

The Cascade Caver

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Coming Events:

Feb. 11-12: possible Vancouver Island trip

Feb. 20: regular monthly meeting at Dr. Halliday's, 1117 36th Ave. E.

(at E. Madison), 8 PM. NOTE MEETINGS CHANGED TO THIRD MONDAY OF EACH MONTH FROM NOW ON!

An early concept of vulcanospeleogenesis - 1854

"Leaving the waters of the White Salmon and crossing a dividing ridge, the trail descended to the Klickitat, a larger stream, heading on the east side of Mount Adams, and, like the last, emptying into the Columbia between the Dalles and the Cascades. Here we met another field of lava, through which ran a line of openings caused by the falling in of the rock covering a vaulted passage. Though dry at the time of our journey (about August 12, 1853), this is evidently during the winter the bed of a torrent which runs toward the Klickitat. Apparently the lava, in overflowing the original bed, had come in contact with sufficient moisture to elevate without rupturing it... The roof of this passage was broken through at short intervals, and large masses had fallen from the inferior layers of what remained, showing that the work of destruction was still going on. The bed of the water course was about 25 feet beneath the surface, and the vaults were from 25 to 30 feet wide, and 15 or 20 in height. The under side of the strata occasionally exhibited fluxures, resembling waves of progression. Small stalactites of infiltration hung from the roof and walls, and stalagmites had been deposited on the floor. This remarkable passage was traced at intervals for three or four miles, and probably terminates in a branch of the Klickitat River crossed by the party the next day. The Indian guide obtained snow from some cavity in this field, and reported that there was one hole into which, if a stone was dropped, a long time elapsed before it was heard to strike."

-Gibbs, George. 1855. Geology of the central portion of Washington Territory. In: Reports of explorations and surveys to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean, 1853-54. Volume 1, pp. 476-477.

BUT ACCORDING TO ANOTHER MEMBER OF THE PARTY:

"From Chequoss (possibly the Sheep Lakes portion of the Cascade Crest east of Red Mountain) the trail bears north of east for 14 miles to the Hodhoolse river (possibly Cave Creek), descending the whole distance; abrupt descent in the first 2 1/4 miles, the rest of the distance being gradual. There is a small lake (possibly Goose Lake) a quarter of a mile long, in a lava district at the foot of the abrupt descent, and on the left of the trail. It is surrounded by a large growth of cottonwood and poplar.

"The main branch of the Klickitat river (more likely Lost Creek) comes in from the north and crosses the trail 4 miles beyond the lake. This stream is bold and rapid 30 feet wide and two deep - fording good. This stream may at one time have been a branch of the Nikepun (what is now called the White Salmon River).

"As the country descends towards the Hoolhoolse, from it, and an old dry bed is frequently crossed by the trail between these points. The last 5 or 6 miles of this dry channel before reaching the Hoolhoolse is basaltic, the basalt arching the channel and making it subterranean-depth of the key of the arch from 4 to 6 feet, and bottom of channel from 25 to 30 feet below the surface. The arch has fallen in places forming natural shafts at irregular intervals, by which you are enabled to trace on the surface the course and direction of this subterranean passage. Once upon a time a great chief of the 'Eliptillicum' had a wife who was changed into a mouse at his request by one of the learned medicine men of the time, as a just punishment for some misdemeanor or other that the women of those days were always committing. But the woman's soul, not profiting by the lesson of transmigration, must still work mischief under another covering; and accordingly in a very rebellious mood, she endeavors to undermine the aforesaid chief's dominions. These caves were the result produced by her spite.

"With all due deference to the Eliptillicum, we may conclude, however, that its cause was volcanic eruption - the lava overrunning an existing stream, and suddenly cooling, the waters of the stream being forced into another channel."

-Duncan, J. K. 1855. Topographical report on western division. *ibid*, pp.207-203.

It is interesting to note that the members of this party couldn't agree on where they were. At this point, Gibbs hadn't even come to the White Salmon River - and when he did, he thought it was a branch of the Klickitat (see above). Duncan's report in the same volume makes the area somewhat more identifiable (correlation indicated are only tentative; their map has never been published and I'll have to look for it in the Library of Congress next June -WRH).

From a letter of Ashley B. Gurney of 12-13-66:

"On my return from the West Indies a short time ago your letter of September 30 and the female specimen of Grylloblatta from Community Camp Cave were waiting for me. So far as I can tell, this is the same species which you and your associates took in the Cougar area some 40 airline miles to the west, and was named chirurgica in 1961. Of course, males have the better characters for distinguishing species and one of them might reveal something of interest, but I now regard your female as G. chirurgica Gurney. Needless to say, I appreciate your sending the specimen very much... any further material will be most welcome."

(Dr. Gurney's address is: c/o U. S. National Museum, Washington, D. C.)

Dr. W. B. Muchmore at the University of Rochester has begun identification of a pseudoscorpion from Pillar of Fire Cave, Klickitat County, believed the first Washington cave. He writes,

"It belongs to the genus Microcreogris and appears to be closely related to M. columbiana, which is known from a single specimen 'drawn from a well' at Olatskanie, Columbia County, Ore... I hope that you will catch more of these critters in the future."

PILLAR OF FIRE SYSTEM, Klickitat County, Wash.

Section 25, T6N, R10E, Husum Quadrangle. Elevation about 1780 feet.

At the time of writing (10-5-66) this system is incompletely known, with only its southeastern segment (Pillar of Fire Cave) studied. That segment consists of a moderately complex lava tube cavern with a main route 846 feet long with distal ramifications terminating in lava seals, at least two of which are subsequent intrusions of billowy yellow lava. The proximal third of the cave contains confluent tubes with a total of 435 feet, providing an overall length of about 1360 feet of passage. An up-tube extension on the orth side of its entrance sink, is a low breakdown cavern about 50 feet long, but several proximal extensions can be entered over a sinuous course of more than 2500 feet, and some of these are quite extensive.

The outstanding feature of Pillar of Fire Cave is its "pillars" which have not been noted in other caves of Washington and may be unique. With the exception of a single example about 1 foot high in the western confluent passage, the "pillars" are all grouped in a line in the first spacious chamber of the cave about 150 feet inside. They consist of accretionary stalagmites and columns of viscous lava which poured down into the cave through linear cracks in the ceiling. Remnants of the same lava are visible within the cracks. These features are one to about 8 feet high and followed local breakdown of varying extent. The principal line of stalagmites is about 40 feet long. From their bases at each end, lava "flowstone" forms distinct mounds and flows a few feet to a few yards long. Their surface is largely ropy, but locally possesses dramatic coralloids. Superficially they appear to consist of the same yellow-brown lava which seals two distal crawlways of the cave, one as a tumulus bulging out of the crawlway and the other as a billowy tongue which does not wholly block the tube.

Other features of the cave are less dramatic. Except in the outer crawlway area, breakdown is relatively scant and focal. Much sand and mud is present in the outer crawlway area, and focally elsewhere in the cave. The "Red Room" is so named because of small, superficial but colorful flowstone, presumably a siliceous compound. Similar but less prominent yellow and black stains are also present. A tumulus is present in the eastern up-tube crawlway; it does not appear to be of identical material to the distal tumulus. In the crawlway terminating the western confluent are some curious bubble-like forms which have the appearance of having been squeezed through the floor from underlying lava; one about three inches in diameter has the appearance of a burst thick-walled bubble.

The deep twilight zone supports a moderate biota; porcupine quills and rodent droppings are present in the eastern up-tube confluent and in the short cave at the north end of the entrance sink.

The system as a whole runs from northwest to southeast following the overall flow pattern west of the flows west of the Cemetery Hill kipuka; it appears to be separate from the Snowpatch Cave flows which appear oriented around the north side of the kipuka but further studies are planned for the near future.

Safety in vertical caving

The August-September issue of the Huntsville Grotto News is chock-full of accident reports. Bill Cuddington reported two more near-fatalities from single-breakbar carabiner rigs bending open (no prusik safety was in use), and recommends a brake bar rack, a rappel spool or a "J" bar instead. Damright.

The same issue quoted 8 European accidents from the December 1965 Spelunca:

1. ladder climb; rung hooked on rock; rock came out; shock jerker caver off ladder; falling rock severed belay rope; severe non-fatal.
2. novice fell in pit. Severe, non-fatal.
3. inadequate data on fall; concussion only.
4. two exposure deaths, climbing in waterfall area; one died because he tried to help the other.
5. party trapped by flashflood; one minor injury from flood debris.
6. two cave divers drowned.
7. fatal fall - experienced caver. Unexplained, obviously no belay. May have fainted in the exposed position.
8. caver fainted climbing ladder unbelayed; fatal.

ENOUGH SAID?

IN THE SAME ISSUE is an account of what happened when Bill Cuddington came to the end of his rappel rope still 30 feet short of the floor of Ferris Pit, Tenn.:

"We rigged the (spare) manila rope and lowered it down beside him. Meanwhile he had wrapped the trailing end of the main rope around him and secured himself to the rope with a "jumar safety". This is a jumar, attached to the swiss seat with a short length of rope, which Bill carries for just such emergencies....He then transferred from the nylon to the manila rope by first rigging himself into prusik slings on the manila, the unrigging from the nylon completely. He experienced a spin just after the transfer was completed, but he had expected it and was prepared. Rather than bothering to rig into rappel again he elected to prusik the rest of the way down."

ARE YOU A BILL CUDDINGTON?

AND ALSO IN THE SAME ISSUE is an account of a rescue in Natural Well, Ala., of a novice who attempted a hand-over-hand rope pitch and fell 60-100 feet. Fortunately he struck a sloping ledge and slowed gradually; amazingly not fatal.

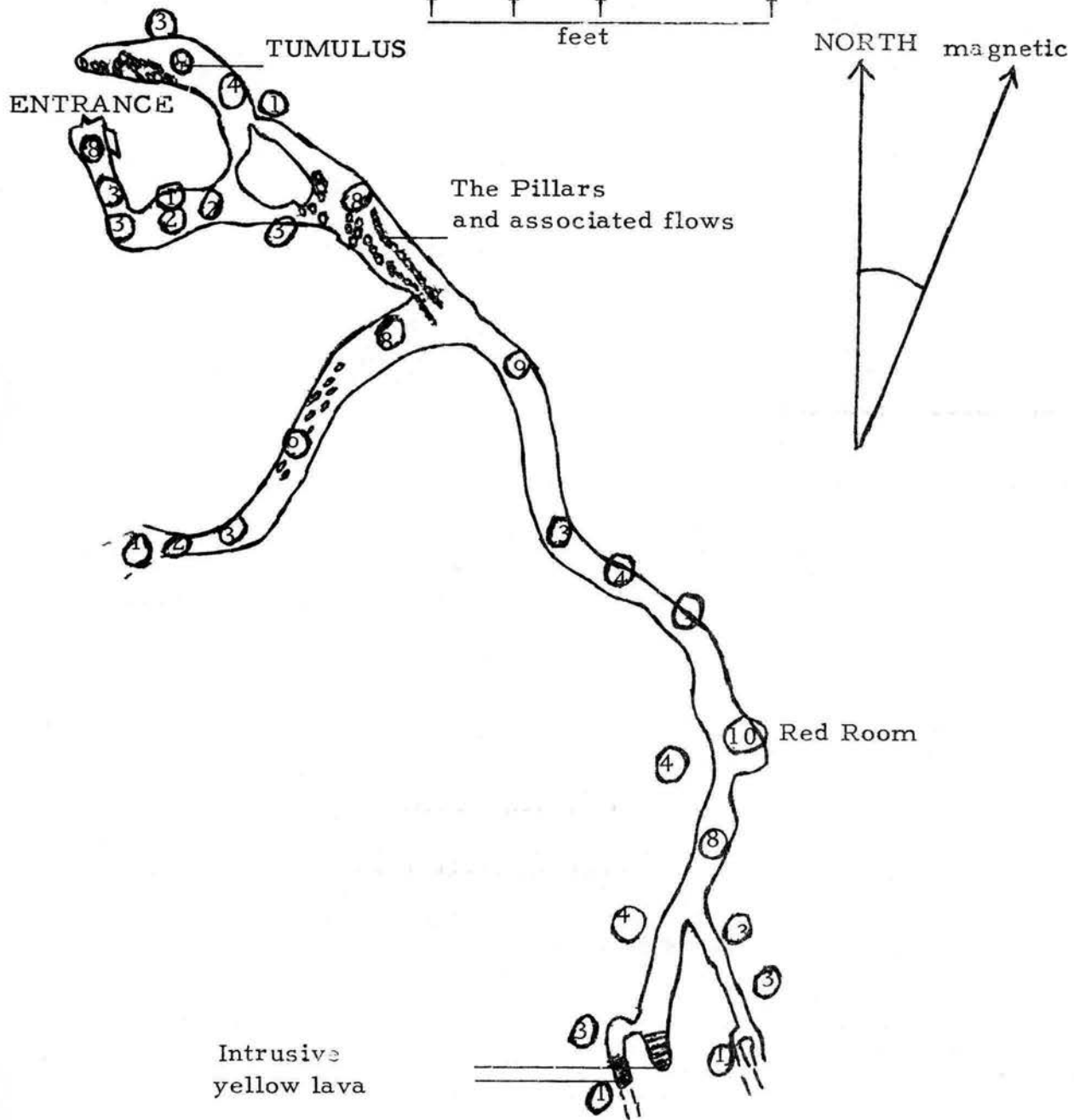
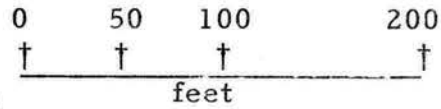
LET'S NOT BE NEXT!

P.S. The final Field trip report involved a tenstron rope incident; first the rappel was too fast (he managed to slow with a leg wrap-around, fortunately), then prusiks and Bachman knots wouldn't hold.

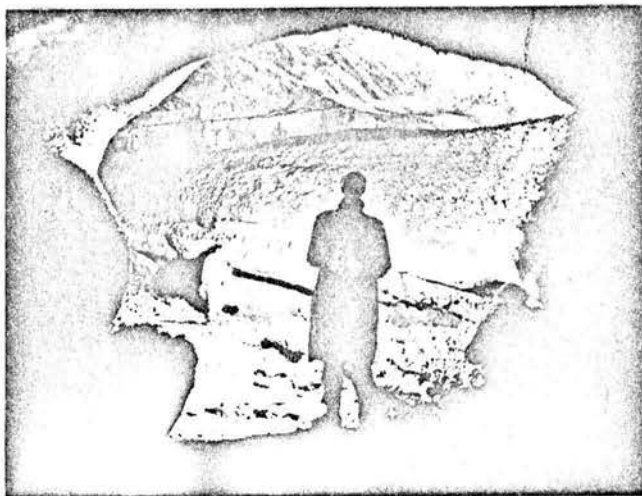
floor plan
PILLAR OF FIRE CAVE
Klickitat County, Washington

compass and tape survey (uncorrected)
10-2-66 Frahm and Halliday - W. S. S.

Scale: 1" equals 100 feet



It is not difficult to traverse even the smallest sections of the lower part of Ape Cave, in the Mount Saint Helens Cave area which has been suggested for preservation.



A speleologist discusses the

Features and Significance of the Mount Saint Helens Cave Area

By William R. Halliday

Photographs by the Author

AS A RESULT OF RECENT EXPLORATION and study, it has become apparent that a Recent lava flow south of Mount Saint Helens, in the State of Washington, is of exceptional interest and importance, and probably of national significance from both speleological and general standpoints. As such, it is believed by various Northwestern speleological, outdoors and conservation groups—as well as the writer—to merit national monument status.

This lava flow is in Skamania County in southwestern Washington, with the exception of its southwesternmost tip which crosses the Skamania County line into Cowlitz County. Its upper end is at an elevation of about 3000 feet at a point about two miles southwest of the

base of Mount Saint Helens. Mostly about three-quarters of a mile wide, it follows a slightly sinuous course southeast, then southwest for a distance of a little more than five miles to the edge of the Lewis River Canyon, at an elevation of about 1200 feet. Lava-tube caverns are known throughout most of this length. Similar Recent basalt on the floor of the Lewis River gorge may be a continuation of this flow, or an entirely separate flow. The lower third of the flow is divided by a forested kipuka, about one-half square mile in extent. At least part of the flow is about 2100 years old as dated by radiocarbon study.¹ Along its length is a marked

gradation in vegetation. The lower end is covered with straggly, recent-appearing growth, with beautiful moss gardens an outstanding feature. The upper sections support a typical Douglas fir forest. In these areas, some extensive "clear-cut" logging has taken place. Where not marred by clear-cutting, the frequent views of Mount Saint Helens, framed by the virgin forest, are breathtaking. They should prove a major tourist attraction when the area is further developed.

Although U.S. Forest Service releases have in the past referred to this flow as "the Goat Mountain cave area," Goat Mountain is several miles farther west, and bears no apparent geographic or speleological relationship to the flow.

In this flow, or complex of flows,

¹ Fairhall, pers. comm.

five important lava-tube caves and several smaller tube fragments are known. The major caves are Ape Cave, Bat Cave, Lake Cave, Little Red River Cave and Ole's Cave. With a slope length of 11,215 feet, Ape Cave is the longest lava-tube cave known in the United States. At the time of writing, no longer lava-tube cave has been reported anywhere in the world.

Other features of this area include exceptionally fine tree-casts near Lake and Ole's Caves, and elsewhere in the flows. Both vertical and horizontal casts are present. Many are several feet in diameter and as much as fifteen feet deep. Some near Ole's Cave appear to perpetuate the bark patterns of the engulfed trees. Some near Lake Cave contain casts of charred, cracked wood. Outstanding self-guided interpretive tours could be developed in these areas.

To permit appropriate study of this curious geobiologic unit, and to preserve the flow as a "living museum," it would appear desirable to keep the entire flow as nearly as possible in its natural condition, and to restore patch-cut areas as rapidly and as effectively as possible. Such restoration also would greatly enhance its attractiveness to visitors.

Significance of the Area

The most obvious feature of significance of the Mount Saint Helens cave area is the "record" length of Ape Cave. The fact that it is the longest lava tube in the United States—and perhaps in the world—makes it of national significance. Nevertheless, there are other features in this area which probably are of greater importance than the mere length of this single cave. Their scientific importance probably surpasses their importance as tourist attractions, important as that might prove to the economy of Cowlitz County.

Ole's Cave appears to be one of the very few caves in which a lava-tube cavern can be traced from vent to terminal cupola. Lake Cave demonstrates confluence of tube-forming flows of different composition, especially in the Red Passage. In addition to its superb speleogenetic sequences, Lake Cave is one of the extremely few lava-tube caves which have been dated accurately. This was possible as a result of radiocarbon dating of charcoal found

just outside the tube in the form of a charred root, still imbedded in the pre-flow soil. The flow in which Ole's Cave is located appears to be much younger than the Lake Cave flow, and may have occurred little more than 100 years ago. On the other hand, correlated study of the caves in different parts of the flow may prove that, surface appearances to the contrary, the entire bed was deposited during a single geologic episode. Little Red River Cave is of particular importance because of the glaze in the entrance section, the "double-barrelled," lava-fall far back in the cave, and other features. Bat Cave is more complex than the other caves, with three effluent tubes and other features of scientific interest. It is the only cave in Washington State inhabited by a colony of bats. Protection of the bats from disturbance should be the principal consideration in protection of this cave. Ape Cave is also of biological and geological importance.

The near-4000 foot section of Ape Cave located downslope from the lower entrance is relatively free from breakdown, and could easily be developed for visitors. With the proper installation of hand-rails, few hazards would exist. This section of the cave has many features illustrative of the origin and development of lava tubes, and would support an excellent interpretive program. Because of the vulnerability of some features (stalactites, "badlands," etc.) to thoughtless or intentional vandalism, only guided tours should be permitted here. Visitors might be provided with a short tour upslope as well as downslope. Most of the remainder of the 7000-foot upslope section of Ape Cave is difficult and dangerous for inexperienced persons, and tourists should probably be excluded there.

Features of Ole's Cave

Ole's Cave contains more breakdown than the lower section of Ape Cave, but portions of this cave are

Dr. Halliday, who makes his home in Seattle, Washington, is a nationally known speleologist who has been published widely on cave exploration and its natural history interests. He is the Director of the Western Speleological Survey.

also suitable for development for tourist visitation. Ole's Cave was the first commercial cave in Washington. A section upslope from the lowest entrance is suitable for development as a self-guided tour with gasoline lanterns. Interpretive signs could be placed at appropriate features. In this area are "George Washington's Face" and some interesting lateral ridges of successive intratubal flow. The lowermost section of Ole's Cave also contains notable features, but of greater fragility, so that only guided tours should be permitted here. The remainder of this cave, like the upper part of Ape Cave, should be open to competent parties of spelunkers.

Lake Cave and Bat Cave contain too much breakdown to be suitable for development for tourist visits. String Cave and the other cavelets known in the flow are too small to be of interest. The very small entrance section of Little Red River Cave is suitable for tourist visits, and is perhaps of some visitor interest because of the spectacular glaze in that section. The descent to the main part of that cave is much too dangerous for visitor development, however, even if the pit were to be enlarged. The features of its lower sections are quite fragile and delicate, and likely would not be appreciated by tourist visitors as much as those of Ape and Ole's Caves. The section below the entrance area should probably be reserved for spelunkers and speleologists.

Division of Ownership

Since ownership of the flow is intricately divided between federal, State and private authority, private development of the area probably is out of the question. Three approaches to its preservation and development appear possible: State park development; national forest development under special-use permit or as a "dedicated area," and establishment as a national monument.

With few exceptions, the State parks of Washington are devoted to mass recreation. The lava-tube area is not suitable for such a park. On the other hand, a basic plan somewhat similar to that practiced at Ginkgo State Park might prove suitable, with secondary recreational use of some areas. However, the past record of State park ad-

ministration in Washington makes the desirability of State park status for the flow seem dubious. Further logging, for example, almost certainly would occur.

In other States, a number of caves on Forest Service land are open to tourists through development by concessionaires under special-use permit. Two of these are Boyden Cave, California, and Minnetonka Cave, Idaho. Kings Caverns, California, have received dedicated area status, as has a tree-cast area in Oregon. The Kings Caverns are not open to the public, but are set aside for speleological study. In the Mount Saint Helens cave area, the Forest Service could establish a dedicated area in which some of the caves and their sections were to be developed for tourist visits and other protected speleological study. In contrast to the situation at national monument caverns, however, few tourists appear willing to detour even a few miles to visit these developed caves on Forest Service lands. Furthermore, severe shortages of funds and personnel have precluded proper protection by the Forest Service of many of the caves on its lands, and such caves often have been damaged severely by vandals.

Under the National Parks Act of 1916, areas of national significance are to be administered by the National Park Service. National Park Service areas also attract far more out-of-State



A projecting lava formation in Ole's Cave bears a strong resemblance to a human profile, and is known as "George Washington's Face."

visitors than State parks or Forest Service dedicated areas. Although not perfect, the protection of undeveloped caves in national parks and monuments, and the administration of developed caves therein, appear to be significantly better than those of national forests. These two factors alone are not indications for establishment of a national monument, but are fringe benefits in areas which qualify by reason of their national significance. None of the lava flows in present units of the national park system exhibits an ecological community similar to that of the Mount Saint Helens cave area.

Aside from those who would gain financially from continued logging of the small remaining virgin forest of the upper part of the flow, and perhaps from the standpoint of a few hunters, designation of this small flow as a Lava Caves National Monument would seem desirable from nearly every standpoint. Such a national monument could be established either by Presidential proclamation or by Congressional action. Such action, however, would involve four problems:

1. National monuments should be "living museums," but large clear-cut areas are present locally on the flow, especially near Ape and Lake Caves. The boundary of such a monument, however, could be drawn to exclude as much as possible of these areas. Furthermore, in fifty years, much of the damage no longer would be so obvious if further cutting were halted immediately. Relatively small patch-cut areas could be included to maintain the unity of the monument and to simplify administration.

2. Establishment of a national monument (or a properly dedicated Forest Service area) would halt timber-cutting in the area, and thus cause some economic disarrangement. Proper delineation of boundaries, however, could exclude all but a small quantity of the

A bearded cave explorer examines a wedged lava ball in a high-vaulted section of Ape Cave.



merchantable timber of the area. Under such circumstances, virgin forest would be of far more economic value as part of the natural scene than as timber.

3. Whether the lava bed became a national monument or a Forest Service dedicated area, future development plans should exclude hunting, to insure the safety of visitors. For this reason the boundaries should be drawn carefully to exclude areas of particular importance to hunters, if at all possible. Since the Washington State Game Department has refused to cooperate in such planning elsewhere in the State, the assistance of local hunters should be sought for such planning. Because of the narrowness of the flow, no significant problem should arise.

4. This area is a "checkerboard" region, within the Gifford Pinchot National Forest but with federal ownership only of isolated blocks of land. It appears that the State of Washington owns some of the important cave areas. The reaction of the State administration to a Forest Service dedicated area is not predictable. On the basis of past experience, the State administration probably would oppose establishment of any national monument unless there were strong local and Statewide support. The Forest Service might also

oppose such a national monument on general philosophic principles; it could be assumed that the commercial logging companies would, also. Actually, however, establishment of a national monument here could facilitate land consolidation and management for all concerned.

Tentatively, it appears that most of these problems could be minimized by delineating such a Lava Caves National Monument as follows: *Southern boundary*, edge of Lewis River Canyon. *Eastern boundary*: (from south to north) a line one-quarter mile east of the east edge of the lava bed north to

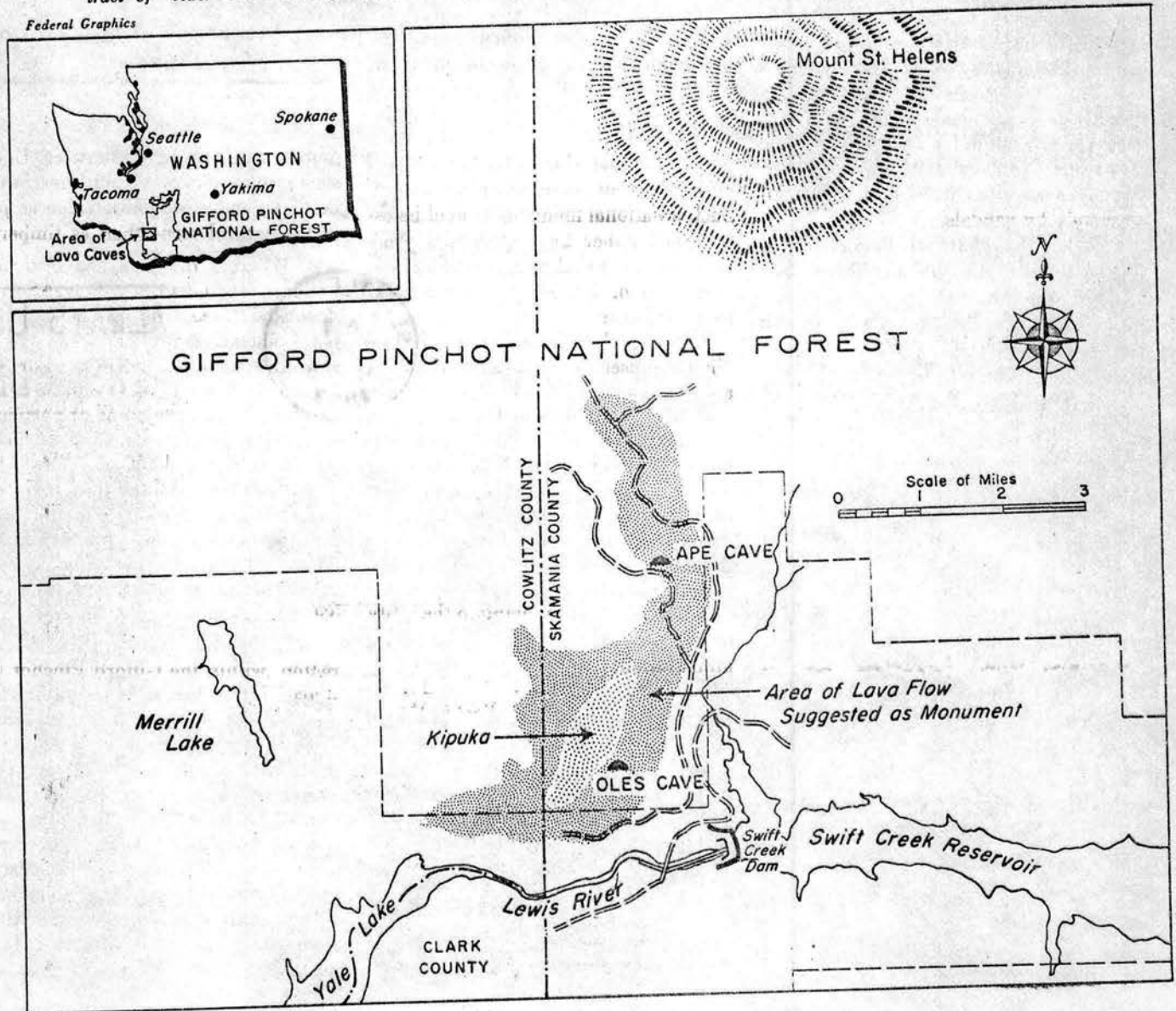
the edge of a clear-cut area in the northeast corner of section 17, T7N, R5E; thence north along the edge of the west fork of Swift Creek road, to bench mark 3064 in section 30, T8B, R5E. (Because the flow tapers to this point, there is no northern boundary). *Western boundary*: eastern edge of hill in section 31, T8N, R5E and sections 6 and 7, T7N, R5E together with a one-quarter-mile fringe of that hill except where already clear-cut. Thence west to the inflow of Cougar Creek into Grass Lake, thence south and west along the margin of the hillside and lava flow to the canyon edge.

Conclusions

In addition to 11,215 foot Ape Cave, which is the longest lava-tube cave known in the United States and perhaps the entire world, the lava flow south of Mount Saint Helens in Skamania County, Washington, contains many features of high scenic, geologic and biotic importance. It appears to be of national significance, and might well be preserved and developed as the Lava Caves National Monument. Two of the caves are suitable for development for tourists. Others probably should be reserved for speleological study and visits by competent persons.

The area of lava flow near Mount Saint Helens in Washington which has been suggested as a possible national monument is shown in fine stippling below. Also indicated are locations of two important caves of the flow, while a "kipuka," or tract of "older" land entirely surrounded by the relatively recent lava stream, is indicated in coarser stippling.

Federal Graphics



AFTERTHOUGHTS

Elections were held at the January meeting. Rob Stitt is the new Chairman. Rob Stitt is also the VICE Chairman. Seems that a motion to combine the offices was passed when no one was looking. Jerry Frahm was elected Secretary-Treasurer. And that brings to mind the fact that the treasury now has \$ 42.86, and not everyone has paid their grotto dues yet. Why not be a big spender and pay yours (\$2.00) at the February meeting.

There will be an NSS slide series at the Feb meeting on the CAVES OF VENESUALA. This is for sure, because the set of slides have already arrived. The very unusual Oil Bird of Venesuala is shown in the series. The bird is unique because it seems to navigate like a bat.

Luurt Niewenhuis got stuck with the job of Field Trip Chairman for '67. Now if we can remember how to spell his name long enough to find it in the phone book, we should be able to find out where the action is.

ACTION AND ADVENTURE ON CHANNEL 11 will be the case if the Federal Communication Commission goes along with the Grotto's application for a Citizens Band Transmitter in the grotto's name. Bill Halliday and Jerry Frahm have applied for individual licenses already.

Bill Halliday just got back from a long, wet, cold and snowy weekend in the Canadian caves on Vancouver Island. Sho uld be interesting to hear about.

JAF

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