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Vol. 13, #10

The Cascade Caver

Official Publication of the
CASCADE GROTTO N. S. S.



Vol. 13, no. 10

Editor: Curt Black

October 1974

THE CASCADE TUNNEL:

World's Longest* UNITARY TRAIN TUNNEL



* Actually 7th Longest with 7.8 miles of passage
Not Bad for a "Non-Cave" State. MAPPED IN 1929
BY N. Bennett

COVER IDEA
FROM HANK RAMSEY
DRAWING BY CURT BLACK

01# 81 JOU

Coming Events

- October 11. Regular Grotto Meeting - irregular time, and place. The October Meeting will be held at the home of Dr. W. R. Halliday, 1117 36th ave E. Seattle Wa., and will start at 8:00PM. The 11th is the second Friday of October. The program will feature a slide series by Charlie Larson of the Oregon Grotto.
- October 12 - 14. Columbus Day - Plan a trip!
- October 18. Oregon Grotto Meeting, OMSI rm. 100 7:30PM, Portland.
- October 19. Cascade Grotto sponsored, Oregon Grotto Spaghetti Feed! This one will come off 6:30 PM at Charlie & Jo Larsons home, 13402 NE Clark Rd., Vancouver Wa. Bring your sildes from this summers caving. \$1.50 for all you can eat. BYOB.
- October 26 - 28. **Veterans Day** trip to Papoose Cave - Call Curt Black LA2-9817.
- November 28 - December 1. Oregon Grotto Hells Canyon Trip, Call Black.
- December **21**. Cascade Grotto Christmas Party. Please note date change.
- December 31-32-33... New Years Party at the Larson's.
- February 17. Washington's Birthday Weekend, NWRA Educational Seminar, Seattle.
- 2nd or 3rd week in June, 1975. The 1975 NSS Convention in Angles Camp, California. (Angles Camp is even with San Francisco, but further inland - You are urged to plan on attending.)
-

New Member

Dave Jones 3202 Grand Ave., Apt. 2, Vancouver Wa. 98663 NSS 11971 A 10/75

This years Christmas Party will feature an auction of caving, and not so caving equipment. If you have gear - helmets - lamps - books - carbide - sling scraps - guides to the secret caves of Arizona - or anything else, start bringing it to the meetings, or bring it yourself to the party. Also, if you are in need of odd items of equipment, or of Northwest spelean-historical interest, bring some extra \$\$\$\$.

See you December **21**.
All proceeds will go toward the publication of the CASCADE CAVER. (Yea!!!)

The Cascade Grotto is once again selling gas-mask bag cave packs for \$1.00 They'll be available at the meetings, and grotto events, or contact Curt Black.

Next, we traveled north to Cliffdell and stopped in at Squaw Rock Resort. Jan had reports of a cave in the vicinity. Investigation turned up nothing new.

So that the entire day wasn't wasted, we drove up to Boulder Cave and enjoyed a dip in cool, clean, cave air! After a hot day of driving, it was really refreshing.

Caves of Washington lists Boulder Cave as 400ft. long. I had the distinct impression, on observation of the cave, that something was amiss. Yes, the main trunk passage seems to be about that long, but what about the numerous side passages and alcoves?

The cave, itself has three major entrances, along with half a dozen, or so minor entrance holes. Two of the major entrances are located, at opposite ends of the main passage. The third is centered halfway between these two and enters from the hill, underneath which the cave is formed. Total estimated passage length, in my opinion is in excess of 600ft. A new survey of the cave is definitely suggested.

In a small alcove, about 25ft. back from the trunk passage, I found miniature stalactites and stalagmitic growth. It was necessary to crawl on my stomach, to reach this place. The alcove looked virgin and untampered with, thus giving me the chance to be the first person to see these formations.

Other possible cave sites are suggested by such names as Cave Creek, Soda Springs, and Lost Creek.

Cave Creek is southwest of Mt. Rainier National Park on the Snoqualmie National Forest maps. There are two Soda Springs, both of which can be found on the Tieton-Naches Ranger District maps and are designated as recreation areas. Lost Creek is south of Cliffdell on this same map.

Larry McTigue

+++++

Big Four

On September 4, 1974, Russel Patterson and his family, along with Jan Roberts, made a trip to the Big Four Ice Caves. They Reported the Main, Middle, and East Caves open, and beautiful.

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Glaciospeleological Note and Proposal

by Julius Rockwell

The The Matanuska Glacier appears from the air to be honeycombed with caves and shifting channels. The Tazlina Glacier is said to have extensive caverns, also.

Let us plan a systematic survey of the Matanuska in 1976.

'%','%'

Hank Ramsey made a trip back east this summer, during which he stopped at Wind Cave, Jewel Cave, and others. Perhaps we'll have a trip report in the next Caver.

*

In fulfilling our responsibilities as, "The International Journal of Vulcanospeleology" we present;

Discriptions of Argentine Lava Tubes

Translated by Tom Miller from the Boletín Sociedad Venezolana Espeleología, Vol. 4, No. 2 pp. 141-146; Octubre, 1973.

"Algunas Cuevas en las Provincias de Mendoza y La Pampa, Republica Argentina" by the Centro Argentino de Espeleología.

Between 1971 and 1972 the Centro Argentino de Espeleología made several exploratory trips to the foot of the high Andes in the extreme central west of the country. Among their discoveries were two caves, both 1500 feet long. What made these unusual was their formation in basaltic rocks, and their regular shape and linear form leaves little doubt that they are lava tubes, quite possibly the first reported on the South American continent.

Cueva de Dona Otilia

Located at $69^{\circ} 24' 47''$ W. and $35^{\circ} 56' 05''$ S. at 1,898 meters elevation in the Province of Mendoza, only 1.2 km. from Puerto Palauca, Bardas Blancas.

"The cave is developed in basaltic rocks of Pleistocene age; the entrance, from one to $\frac{1}{2}$ meters, is located in the bottom of a little doline, and after a little slope, between boulders, is reached the principal gallery, that keeps the same plan throughout the main path.

"The first 300m. of this gallery has traces in the floor of the dry bed of a river, with a floor of sand; 90 m. further the cave narrows in a crawl of 3 by .4 m., and with the width changes the passage course appreciably, previously NE, and now NW. In the 200 m. from this point is the largest room in the cave, from 12 m. wide to 7m. high, nothing more that a widening of the passage. Ahead the passage continues between ~~break~~ down, and afterwards passes another crawl of 1.5 by .5 meters and ends in a chaos of blocks that plug the gallery.

"The floor of the cave is generally formed of clay and sandy sediments, except at the end, which is made of sediments consolidated by a binding cap of calcite.

"This cave has a horizontal development of 838 m. and a vertical one of 8 m."

Cueva La Alada (The Winged Cave)

Seven Argentines mapped and explored this cave Oct. 12-13, 1971. It is located at $68^{\circ} 05' 17''$ W. and $36^{\circ} 56' 23''$ S. in the La Pampa Province, Puelen locality, in the route from Ranquiel to the Pueto.

"The cave is found in basalts of the Pleistocene age. The entrance is a little hole, and after two descents of 1.5 and 1 m. respectively, is reached a little levee formed by blocks that apparently divide the gallery in two. The ceiling is low (.7 m.) and the soil is sand. 95 m. from the mouth is a column formed by blocks, and a little side gallery of 30 m.; 35 m. further is a collapse caused by two partial ruptures of a crevice that crosses the floor in the center. 35 more meters the passage forks in two, rejoining later, and the right ends in a pass too narrow to negotiate."

The name apparently refers to the mapped shape of the cave.

* Also occasionally referred to as "The Interplanetary Journal..."

Lava Tubes on Maui (Haleakala Massif)

24. Kalua O Lapa Cave	La Perouse Bay, Keoneolo	120 m	60 m	+
25. Puu Mahoe Cave	Ulupalakua	700 m	100 m	+
26. Offal Cave	Hana	90 m	3400 m	+
27. Holoinawawai Stream Cave	Hana	290 m	700 m	+
28. Lower Waihoi Valley Cave	Hana	300 m	100 m	+
29. Waihoi Valley Trench Cave	Hana	450 m	30 m	0
30. Upper Wananalua Cave	Hana	180 m	100 m	+
31. Lower Wananalua Cave	Hana	180 m	75 m	+
32. Long Cave	Haleakala Crater	2000 m	250 m	+

Lava Tubes on Oahu

33. Burial Cave #1	Niu	33 m	115 m	+
34. Judd Street Cave	Honolulu	30 m	70 m	0

Lava Tubes on Kauai

35. Koloa Cave #1	Koloa	37 m	200 m	+
36. Koloa Cave #2	Koloa	37 m	100 m	+
37. Koloa Cave #3	Koloa	25 m	50 m	0
38. Koloa Cave #4	Koloa	20 m	20 m	0
39. Knudsen Cave #1	Koloa	45 m	100 m	0
40. Knudsen Cave #2	Koloa	45 m	50 m	0
41. Koloa Mill Cave	Koloa	60 m	—	—
42. Koloa Mill Twilight Cave #1	Koloa	70 m	30 m	0

Other Caves and Caverns

43. Waianapanapa Sea Cave	Hana, Maui	10 m	50 m	+
44. Makua Sea Cave	Makaha, Oahu	5 m	50 m	0
45. Kaena Point Sea Cave	Makaha, Oahu	5 m	15 m	0
46. Dry Sea Cave	Makapuue Point, Oahu	5 m	20 m	0
47. Limestone Quarry Cave	Koloa, Kauai	5 m	100 m	+
48. Maniniholo Dry Sea Cave	Haena, Kauai	5 m	70 m	0
49. Waikanaloo Wet Sea Cave	Haena, Kauai	5 m	50 m	0
50. Kauaikiinana Stream Water	Kokee State Park, Kauai Tunnel (man-made)	1040 m	300 m	+
51. Kokee Ditch Water Tunnel	Waimea Canyon State Park, Kauai (man-made)	1000 m	100 m	0

1. += Dark zone present : 0 = dark zone absent ; ? = dark zone questionable.

And Finally:

VULCANOSPELEOLOGICAL ABSTRACT (of a sort)

McKee, Bates, and Dale Stradling, 1970. The Sag Flowout; A Newly Described Volcanic Structure. Geol. Soc. Amer. Bull. 81 2035-2044.

Article describes a number of sag flowouts, circular structures created by collapse of the surface of a basalt flow and flowout of the molten interior, in the Roza Member of the Yakima Basalt in the vicinity of Odessa, Lincoln County, Washington.

p. 2040: Fig. 7 shows a cave formed between the collapsed top of a flowout and a subsequent dike. "Site is immediately south of the Jump-Off Joe Cliff", along the south side of Crab Creek about 1 mile E of the E end of Sylvan Lake.---RLC

Parts from a letter recently recieved by Charles Larson:

September 6, 1974

Mr. Larson, I am writing about a possible cave I observed while backpacking in the North Cascades...I am curious to learn if the cave I saw has ever been checked out by any actual cavers. If not, perhaps your local grotto would be interested in checking it out...

The cave is located on the Milk Creek trail in the Glacier Peak Wilderness, about five miles from the end of the Suiattle River Road, #345. Road #345 is reached on highway #20, a few miles north of Darrington. The Milk Creek Trail is about 6.2 miles long, and it runs from the end of road #345, at the Suiattle River, to the Pacific Crest Trail. You will pass through a few large meadows with tall plants and shrubs before you reach the cave; if you reach the Whistle Pig Camp, a large overhang at mile six, or the Pacific Crest Trail junction at mile 6.2, you have gone too far, and passed the cave. The cave is located on the left, or uphill side of the trail as you walk in from the road. It is only about three feet to the left of the trail and about three feet up on the hill-side.

The entrance is about 3.5 feet wide by about 2.5 feet high, tapering off at each side. The cave goes in for about three feet, where there are cracks on the ceiling and to the right. To the left there is a hole that went down about 10 feet before it angled out of sight. It looked large enough for a caver for as far as I could see. I did not investigate down the hole because we didn't have any ropes, we had insufficient light sources, and we aren't experienced spelunkers.

When we were there, the entrance of the cave was emitting a cold, 38 - 45 degree wind, of about 10 to 15 miles per hour. There were other small blowholes along the trail on the hillside, but none of them looked easily negotiable.

These seem to indicate to me that there might be a sizable cave system in the ridge, although this is only the opinion of a novice...

(This one isn't just, "Out yonder in the clump-a-trees", it has a location -- So.... let us go and Bagavirgincave for Washington. -- ed.)

Sincerely, Allen Hareid
5646 Bryant Ave. N.
Mpls, Mn. 55430

!&!

Non-Field-Trip-Report; August 24 - 25
or, I Blew It

-- William Halliday

Everything was go for the Steam Caves. With roughly 35-pound packs, Patricia, Ross, and I breezed up to Camp Muir in 5:15 the week before, more than three hours faster than the first run prior to the Mt. Adams trip. But we took a "little more" on the real thing. Fresh out of the Rockies, Alexis Kelner of the Salt Lake Grotto was along too, in excellent condition. But that "little more" did us in; 8:30 to Camp Muir and Patricia felt somewhat wrong in the middle. At bedtime my pulse was still over 100, and when the alarm went, at one A.M., it was still over 90, and its pounding had kept me from sleeping much. Patricia didn't do much better. We decided to wait until 4 AM, the last possible moment. It was still pounding away over 90, and Patricia wasn't much better, either. Ross and Alexis went on to the summit, but because of the delay had no chance to do anything in the caves. (By 11 AM Pat, and I were fine.)

We now know what to do next year. Like finding some suckers to carry our packs to 10,500 feet for us. Any volunteers?

Trip Report: The Famous Stanley Microbiological Expedition
September 11 - 12, 1974
Dr. James T. Staley, U. of W. Microbiology Dept., Leader
With four of his graduate students, and their trusty guide,
Yours truly, R. L. Crawford, Esq.

After arriving and camping at Smoky Creek Wednesday night, we got an early start Thursday morning. Two hours were spent studying the deposits in Slime cave. A brief stop at Ice Cave followed, to pick up a few (loose) fragments of ice for the microbial cold box. The remainder of the studies were conducted at New Cave.

Several of the roads between Randle and Trout Lake are closed, necessitating detours. (e.g. N604 and a short section of 123 before the junction with N84).

Preliminary observations of lava tube slime suggest that while part of the slimes bulk is provided by bacteria, the framework is of some sort of diffuse fungus. The white and orange varieties of the slime are distinct organisms, the orange varieties of the slime possibly being better adapted to the lower temperature at the end of caves (the slime temperature 335" inside Slime Cave was 7° C.; at the end it was 4½° C.). The same phenomenon was observed in New Cave. This information is subject to change by laboratory investigations currently being conducted. A more complete report will appear in the Biologists Chamber an issue or two hence.

JERKY RECIPE

This seems, even to myself, to be a strange thing to be including in your Gaver, however, so many people have been asking how to make it, I thought you all might like to try it. Any kind of meat will do -- Have Fun!

Ingredients:

1½ to 2 lbs. lean boneless meat (partially frozen)
¼ c. soy sauce ¼ t. garlic powder
¼ t. pepper ½ t. onion powder
1 t. Liquid smoke flavor ½ to 1 Tbs. Worcestershire sauce

Method:

1. Cut meat 1/8 to 1/4 inch thick, 1½" wide as long as possible. Slices most easily when partially frozen.
2. In a bowl combine the soy, Worcestershire, pepper, garlic, onion & smoke flavor. Stir until dissolved. Add meat & mix to coat all surfaces. Meat will absorb most of liquid. Let stand one hour, or cover and refrigerate over-nite.
3. Shake off all excess liquid.
4. Dry meat at lowest possible oven temp (150 - 200 degrees) until it turns brown, feels firm, and is dry to the touch. 4 to 7 hrs for beef, or venison, 5 hours for chicken or turkey.
5. pat off beads of oil. (otherwise it'll be the first thing to turn rancid) Let cool, remove from packs, put in airtight plastic bags. Keep cool until use.

Although I'm not known as the best cook in the region, I would recommend that you not dry the meet to absolute hardness (unless you want to keep it a long long long time). I have never had any problem keeping the jerky, and it's a lot easier to eat if left a little softer - (If you wish you may always dry it more). ENJOY!!

Curt Black

CONSTITUTION
of the Cascade Grotto of the
National Speleological Society, Inc...

I. The name of this organization shall be the Cascade Grotto of the National Speleological Society.

II. The purposes of this grotto shall be the same as those of the NSS with the additional object of organizing members of the NSS in the Pacific Northwest into a group to better promote NSS objects.

III. The entire management and government of this grotto except as otherwise expressly provided shall be vested with the membership.

Section 2. The officers of the grotto shall be: Chairman, Vice-chairman and Secretary-treasurer, elected yearly by the membership. Their duties shall be those usually associated with each office.

Section 3. The membership shall have complete power to manage the grotto, to make rules relating to subsequent elections, to formulate by-laws, to appoint chairmen of special committees, to raise funds in any manner not inconsistent with the policies of the Board of Governors of the NSS, and to perform all other necessary functions.

IV. General and special business meetings of the grotto shall be held at such times and places as are determined by the membership, and the chairman of the grotto shall have the power to call special business meetings whenever necessary.

Section 2. Decisions reached at special business meetings must be ratified at the next general meeting of the grotto.

V. Membership is open to all persons in the Pacific Northwest interested in the grotto's purposes, but they must join the NSS after one year of continuous membership in the grotto.

Section 2. Only members with their grotto dues paid shall have voting rights in the election of officers or at meetings.

VI. The constitution and by-laws of the NSS shall be binding on this grotto. Any action inconsistent therewith shall be null and void.

VII. Any property held by this grotto shall revert to the NSS in the event of dissolution of the grotto.

BY-LAWS

I. The Cascade Grotto shall have four classes of membership:

Section 1. Regular members shall be those persons who have signified their desire to become members, who have paid current dues, who live in the Pacific Northwest, and who are not voting members of other units of the Northwest Regional Association. Regular Members receive all grotto publications, and the NWRA Newsletter, and are entitled to vote on all pertinent matters.

Section 2. Family members are relatives of a Regular Member of the grotto who live at the same address, and have paid current dues. Family members receive no publications but those over 15 years of age are entitled to vote on all pertinent matters.

Section 3. Subscribing members are persons who have paid the subscription rate for Grotto Publications, but do not desire to be active participants in grotto activities. Subscribing members receive grotto publications, but are not entitled to vote on any grotto matter.

Section 4. Associate members shall be those persons who have signified their desire to become members, but who live outside the Pacific Northwest, or are voting members of some other unit of the NWRA. Upon payment of current dues they shall receive all publications of the grotto, are encouraged to attend all grotto activities but, should their vote be challenged, are not entitled to vote.

II. All grotto dues shall be paid at the time of beginning membership and shall be renewable one year later. Dues for Regular members shall be \$4.50 per year. Dues for Associate and Subscribing members shall be \$3.00 per year. The subscription rate for the Cascade Caver shall be \$3.00 per year. Dues for Family members shall be \$1.00 per year.

III. Nominations for officers shall be made at the October and November general meetings; such nominations must be made by a grotto member with the right to vote. Elections will be held at the December general meeting, or by mail, and the new officers will take office on the first day of the following January.

IV. A simple majority of voting members shall prevail at general or special grotto meetings. Approval, or amendments to by-laws, or the grotto constitution or expulsion of a member shall require a 2/3 favorable vote after due notification to the grotto membership; due notification being 20 days' notice.

Reports of two trips:


18 September 1974

Larry McTigue, Rod Crawford, Hank Ramsey

A scouting trip to the Rainy Creek Limestone Deposit (10 or so miles west of Lake Wenatchee) ended in only partial success. That is, we found a number of those intriguing holes where one can do nothing but sit and wish for a shovel. I would suggest that a major digging expedition to this area is a must (and speaking of digging, when are we going to install that culvert up at Ramsey Cave?).

21 September 1974

Bob Tower, his daughter Ruth, his secretary Carol, and Rod Crawford

A visit to Ape Cave revealed that the Forest Service is still allowing self-guided tours, accompanied by the usual follies, although some tours are being guided as well. The "bigfoot" graffito is still there. We paid a brief visit to Prince Albert Cave and what we thought at the time to be Bat Cave. It since develops that, both by location and by character, this cave cannot be Bat; and it certainly isn't Dollar and a Dime. If no more caves have been discovered in this group since Prince Albert* then this one must be new. An upper entrance looking remarkably like the upper entrance of Bat cave leads to about 100' of stoopway, clean of breakdown, with a cross section like this . After a skylight entrance at this point, the passage becomes a crawlway. This crawlway was not pursued more than about 30', but it must go considerably further because bats were observed flying in and out, although none could be seen in the visible part of the crawlway. I met one head on in this crawlway but it skillfully avoided a collision. It was flying too fast to be identified but was probably Plecotus. A snail-eating harvestman (Taracus sp.) was collected on the wall near where I met the bat. There seem to be quite a few other caves in the vicinity of these, and we also discovered one (the entrance of which was too vertical for our liking) much farther north along the same side of Green Mountain. For the purpose of general information, I must state that it is best to approach these caves from the south; thus a seven hour hike, ending after dark, such as we experienced, may be avoided (astonishingly, after that ordeal, Mr. Tower and Ruth still want to try again!).

-----RLC

* (It seems that a pair of Oregon Grottoites, known only as "Rick and Rick" have done a fair amount of scouting in the area -- however, their adventures don't seem to often be published - leaving other explorers to wonder if what their checking out has already been checked out; not the best of all possible situations. -- ed.)

Trip Report: South America
By Newell Campbell, January 1974

Just returned from South America. My attempt to climb Mt. Cotopaxi (19,000+ feet) was snowed out at 17,000' so I didn't get a chance to look for summit steam caves, and saw no ice caves on the north side where we climbed.

Near puno, Peru we saw several thousand feet of limestone out the train window (elev. 12,000') but it looked thin bedded, and silty. Could find no information on caves there.

Visited a small cave on San Andreas Island, in the Caribbean, where Morgan was to have hidden his loot. It's a small collapsed room half water-filled. Divers have extended it one-hundred, or so feet beyond the entrance. The water is brackish.

(My apologies for taking 6 months to print this - we are now up to date as to trip reports. -ed.)

!&!

NSS Team Brings SRT Expertise to Europe's Pots

For three weeks this summer, a six-man team from the National Speleological Society (USA) put their single rope technique expertise to good account on the Astraka Plateau in the Pindus Mountains of Greece. While no new shafts of any great depth were discovered, the four cavers in the group did manage to repeat the 1968 and 1969 British descents of Proventina (1,350 Ft.) and Epos Chasm (1,450 ft.).

The Epos Chasm round trip was accomplished in 12 hours using SRT with 1,500 feet of Bluewater 11mm rope on the 500ft., 550ft. and 300 ft. pitches. Although the four men wore wetsuits in the 36°F temperatures of the shaft, no one was tempted to swim in the lake at the bottom of the last pitch, as the rope ended some 15 ft. above the terminal lake.

Proventina was also descended with rope, racks and Jumars by two-man teams. Dual 600 ft ropes were used on the 100ft by 80 ft in cross section and 520 ft deep daylight entrance drop. This led to a 100 ft by 60 ft snow ledge, nicknamed the "Spider", which sloped at a 45° angle into the next drop.

The rigging team, led by Wil Howie, was fortunate enough to locate a shelterer niche at the Spider's upper rim. Out of harms way from occasional rockfall, two good bolts were set in the niche (out of four tried), and a rope was lowered down the snow sloop and into the next 690 ft pitch.

Low snow conditions on the Spider gave us a good rock lip at its lower edge, instead of the 70° overhanging cornice experienced by Jim Eyre in 1966. The two riggers did not have to spend extensive time clearing snow and ice from the overhang.

The second drop was a wet and absolute 690 ft in a 34°F meltwater shower to the 130 by 220 ft shaft floor. Old expedition relics found on and around the 8 foot deep residual snow field at the bottom of the shaft included a winch drum, great quantities of telephone wire, a portable British Army field radio, someone's Jumar near the landing area and the names of the members of the 8th British Army Paratrooper Brigade Expedition smoked on the shaft wall.

Round-trip time for the two-man rigging and surveying teams in Proventina were approximately 6½ hours.

From Descent, No. 26, pp 9-10. By correspondent, John Pollack, NSS

GLACIOSPELEOLOGICAL EXCERPTS

From John Tyndall's The Glaciers of the Alps 1906 London edition
(Longmans, Green, and Co., 445 pp.)

(p. 38). (July 14) 1857). In former times the whole volume of the Arveiron escaped from beneath the ice at the end of the glacier, forming a fine arch at its place of issue. This year a fraction only of the water thus found egress; the greater portion of it escaping laterally from the glacier... The vault at the end of the glacier was nevertheless respectable, and rather tempting to a traveller in search of information regarding the structure of the ice. Perhaps, however, Nature meant to give me a friendly warning at the outset, for, while speculating as to the wisdom of entering the cavern, it suddenly gave way, and, with a crash which rivalled thunder, the roof strewn itself in ruins on the floor.

(p. 58) Looking through my opera-glass in the direction of the sound (like a descending avalanche), I saw issuing from the end of a secondary glacier on the Tacul side a torrent of what appeared to me to be stones and mud. I could see the stones and finer debris jumping down the declivities, and shaping themselves into singular cascades. The noise continued for a quarter of an hour, after which the torrent rapidly diminished, until, at length, the ordinary little stream due to the melting of the glacier alone remained. A subglacial lake had burst its boundary, and carried along with it in its rush downwards the debris which it met in its course.

(p. 60) Strange subglacial noises were sometimes heard, as if caverns existed underneath, into which blocks of ice fell at intervals, transmitting the shock of their fall with a dull boom to the surface of the glacier.

(p. 64) As at the base of the seracs, a subterranean noise sometimes announced the falling of ice-blocks into hollows underneath, the existence of which the resonant concussion of the fallen mass alone revealed.

(p. 136-136) On one of the slopes an archway was formed which appeared to lead into the body of the glacier. We entered it, and explored the cavern to its end. The walls were of transparent blue ice, singularly free from air-bubbles; but where the roof of the cavern was thin enough to allow the sun to shine feebly through it, the transmitted light was of a pink color....

(p. 216 - Dec. 1859) (same cave as p. 38) The entrance to the vault was formed by an arch of ice which had detached itself from the general mass of the glacier behind. Beyond this the cave narrowed, and we found ourselves steeped in the blue light of the ice... (moulin to surface, with pillar 20ft high).. Passing over a number of large ice-blocks.. we reached its extremity, and here found a sloping passage ... leading by a steep gradient to the air above. This singular gallery was about 70 feet long, and was floored with snow.

pp. 362-366 is a section on moulins. A "lateral canal" was observed at the bottom of one about 18 feet deep.

Cavers: A closely knit tribe that flourished briefly during the last half of the twentieth century. Their numbers diminished with the gradual elimination of their underground habitat. The last reported sighting was in 1995 at the northernmost entrance to the Los Angeles City Sewer System.

Far fetched? Perhaps a little, but when was the last time you were in a cave that had improved since your previous visit? how many years does it take to unbreak a formation, or un flood an innundated cave, or unquarry a cave? If it is not possible to undo cave destruction, is it possible to prevent it? Or should we even try?

From the Southwestern Cave Conservation Symposium

Tom Miller writes of free-climbing the Big-Horn entrance pit (70') on his way out, and his plans for the South American trip coming up. Right now, he, Jim Peck, Bill Treuthick, and Steve Knutson are planning to leave Nov. 23. (To keep myself from being too crushed at not being able to accompany them - I plan to go down Summer of 1976 - I have only to read the following piece; done by Barb MacLeod, and her compatriots, one night in Seattle before leaving for British Honduras. --ed.)
The following was taken from The Speleograph, Vol. VI. No. 7

EASTER MANIFESTO OF THE B.H.R.S.S.T.

Congratulations!! You are among the fortunate few to have been selected for an impossible mission in the name of Spaeleology and the american way. The fact that your name appears above indicates that you are highly regarded amongst your friends for your patience, perseverance, great will to survive, and extensive financial resources (and concomitant benevolent paternal attitude). There are a few things you should know, of course, particularly if you have never been in a cave before, or waded through crocodile-infested swamps in 140-degree heat, or fought off hordes of hungry tsetse flies and throngs of rabid vampire bats, or singlehandedly beheaded with your machete an entire encampment of drunken chicleros. Most of these are skills requiring on-the-spot training, and there is probably little that you can do at this late date to prepare yourself in advance.

We wish to emphasize that the main purpose of this expedition is reconnaissance; as a result, no schedule or plan of attack can be proposed, much less adhered to, until we are arrived and the leader is well practised in the finer arts of wheep-cracking. It is considered highly desirable to be small of brain and large of body, however, and those best meeting specific requirements in this regard will be given preferential treatment--e.g. privilege to negotiate the deepest drops (testing our locally-acquired sisal rope) privilege to break trail through virgin batguano, privilege to defend the party against throngs of screaming howler monkeys and fierce tigers, etc. etc. Better food will also be provided for those with superior qualifications... marinated armadillo and boiled iguana being considered delicacies in this region.

We think you should be properly warned, considering the great likelihood that you will be continually devoured by vast swarms of sucking, biting, buzzing pathogen-carrying parasitic insects not to mention constant vile-smelling toads underfoot, anacondas and fer-de-lances on every branch, army ants three feet deep covering areas of up to six square miles, and galloping green crud between toes, behind ears and other nameless places. We will of course be arriving at the start of the wet season, when things are generally a little wetter than usual--usual being 99.8% humidity and chest-deep mud.

Daytime temperatures range from 110-140, with the temperature dropping to a cool 97-99 degrees between the hours of three and five in the morning.

However, breaks from the monotony of highland life are anticipated, and will be arranged at the discretion of the leader, who plans to direct everything from the beach-side resort of the queen anyway. A two-day break every three months should be adequate; additional time off may be petitioned for four months in advance. However, given the uncertain nature of our itinerary, such requests will probably not be granted.

Do not fail to overlook the fact that we will be working in a hitherto untouched area (untouched for good reason!) where opportunities to bag a virgin cave a day abound, with subsequent postmortem glorification of one's name in the annals of the NFF.

There are certain medical considerations, precautions, etc, which should be undertaken immediately to reduce the expected amount of time lost from valuable labor due to terminal diseases. Immunizations are available for about fifty of these, the other eighty or so being a little less common. Required of all peons will be vaccination against smallpox, typhoid, typhus, whooping cough, measles, coccidioidomycosis, gonorrhoea, encephalitis, cholera, xe-kik ("blood vomit") plague (pneumonic, bubonic) polio, chickenpox, Rocky mtn. spotted fever, Q fever, blackwater fever, poison ivy, and rabies, Rabies immunization should span a period of three months to be fully effective-- that is, one shot a day for three months...even then it may not be sufficient to guard one against the continual barrage of Bat urine which saturates the air of all known caves in British Honduras. Histoplasmosis is also a major problem--one reason why there are so few cavers in the country anymore. It is best guarded against by getting it now, rather than when one's time is more valuable.

But it is not our desire to discourage you! Hope springs eternal, as they say, and our medical kit will be well-stocked with antivenin specific for cobras, fer-de-lances, bushmasters, Gaboon vipers, and copperheads, and there is an outside chance that you are not subject to anaphylactic shock when horse serum is administered as a prophylactic measure against possible snakebites. Immediate amputation is now considered the most effective lifesaving measure in the event you are bitten. There will also be a more-than adequate supply of other drugs considered necessary for the area-- Thorazine, opium, LSD, Cocaine, Heroin, Benadryl, Demerol, and Hoppe's No. 9-- and many gross band-aids for minor injuries and to protect the skin from sunburn and the bite of the egg-laying Musca Gusanera.

There is of course the additional chance that we may well not make it as far as British Honduras at all, what with the entertainment available in Tijuana and the marijuana fields of Michoacan. But it would be well to sharpen your machete, eat a hot chili a day, make out your will, read up on ancient Maya curses, and the habits of scorpions, practice your Spanish, Lacandon, Quechua, Carib, Chinese, and conversational epithet-hurling amongst your fellow cavers, if you go caving at all. If you do not, then join the NFF and form yourself a grotto, as we wish to have as many warring factions represented as possible.

Cheerio, chappies! See you in Belize on July 1--don't forget your 400 pounds of bug repellent and your 98 rabies shots, which are now a month overdue. Is this specifick enough?.....The BHRSSST, Esq.

THE BIOLOGIST'S CHAMBER: BATS, PART ONE

by Rod Crawford

I must confess at the beginning that I am not really a bat man. However, this column seems to be an appropriate place to say a few words about the furry little devils, and I present below a sort of modified "How to Know the Bats". Clyde Senger (or anyone else who knows about bats) is invited to correct my mistakes, and, indeed, to write the second part of this article.

There follows a series of brief accounts of the more common cave bats of Western Washington and the Cascades, along with some rather makeshift keys. These keys should not be used for bats found outside of caves, since there are many species of bats that roost in trees, etc. For a better and more general account of bat identification, the reader is referred to Lloyd G. Ingles' book, Mammals of the Pacific States (Stanford Univ. Press, 1965).

Eptesicus fuscus, Big Brown Bat--- Our largest bat. Wingspan to 20 cm (8"). Medium brown body contrasts sharply with dark brown wings and ears. Nose to tail about 11 cm (4 1/4"). In forested areas. Roosts and hibernates in caves.

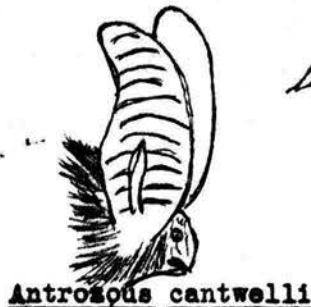
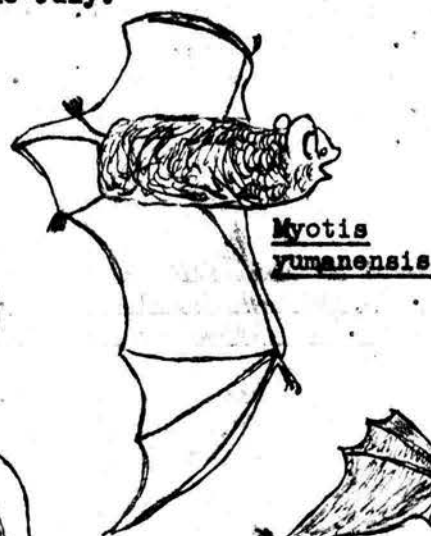
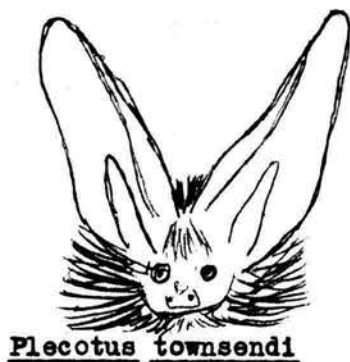
Plecotus townsendi, Lump-nosed or Jackrabbit Bat--- Ear very long. Of medium size. Fur dark, lighter in E. Wash. Gregarious and very typically a cave dweller, where it hibernates. Formerly called Corynorhinus rafinesquei.

Myotis volans, Long-legged Myotis--- Small (abt. 9 cm long), cinnamon to brownish fur. Ears short. Supposedly avoids caves but has been observed in several of the Mt. St. Helens lava tubes. Less social than other Myotis.

M. californicus, California Myotis--- Small (8-9 cm long), dark brown fur, lighter in E. Wash. Ears fairly long, extending a little beyond snout when laid forward. Hibernates in mine tunnels and caves.

M. yumanensis, Yuma Myotis--- Small (8 1/2 cm), dull brown fur, medium sized ears. Commonest Myotis in Western Washington. 1 young per season.

M. lucifugus, Little Brown Bat--- Small (8 1/2 cm); fur very dark brown to blackish, glossy; lighter in E. Wash. Ears extend barely to nostril. Highly colonial. Hibernates in caves. One young born June-July.



Use of dichotomous keys. For those who are unfamiliar with them, a few words of explanation about the keys might be helpful. They are composed of pairs of statements, each pair numbered in order (1 and 1'; 2 and 2'; etc.) Starting with #1, decide which of the pair of statements fits the specimen. Then proceed to the pair of statements (called a dichotomy) below the one that fits, until a statement followed by the name of the species is reached. Thus, in the first key, a Myotis would fit statement 1', then 2', leading to the name.

Sight Key to Cave Bats Common in Western Washington and the Cascades:

1. Ear very large, rabbit-like (see figure). Plecotus townsendi
- 1'. Ear small, rarely extends beyond snout.
2. Very large, fur conspicuously contrasting with darker wings and ears. Eptesicus fuscus
- 2'. Smaller, not so contrasting. Myotis species

Sight Key to Cave Bats Common in Eastern Washington:

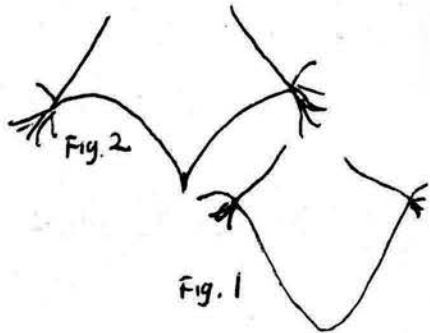
1. Ear very large, rabbit-like.
2. Fur very pale, buffy-yellow, contrasting with wings; ears widely separated. No lumps on nose. Antrozous cantwelli (Pallid Bat)
- 2'. Fur brown, not contrasting with wings; ears almost touching at base; with lumps on nose. Plecotus townsendi
- 1'. Ear small, rarely extends beyond snout.
3. Very large, brown fur conspicuously contrasting with nearly black wings and ears. Eptesicus fuscus
- 3'. Smaller; if contrasting then very small.
4. Very small, less than 9 cm long; ears and wings blackish, fur light smoky grey. Pipistrellus hesperus (Western Pipistrelle)
- 4'. Small to medium sized; fur tan or brown. Myotis species

Hand Held Key to Common Cave Myotis of Western Wash. and the Cascades

1. Underside of wing furred to elbow. M. volans longicrus
- 1'. Underside of wing not furred to elbow.
2. Foot small. Tail completely enclosed in membrane. Ear, when laid forward, extending beyond snout. (see fig. 1) M. californicus caurinus
- 2'. Foot larger, tail enclosed or free at tip. (see fig. 2.) Ear smaller, not extending beyond snout.
3. Fur brown, dull, hairs not burnished. M. yumanensis saturatus
- 3'. Fur blackish brown, hairs burnished at tips giving a glossy appearance. M. lucifugus alaskensis

Although lack of space does not permit me to key out or discuss the cave Myotis of Eastern Washington, I will list them: M. lucifugus carissima; M. yumanensis sociabilis; M. thysanodes thysanodes; M. californicus californicus; and M. subulatus melanorhinus.

Bat colonies frequently have a more or less thick deposit of guano beneath them. This should not be disturbed unnecessarily, since it is the habitat of numerous small creatures. Anyone planning to handle live bats should use heavy leather gloves and/or take the Pasteur treatment for rabies. Colonies of bats hibernating in winter should not be disturbed at all, as this may result in decimation of the colony. Clyde Senger, who is doing a study of the bats in Spider and Bat Caves, Mt. St. Helens area, requests that the bat inhabited parts of these caves not be visited at all from October to April. He has also been banding bats (with rings over the forearm) and would like to learn the band numbers of any banded bats that are rediscovered.



THE JOVIAL CAVER

I am a jovial caver now, as blithe as blithe can be,
 And let the times be good or bad, it's all the same to me;
 It's little know I of the world and care less for its ways,
 For where the dark star never glows I crawl away my days.

Down in the crawlways underneath the ground
 Where a gleam of sunshine never can be found,
 Wriggling through the mud and water all the season round;
 Deep down in the smallest crawlways underneath the ground.

My skin is horny, hard and brown from writhing in the mud
 And like the clothes upon my back, my words tell tales of blood;
 But if my talk discourages, I've one excuse to say:
 It's not the caver's heart that's wrong, it's the head that's gone astray.

Down in the crawlways underneath the ground
 Where a gleam of sunshine never can be found,
 Wriggling through the mud and water all the season round;
 Deep down in the smallest crawlways underneath the ground.

What little do the others care that sit at home secure,
 What hidden dangers covers dare, what hardships they endure.
 Ours is a world so far removed from anything they've known
 That they can never sing our songs of guano, mud and stone.

Down in the crawlways underneath the ground
 Where a gleam of sunshine never can be found,
 Wriggling through the mud and water all the season round;
 Deep down in the smallest crawlways underneath the ground.

So cheer up lads and make the most of every joy you can,
 For we've as many caves to find as when we first began;
 And let the times be good or bad, we'll still be jovial souls,
 For where would the country be without lads that look for holes!

Down in the crawlways underneath the ground
 Where a gleam of sunshine never can be found,
 Wriggling through the mud and water all the season round;
 Deep down in the smallest crawlways underneath the ground.

The image shows two staves of musical notation. The top staff is a single line of music in G major (one sharp) and 4/4 time, featuring a melody with many beamed eighth notes. The bottom staff is labeled 'REFRAIN' and also in G major and 4/4 time. It includes lyrics written below the notes: 'Down in the crawlways underneath the ground / Where a gleam of sunshine never can be found, / Wriggling through the mud and water all the season round; / Deep down in the smallest crawlways underneath the ground.' The lyrics are written in a stylized, handwritten font.

Having learned from last times being forced to transmit the tune by song;
 this time I sat down and wrote out the music for you -- now all you need is
 a piano, or a pianist -- ed. (Enjoy!)

CALCIUM CARBIDE

By John Stade

The other weekend a guest and novice caver asked me, "Where does carbide come from -- is it mined?" Well I knew it wasn't mined, (can you imagine a wet carbide mine?) but I realized that I didn't know much more about it than that. So, after a fast letter to Union Carbide and a few hours in the library here's what I was able to find out.

Pure calcium carbide can be produced in the laboratory by the thermal decomposition under a vacuum of pure calcium cyanamide; however, this process isn't commercially feasible due to expense. The first commercial production method was developed by a Mjr. James Morehead who owned a cottonmill in North Carolina. Finding he had more waterpower available than was needed to operate his factory he decided to build a small electric furnace -- a device that showed great promise as a means of attaining high temperatures for smelting purposes. In looking for an economical process for producing aluminium, Mjr. Moorehead decided that what was needed was a reducing agent -- metallic calcium, for example that would free the aluminium from its ores.

It happened that one day in 1892, they had in the furnace a mixture of lime coal, carbon, and tar. After a run of several hours, the furnace produced some molten material that hardened into a brown stone-like substance. When placed in water it gave off a pungent smelling vapor that burned with a smokey yellow flame. The brown substance was carbide, and the gas, acetylene.

Although both products - carbide and acetylene - were considered lab curiosities at that time, the optimistic Mjr. Morehead interested several Chicago entrepreneurs in the use of acetylene for city and home lighting. In 1898 a group of them formed the Union Carbide Co.

The present method for making carbide has changed little since 1892. The basic raw materials used are limestone, and coke or coal. Such a mixture is heated in the intense heat of the electric arc to react as follows: $\text{CaO} + 3\text{C} \rightarrow \text{CaC}_2 + \text{CO}$. The carbide formed is a liquid and is drained off and cast into "Pigs" which are cooled, crushed, sized and packed for use. The carbon monoxide is drawn off near the top of the furnace. Pure calcium carbide is transparent, and colorless but the commercial variety varies from grey to reddish-brown depending on the impurities present.

The furnace is essentially a large crucible to contain the reacting lime and carbon, two large graphite electrodes, and a power supply. A mixture of calcined lime and crushed coke is added continuously to the furnace through a hopper; it is heated to 4000° F where the lime melts and reacts with the carbon. Comparatively low voltages of only 75 -250 volts are used, but with a current of 50,000 to 125,000 Amps. Such a large, modern furnace using 50,000 kilowatts of electricity can produce up to 400 tons of carbide a day.

The largest use of carbide is in the production of acetylene for welding and cutting, organic chemical synthesis, fertilizer and plastic manufacturing, metallurgical processes; and last, but certainly not least, it is sold to Cascade Grotto members for use in carbide lamps.

"The Underground"

Vol. VIII, No. 2 pp. 16-18

State prof has 'own' spider

Dr. Clyde M. Senger, chairman of the biology department at Western Washington State College, has had a spider named after him.

Senger discovered the spider two years ago while studying bats in lava caves in Southwest Washington. The creature has adapted to a lightless life in caves. Its discovery was a surprise to the scientific community which had assumed that western lava caves were too young geologically for creatures to have evolved to live in them.

The only similar species have all been

found in Europe and Asia.

The critter, technically an arachnid, is about an eighth of an inch long, has long legs and feelers, and is whitish in color, typical of organisms that live beyond the reach of sunlight.

Since the discovery, Senger's students have found several other cave-adapted life forms in the lava caves.

Senger's discovery will be known in scientific literature as the *Speleonychia sengeri*.

One might note that the "Spider" is actually a harvestman; that by "feelers", probably the front legs are meant; that one does not use "the" before a technical name of an animal. For more information on this creature, see the August Caver.---RLC

The Cascade Caver*

3530 Green Wood Ave W.
Tacoma Wa. 98466

* Subscription rate: \$3.00/yr.
payable to the above address.