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THE CASCADE CAVER

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Editor: Rod Crawford

April, 1980

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SPECIAL ISSUE



CASCADE GROTTO EXPEDITIONS

THE CASCADE CAVER is published ten times per year by the Cascade Grotto of the National Speleological Society. Subscription rate is \$6.00 for one year's issues. Full Grotto dues are \$7.50, and family memberships (not including subscription) \$1.50. All payments should be made to Grotto treasurer Craig Hansen, Rt. 3 Box 118, Cheney WA 99004.

COMING EVENTS

Field trip coordinator: Geary Sanders, 763-0361. If planning to attend one of these trips, or planning your own, please contact Geary first.

May 25, Sunday. Crevasse Practice at Big Four Glacier Cave. Halliday. This trip has presumably occurred (unless rained out).

May 26, Monday. Concrete area trip; Brown, Crawford, et al. This has occurred.

June 5, Thursday. Public meeting for planning input on Okanogan National Forest, to be held in the San Juan Room, Seattle Center, 7:30 PM. Be there if you care about Okanogan caves!

June 7-8. Practice trip for Mt. Baker team. Contact Bill Halliday (324-7474) or Sanders for details; destination undecided at press time.

June 14-15. Cascade Grotto garage sale to be held in West Seattle, raising \$\$\$\$ for the Grotto! Volunteers to come down for a few hours and help sell things, and donations of salable items, are both needed. Please do your part! Geary Sanders will coordinate these arrangements in Seattle. See further details on back cover.

June 15-21. National Cave Rescue Seminar at the University of Tennessee in Chattanooga. For details contact Halliday or Crawford.

June 17, Tuesday. Regular monthly meeting at the Hallidays', 1117 36th Ave. E. in Seattle. Doors open at 7:55, meeting starts at 8:00. Program is the color/sound movie "The Wilderness Below"; also slides on Caves of the Azores.

June 20-22 Official Grotto trip to the Mt. Adams lava tube area, this year possibly concentrating on lower elevation caves. Camp in Trout Lake Community Park; an information flyer will be mailed.

June 21-22. ALTERNATE in case Mt. Adams area is ashed out: Mountain Loop trip in Snohomish County, including an ice cave, limestone cave, limestone mine, and limestone scouting. If in doubt, contact Sanders.

Also: Paradise Glacier Cave trip. Contact Halliday.

June 27, Friday. Eastern Washington Unit meeting at the Kennedy Library, EWU campus, Cheney, 8:00 PM. Program: film "The Wilderness Below" & slides.

July 4-6, Independence Day Weekend. Official trip to Windy Creek Cave, north cascades. Further information will appear in due course.

Also: Mt. Baker Summit Steam Cave expedition. Contact Halliday or Sanders.

July 12, Saturday. More grotto fundraising: Woodcutting near Bob Brown's place in S. Pierce County. Stay overnight in Bob's house; fine view of Mt St Helens! Slides and possible caving. Contact Bob Brown, 206-569-2724, or Sanders.

July 15, Tuesday. Regular meeting comes early this month. Same time and place; program is NSS slide show on Reeds Cave, South Dakota.

July 28-Aug. 1. NSS Convention at White Bear Lake, Minnesota.

August 30-September 1. Labor Day. Northwest Regional Meet in Nelson, B.C. promises to be a great one with some great limestone caves!

Sept. 3-7. Third International Speleology Film Festival, LaChapelle en Vercours, Drome, France. Contact Halliday for details.

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THIS MONTH'S COVER drawing by Carlene Allred represents a flabbergasted Washington caver in a Hawaiian lava tube.

FEATURES

TWO HISTORIC REPORTS ON THE THURSTON LAVA TUBE

* * * * *

A LAVA TUBE AT KILAUEA*

by Sidney Powers

Introduction

Thurston's Tube, Keanakakina, is one of the longest and most accessible tubes thus far found near Kilauea. This tube is named in honor of its discoverer, Mr. L.A. Thurston of Honolulu, through whose interest in Kilauea vulcanological research has been made possible on Hawaii for the past ten years. It is situated about three miles east of Halemaumau, the active pit of Kilauea, and 1000 feet east of the rim of the pit crater Kilauea Iki. It opens into the Kilauiki [sic] pit crater at the junction of the old Heauhoa road with the road from the Volcano House to Halemaumau and runs in a northeasterly direction. It is one of the channels by which Kalauiki was drained not long before the lava lake finally disappeared and the crater became filled with a tumble of blocks from the walls. The lavas surrounding this crater and the original tube represent flows from the volcano Kilauea.

Kalauiki is one of the pit craters along the long row of pit craters, cone and pit craters, cones, and finally lava flows which extends along a line of weakness from the former summit of Kilauea to the sea at Kapoho, south of Hilo. Along the same line the volcano split again in 1840 with renewed activity in the lower pit craters and below them.

Thurston's Tube is described in order to give details of the size and shape of a long Hawaiian lava tube for the first time, to emphasize the comparative rarity of large tubes, [remember this was written in 1920!--ed.] and to call attention to concrete examples of "blow-piping" according to the gas fluxing hypothesis of Professor R. A. Daly. The writer is indebted to Dr. T. A. Jaggar for correcting the manuscript. With the 1918-20 activity of Kilauea and with the lava flow in Kau on December 22, 1919, many similar tubes have been formed which unfortunately cannot here be described.

Description

Measurements of Thurston's Tube were made with a tape and a small transit using azimuth angles, checking direction with a compass and elevation with barometers. Magnetic variations of 10 degrees were noted. The length of the tube is 1494 feet, or in a straight line from entrance to end 1360 feet. The maximum height, excluding the cupola at the entrance and a collapse of the roof, is twenty feet, the maximum width is 23 [illegible] feet. The difference in level of the entrance and end of the tube is 73 feet, representing an average drop of 4.9 feet per hundred feet or 2 1/2 degrees.

Liquid lava completely filled the tube at the initial stages of filling just as was the case of the Halemaumau tube above referred to. Gradually the level of the lava fell, as shown by numerous benches at different parts of the tube. Finally the viscosity became so great that the surface froze. A final

*Originally published in the Bulletin of the Hawaiian Volcano Observatory, March, 1920, pp. 46-49. Portions of the original report not reprinted here.

spurt of lava from beneath the crust is recorded near the end of the tube. The present end represents either a low place in the roof, or the level to which the pre-existing tube was filled. Hot lava ran down the walls in the form of poorly developed stalactites and welled up from the floor at the far end of the tube in many small volcanoes a foot or less in height.

During the time the lava almost completely filled the tube there was a great release of gas, especially near the entrance--the same phenomenon which may be watched in the splashing "caves" at the sides of the Halemaunau lake or lakes and just as must take place as proved by recent soundings of the Halemaunau lake by Dr. T. A. Jaggar, which showed that only the surface of the lava lake is a liquid, and that this liquidity is developed by surface chemical reactions. The gas collected against the roof of the tube and "blow-piped" more than a dozen small conical cupolas in the original overlying lava, searing the surface of the cupolas as formed. The peaks of these cupolas are one to eight feet above the general roof level and the basal diameter is about the same as the height. Farther down the tube the narrow cupolas are replaced by large rounded cupolas as well as high rooms which have evidently been formed by stopping of lava blocks together with fluxing of the surface. Still farther along, missing roof blocks must have fallen into the lava. Blow-piping was intense at the mouth of the tube where the gas release was greatest and decreased in proportion to the distance from the mouth.

Since the cessation of activity at Keanakakina, earthquakes have jarred loose portions of the roof, making an opening to the surface at one place and causing a collapse further along the cave which exposes a directly superimposed tube of the same dimensions, but of shorter length. The resulting cavity is 30 feet high.

One of the interesting recent developments in the tube is the penetration of long pale yellow, filamentous roots through 4 to at least 8 feet of roof. These roots are very abundant. Many of them are over 9 feet long below the roof and the longest measured 12 feet. One root, 9 1/2 feet long, has penetrated to the floor.

[Powers gives a three-page, foot-by-foot log of the cave's features which is not reprinted here. His map of the cave is omitted in favor of the more detailed 1979 Cascade Grotto map which appears on the facing page.--editor.]

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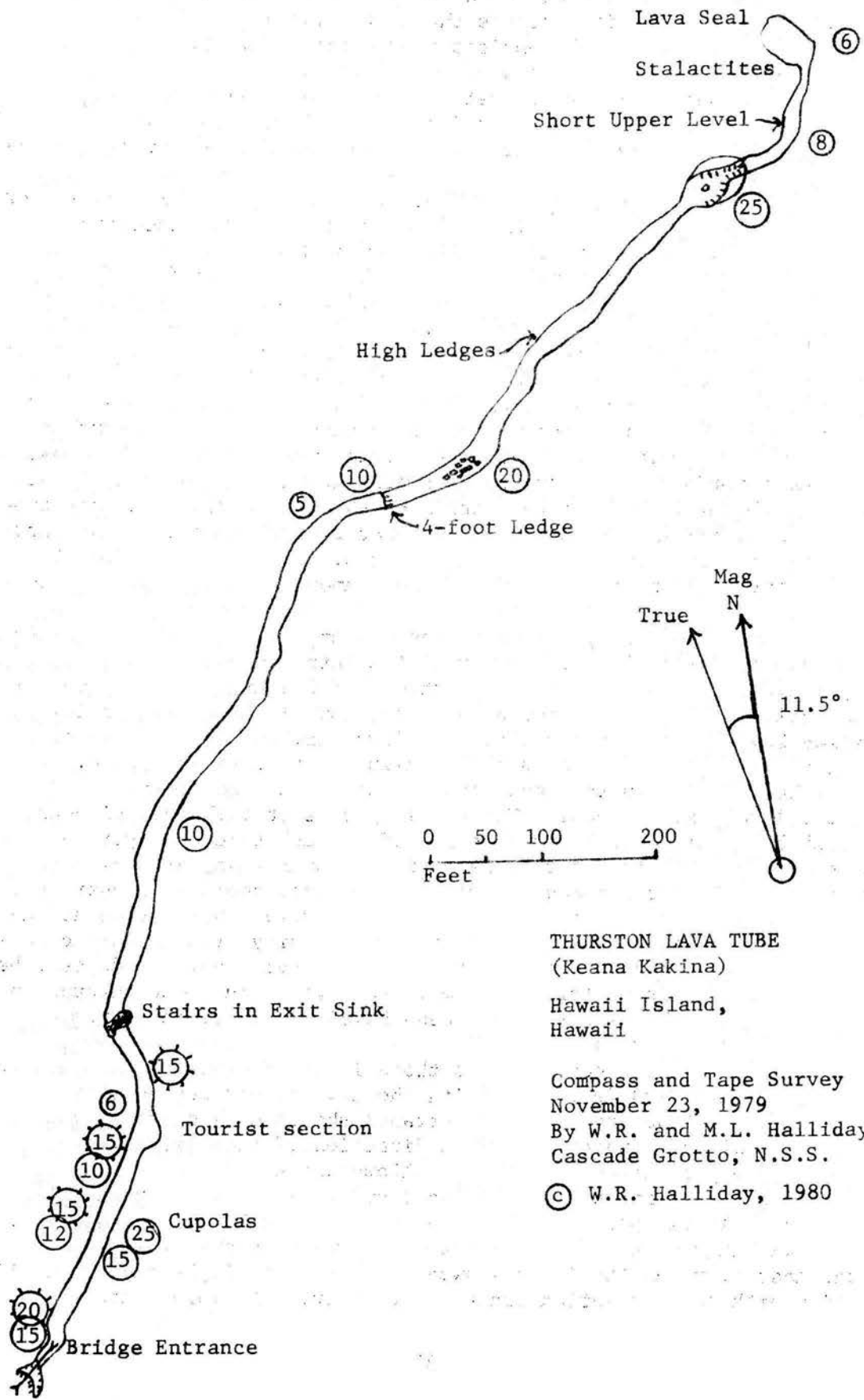
THURSTON'S LAVA TUBE: A 1962 REPORT*

by Don Rimbach

Thurston's Lava Tube is located in Hawaii Volcanoes National Park on the island of Hawaii. Its entrance is in the eastern wall of a small, long-extinct, jungle-filled crater called Kalua Iki, about 1/2 mile east of Kilauea Iki crater which erupted in November, 1960. [Cascade Grotto reconnaissance in 1979 indicates that this is a collapse sink rather than a crater.]

A short walk across the base of the crater and up a small hill of breakdown brings one to a forty foot long footbridge, which crosses a "pit" formed by the breakdown hill on one side, and the crater wall on the other. The roof of the cave, which is only ten feet below the surface, extends out over the pit some twenty feet. After crossing the footbridge and passing an electric-eye counter,

*Previous publication, if any, not cited in my copy.--Ed.



THURSTON LAVA TUBE
 (Keana Kakina)
 Hawaii Island,
 Hawaii

 Compass and Tape Survey
 November 23, 1979
 By W.R. and M.L. Halliday,
 Cascade Grotto, N.S.S.
 © W.R. Halliday, 1980

the visitor finds himself inside the cave's entrance and looking down a well-lighted passageway which slopes gently away from the crater. The asphalt pathway which led the visitor across the crater floor continues through the commercialized section, which consists of the first four hundred feet of the cave and lies between the main and rear entrances.

The cave's ceiling is fifteen feet above the floor at the entrance. The section which overhangs the pit contains a dome about six feet wide and five feet deep. It is circular, and appears to have been formed by a large gas bubble.

Several cracks, formed by the contracting of the lava as it cooled, criss-cross the dome. This dome and others like it near the entrance are referred to as "cupolas" in Sidney Powers' description of the cave.

The passage slowly decreases in size until, at 260 feet from the entrance, one must duck under a low spot only 4 feet wide. This is the smallest cross-section in the cave and it appears that the last lava flow had been backed up behind this constriction, forming a high lava mark on the wall some two feet higher than the mark beyond the constriction. This high lava mark before the constriction is eight feet above the floor of the cave, and it can be traced back to the entrance along each wall. It is harder to see the farther one gets from the entrance, until it is just a trace as one approaches the constriction. The lava mark reaches the floor level exactly at the edge of the pit at the entrance. This shows the general action of the lava during the last time the cave received a deposit of lava from the crater. The crater at the entrance rapidly filled with lava, filling the tube too. Somewhere far down the tube the lava nearly plugged it, and only a small amount of lava was able to pass through.

Then the lava eruption subsided in the crater, and the lava in the tube that was above the level of the floor at the entrance flowed back out into the crater, as it was unable to drain out through the nearly closed tube. This lava was still very hot and viscous and therefore left only a small layer of solidified lava on the upper walls. The lava still in the cave stood in a pool, whose level now was even with the high floor at the entrance. Being exposed to the air, now in the upper part of the cave, and to the solid cave walls, the lava began to cool. This cooling made it much more viscous than the lava which had drained out, and thus it left a much thicker layer on the cave walls and floor. The top of this layer is the high lava mark which was previously mentioned, and the reason it was only a trace near the constriction is that there the lava lake was 8 feet deep and therefore held its heat and left only a little deposit, while the lava in the vicinity of the entrance was only a few inches thick and it cooled rapidly, leaving a large deposit behind. After this pool had stood for some time, the lava drained out through the tube rather quickly, as the plug that had been holding it must have broken loose, allowing the lava to drain.

Sixty feet beyond the constriction there is a large room 200 feet long, 12 feet high, and 20-23 feet wide, with the cave's rear entrance at its far end. About 75 feet before the rear entrance the cave is crossed by a joint which runs nearly perpendicular to the direction of the passage. It varies in width from one to three inches, and allows one to see the thickness of the lava deposit. The joint passes through a cupola and a lava ledge. This lava ledge is the only example in the tube of that particular feature which is so common in Washington lava tubes. This ledge was composed of lava entirely from the last flow, as the joint showed it to be one single layer over five feet thick with no contraction cracks whatsoever. The joint also showed the

lava deposit from the last flow to be 2 1/2 feet thick on the floor and from 4 inches to 12 inches thick on the walls and ceiling.

The 1000 feet of the cave beyond the rear entrance was not studied in any detail. The cave continues at a slightly greater slope and remains about the same size as the commercialized portion. On the floor of the "collapse room" there are "lava volcano" stalagmites. Powers' theory as to how they were formed seems reasonable. On the ceiling of the same room, at 1280', there are lava stalactites 8 inches long and 1/4 inch in diameter. The cave ends with the ceiling going from five to six feet in height down to the floor rather abruptly. Whether this end is caused by the lava filling the rest of the tube entirely or just from lava solidifying in a constriction in the passage is not known.

In comparing Thurston's Lava Tube with the tubes of southern Washington, a sharp contrast is seen. Many of the structural differences are based on the fact that Hawaiian lavas are much less viscous and much more subject to erosion than those which formed the tubes in Washington.

The Washington tubes were much larger in average cross-section, both in width and height, even though much of their length contained lava ledges on either side between 10 and 15 feet high.

The color of the lava in both caves was the same: black. Both areas also had small isolated deposits of a deep red, highly porous, lava which were amazingly similar in appearance and texture.

The Washington caves have suffered extensively from breakdown and stream deposition of mud and gravel, while Thurston's Tube has no stream deposits or any stream, as the water which enters the cave seeps right on through the floor. [Editor's note: from the above, it is easy to conclude that the author had visited Ape and Lake Caves, Washington.]

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VULCANOSPELEOLOGICAL ABSTRACT

Kempe, Stephan. No date. Three caves on Mauna Loa and Kilauea. Preprint: report submitted to the Internal News, Hawaii Volcano Observatory. Published in Limestone Ledger (Sierra-Mojave Grotto, N.S.S.), vol. 11 no. 7 pp. 47-53, July 1979. Abstr. by W.R. Halliday.

The entrance of Mauna Loa Ice Cave (near the observatory) segments the lava tube cave into sections 235 m and 45 m long; the ice is in the longer downslope segment. When visited in the summer of 1978, the ice was several decimeters thick and appeared permanent.

The Calabash-Charcoal (or Keana Momuku Ahi) system is more complex, including both throughway and tight tubes. Charcoal and Calabash caves are connected by one of the latter, leading from the ceiling of the Calabash Cave throughway to a point near the Charcoal Cave entrance. Ash fills much of the throughway in and near the system. Total length of the system is about 1,300 m. It is segmented by the Charcoal Cave entrance, with about half of the system on each side. It is in the Kipuka Bishopa Keana area north of the Hilina Pali road on Kilauea. A more detailed account is being submitted to the NSS news, and appeared in Limestone Ledger, vol. 11 no. 6, June 1979.

Skylight Cave is located along and under the Mauna Loa Observatory road. It is of special interest for its branched north end containing rafted blocks. Its paced length totals about 600 m. In the first 100 m are five skylights. Two shorter segments of the system (about 30 and 50 m long) can be entered nearby.

is especially interesting. Total length is about 180 feet. It ends with a breakdown choke.

I was in Honolulu for an important medical meeting, so couldn't do much more caving. On the following day, however, there was a short break in the program, so Frank and Frankie Howarth showed me a phreatic limestone cave on the University of Hawaii campus nearby: U.H. Quarry Cave. It is a miserable little maze just below the coral-lava disconformity, recently opened as a result of collapse beneath the office then occupied by Congresswoman Patsy Mink. Frank says that a number of similar collapses have occurred in this neighborhood since the Alawai Canal lowered the local water table, but usually they are filled at once. This one would make a nice little natural ecology laboratory, but nobody seems interested in saving it. In most places there is a maximum of three feet of air space above the water table at low water (as when we were there) and the water is more than 8 feet deep in places, in a series of ponds connected below the water table in small rooms. No speleothems were present. Frank had fish traps in the cave because of rumors of cave fish, and this time Frankie spotted a small catfish--not in the trap, unfortunately. The cave is about 1/4 mile from the nearest stream. We tried to map it, but Frank is such a joker that I thought he was exaggerating the muddiness and tightness of the cave and didn't come properly prepared for the job. He estimates a total of about 300 feet of passage, none of which is very far from the entrance.

A couple of days later the Allreds and I made a quick return trip to Pupukea Cave for some photography, but that was all I had time for, on Oahu, this time. There is a little sea cave in emerged coral, about 1/4 mile north of Pupukea Road, that Frank has traversed at low surf, which we barely entered, and a small sinkhole in a coral flat a little farther north, that surges with the surf, so future visitors to Pupukea Cave may want to check that area more thoroughly.

The Big Island, November 1979

by Bill Halliday

My medical meeting in Honolulu was over at noon on Friday Nov. 16 and an eruption had begun at 8 AM that morning, about the time Kevin, Carlene, and Lehi reached the Big Island. I made the mistake of working in the state library and Bishop Museum instead of switching to catch the next available plane to Hilo. By the time we got there, on schedule, on the 17th, the eruption had proved to be one of the shortest, smallest ones on record, and had quit. It grew just one cave, of which more later.

A huge thunderhead was sitting on the Big Island when we arrived, and was in the process of dumping 15 inches of rain in three days. But it was nice, warm rain. After we got organized at base camp (a hotel where it was raining inside as well as out), we spent Sunday morning in a vain attempt to find a way into the Puna cave area where the roads weren't flooded. When we caught up with the Allreds, however, Kevin mentioned waterfalls in Kaumana Cave, a county park right on the city limits of Hilo, so we all took off for some photography there. It was raining so hard in the cave that all our flash equipment quit working before we got to the waterfalls, unfortunately. They were truly spectacular, spurting from cracks in the walls eight to ten feet from the floor and cascading along steep pitches in the floor. When we got back with dry equipment a couple of days later, they were much reduced but still photogenic. We never got around to mapping the cave, which is quite varied with big rooms, duckunders, handsome flow features, and a braided section

Mag.
North

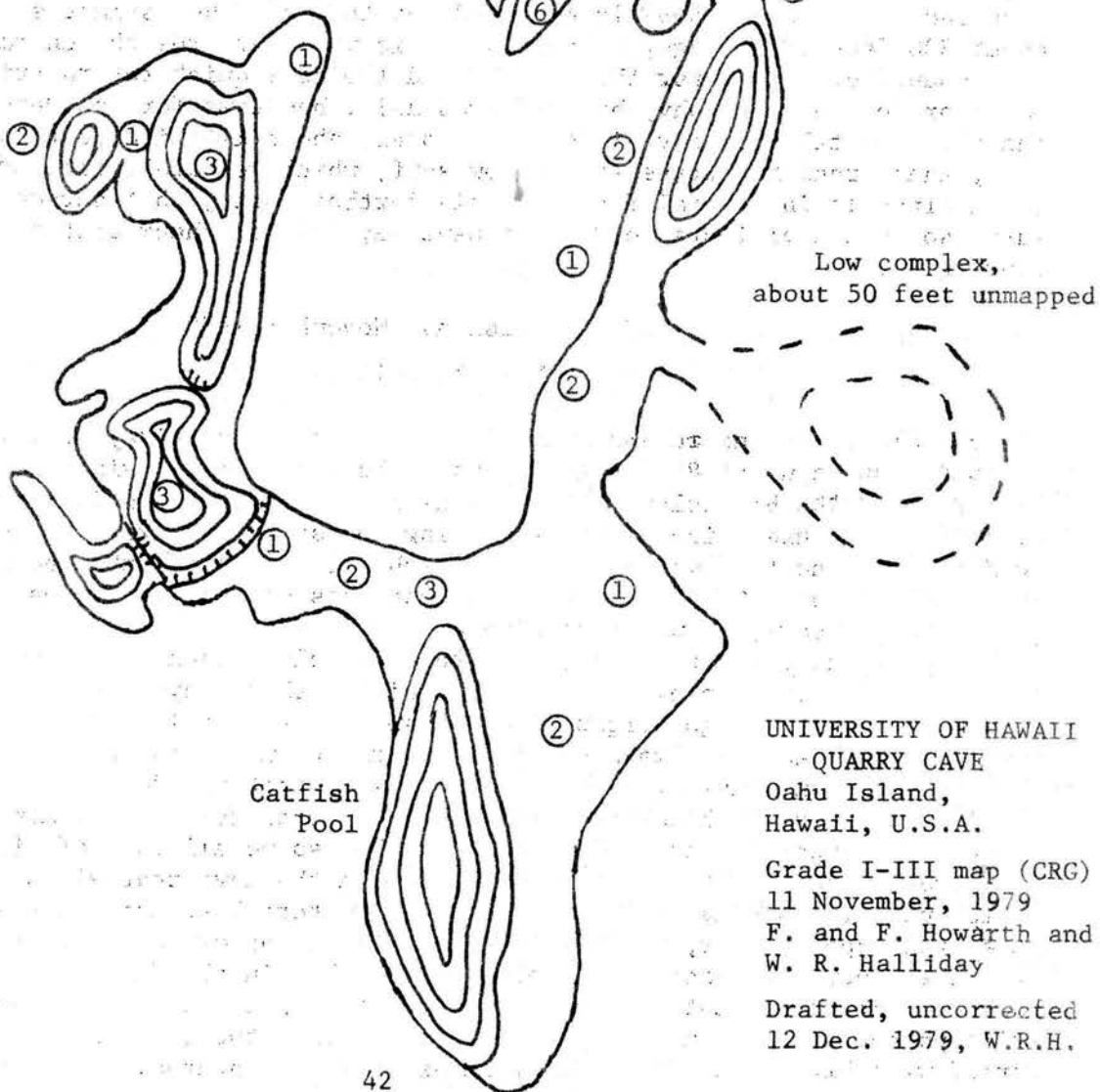
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Breakdown

0 10 20
Feet

ENTRANCE

Breakdown
Slopes

Lava-
Coral
Contact



Low complex,
about 50 feet unmapped

UNIVERSITY OF HAWAII
QUARRY CAVE
Oahu Island,
Hawaii, U.S.A.

Grade I-III map (CRG)
11 November, 1979
F. and F. Howarth and
W. R. Halliday

Drafted, uncorrected
12 Dec. 1979, W.R.H.

uptube from the main entrance. Development here consists of a metal stairway leading into the main entrance, after which visitors are on their own. The cave shows it, but vandals don't seem to go far from the entrance.

Monday morning we drove up to the national park and made the loop tour of Kilauea, including photography of a wonderful pahoehoe trench. The lava is much glassier and crumbly than any I've seen in other parts of the world, and surprisingly prickly. After touching base with the Chief Park Naturalist, we had a look at the Devil's Throat, a volcanic pit more than 200 feet deep, and decided not to drop it as we could see that there were no openings at the bottom and the walls were very crumbly. The Allreds then took off to check out a lead in Kona which will be reported separately, while we had a look at South Point. South Point Cave is the southernmost cave in the United States, and is surprisingly pretty. It is a littoral cave with a wide but funneling overhung entrance on the west side of the point between two boatsmen's hoists. Late in the afternoon, sunlight reaches the rear of the 50-foot cave, and purple shelves of marine life can be photographed through a hole in the roof. About a mile farther north is an impressive collapse sink with two short caves, one with a crawlway leading steeply downward through very muddy breakdown, which I left unchecked. This is Makalei Caves. Several large caves are reported elsewhere in the extensive flows which form this long promontory. That particular cave, however, lives up to its reputation as the muddiest garbage dump on the island.

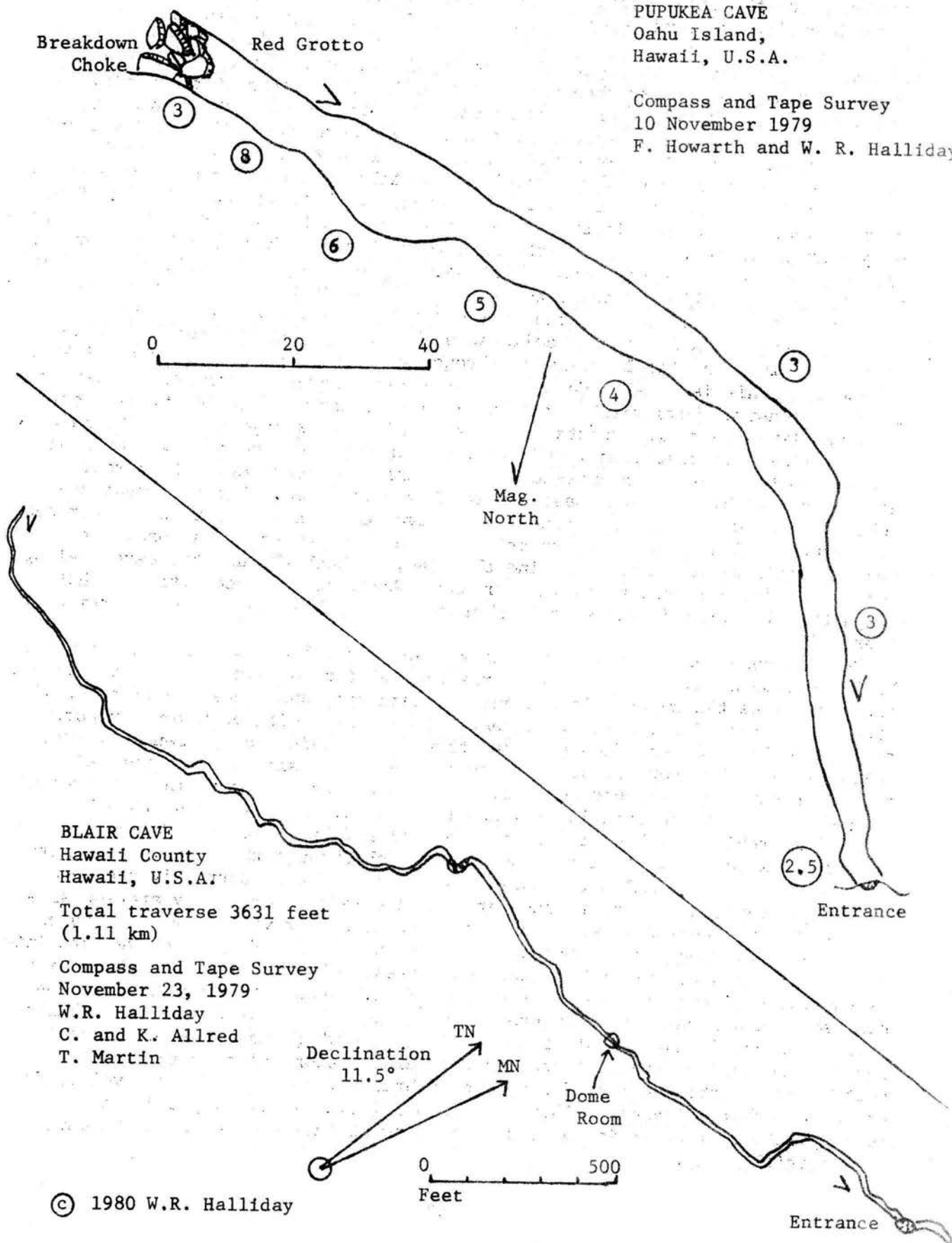
The rains were slackening, and after photography in Kaumana Cave, we found our way to the upper main entrance of Kazumura Cave next day. It is well hidden in head-high orchid grass and scrubby ohia trees. First we went up-tube about 3000 feet to the upper end--a lava seal--then down-tube to Entrance 12, about 2 miles away. Here we tried to find our way back via road, but in the swampy jungle we couldn't even find the road, so back through the cave. Along the way we did a little remapping for Chris Wood, and stopped often to photograph the fine flow features and dripstone. Red tubes-in-tube were particularly impressive.

On Wednesday, we started with some surface work, locating what may or may not be Doc Bellou's Cave and Hawaiian Acres Cave #1 (at opposite ends of a collapse sink much like the upper main entrance of Kazumura, and equally well hidden.) These are detached upper level segments of Kazumura, with much more dripstone and decidedly different flow patterns than in the main passage beneath. Doc Bellou's Cave, however, is supposed to have been the site of a commercial mushroom operation, and I found no trace of it in the cave we were informed was his; I think it may be Entrance 12 of Kazumura instead. More sloshing through the head-high orchids and I could see an orange flag I had left near Entrance 12 on the previous day; I just hadn't gone far enough through the swamp. From here we charged about two miles to a breakdown choke which is currently the lower end of the cave, and brought back Chris Wood's last paper survey station as a trophy or contribution to cave conservation, whichever you prefer. Again we did much photography, and remapped one area for Chris. We did not venture into the largely unmapped right-hand terminal passage where Howarth's Lost Passage is rumored to lead back up-tube for 2,000 feet. Just not enough time. Along this section was much more dripstone than in the upper part, a Hawaiian burial, a large elevated platform of breakdown fragments which may be a heiau (ancient temple site) and a circle of rocks surrounding a stone altar which may be recent. Part of the section of the cave is braided, and some upper level leads extend to other entrances. Chris Wood's map includes 11.5 km, and the cave is not segmented. Thus it is currently the longest lava tube cave in the world and is still going.

Breakdown Choke
Red Grotto

PUPUKEA CAVE
Oahu Island,
Hawaii, U.S.A.

Compass and Tape Survey
10 November 1979
F. Howarth and W. R. Halliday



© 1980 W.R. Halliday

Next morning was Thanksgiving Day. We celebrated by mapping Blair Cave, hidden in more orchid grass and ohias near the road to the national park. It is a bit over 3,000 feet long. While smaller in length and diameter than Kazumura, it has fine flow features and is a nice cave to visit. By this time the crowds had stopped flocking to see where the eruption had erupted, so we went to have a look and found a surface tube where the flow had crossed the Chain of Craters road. It had been opened when bulldozers reopened the road and was still warm. It smelled of creosote, of all odd things, and was very prickly so I didn't crawl very far.

At that point, the Allreds and John Martin went off to have a look at John Martin Cave. I should have gone with them--their report will be separate. Instead, I thought I would have a quick look at Thurston Lava Tube, which Marcia and I were scheduled to map on the following day while the Allreds tried for Apua Cave. Thurston has a tourist section about 300 feet long, with a lighting system which is fine, going in, but which encourages tourists to leave the cave at a small collapse sink and take a trail on the surface. I was in a hurry so I headed back through the cave, shading my eyes from the lights which now were in my face. WHOOMP! I ran into the edge of a cupola and needed two Band-aids for my forehead. End of accident report. But I still think it would have been bad form to wear a helmet in the lighted section of a National Park Service tourist cave. Thurston, incidentally, is about the most featureless lava tube I have ever seen--nothing but cupolas and traces of flow ridges in the tourist section. It impresses me as being the upper level of a large, unknown system, contrary to present theory. Rather than a pit crater as currently believed, the large sink at its main entrance looks to me like a jameo-type collapse sink.

Next day the mapping went uneventfully and we went on to have a look at the Mauna Ulu area where speleogenesis was observed during the 1974 eruptions. There were so many surface tubes and shallow road-cut tubes that I decided to wait until another time here and went to scout the pali area beyond. We just missed Kevin who had done a marathon across the flows to Apua and back (from his description, we'll camp overnight next time).

The Allreds' plane was early Saturday morning, and Marcia's was that afternoon, but that gave me time for a quick look at Cave of Refuge near Kalapana. For some reason, this cave has eluded several visiting cavers, but it is right where the topographic map shows, albeit in some dense scrub. The entrance and entrance room have been modified extensively by ancient Hawaiians, and the cave deserves intensive study.

And when we landed in normal Seattle November weather, I sure wondered why I ever got on that plane.....

Caving in Paradise

by Kevin Allred

Illustrations by Carlene Allred

Carlene and I had decided several months before that we would go caving in Hawaii and accordingly left Tuesday, Nov. 13, for Oahu where we would spend our first two days. We planned to meet Bill, Len, and Marcia Halliday on the Big Island later and cave with Bill for a week or so. We owe thanks to him in heading and organizing much of the expedition and also to Frank Howarth for his helpful information.

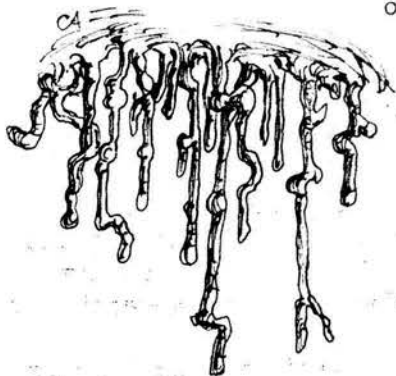
Oahu: Most of our time was devoted on this island to visiting old friends and familiar places I remembered from living there ten years ago. Bill easily



SHOWERS



lava-fall

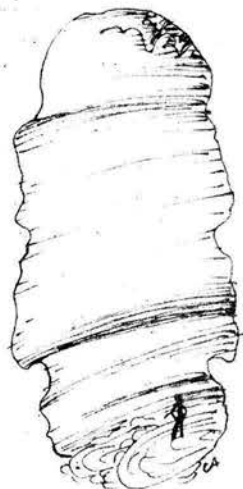


helictite-stalactites

talked us into caving though, and we saw and photographed a small lava tube and entered the entrance portion of a limestone cave. We snorkeléd at a fish refuge in Hanauma Bay and it was fascinating to swim freely among and even get close enough to touch unmolested fish of many sizes and colors.

Maui: We only had a one day caving reconnaissance there and after frantic car and baby sitting arrangements decided to shoot for the crater of Haleokala where there are a few reported caves. At Haleokala National Park headquarters we talked with personnel and were shown directions to the closest lava tube which is Long Cave. We were requested not to map it on this trip. After five miles in pouring rain, it was getting dark, and while Carlene waited in a shelter cave with another wet backpacker, I went on to the cave. There is about 1800 feet to map. A nearby collapse sink known as Na Piko Hauna was apparently used by locals who had a custom of throwing or stowing baby umbilical cords in such places (see Halēakala Guide published in cooperation with the National Park Service). We had to hike back out that night to be at the airport in the morning. At 8,000 feet on the crater rim the temperature was in the upper 30's F. We were delayed a while because I got lost.

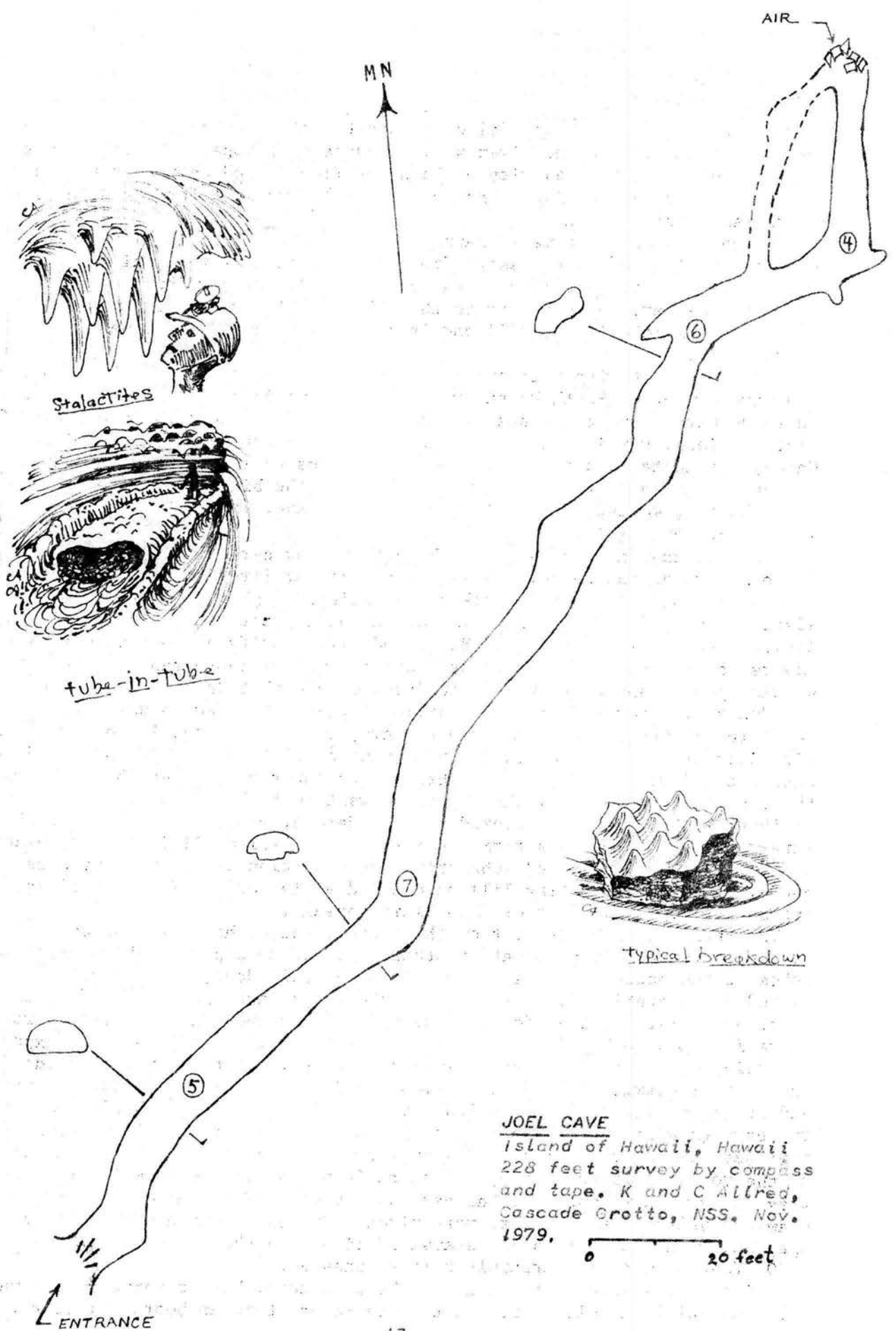
Hawaii: Much to our amazement, the first volcanic eruption in two years began the same morning we arrived from Maui. As soon as possible, we headed for the eruption site in hopes of seeing lava tubes actually forming. We arrived there about 45 minutes to an hour after the Park Service opened the site to visitors, and while Carlene waited in the car with Lehi, I waited in the rain in line for a shuttle bus headed for the remaining miles to the eruption. While approaching the area it sounded like an international airport ahead because of steam roaring out of vents. One spatter cone had an occasional small blob of lava shoot 30-40 feet up, and to my dismay it was evident that the eruption was subsiding. It was dangerous footing traversing over a few year old rough black shiny pahoehoe flow away from the crowds to get a closer look at some visible red molten lava. At any moment I feared to suddenly plunge through a thin crust into a fiery lake of lava. Soon I realized I wasn't the only crazy



Passage cross-section

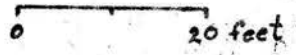


Passage cross-section



JOEL CAVE

Island of Hawaii, Hawaii
 228 feet survey by compass
 and tape. K and C Allred,
 Cascade Grotto, NSS, Nov.
 1979.



one out there, as a drunken fellow in short pants approached having a lacerated leg from a crust that had given way. Because of a roped off area, I wasn't able to see where the majority of lava was flowing and where a small lava tube was forming (which we didn't know about then). We left for the Hotel since there was little happening.

The next morning saw me at Kaumana Cave trying to map it alone with a raging torrent rushing down the passage from the 15 inches of rain which fell in three days. Needless to say, little was accomplished. We saw Thurston Lava Tube at the Park that evening and learned that the eruption was over.

Sunday was relaxing as Bill and Carlene photographed in Kaumana Cave a short while.

Monday we went with Bill and met with the Park Service and then, when Bill and Marcia went to South Point, we drove to Kona on the west side of the island where we were to meet a contact. On our way we were delayed by a short 500 foot partially virgin roadside tube, and went on past a second opening. Joel Garon, our contact, was kind enough to drive us up in his four wheel drive to his cave area, and even though we didn't find the big entrance he had seen years before, we mapped a smaller cave (Joel Cave, about 200 feet long), located in a sugar cane field.

From Tuesday on, a wonderful baby sitter took care of Lehi, so we were able to zoom through the caves. Tuesday was also our first day in Kazumura Cave. We saw the upper four miles, making our walk through cave passage a total of eight miles. Much of the cave was coated with glaze, and some lava features looked like calcite deposits. We helped Bill clarify a question some British cavers had on the new map they are working on. We photographed back out. We also photographed waterfalls in Kaumana Cave that day.

Wednesday, after exploring Doc Bellou's Cave for a few thousand feet, and realizing it wasn't part of Kazumura Cave, Bill headed out in the swamps to find Kazumura while we waited within shouting distance. He found the desired entrance and we headed inside. Three miles later we reached the back, where the continuing cave is blocked by rocks waiting to be dug out.

Thursday Carlene and I picked up John Martin, who is interested in the many large lava tubes near his farm. Before we met Bill at Blair Cave as planned, we took twenty minutes and John showed us a portion of a cave very close to his house. Then after meeting Bill we all did an incredibly fast job of mapping the several thousand feet of main Blair passage.

The National Park was next on the agenda, and we hoped to use our 300 feet of rope to drop Devils Throat or other reported deep pits with possible lava tubes at the bottom. Devils Throat is about 150' deep, 50 feet across, and looked too unstable, so we went on to the recent eruption about 1/4 mile away. A stream of lava some 40 feet across had crossed the chain of craters road, and where it had been bulldozed out of the way a small surface tube was exposed. The thing was very warm inside; jumpin' catfish, a totally virgin roadside cave! Bill crawled in. John, Carlene, and I left Bill at Thurston Lava Tube and after leaving a sleepy Carlene at his place, John and I headed back into the cave (now named John Martin Cave) near his house to see if we could get down past the previous limit of John's exploration downtube; he had stopped at the top of a 15 foot drop, and heard from his two other caving friends that they had gone down once but the cave soon ended. We climbed down and after a crawlway walked until we were very tired. The cave continued on as big passage, but we had to turn back because of time. On the way back, I paced off 7,700 feet of what is certainly unitary passage!

Friday was scheduled for a long hike to a cave, but it turned out I was the only one still capable of it, as the others had torn up boots, blisters, or

sickness. The cave was well worth the 16 mile hike.

We flew home without seeing your typical tourist sights, but to us, the hidden paradise underfoot was the chance of a lifetime, and very extraordinary.

Western Cone Crater, Hawai'i, 19 & 20 December, 1979[†]

by Phil Whitfield

The story really begins when Bill Halliday caught wind of Dave Jones' and my pending trip to Hawai'i and somehow talked us into taking with us a virtual "shopping list" of caving projects, as well as our vertical gear. It seems there were these virgin craters of indeterminate depth in the midst of the Kau Desert in the Hawai'i Volcanoes National Park. The three craters might be connected by a large lava tube...

So it was that the "Somewhat Dynamic Trio", Dave, Penny Humphreys and myself, met the other members of the Eastern Washington University field course around 1030 the morning of the 19th. The craters proved impressive: the western and middle ones being about 50 m across and apparently well over 50 m deep, and the eastern one being set in a small cinder cone with a throat only about 20 m across but obviously deeper than the others.

After my usual hemming and hawing in the presence of heights over 5 metres, and after all but my two faithful retainers had departed, I found a reasonable looking large rock anchor just below the rim of the western crater at the top of a sand slope leading down to the main drop. Tying on the Bluewater and donning my gear, I gardened my way carefully down some 30 m of sand slope and inched down the considerably steeper rock-studded, clay-like slope to a small ledge at the edge of an obvious void. From the ledge, I could see to the bottom of the crater, perhaps 30 m below. The pit appeared blind. With the knotted end of my rope dangling awkwardly at least 10 m above the floor of the drop, I completed my observations from the ledge and cautiously retreated up the 15 m to the foot of the sand slope and thence to the rigging point. Enough for one day!

Next day, Dave and I teamed up with a crew of U.S. Geological Survey types from the Hawai'i Volcanoes Observatory for a return trip to the Cone Craters. This time, the rope reached the bottom of the pit with some 5 m to spare. The descent was pleasant, with no really sharp edges or loose rocks to worry about. Norm Banks and Dave quickly followed me down, and we spent over an hour looking around, surveying and taking notes.

The floor of the Western Crater sloped some 60 m westerly from the foot of the rope to a point some 15 m lower. Massive breakdown covered most of the floor area, which measured about 85 m long by 30 m wide. No connection with the next crater to the east existed, and a remnant lava tube some 13 m up the east wall was blocked. The free-fall climb to the ledge turned out to be 30 m and the linear distance from the ledge up to the rope anchor was about 46 m. Altimeter readings top (915 m) and bottom (830 m) indicated a total depth of 85 m (280 ft.). I hope to complete the survey drawing before too long, and to obtain Norm's geological notes on the crater for a more formal report.

With one crater explored, the other two remain. The middle one is probably deeper than the western crater, although it is most difficult to estimate accurately how far the shadowy bottom is below the rim (especially when one is trembling with fright!). The Eastern Cone Crater looks more interesting, though perhaps no easier to rig. One suspects it may be the deepest of the lot, and who knows whether the conjectured lava tube may not lie below?

[†]Since no report has been forthcoming for the Caver, the above is reprinted (much abridged) from VICEG News, v. 9 no. 12, pp. 116-117.

P L E A S E H E L P !

For some time now several members have been trying to arrange a Garage Sale to raise money for the Grotto. We now have a location and date and need your help. You can help by contributing items for sale, volunteering to man the sale desk, and telling your friends about the sale. Details:

LOCATION: 8833 13th SW in W. Seattle

PHONE (at sale location): R03-0769

Date: June 14-15, 1980

TIME: 9AM-7PM Sat., 10AM-5PM Sun.

ITEMS NEEDED: tools, clothing, garden equipment, camping gear, books, home furnishings, appliances, auto parts, camping gear, and any other salable itmes.

You can drop your contribution off at the sale Sat. morning or arrange to have large items picked up during the day Sat. Please contact either Bob Brown, (206) 569-2724, or Geary Sanders, 763-0361, to let them know how you will be able to help, or to arrange pickup.

Money raised will be used to support many of your grotto's programs: me ting program, cave register

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

Take
Nothing
But
Pictures
Leave
No
Trace

and information sign program, field trip flyers, map library, membership committee, Grotto Store, etc.

The Oregon Grotto held a garage sale and managed to raise several hundred dollars. Please help make our sale a success too.

+ + + + +

EASTERN WASHINGTON UNIT MEETINGS

October: About five attended and saw the slide show "Caves of Oregon". Next day the Eastern Washington members dug at Simpson's Caves and connected Caves #2 and #3. Local research indicated that the cave should be called McMillan's Cave, not Simpson's. There is a 1927 date in the cave.

[Hard as it may be to believe, the above is the latest report yr editor has received from Eastern Washington.]

FEBRUARY GENERAL MEETING

There was no meeting on account of the Symposium.

Meeting notes on the March, April, and May meetings will appear in a future issue.

SUPPORT YOUR GROTTTO GARAGE SALE!

DON'T FORGET THE MEETING IS TUESDAY JUNE 17TH