jones

Well it's so many feet long and so many feet deep: but does that really say how big a cave is? I think not.

For example:

Cave A is 662 feet long with 2 foot ceilings and narrow passages.

Cave B is 312 feet long with 9 foot ceilings and wide passages.

I ask you, which is bigger Cave A or Cave B?

By my way of thinking, Cave B, but one would not know it by looking at depth. How does one resolve this dilemma? Easy! Use volume!!!!

I know some people are scared off by fancy looking formulas and such, so I won't use any. If you know how to add, multiply and divide, you can do it!! So let's get started.

Cave A				HT				WD							
Sta#	DIST	SLOPE°	AZI°	S	T	L	R	Sta#	DIST	SLOPE°	AZI°	S	T	L	R
0				1	2	1	1	0				5	10	5	5
	75	-1	98						50	-1	95				
1				2	3	1	0					5	13	10	3
	67	-1	75						42	-1	45				
2				1	2	0	1					5	8	5	4
	95	0	82						65	0	78				
3				4	5	3	2					5	13	5	6
	100	-1	63						55	-1	92				
4				1	1	2	0					5	6	7	2
	80	-1	72						48	-2	50				
5				1	3	0	2					4	5	10	3
	70	-1	45						52	0	65				
6				2	3	1	0					5	10	2	5
	83	-2	75												
7				1	2	1	1								
	92	-1	91												
8				2	3	2	0								

Step 1: Add all distance readings. **Cave A** = 662 feet. **Cave B** = 312 feet.

Step 2: Divide total distance by 2 times the number of stations.

Cave A, 8 stations
 $2 \times 8 = 16$
 $662 \div 16 = 41.38$

Cave B, 6 stations
 $2 \times 6 = 12$
 $312 \div 12 = 26$

Step 3: Find cross-sectional area of each station. Do this by adding distances left and right, then multiplying the result by ceiling height.

Cave A

1 + 1 = 2	2 X 2 = 4
1 + 0 = 1	1 X 3 = 3
0 + 1 = 1	1 X 2 = 2
3 + 2 = 5	5 X 5 = 25
2 + 0 = 2	2 X 1 = 2
0 + 2 = 2	2 X 3 = 6
1 + 0 = 1	1 X 3 = 3
1 + 1 = 2	2 X 2 = 4
2 + 0 = 2	2 X 3 = 6

Cave B

5 + 5 = 10	10 X 10 = 100
10 + 3 = 13	13 X 15 = 195
5 + 4 = 9	9 X 8 = 72
5 + 6 = 11	11 X 13 = 143
7 + 2 = 9	9 X 6 = 54
10 + 3 = 13	13 X 5 = 65
2 + 5 = 7	7 X 10 = 70

Step 4: Multiply all cross-sectional areas (except the first and last) by 2.

Cave A	Cave B
3 X 2 = 6	195 X 2 = 390
2 X 2 = 4	72 X 2 = 144
25 X 2 = 50	143 X 2 = 286
2 X 2 = 4	54 X 2 = 108
6 X 2 = 12	65 X 2 = 130
3 X 2 = 6	
4 X 2 = 8	

Step 5: Add all the results of step 4, plus the first and last station cross-sectional areas.

Cave A	Cave B
4 + 6 + 4 + 50 + 4 + 12 + 6 + 8 + 6 = 87	100 + 390 + 144 + 286 + 108 + 130 + 70 = 1,228

Step 6: Multiply the results of step 3 with the results of step 5.

$87 \times 41.38 = 3,599.63 \text{ ft}^3$	$1,228 \times 26 = 31,928 \text{ ft}^3$
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OK. Which cave is bigger: Cave A at 3,599.63 ft³ or Cave B at 31,928 ft³?

Some cautionary notes:

1. Cave cross-sectional areas – watch it, passage shape may alter area. The method above assumes a rectangular cross-section, so adjust accordingly.
2. Try to keep distance shots near the same length.
3. The more data the better.
4. Remember, these volumes are only approximations.

Some notes for people who are not intimidated by math:

The rule used above is the Trapezoidal Rule for Numerical Integration

$$V_c = \frac{a-b}{2n} (A_0 + 2A_1 + 2A_2 + \dots + 2A_{n-1} + A_n)$$

where A = cross-sectional area; $a - b$ = length of cave; n = number of stations.

HAVE FUN!!!! GET OUT THERE AND FIND SOME BEEEEEG ONES!!!!

* * * * *

WELLHELLA CAVE* REVISITED – Oct. 25, 1986 by Jim Wolff

Why, it seemed like the only thing to do! Here I was, stuck with visiting relatives, bad weather turned good, the reservoir level way down and nothing to do! Even sometimes-caver and brother-in-law Mark Smale, from Portland, had split up all of my 2½ cords of knob cone pine – in two days (!), thus eliminating the need for that wood splitting machine I had reserved for Saturday. So what to do ...? Well, I had a sleazy little pit to check out in Wellhella, just south of town, plus, there was that blowing hole lead nearby

Soon I was stuffing myself into the same, say, at least 2½ body lengths, only to discover it would take quite a bit more rock removal (by hand) in order to get much further. It's in a bedding plane which has suffered from massive blasting, during quarrying operations. Good luck to the next "digger"!

Mark and I next crawled into Wellhella Cave, or rather, we jumped into it! It was mid-day on the week-end and the traffic along the road was heavy. We timed our entering of the cave between arrivals of cars. I jumped in and hid while Mark would toss the packs, rope and his hard hat, and then casually sit there (in muddy coveralls and knee pads), effectively blocking view of the entrance, while yet another car would drive by. Then he would pop in, quick like a bunny, in this not-so-obvious-hole-in-the-ground. I usually enter the cave at night, in order to minimize chances of attracting undue attention to this potentially dangerous, challenging and very interesting little cave.

Once inside we quickly transferred the stuff back to Thanksgiving Pit, a pretty little corkscrew-like drop of around 40 ft. It would make a nice warm-up exercise for us. Starting down, I noticed the pit stank of rotten ... well, but I went down anyway. The water level hadn't gone down any from the last time I was in the pit, back in '79. I found my old survey station too, a carbide smudge mark on the flowstone that I mistakenly caused during a frustrating change-over maneuver way back when I got off rope into chimney position and called up to Mark for his trip down. Since one gets off rope in a very deep lake with nowhere to go, I opted to risk the small amount of rockfall for being there to coach Mark on his change-over, plus show him the depth of the lake with my strong light. On the way out we noted the cause of our odoriferous treat, a decomposing body of a snake. Once on top with Mark, I untied the rope and put the other end down "Becky's Climb", the "sleazy little pit" I mentioned earlier.

Years ago when I was with Roger Jones in the cave, we checked out two new pits, one was this one. I remember back then, I had gotten down about 30 ft. to a small hole 12 in. in diameter, and kicking it with my foot knocked out a mud diaphragm – only to have the stuff tumble down a steep slope and plunge over another drop, echoing into a deep pool in a largish room So now with Mark topside, I'm above this much wider opening, looking towards the unknown. The water was down from my last visit, and by the sounds of it my rope landed on a dry bank or shelf, so I went down.

But my, was the mud bad!! I had to get my ascenders all set up first or have a heck. of a time just putting my feet into my foot stirrups! So, down I went, on my left side, "rappelling" or slithering down this 45 degree slope, right into the ceiling of a 12 ft. high and wide room. The last ten feet were freehang ..., but virgin!

I took a good look at this new room ... The rope I had kicked, landed in a muddy heap right on the exposed tip of mud debris cone in this water-floored room. The slope leads to the right of the landing, which gives way to three 3 ft. dia. water-filled tubes going into the mountain – the blank portion of the map. The Cave Continues!!

The trip out was alright, I guess, the struggle up that sloping tube was really something else! The Goldline I was using was kept out of the mud for most of way, coming and going, yet my lower jumar had to be triggered to open, because of the mud. They never did slip on me tho. I seemed to keep plowing the mud above my leading shoulder, as I thrashed my way upward. Once out of that mess, the rest was easy. We exited after 5 hours in the cave.

We had accomplished our objectives, altho we didn't map anything. I estimate there were 40 some odd feet of new cave, with around 50 ft. of vertical relief.

* a.k.a. Battle Creek Cave #2, see Cal Caver, Dec. '81.

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DEAR CONFUSUS CAVER:
 Are The caves in CHINA
 Up Side Down?
 Confusus Caver Say: No,
 not to us!

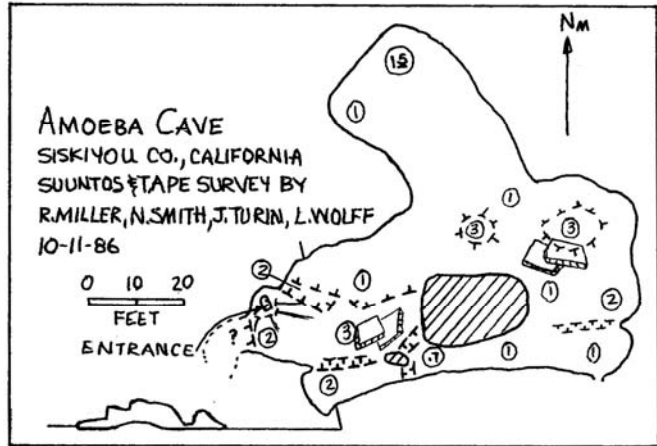
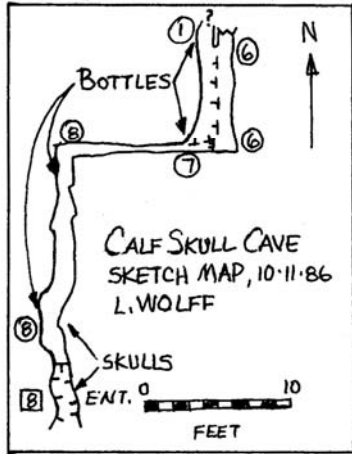
A Saturday Excursion NE of Mt. Shasta by Liz Wolff

Saturday October 11, found Ray Miller, Neils Smith, Jake Turin, and I headed for the Bray area and Jack Jones Ice Cave. Ray and I and Jim Kottinger had visited this cave a year ago in the summer and found a large (200-300) bat population in the cave and a lot of historical graffiti. So our objective this day was to count bats and photograph names. Neils led the way down the wall of the sink and across the "bridge" – reasoning that if he made it, the rest of us could too. The kindest thing anyone could do for that bridge would be to send it the rest of the way down the sink, but it does make the climb easier and shorter. We began the bat count, finding most bats high up and sleeping, except one flying, getting 22 bats altogether. Then we were off to the south end for photography.

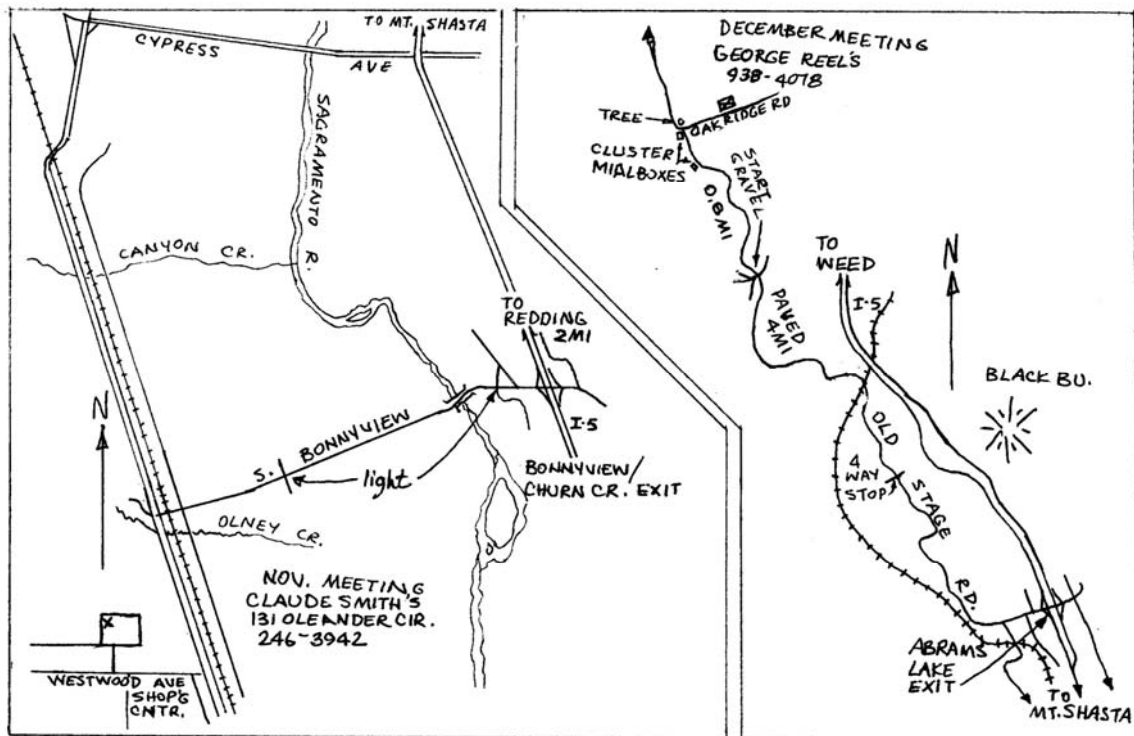
Ray checked for ice where we had found it before and found a small patch well hidden. We headed on over the breakdown, down the chimney, and over more breakdown to the only intact portion of the cave. Pressing Ray into service as "Flashman" I took pictures of most of the readable names on the walls, with dates ranging from 1895 to 1930's. Then we tried a multiframe big passage shot

Exiting the cave we ate lunch and discussed our next objective for the day, deciding to chase leads. Thirty minutes of brushwacking later, on this second weekend of deer season, we had about given up on locating this "easy to find" cave marked on Ray's map, when Jake walked over into a shallow depression near the truck, and found an entrance 1' X 2'. Not quite fitting the description, but it was in the right area and it did look like it went. In the cave, Jake discovered the luxury of kneepads. This is really a friendly little cave with sand and gravel floors, near the ceiling of what must have been a large tube. Jake and I slithered through places that Ray and Neils wouldn't fit (8"-9") and found that the cave looped back on itself around a central pillar. Jake suggested Amoeba Cave as a name since it seemed spread out like an amoeba, and all agreed.

It was getting late and Ray was in a hurry to get home, and as usual another opening was spotted. In a shallow depression a rift type entrance led down 8 or 9 feet to a dark and eerie passage. There were skulls, bottles, cans, and other debris spread around on the floor of the cave. Neils was the first one down and could see that it came to a corner but was too tight for him. So Jake climbed down and reluctantly entered the cave going around the corner, just to see another right-angle turn 10' ahead of him, and called back for another body so he didn't have to go alone I climbed down and joined him to get past the second corner and seemingly the end of the cave, but under the side wall we could see the glint of glass under a ledge and further into darkness. We didn't crawl on, but exited with some difficulty due to the narrowness of the passage. Driving on toward home we speculated on the animal of origin of the skulls, and Neils being a part-time farmer, thought they looked like calf skulls. One really puzzling thing about this cave is the bottles: even back under the ledge at the end of the cave they aren't broken, and the passage is only about 7" wide. Interesting, no?



Map: Amoeba Cave, Calf Skull Cave



THE SAG RAG
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NEWS DATED MATERIAL

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