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GROTTO NEWS: by J. & L. Wolff

It's **election time again** and we urge all those eligible to vote to do so. Those eligible to vote are NSS members in good standing, and who have fulfilled the rest of the grotto membership requirements.

If you have changed your address and telephone number, please notify us, as a new **membership list** will be coming out in the next RAG.

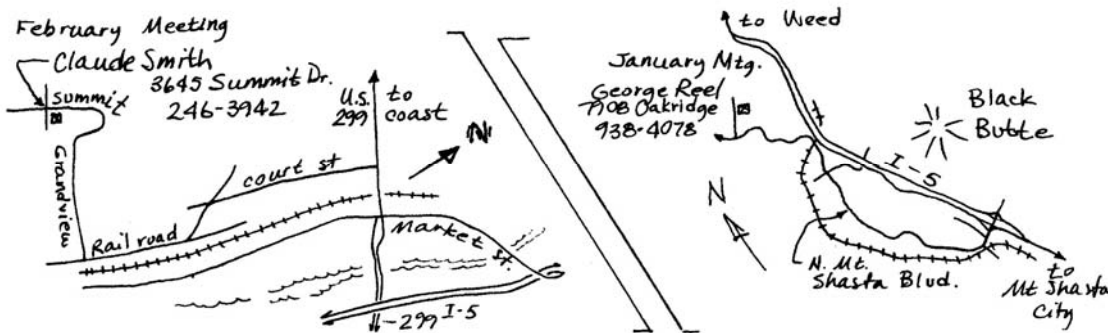
Hopefully, the (seven years worth!) SAG RAG **index** will soon follow!

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CAVING CALENDAR

January SAG Mtg. at Reels. New officers will be announced. Jan. 13 meeting.

February SAG Mtg. at Claude and Mary Belle Smith's new place in Redding. Feb. 10.



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SPELEO-ED SEMINAR

Memorial Day weekend, May 26-29, 1989, the Diablo Grotto is hosting a speleoeducational seminar. It will be held at the Berkeley Tuolumne Camp, near the west entrance of Yosemite N.P. Sessions will include cave photography, customizing your cave gear, newsletters, air quality monitoring of Mother Lode caves, Lava Beds cave management plans, with reports on trips to Lechuquilla, Lilburn, Mexico, and Belize. Slide shows, workshops, and other activities are being planned.

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Where Are All The Virgins?

A Commentary by Bruce Rogers, Regular Fellow

The basic tenets of Ray Miller's editorial are very true. I would like to offer another thought which, perhaps, each caver might want to consider. Should we be hell-bent on immediately finding every last new cave or cave passage?

Nothing can compare with the thrill of finding a new cave or passage. However, it is true that California is a relatively cave poor state. Also true is the fact that there are a large number of big-

ego cavers in this very small arena. Now, consider what happens when there are no more new passages to discover?

I relate a story told to me by David McClurg upon his Mobil Family Grotto's return from a trip to Europe. As their group was being shepherded through the classic karst area of Czechoslovakia, time and again they would ask what cave that gaping entrance led to. In the caves they visited they also asked where that passage led to. Many times the answer was "we don't know." It turned out that exploration was conducted at a more measured pace in that particular corner of the world. "This way we can assure our children and grandchildren of the privilege of finding their own virgin cave or passage," was the Czech rationale.

One has to admire the maturity of that particular philosophy when those around oneself are apparently engaged in a race to collect as many new caves and passages as possible. To paraphrase Ray's last statement: If you aren't finding virgin passage, you aren't looking.... and perhaps it is just as well not to look too hard.

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Dues are due January 1, 1989

A dues increase was proposed and passed at the November meeting.
Dues are now \$6 for all classes of membership.

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F L A S H !! "FS/Spelunkers Team Up" says USDA

The Forest Service signed a Memorandum of Understanding (MOU) with the National Speleological Society, this year, according to a short article in USDA's (9/30/88) The Friday Newsletter. This MOU is "intended to promote increased cooperation between forests and local caving clubs. Local agreements between these clubs and the Forest Service will provide an avenue to the technical expertise and skilled volunteers who can help us [FS] in managing underground resources on the national forests. Some activities we [the FS] hope to Jointly pursue [are] cave inventories, development of cave management plans, monitoring of visitor use, interpretive activities, completion of cave research, and development of cave search and rescue plans."

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PRELIMINARY EXCAVATION AT WELLHELLA CAVE by Jim Wolff

Background and Preparations:

A preliminary paleontological survey/excavation was completed on 10/22/88 in Wellhella Cave by the University of California/Berkeley. A caver friend of ours told them of the bone deposit. A team of three was led by Bruce Hanson. They were especially interested in the report that the deposit may contain a "cat" skull of great age, so they brought along an expert on felines. As it turned out, the skull was a bear, but I'm getting ahead of my story....

The cave is on Hearst Corporation land, so the project was okayed with them, not with the USFS as we thought. All Hearst wanted from us was the "Assurance-Of-Insurance" for all participants, including me! With a high-use road right next to the cave entrance, it has been feared by cavers that the cave would be gated, or **blasted shut** for liability reasons. To date the cave has not even been posted.

After many last minute delays the team consisting of Bruce, Dan, and Curtis (never did catch their last names) finally got their first of two SRT instructions in Wolff's garage (the second lesson being in the cave!). While preparing for the trip we had to get dressed and geared up, prepared to jump in the cave the moment we got there, since we were entering the cave in mid-morning and hunting season traffic would be rather heavy. We would need **good timing** in order to pop into the

small entrance, get the packs passed in, and then talk everyone down to the top of the rope! We would be doing good not to be seen by any passing cars!

You probably caught the fact that they hadn't done any ropework before, well..., **you're right!** Surprisingly, everything went off without a hitch. Also, it was a first cave trip for one of 'em, but that didn't dim his enthusiasm any! A real good quality trio... I liked them the moment we met!

At the Cave...:

We got to the bone deposit in under two hours – which is only about fifty feet horizontally from the entrance! We had to pass the ascenders back to each person, and that took time!

You know, they hadn't really appreciated the full meaning of my early remarks to the fact that this would probably be just a reconnaissance trip to evaluate the deposit, figure out the logistics of getting the specimens out of the cave, and to assess the size and durability limitations of their equipment. The job was bigger than they thought for the time, manpower, and equipment they had. Not to mention the SRT work that had to be done by all participants! All they had for caving and vertical gear was: one-carbide lamp, two helmets, two seat slings and 'biners – for the three of them! I had to set Dan up with “the basics”.

We spent at least seven hours on the deposit: measuring, stabilizing, photographing, labeling and packaging the bone samples they took. The deposit was big enough and worthy enough to come back sometime in the future to excavate more completely. They took only some of the bigger bones from the surface, and only the ones that they could harden enough artificially to remove. They found all kinds of bones: bear, pocket gopher, raccoon, mice and other rodents, plus loads of microfossils. The largest specimen they removed was the bear skull which is partially covered with calcite, attesting to its great age. They also found a huge bird bone that may be a condor. They found that the stratigraphy was sorta scrambled, making it a lower priority dig. Even though they didn't find super old stuff, the material they did see was old enough that they will be looking for funding (\$\$) to do a proper excavation....

Afterwards:

Hardly a footprint remains from their activities that day. All three used small convenient stepping stones, and spent hours hunched over with their faces a couple of feet away from their labors, kinda like some troll, gnawing on the very bones of the scientists! We spent twelve and a half hours in the cave. They promised a copy of their findings to the Grotto, and will do like-wise for the cave owner.

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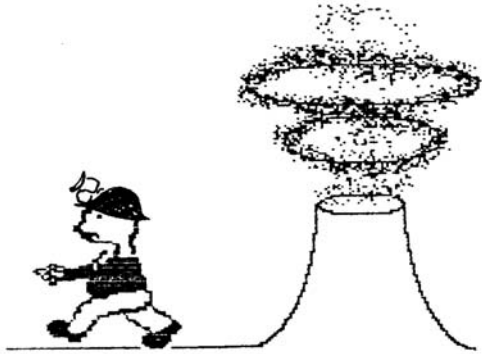
EARTHQUAKES AT MEDICINE LAKE – by Ray Miller

Early in October 1988 earthquake swarms began under the Medicine Lake caldera. Since a seismometer was installed in the area 8 years ago it has been quiet. Tremors have registered as high as 4.2 on the Richter scale. These earthquakes were first reported as being under Medicine Mtn. which is part of the south rim of the caldera, very close to the privately owned cabins on the south shore on Medicine Lake. Minor damage was reported to 1 or 2 cabins and a few dead trees were knocked down. The focus of the current activity is 3 1/2 kilometers north under the Medicine Lake Glass Flow. It has not been resolved if the activity has actually migrated or if there was an error in plotting the epicenter before the new array was in place. The quakes are only 1/2 to 2 km below the surface so most of the energy seems to be directed upwards instead of radiating outward.

USGS personnel placed a temporary seismic array around the lake. The information is fed into McCloud by microwave, then sent to the National Earthquake Center at Menlo Park by land line. The largest quakes were felt at Lava Beds N.M., but Monument personnel have noted no new rock fall. The Freudian Complex we have been surveying lies the same distance to the south. No SAG

people were in the area when the largest tremors struck, but later visits have not revealed displaced rocks in that area either.

With the new network in place the USGS hopes to get clean signals throughout the winter. Until the area became snowbound the signals were very cluttered with cultural activity. This consisted mainly of vehicle movement, but when the shaking started the main activity was deer hunting (at least the USGS is calling it a cultural activity).



These tremors may be due to tectonic activity, but the quakes are low frequency which is often associated with the movement of magma. A Leveling Line through the area was checked in August 1988 and showed a drop of 18 cm (7 in.) since it had been run in 1954. When checked after the quakes started in October the crater floor has shown a continued drop. This may indicate that magma is draining from the chamber.

If a volcanic eruption should occur there would be little danger to humans. The probability of a large explosive event is very remote.

The lava would be expected to flow at walking speed, and the main result of an eruption would be some rearrangement of the scenery and an increase in tourism.

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CAVING 101 – October 15, 1988 by Ray Miller

While Jim and Liz Wolff conducted a guided tour of the Freudian Complex for Neils Smith, Jim Kottinger and I led an introductory caving tour. Of the 8 people invited to join us we actually had 4, but this was better. It seemed more like a visit than an invasion.

We stopped at Yellowjacket Ice Cave to find drought conditions have lowered the ice level. The cave can now be pushed beyond the entry room, which I understand was done by Peter Bosted several years ago. Due to the personnel available we did not attempt the push, but I hope someone gets back to try it before winter shuts us out.

Next on our itinerary was Bat Cave. The nursery colony of *Plecotus* bats has broken up. We found one bat already in hibernation about 5 feet off the floor. As heavily visited as this cave is, I fear his chances of survival until next spring are rather limited.

We ended our trip at 3-Level Ice Cave. There was still plenty of ice throughout the cave, and some trash. Much of the garbage frozen into the ice has melted free and was removed.

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“Bat Gram” by Ray Miller

Bat Cave, (Half Mile Cave) has been identified as a *Plecotus* nursery. It is important for the well being of the bats that no visits are made to the cave until late summer. The cave is located in Siskiyou County 10 miles south of Medicine Lake. Unfortunately the USFS has put it on the Shasta-Trinity NF map, and people at the McCloud R.S. encourage casual visits to the cave.

An attempt is underway to have the roadside entrance to Bat Cave closed. It would require 2 or 3 dump truck loads of large rock. This entrance was opened by road building equipment. Closure would return the cave to near-original condition. Access to the cave would still be possible through the down flow skylights which the bats use. This should curtail casual visits, as the skylights are very hard to locate without very accurate directions.

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Here's the last of a three part series:

BASIC CAVE PHOTOGRAPHY by Dick LaForge

Guide Numbers: Determining Exposure

Now that you have provided your own light, you must find the correct exposure. This is perhaps the aspect of cave photography most difficult to understand, but it is the most important.

Your basic tool is the guide number (abbreviated GN). For a certain speed of film, each strobe or bulb has a GN. For example, with Kodachrome 64 (ASA 64), a Magicube has a GN of about 50 in the average cave. If your subject is 10 feet away from the flash (the subject-to-camera distance doesn't matter) you determine your f-stop by dividing $50 / 10 = 5$. So use f 5 (or round to f 5.6). If the flash is 20 feet away from the subject you use $50 / 20 = f 2.5$ (or 2.8). And so on. Faster films require larger GN's, of course.

The question is, how do you figure out GN's? There are 3 methods. The first is to use the numbers suggested in the chart below (for ASA 64 film, shutter speed 1/25 or slower for bulbs):

– Small strobe	35, more or less
– Magicube	50
– Medium strobe	50, more or less
– Vivitar 283/285	60
– M3-B bulb	80-90
– 50B bulb	300

Actually, this chart will be useless to you unless you use the bulbs listed or the 283/285. Unless you can ask an experienced person who uses the same strobe as you do, you will have to determine the GN yourself.

The second method is to find it in the literature that came with the strobe or to figure it from the little exposure dial they all have. To figure it from the exposure dial, set its film speed indicator at the film speed you use. Then find the recommended f-stop for 10 feet (suppose it is f 5.6). Then multiply the f-stop by (5.6 x 10) to get the GN equation in reverse. However, these recommendations from the factory assume you will be in a living room with white walls and ceiling bouncing extra light from the strobe into the picture. In the typical cave, the light that does not go directly to the subject is lost. To compensate for this, multiply this factory-recommended GN you looked up or figured out by .7 to get a "cave" guide number (in our example, $56 \times .7 = 39.2$, so use a GN of 40).

The third method can be used to refine your trial GN found by the two methods already explained, or you can use it to start from scratch if you have to start with a total guess. There are several reasons why your trial GN might not be exactly correct for you. With bulbs, different reflectors have different efficiencies. Strobes can lose power with age.

This third method is simply taking the same picture at least 5 times, bracketing the exposures, seeing which exposure comes out best, and recalculating the guide number from that exposure. Load up with your favorite cave film (use slide film, as it is more touchy about exposure) and go to your favorite cave. Or, you can simply take the pictures outside at night. Use a model wearing multi-colored clothes, because exposing for good color saturation and skin tones are very important. Place the flash next to the camera and measure an accurate 10 feet to the model. Be sure to use 1/25 sec. exposure for bulbs, and not faster than your camera recommends for strobe. Take the picture with the f-stop recommended by your trial guide number, then four more times, overexposing and underexposing by one and two stops. Don't forget to make notes of your settings. Best is to write them big on a piece of paper that the model can hold. When you get your pictures back, pick the one with the best exposure. Multiply the f-stop used by 10 (the distance) to get your new cave GN. For example, if f 5.6 was best, your GN is 56. This test will also give you a feel for the effect of one or two stops of overexposure or underexposure.

Your new GN is based on an exact measured distance. There are two usual ways for finding distances in caves. With normal and telephoto lenses (50mm and up) it is better to focus on the subject and then read the distance off the lens (test it to be sure it is accurate). For wide-angles, it is usually better to just estimate. Often though, with any lens, there is nothing bright to focus on and you will have to estimate. If your estimation is off, so will be your exposure. Many people estimate distances poorly, especially in caves. You should practice by estimating distances and then measuring them (preferably in caves) until you are accurate.

Once you have a GN for your favorite film, you can mathematically find the number for other speeds of film (for the same flash source, of course). The formula is:

$$\text{New GN} = \text{old GN} \times \sqrt{(\text{new ASA} / \text{old ASA})}$$

For example, suppose you have a GN of 80 for ASA 100 film, and want to find it for ASA 400 film. Then

$$\text{GN ASA 400} = 80 \times \sqrt{(400 / 100)} = 80 \times \sqrt{4} = 80 \times 2 = 160$$

If you determine a GN for ASA 64 film,

for ASA 100 film, multiply by 1.25

for ASA 200 film, multiply by 1.75

for ASA 400 film, multiply by 2.5

to change from ASA 100 to ASA 200, multiply by 1.4 (the square root of 2)

Your new, tested GN's should give good results in nearly all cave situations. There are only a few exceptions. One is in lava tubes or other very black caves. Actually, your usual GN will give a true result – the picture will look black. But all black does not look so good in pictures, so overexpose by 2 stops. If the subject is a person, however, do not overexpose him/her by more than 1 stop, or she/he will be burned out. Another exception is the rare circumstance where the cave really is like a small, white living room, and light will be bouncing back into the picture. If this is so, underexpose by one stop.

Sometimes it works very well to flash off a "bare bulb" to get light going in all directions. This means flashing a bulb in a folding-fan flashgun with the reflector down. When you do this, overexpose by one stop.

Once you have determined GN's that work for you, avoid repeatedly computing them. Eight hours into a cave, with helpers grumbling and hypothermia setting in, is no time to do any sort of math. Instead, make a chart of distances and their f-stops for the flash sources and film you carry. Type it in a compact way and tape it on your camera or camera case for quick reference. Here is the one I use. It is for the Vivitar 283/285 and the M3B bulb:

ASA 64 film					
Distance (ft.)	f-stop for:		Distance (ft.)	f-stop for:	
	GN 60	GN 80		GN 60	GN 80
2.5	24	--	10	6	8
3	20	--	12	5	6.5
4	15	20	15	4	5
5	12	16	20	3	4
6	10	13	25	2.4	3.2
8	6	8	30	2	2.7

It is easy to use this chart. Let's say you are using a strobe with GN 60 to light something 5 feet away. The chart says to use f 12 (round to f11). It is important to remember to use the flash-to-subject distance, not the camera-to-subject distance.

For reference – the f-stop sequence:

Larger hole (aperture):	Smaller aperture:
Lets in more light	Lets in less light
Less depth of field	More depth of field

f-stop sequence:

1.4 2.0 2.8 4.0 5.6 8 11 16 22 32

the ½ stops:

1.6 2.3 3.2 4.6 6.5 9 13 19 26

Each f-stop lets in twice as much light as the f-stop to its right, and half as much as the f-stop to its left.

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FIRST CLASS MAIL

To:

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