

Vol. 16 #7-8



# THE CASCADE CAVER

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CASCADE GROTTO N. S. S.



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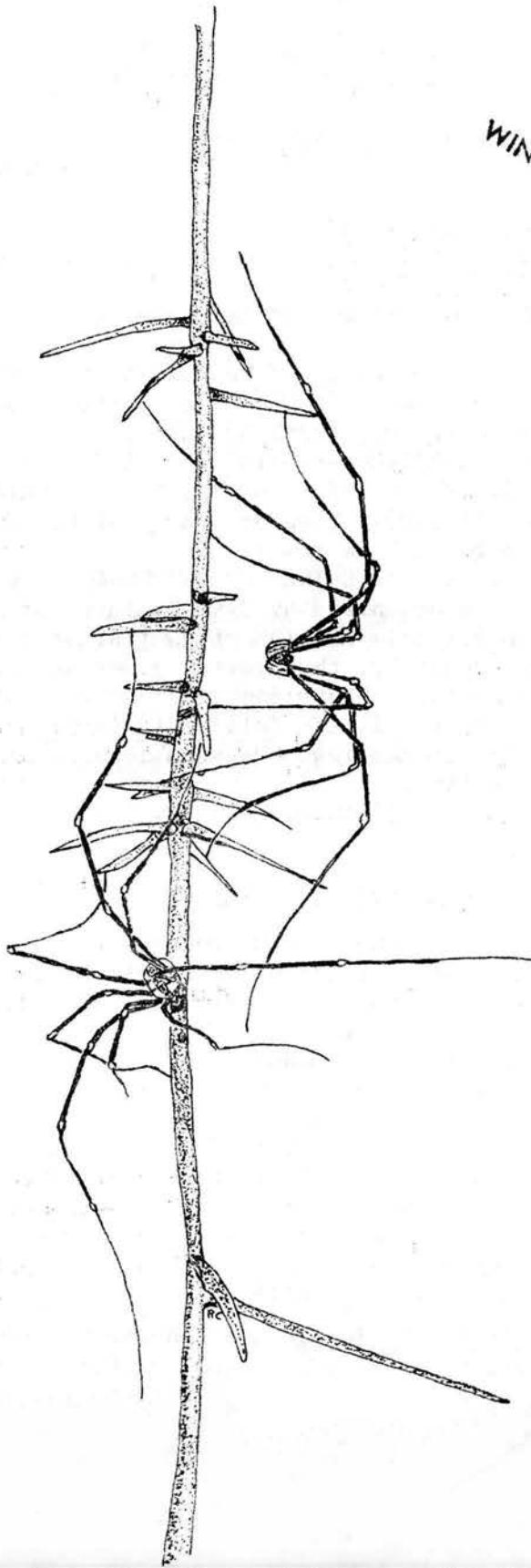
Volume 16 No. 7-8

Editor: Rod Crawford

"July-August 1977"

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THE CASCADE CAVER is published (in theory, at least) ten times a year by the Cascade Grotto of the National Speleological Society. Subscription rate is \$4.00 per year (i.e. ten issues). Full grotto dues are \$4.50, and family memberships (not including subscription) 50¢. All payments should be made to the Grotto treasurer, Chuck Coughlin, 6433 S. 127th Pl., Seattle, Washington 98178.

COMING EVENTS  
(and yes, there are some!)

PLEASE NOTE: The "Conservation and Safety Seminar" scheduled for March 11 WILL NOT OCCUR AT ALL.

Mapping Trips to Ape Cave

Mapping Trips to Senger's Talus Cave

At least two more trips each on different weekends should occur in the near future. Contact Bill Halliday, EA4-7474.

March 11, Saturday. Tentative trip to Cascade Cave, Cave Ridge. Contact Bill Capron, 784-8497.

March 18, Saturday. NSS Board Meeting, to be held at the Marshall Recreation Center (where the seminars are held) in Vancouver, Washington. For further information, contact Charlie Larson, (206) 573-1782.

MARCH MEETING OF THE CASCADE GROTTTO-----TIME AND PLACE CHANGED FROM LAST MONTH  
Meeting will be on March 21 (the third Tuesday), at Bill Halliday's house, 1117 36th Ave. E, Seattle, at 8:00. Program: Caves of the Canary Islands. For more information see outside back cover.

April 15-16. FINDING NEW CAVES--A SEMINAR AND WORKSHOP, sponsored by the Western Region of the NSS and organized by Dave McClurg, San Francisco Bay Chapter. I have a program for this meeting which indicates it might well be very interesting. Unfortunately, the program gives no indication of where the meeting will be. Presumably somewhere in the San Francisco area. Come to the meeting and check the latest California Caver for more information.

April 18, Tuesday. April Grotto Meeting. Presumably also at Hallidays' home and at the same new day and time.

June 18-24. NSS Convention, New Braunfels, Texas.

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NEWS AND NOTES

The listing of Russ Turner as nominee for Secretary-Treasurer in the last issue was a typographical error. Elections were duly held at the December meeting, and the officers of the Cascade Grotto for 1978 are:

- Chairman: Ed Crawford
- Vice-Chairman: Russ Turner
- Secretary-treasurer: Chuck Coughlin.

\* \* \* \* \*

As indicated later in this issue, Pot O'Gold Cave, recently discovered by Frank Ireton and others of the Gem State Grotto, is now the longest lava tube in Idaho with 1.7 km mapped and an estimated 300 or more meters remaining to be mapped. Among hazards for the mappers was an enormous breakdown room where the walls were invisibly far away and explorers tended to get turned around and headed back out instead of in (honest!).

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OUR COVER: Harvestmen, Nelima paessleri, on a hanging root in Flashcube Cave, Skamania County. Drawn by the editor from a slide by Stan Pugh.

## FEATURE ARTICLE

### TSOD - THE ADIRONDACK TALUS CAVE THAT WENT THE EXTRA MILE

by Robert W. Carroll, Jr.

[Editor's note: this article was evidently sent to several grottoes simultaneously. I don't know if it has already been published, but the Caver received it in the form of an original submission.]

On October 9, 1977, the TSOD anorthosite talus network in Essex County achieved a documented 12,100 feet of passages. Over 10,000 feet larger than the second largest Adirondack cave and fifth-ranked among all Northeast caves, it has over 320 entrances and 410 intersections, and a horizontal spread of 780 by 260 feet. The possibility that it may have set a world talus record is being investigated.

Formed by the last Ice Age, perhaps first visited by Iriquois or Algonquin hunters whose names were lost in time, and often used by hikers as a shortcut to good views from atop its ramparts, TSOD essentially was a series of separate rockshelters until my talus investigations actively sought out interconnections. On August 3, 1974, I found a pair of large caves--TSOD (for "touchy sword of damocles", a notorious loose-rock configuration) and Strungout (for its initial "strung-out" layout)--which I rated as 700-foot systems on a visit a month later. Then I lost them for 23 months. Before I finally relocated TSOD on August 14, 1976, the search had netted no less than four other large caves, one of which actually was but a section of the ultimate "monster". Especially after the two original caves unexpectedly connected that Labor Day weekend, the system underwent incredible expansion in the next fourteen months.

The exploration and documentation of this cave turned out to be the most protracted single-handed effort on one cave that I had ever made--and probably ever hope to make. The hike is a fairly rough four-plus miles each way, the weather was mostly abominable, and most of the seven different in-cave bivouacs were less than ideal. On one occasion, hikers joined in on the exploration of a few leads (for conservation reasons, I did not divulge the full importance of what we were doing), but the regular caving community lacked the time or interest to participate. The one-man stick-and-compass mapping method incurred major loop-closure errors, and suspected ferromagnetic rock content may have caused problems, but the practice of periodically rounding downward to the nearest ten feet for minor parts and nearest fifty feet for major parts helped insure that the final length figure was not an overestimate. The overall system however is lower in quality than MBDATHS (the 5300+ footer in New Hampshire) because of the numerous overhang-type links.

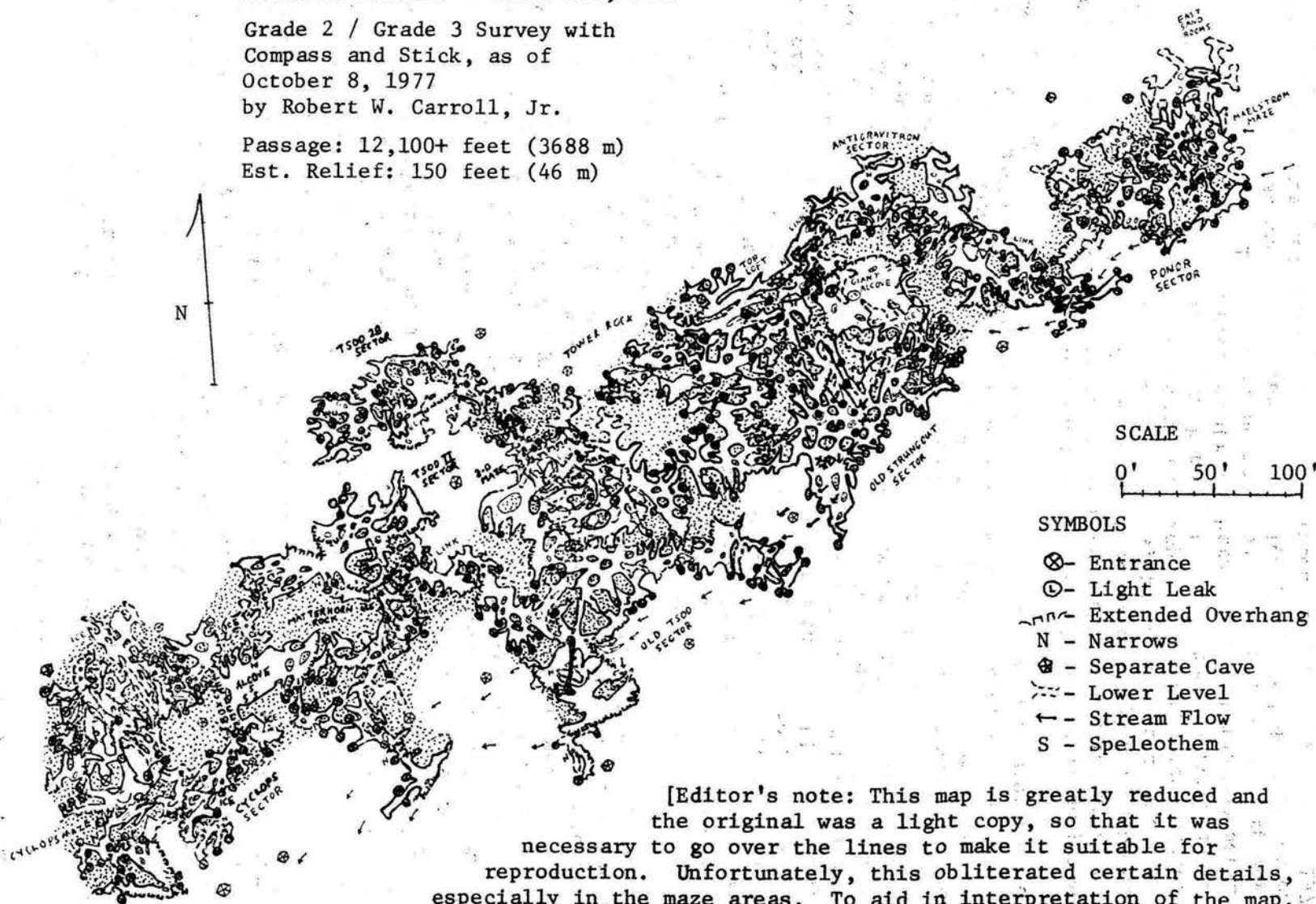
The practice of solo caving is not a safe one, is even more dangerous in remote talus caves, but has become a mainstay with me as a result of my disgust at the caver-caused bad situations in the major karst regions. TSOD has its full share of dangers--the usual loose rocks, treacherous pits and crevasses both on and below the surface, glare ice slopes, confusing mazes, hypothermia in the stream and ice sections, a "hanging tonner" atop one fifteen-foot pit, jagged narrows, and inconspicuous stress-shards that clothing can detach from ceilings and walls and cause serious injuries from razor-sharp edges. However, the worst danger nowadays is the risk of hikers' dog attacks on all trails in the area, a hazard that has escalated from nonexistence in 1975, to incidents at leantos in 1976, to incidents at random tentsites with no

TSOD ANORTHOSITE TALUS CAVE SYSTEM

ADIRONDACK MTNS. - ESSEX CO., N.Y.

Grade 2 / Grade 3 Survey with  
Compass and Stick, as of  
October 8, 1977  
by Robert W. Carroll, Jr.

Passage: 12,100+ feet (3688 m)  
Est. Relief: 150 feet (46 m)



SYMBOLS

- ⊗ - Entrance
- ⊙ - Light Leak
- ~ - Extended Overhang
- N - Narrows
- ⊕ - Separate Cave
- - Lower Level
- ← - Stream Flow
- S - Speleothem

[Editor's note: This map is greatly reduced and the original was a light copy, so that it was necessary to go over the lines to make it suitable for reproduction. Unfortunately, this obliterated certain details, especially in the maze areas. To aid in interpretation of the map,

I have distinguished some non-cave areas with a dot pattern. Parts of the map bring up questions of just what constitutes a cave passage in a talus cave. For instance, the "passage" connecting the Antigravitron and Ponor sections of the cave is evidently completely open to the surface on both sides...]

detour routes in 1977, to probably the necessity of going armed in 1978. It is the spectre of ugly incidents that primarily accelerated my timetable for this effort.

A summary of the seven main sections of TSOD is as follows:

TSOD "PROPER": Referred to as "Old TSOD", has impressive temple-like entrance, three-dimensional mazework, streams, ice beds that last into September, some small speleothems, a pit room with some stunted ferns, an overhang-overlap link with TSOD II, a good link with Strungout, and an "eat-dirt-and-roots" link with TSOD 2B.

STRUNGOUT: Rather complex with both channel-pseudokarst and upper boulder mazes that diverge and reconnect at Giant Alcove under a huge boulder, nice isolated channel rooms, the distinctive Tower Rock, ice beds that last into October (perhaps all year at the Glacier Lake Room, site of a curious stratified ice plug), some bad narrows, and a narrow link with Antigravitron.

ANTIGRAVITRON: Named for numerous dangerous "hanging" boulders, has small but complex sub-mazes, ice beds that last into October, a few nice rooms, bad narrows, and a downhill link with Ponor.

PONOR: Named for stream "rumble" heard in most leads, has multi-level mazework that alternates from channels to ramparts, underground waterfalls and pools, excellent boulder-sand-matrix leads still actively forming, nice rooms, minor speleothems, dangerous pits (one with a loose "tonner" ready to come down any second), and ice that lasts in two places well into the summer.

TSOD 2B: A branch of "Old TSOD" that failed to link with TSOD II, has limited but complex mazework, two nice ice rooms, bad narrow crawls of limited extent, and minor speleothems.

TSOD II: Extends from awesome boulder rampart down via shallow link to stream, has 60-foot high Matterhorn Rock, impressive alcoves, unique ice "cellar" with ice forming much of the ceiling, a hidden fifteen-foot high ice room, mostly-limited branches off big rooms, an alcove with treacherous 25-foot crevasse, some minor nodule speleothems, and two shallow links with large east overhang entrance of Cyclops Sector southwest of Matterhorn Rock.

CYCLOPS: Named for impressive rooms and especially the gaping entrance and maze work at its west end, has tall leads and complex branches, ice beds that last into October, treacherous pits and crevasses, 1.5 inch stalactites that appear flood-eroded despite "high and dry" location far above reach of stream, a lower room with a lone hibernating bat, and a visible link with a nearby 900-foot cave still regarded as a separate system. The lone bat and eroded speleothems each raise many fascinating questions.

It is hoped that this remarkable system will be carefully studied by experts before its more unusual features are either unintentionally or deliberately destroyed by more casual visitors. These features deserve every bit as much protection as phenomena in solution caves, maybe even more so because of possible indications from its eroded flowstone of events since the Ice Age which are at serious variance from current theory. TSOD has been a very exciting "breakthrough" for talus caving, but one that I most regrettably and angrily have to admit extreme relief at being essentially done with because of the inexcusable, worsening, very dangerous menace of dog attacks on the trail to it that has turned the whole idea of "wilderness experience" into a complete farce.

[Editorial note: Recent work at Senger's Talus Cave indicates that New York has nothing to fear from Washington, talus cave-wise, so far at least. But at least the dogs on the trail are friendly...]

## TRIP REPORT

Windy Creek Cave Trip, 24 July 1977

OR

How to Quit Caving in one "Easy" Trip

by Stan Pugh

Much has been told about the vast new cave in the North Cascades in our monthly meetings, so I was looking forward to this trip with eager anticipation. However, upon its completion, I can say without reservation that if you wish to discourage someone from caving or if you have any enemies, this is the trip you will want to take them on. Even after a week's rest and recuperation, I am still having a difficult time trying to remember the "good" aspects of the trip.

If you live in Tacoma, you must set the alarm for 2:30 AM in order to leave for Seattle by 3:00. I picked up Rod, then Joyce Thompson and headed north on I-5 in the blackness of night...yet it was quite warm if you recall-- Sunday was to be a "scorcher" (90°). My newly painted Wagoneer hummed along the North Cascades Highway, then turned left on the proper side road. Since my odometer is not the most accurate, we then made a wrong turn and ended up looking at a washed out bridge crossing. We soon found the right road and, heading up, we passed through a burnt out clearcut--still smouldering.

It was probably about 7 AM when we came upon the first slide area. After some "pick and shovel" work, Rod and Joyce guided the four-wheeler over the narrow ledge. We had about four inches to spare...much better than the Black Mountain trip, where one wheel was spinning in space! The day had dawned with a beautiful sunrise, and as we proceeded up the jeep road the sun shone brightly on the rugged peaks. We had to dodge several boulders on the road, big ruts, big trees, etc., but we did go farther than any previous trip in a vehicle [except for the very first, before the washout--RC]...about three miles further according to Rod.

No sooner had we stepped out of the Wagoneer, than we were set upon by the biggest horse flies I've ever seen! Now the last time I looked in a mirror I didn't look like a horse, but perhaps some of my caving friends might argue the point. Nevertheless, these flies must have been somewhat nearsighted to mistake Rod and Joyce for horses. They were so hungry they even tried to eat the Jeep! Word of our presence must have spread quickly in the animal world, for soon the deer flies and mosquitoes descended upon us as well.

We set off across the marsh-like basin about 8:15 figuring that we should get to the cave in about two hours. Such was not the case, for with the height of the growing season the brush was very high. It seems that the area is heavily populated with elk, for one cannot walk fifteen feet without crossing one of their trails! Yet we didn't see one of the beautiful animals all day long. One can divide the trip to the cave into four parts...down, across, up, then down. In plain language, we travelled down a creek bed, across the valley where I managed to step into a four century old elk manure pile...that stuff gets deep!! Meanwhile, the flies were getting desperate! There were always between five and ten flies constantly trying to land anywhere on you and get a bite. "Pardon me, but did I hear you say teeth?"...these flies had a set of chompers that would make a crocodile look toothless!

Once across the valley we headed up along the base of the cliff where after crossing a talus pile we ran into a patch of Devils Club and salmon-berries...ouch! It was about 10 AM when we stopped for lunch and a much

needed rest. While we ate our sandwiches, the flies tried to eat us! We were soon seeing sinkholes all over the area; these are located directly above the cave. We then headed down the steep (60°) slope to the cave entrance at the base of the sixty foot cliffs. It was here where the Devils Club was very thick, making the going a sticky affair. The water from the resurgence was very refreshing in the 80°+ weather, but I could not see any sign of a cave entrance.

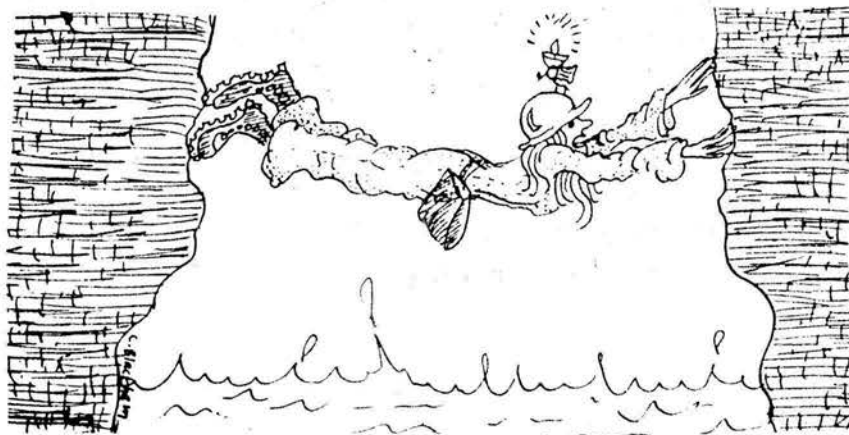
"Hey Rod, are you sure that there is a cave around here?"

"Yes, I'm quite sure. Right over there by those roots."

Here I was standing fifteen feet from those roots and I couldn't see a thing! Now that's what I call a well disguised cave! That cool air felt neat... at first. The entrance is an eighteen inch wide eight foot high vertical crack at the base of the limestone cliff from which icy cold air briskly blows forth...at least it keeps the flies away. Yet one can stand in the draft with a single shirt on for only five minutes before becoming too cold even in 80° weather.

As we entered the cave our watches said about 11:15 AM. The cave is fault-like through most of its passage, which makes for difficult and slow going. The "Ex-pool" crawl wasn't too bad, but one has to be careful in the next part of the cave not to accidentally touch the small pencil-like stalactites, the longest of which is about eight inches.

We soon heard a stream entering below us, and Rod mentioned that no one has checked out that area down stream. The going is made slow by narrow squeezes and obstacles, but we soon are fording or bridging the stream. Up till now



CAPTION: This is how Joyce felt...

(or)  
"Help!"

Stolen from:  
The Inner  
Mountain News,  
Vol. IX, No. 6

Joyce had only her left foot wet, but then we heard a splash and a muffled scream behind us! The mud ledge that Rod and I walked on finally gave way with Joyce on top...down she went into the icy water up to her waist. After she emptied her boots, we continued up passage until we came to a point where it was "get wet up past the knees" or "turn back"...we turned back and found the main passage. [Evidently, Stan, the passage we were in was virgin up to that time--if that makes you any happier--RC].

Again we came to a dead end; this time we were looking at a seven foot overhang. Rod couldn't remember how he climbed it the last time, and Joyce and I didn't want him to try too hard, for we were quite tired and cold. It also crossed our minds that we were a long way from civilization should anyone

get hurt. As we were retreating, I volunteered to slide down the fifteen inch crack where we first heard the stream. The crack angled down about 75 degrees and the protrusions from the sides made for a snug feeling. Once on the bottom, I could see Rod's light about twelve feet above. As I went around a bend I could see the stream splashing down a two foot waterfall, then through some six inch round holes in the floor. It appeared that there was a stream passage below the holes, but since I was a bit wider than six inches I would have to go a different way. As I turned to crawl to the lower level, my lamp struck the ceiling and nearly went out. Being a full-fledged 100% chicken, I decided that I'd better turn around since I left my cave pack with the folks on top. I was then finding out that coming up was much harder than going down...especially with nil illumination. My lamp cracked the ceiling a few more times but I managed to get back to the bottom of the narrow crack. After several false starts, I managed to pull my weary body up to the top. The rest of the exit was uneventful, and the warm air of the day felt good... but the flies were terrible!

It was about 3:15 when we began our trip back across the Devils Club patch which covered the hillside below the cave entrance. Just below the saddle on the north side of the peak, I found two very picturesque sinks with small waterfalls into them. There were small water passages leaving the sinks, but we did not wish to get soaked. We soon found ourselves back in the elk valley and finally started up the stream bed. About this time Rod was showing signs of running out of energy, and fell a bit behind Joyce and I. We were all very tired when we reached the Wagoneer, but Rod was by far the most fatigued, bordering on exhaustion. The flies were still trying to eat the Jeep as we pulled away...I pulled into my driveway about 10 PM, twenty hours after leaving on a trip I will never forget.

[Stay tuned to the Cascade Caver for reports of two MUCH MORE PLEASANT trips to Windy Creek Cave later in 1977, which I actually returned from somewhat less than exhausted.--RC.]

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L E T T E R S  
to the Editor and Others

Anchorage, Alaska

Dec. 16, 1977

Dear Bill [Halliday]:

We are having a superb fall for caving. All three Byron Valley caves are open, two for the first time in five years.

The one in the main glacier only goes for 150 yards but has a really beautiful entrance. The one in the big snow field has a 50-80' wide passage 500 feet long and 20 feet high. It's sagging some and some columns are bent.

The other "middle snowfield cave" is similar to two years ago with some survey marks still in place (on rocks).

Best to all,  
Jay Rockwell

\* \* \* \* \*

Wisconsin

December 1977

William [Zarwell] now has a very busy dental practice in Jefferson, Wis., halfway between Madison and Milwaukee (where he always wanted to be!) Address: 114 W. Milwaukee St., 53549. The suite of business rooms is lovely, but the



housing problem is as yet unresolved, probably because of the area's proximity to I-94.

Estelle Zarwell

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Potsdam, N.Y.

Sept. 26, 1977

Dear Dr. Halliday,

The past month has seen some interesting new developments concerning Northeastern talus caves. Maine has its first 300-footer--a bit small by today's standards, but at least a start...In N.H., the Presidentials now have a 1000-footer at 4100+ feet elev. on Mt. Washington and a 700-footer at 3700 feet on Mt. Adams. The 1000-footer is intricate, kept me busy for six hours, and still had two-foot snow Sept. 12 in an alcove! As for the 5300-footer [MBDATHS], the NE "talus crew" has just about disbanded, and it is "growing back up in brush". Next year, I hope to see if Vermont is harboring a talus "monster" somewhere.

...Rumors exist that the November BOG meeting at Saratoga Springs will presage a 1979 NSS convention in the same area...I would likely be in charge of Adirondack tectonic/talus/pseudokarst field trips if this occurs. Another idea is to have a symposium on talus/tectonic systems, much like the White Salmon Convention had one on lava tubes...

Robert W. Carroll, Jr.

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Seattle, Wash.

August 20, 1977

Dear Rod,

I was just looking over the May Cascade Caver preparatory to filing it and noticed some inaccuracies in Bill Halliday's article on the longest lava tubes in the U.S. Specifically in the section on New Mexico, which suggests that that state has no long lava tubes.

Although I have not personally visited the cave (Truckett's Guano Cave), I have read trip reports in (I believe) the Southwestern Caver which state that it is in excess of 5,000 feet long (uncollapsed). I have also personally been in sections of the Tajima system which are longer than 300 feet uncollapsed.

...I believe that there are several other caves in the Grants Malpais which are certainly in excess of 100 feet in length. I would hope that the relative lack of communications between cavers in the Northwest and those in the Southwest has not contributed to inaccuracies in the list of longest lava tubes.

Rob Stitt

[Dear Rob: For Truckett's Guano Cave, see the "Addenda and Corrigenda" appearing on the next page. As for the rest, what Bill said in his article is "...no lava tube cave here is known to be more than 100 m long."

100 m = 328 feet. And by the way, what was that about "just looking over" the Caver before filing it? Heavens! I thought everyone read it religiously from cover to cover. On the other hand, there are times when I think no one reads it at all....---The Editor]

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LAVA TUBE CAVE LISTS:  
Addenda, Corrigenda, and Notes

MAJOR LAVA CAVES OF THE UNITED STATES: Addenda and Corrigenda  
by William R. Halliday, M.D.

[The following notes are supplementary to the list which appeared in the  
Cascade Caver v. 16 no. 5, May 1977, pp. 43-47.]

California:

Catwalk Cave: Length about 1950 m. June 1977 California Caver shows cave  
is segmented into sections about 1950 and 400 m long. [This supersedes the  
originally given length of 2420 m, and requires that this cave be removed  
from the list of the world's longest lava tubes (see below).]

Hercules Leg - Juniper Caves: National Park Service map apparently is  
unpublished to date.

Idaho:

Add: Pot o'Gold Cave: Length: 1,700 m mapped plus estimated 300 m unmapped.  
Discovered by Frank Ireton while searching for a bat cave reported in same  
area. Map not yet published; discovery in May 1977.

New Mexico:

Add Trucket Guano Cave: Length about 1,590 m. Ref: Southwest Cavers, vol.  
10 no. 4, July-Aug. 1976 (map unpublished).

LIST OF THE WORLD'S LONGEST LAVA TUBES: Notes and Addition  
by Rod Crawford

The following notes refer to the caves listed in Cascade Caver 16 (6):  
p. 63, in the numerical order adopted in that list.

1. Leviathan Cave. Length given (11,122' m) is total length of three  
segments. Source: Cave Exploration Group of East Africa Newsletter, May 1976,  
pl. 2. Total lengths of individual segments not published, but all three are  
over 2000 m. However, article in B.C.R.A. Bulletin #14 suggests that these  
segments have been connected by digging. If it transpires that this is not  
the case, and that the cave is indeed segmented, then the three segments will  
have to be listed as separate caves and Kazumura Cave will resume first place.

2. Kazumura Cave. Source of data: Pacific Insects, 16 (4): 405.

3. Bilremos-gul. Source: Ann. Speleol. 29 (3): 408. No map is available  
and cave may be segmented. Evidently Korean cave mappers never indicate  
vertical range. In fact, rumor has it that their maps are untrustworthy in  
any case.

4. Cueva de los Breveritas. This is the longest segment of the Cueva  
del Viento system. Source: Spelunca, Supplement #2, 1977: 17.

5. Bilcino-gul. Source: Spelunca supp. 2: 13. No map available and  
cave may be segmented.

6. Manjang-gul. Length given (4550 m) is that of principal segment.  
Source: "Korean Caves", a 1970 publication of the South Korean Ministry of  
Information and Cultural Preservation. Other sources give length as 6800,  
7380, 7865, or 10068 m; all these lengths are totals of three (or more)  
segments, one of them unmapped.

7. Duck Creek Lava Tube. Source: Inner Mountain News, 8 (5), May 1976.

8, 9. Ape Cave, Offal Cave. See notes in U.S. list by W. R. Halliday,  
referred to above. Additional mapping in Ape Cave is due to occur in the  
near future.

10. Kalmanshellir. Length is approximate and unconfirmed; cave may be segmented. Source: Spelunca Supp. 2: 38.

11. Susan-gul. Length given (3000 m) is approximate and unconfirmed, and cave may be segmented. Source: Ann. Speleol. 29 (3): 409. T. Ogawa has supplied an alternate estimate of 4700 m, also without indication of number of segments involved.

12, 13. Falls Creek Cave, Dynamited Cave. For sources see previous list of U.S. lava tubes. Length given for Dynamited Cave (2388 m) is correct. Length given in U.S. list was a typographical error.

14. Socheon-gul. Length given (2092 m) is that of longest segment. Source: "Korean Caves", see above. Several larger figures exist; all of these result from combining several segments.

15. Catacombs Cave. For sources, see U.S. list.

ADDITION: Cueva de los Verdes (middle segment), Lanzarote, Canary Islands. Length: 2565 m (1.59 miles). Depth: 29 m. This segment is that between the Jameo de la Gente and Puerta Falsa entrances. The length includes the main passage length of 1165 m, an upper level of 525 m, and a connecting side-complex of 875 m (not counting the latter's 240 m entrance trench). Source: "Karst", Revista de Espeleologia (Barcelona), v. 6 No. 22, 1969.

Cueva de los Verdes takes thirteenth place in the list, displacing Dynamited Cave to fourteenth, Socheon-gul to fifteenth, and Catacombs Cave to sixteenth places on the list.

Catwalk Cave, previously listed at 2420 m, is segmented as related above, and does not belong on the list.

A limited number of free copies of the "PRELIMINARY LIST OF THE WORLD'S LONGEST LAVA TUBES" are available. To receive one, send a stamped self-addressed envelope to the Cascade Caver address.

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#### Book Review

by Ed Crawford

Guide to the Lava Tube Caves of Central Oregon--by David Purcell, 1977.

This short book, or, more properly, pamphlet, is being sold at the "Lava Lands" visitor center of the Deschutes National Forest, USFS, near Bend, Oregon. It consists of a collection of short descriptions of thirteen lava tubes in the Bend, Oregon area, and a description of Malheur Cave, some 200 miles to the East. There are about ten pages of introductory material, including a little on safety and conservation. There is a "difficulty scale" for lava tubes.

The maps included are acknowledged to be taken from a NASA geological study (not referenced).

Really a guidebook for the casual visitor, it may have an influence on traffic through the Bend caves.

[Editor's note: The reference for the NASA study is: Greeley, Ronald, 1971. Geology and morphology of selected lava tubes in the vicinity of Bend, Oregon. Oregon Dept. of Geology and Mineral Industries, Bulletin 71, 47 pp. Greeley, NASA, and Jack Hyde also did a study of the Mt. St. Helens lava tubes.]

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# HEAR YE HEAR YE!

THIS MONTH'S **GROTTO MEETING**

WILL BE HELD AT A

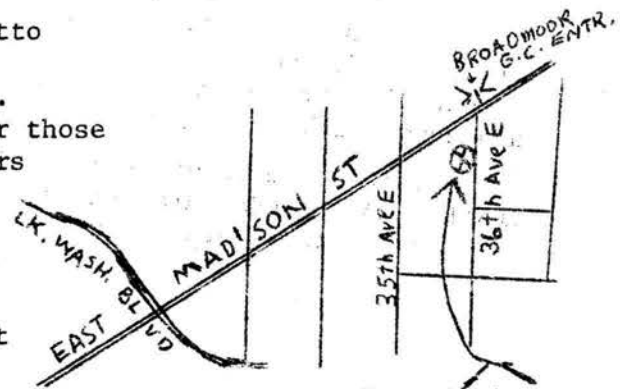
# NEW TIME + PLACE

(OLD)

Yes, by vote of the February meeting, the Grotto decided to abandon the public library for the present and move back to Dr. Halliday's house. The address is 1117 36th Ave. E, Seattle. For those who have not been there, a location map appears at right. What's more, the meeting date will henceforth be the **THIRD TUESDAY OF THE MONTH.**

...or, in this case, **TUESDAY MARCH 21st** (a week from this tuesday) at 8:00 PM.

Y'all come. There will be reports of recent caving and a program on the Caves of the Canary Islands.



Here it is--  
the large house with  
tile patio.

THE CASCADE CAVER  
207 HUB (FK-10) Box 98  
University of Washington  
Seattle WA 98195

Take  
Nothing  
But  
Pictures  
Leave  
Nothing  
But  
Footprints