

THE CASCADE CAVER
official publication of the
Cascade grotto of the
National Speleological Society

or

THE AMERICAN JOURNAL OF
GLACIOSPELEOLOGY

Volume 9 #3

Dr. William R. Halliday, editor

March 1970

Coming events

Friday Feb. 20 Oregon Grotto meeting 7:30 PM, Portland, at OMSI.
Program: Mexican caving.

Feb. 21-3. Trout Lake Oregon Grotto Invitational. Red Cave primarily.
Contact Charley Larson, 695-4143.

Feb. 23. (Monday) Planning conference for NSS NW Convention "71 or "72.
Hood River and/or White Salmon. Contact Bill Halliday, EA 407474.

Feb. 28. (Sat.) 11 AM work party, Hallidays.

March 7. (Sat.) 6:30 PM. Grotto invitational potluck banquet for all NW
cavers. Call Ron Pflum ME2-4898.

March 8. (Sun.) Possible Big Four Ice Cave trip. Planning at the banquet.
March 14 or 15, weather permitting. Paradise Ice Cave trip. Call Charley
Anderson at work.

March 21-22. Papoose Cave, Idaho. Call Chuck Coughlin, ME2-4898.

March 16. (Monday) Grotto meeting, Hallidays, 8 PM.

March 21-22. Shi Shi Beach littoral caves. Call Van York or Bill Halliday.

Memorial Day weekend: Papoose Cave, Idaho.

July 4 weekend: Steam Caves of Mt. Rainier.

Labor Day weekend: NW Regional Convention; eastern Nevada.

PLAN AHEAD

FEBRUARY WAS A GOOD MONTH

Bob Brown, Dave Mischke, Russ Patterson and Ron Pflum took advantage of the premature spring and got to Papoose Cave the weekend of the 8th; they came back with some tall tales and excellent photos of the new section above the 70' waterfall. On the same weekend, Charley Anderson and Claude Smith had a quick look at several lava tubes near Bend, including Skeleton Cave, Arnold Ice Cave and Charcoal Cave. No snow, but it was cold enough that they would have done better camping in Skeleton Cave. Chuck Coughlin tried Cave Ridge on snowshoes, but stopped at the saddle; he still thinks it was worth it. And we still have a weekend left as I write!

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Caves and pseudokarst of the Martin River Glacier, Alaska

(Notes on the grotto program of February 16, 1970, by Dr. E. Reid, of the Geology Department of the University of North Dakota, currently on sabbatical at the Quaternary Center at the University of Washington)

Dr. Reid has been studying the Martin River Glacier almost every summer since 1962. He also has had limited glaciopedological experience in Greenland and Antarctica (mostly related to crevasses), and also showed photos of the entrances of glacier caves in the Mendenhall Glacier near Juneau and the Slide Glacier (formerly the Sioux Glacier) in the Martin River area.

The Martin River Glacier is about 60 miles east of Cordova. For Alaska, it is a small glacier, only some 60 miles long. It arises from the same ice field as North America's largest glacier, the Bering Glacier. Precipitation is up to 300 inches per year. Access is by bush pilot; float planes or helicopters are used. Problems of the area include mosquitoes, black flies and bears - which find life rafts stasty.

The Martin River Glacier was selected for study as a "dirty glacier" with characteristics similar to a large part of the continental glacier which covered North Dakota. The terminus was the area especially studied; there are three primary lobes plus some smaller ones. Debris covers most of the lower four miles and a bit more; this is a "saprolite equivalent" comparable to the residual soil of the karst cycle. It supports a patchy but locally extremely dense vegetation of alder, spruce, willow, hemlock and lesser vegetation, and is up to 20 feet thick at the terminus.

Pseudokarstic phenomena comparable to all stages of the karst cycle are present. In the bare ice portion of the glacier up-glacier from the mantled area, there are some surface streams and swallet depressions (moulins) as in a youthful karst. Large conical sinks are present with lakes as much as 300 feet wide.

Mature pseudokarst is present farther down the glacier in the zone veneered with two to ten feet of rock debris. Coalescence of large sinks into uvalas occurs. Miller Lake is the largest. It is over 1 1/2 miles long and is surrounded and floored by ice, partly stagnant and partly moving at a rate of 100 to 300 feet per year. Serial photography since 1938 shows that coalescence is an active, comparatively rapid process.

Two smaller sinkhole lakes, connected in a dumbbell pattern, showed features of particular interest. The lake level was part of a local hydrostatic system involving six lakes. The lower lake emptied and refilled three times while under study, at a rate of about one million gallons per minute, through a ponor in the bed of the lower lake. The two lakes required about 5 hours to empty. The glacier is about 300 feet thick here and it is likely that the subsurface channel is near or at its base. Upon approaching the ponor when the lake was empty, an impressive roar was audible deep below, then suddenly stopped - a signal to run for high ground, as refilling was beginning at an equal rate. Periodically, very loud noises like explosions were audible. It was concluded that the refilling was due to local collapse or temporary boulder blocking of the water discharged at the terminus about one mile away. On a less spectacular scale, constant draining and refilling of these lakes seems characteristic. Each summer intermittent floods burst unpredictably from the snout and sometimes the discharge occurs via a fountain 20 feet high, active as long as a week. All the drainage in this mature pseudokarst is subsurface.

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Collapsed tunnels form prominent features in some areas of old-age glacier pseudokarst; here the tunnels are mostly short. This is particularly prominent near Charlotte Lake. In some cases, cave orifices are visible 30 to 40 feet up ice walls. In at least one case, a dangerous dropoff occurred a few feet into a cave.

A particularly interesting cave near the terminus was followed during several summers. It was about 12 feet in diameter. In 1962, it was followed for 1/2 to 3/4 mile underground, to a large pseudokarstic valley, with a confluent branch originating at a large marginal area. Blocked orifices of other branches were evident. In 1965 only a short arch remained and this soon collapsed also. Interior slides showed fallen slabs and blocks of ice on the floor.

Later discussion included the glacier caves which the grotto has visited, Mountaineer records of similar phenomena in Washington's Lower Challenger Glacier and Cotton's studies of similar phenomena in New Zealand. Dr. Reid expressed the belief that glacial pseudokarst will develop more rapidly in mantled than in "clean" glaciers. One of his former students, Dr. Lee Clayton, has published a paper in the Journal of Glaciology (Vol. 5, no. 37, pp. 107-112, 1964) mentioning this cycle, but no one has written up the speleological aspects thereof; he was urged to submit a paper to the Bulletin of the N.S.S.

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Vulcanospeleological abstract

Kermode, L.O. 1966. Speleology in New Zealand. N.Z. Speleol. Bull. V. 3, No. 60, Dec. P. 518:

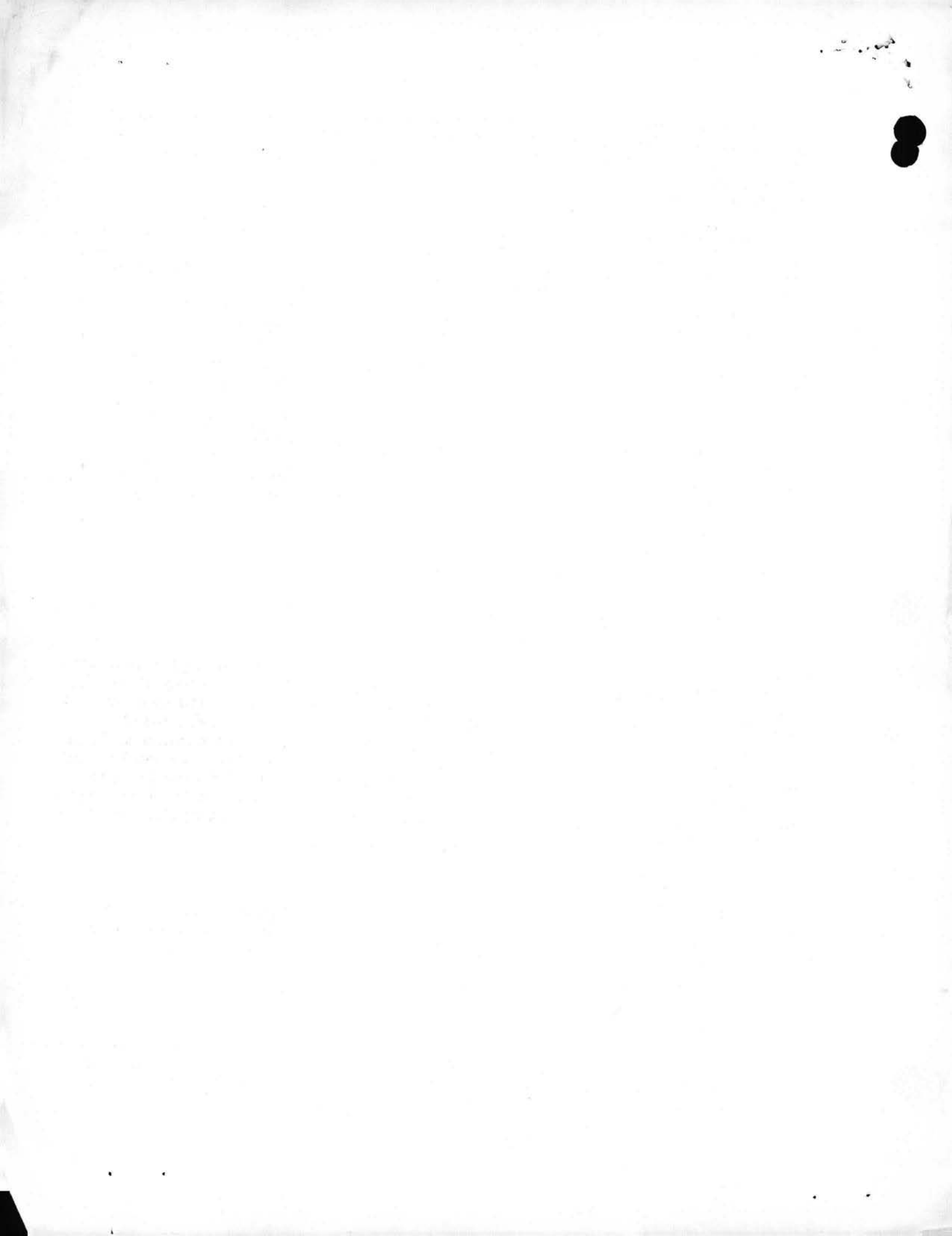
Lava caves occur in areas of recent basaltic volcanism that has produced lava flows. When a tongue of lava flows down a slope it cools and consolidates on the outer surface while the interior remains molten and continues to flow. The liquid lava eventually drains out of the interior of the tongue and a tubular cavity remains. A newly formed lava cave does not have an entrance at floor level, but some thin part of the ceiling collapses after the lava has cooled and thus forms an entrance. Lava caves may be more than a mile long and may branch upstream and downstream. Good examples are found at Wiri and Onehunga near Auckland. (A photo of a small but interesting multicyclic lava tube cavern is on p. 517)

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Just wait til the next issue! We're going to steal an article from the Interstellar Journal of Vulcanospeleology, ~~also~~ the Windy City Speleonews! (Yep, that's the name.) Title: Pulsar pseudokarst. Author: chief pulaar Bill Mixon.

* * *

The Cascade Caver happily relinquishes the title of being foremost in typographical errors. It seems somebody wrote about somebody else in the Missouri Speleological Survey Liason, saying that no word had been had from him. Somehow, the d got changed into k.....





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~~SECRET~~

New grotto forming in eastern Washington

(from a letter from Tom Miller, 425 DuBois, Cheney, Wash., 99004)

....Our membership is about ten now with about five or six people outside who are interested. As soon as the snow melts enough up north we plan to start a membership drive and give a slide program, etc. The constitution for our new grotto should be completed and signed in a month at most and then we'll send it off to the NSS....Last weekend (Feb. 1) seven of us went up north of Leadpoint to check out the ten-year-old lead up there. There was three feet of snow unfortunately. However a crust 6" under the surface enabled us to hike two miles on the old road we had assumed would be clear. There, the futility of our efforts became apparent, and after a brief struggle to breast the chest-deep snow, the trek disintegrated into a snowball fight....

(Tom has sent some additional reports on caving last fall; they will be published as time permits)

NEXT MONTH: HISTORY OF THE CASCADE GROTTTO

Cascade Grotto of the
National Speleological Society
1117 36th Ave. E.
Seattle, Wash., 98102



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