

# Hawaiian Volcano Observatory Record Book 1931

This volume is one of a series of record books compiled by the Hawaiian Volcano Observatory (HVO) from 1912 through early 1966. The pages for this volume were transferred by HVO to the Bishop Museum, in Honolulu, Hawai'i, in 1972 and are held at that institution (accession number 1972.265). In 2010, HVO entered a cooperative agreement with Bishop Museum to scan many of the record books in their repository. The scanning was done by HVO volunteer Frances Wong using a flat-bed scanner at a resolution equivalent to 600 dpi. The raw scans were then delivered to HVO volunteer Ben Gaddis, who processed each of the scanned pages by cropping and by adjusting the exposure and contrast using a photo editing program. The scanned and photographed pages for this volume were then combined to form this digital version of the record book. Quality control and posting was done by Tim Orr of the U.S. Geological Survey Alaska Volcano Observatory.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Friday	Date	January 2, 1931
	Monday		" 5, "
	Tuesday		" 6, "
	Monday		" 12, "
	Wednesday		" 14, "
	Monday		" 19, "

January 2  
10:00 a.m.

Strong steam from S talus and middle of west talus. Still slight amt. from sulphur stained edge of floor. Almost no steam from floor cracks and old cone and no sign of blue fume.

H.A.P.

January 5  
11:25 a.m.

No fume. Steam from S talus, but no steam from floor.

H.Y.

January 6

Raining on rim but no extra steaming from floor cracks. West and South talus still steaming. No steam from cone area.

H.A.P.

January 12

Very high wind (second day) blows dust clouds over SW crater and rim; the thickest dust from winds ever noted by this observer. Clouds are dun-colored.

R.H.

January 14  
10:05 a.m.

No fume coming out from near cone. Lots of sulphur spots scattered with whitish color, but the SE edge of floor is bright yellowish. Steaming strongly on S talus.

January 19  
9:25 a.m.

No changes at pit. Steaming on S talus as usual. Pit seismograph shows the pit is very quiet.

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## JOURNAL

Day		Date	
Thursday		January 22,	1931
Saturday		" 24,	"
Tuesday		" 27,	"
Friday		" 30,	"
Saturday		" 31,	"

January 22            A small avalanche occurred. A little dust rose from N of pit.  
3:45 p.m.            (Viewed from HVO)

January 24            The little avalanche of Jan. 22 occurred on N talus. A little  
9:15 a.m.            fume was noticed from the sulphur spot. Pit seismograph shows a few  
volcanic tremors.

January 27            No changes at pit. Seismograph recorded a few slow period tremors.  
12:34 p.m.

January 30            A few rocks heard falling on N wall. No fume from sulphur spot.  
9:32 a.m.            Very little steaming from S talus. Very windy at pit.  
Rocks heard falling from HVO during 11:39 p.m. of Jan 29, 1931  
quake.

January 31            Rocks heard falling during the quake of Jan. 29 was from the  
9:35 a.m.            N wall. A little red scar was noticed above the N sill.  
Very strong wind at pit.

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## JOURNAL

Day	Monday	Date	February 2, 1931
	Wednesday		" 4, "
	Tuesday		" 10, "
	Thursday		" 12, "
	Saturday		" 14, "
	Thursday		" 19, "

February 2                    No changes at Halemaumau pit.  
9:42 a.m.

February 4                    Halemaumau pit seismogram show a few quick period tremors. No  
10:14 a.m.                    avalanches noticed. Steaming on S talus as usual.

February 10                    Mr. Hodges measured cracks which show very slight widening.  
3:05 p.m.

February 12                    No changes at pit.  
10:25 a.m.

February 14                    Very little steam on S talus. A few more rocks seen at the  
11:45 a.m.                    edge of lava floor between S and SW taluses.

February 19                    Pit is very quiet. 3:10 p.m. saw dust rose from the N wall of  
9:18 a.m.                    Halemaumau twice continuously.

10:25 a.m.                    Pit seismograph recorded a few tiny volcanic tremors. Steaming  
on S talus is very slight. Very windy at pit.

## JOURNAL

Day	Date
Monday	February 23, 1931
Thursday	" 26, "

February 23  
9:25 a.m. No changes at pit. Pit seismograph show no tremors, and tilt also shows very little change.

February 26  
10:40 a.m. Steaming a lot on Halemaumau crater floor near the new cone after rain. Some sulphur spot seem washed away a little. Ranger Brumahgan reported that on the far side NW of cone was smoking strongly in the afternoon of Feb. 25.

Tai On

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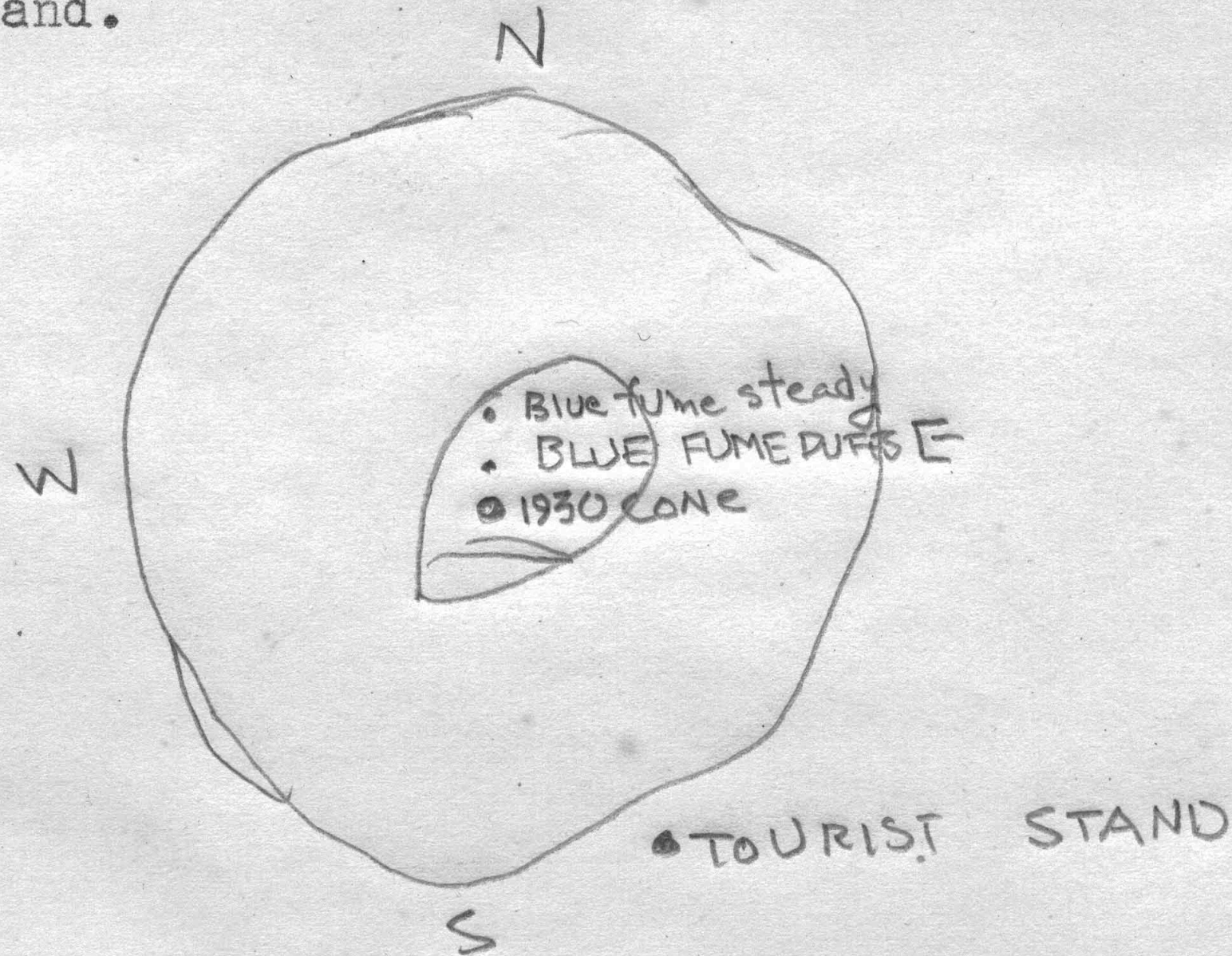
JOURNAL

Day	Date
Monday	March 2, 1931
Tuesday	" 3, "
Saturday	" 7, "
Monday	" 9, "
Tuesday	" 10, "

March 2  
10 a.m.

Saw bluish fume coming out at two places, directly north of 1930 lava cone. The far side fumes steadily, while the one nearer to the cone comes out in puffs, with few minutes of irregular intervals.

Two large rocks noticed at the SE edge of crater floor, under tourist stand.



March 3  
3:20 p.m.

Smoking at the spot which is the one far from the cone is still steady.

March 7  
10:50 a.m.

No smoke is noticed at the spot which is the one far from the cone, but the nearer one is still puffing.

Rocks heard falling from the N rim.

Pit record showed a few small tremors.

March 9  
9:20 a.m.

Very little changes at Halemaumau pit.

March 10  
3:15 p.m.

Fuming at sulphur spots north of 1930 cone is still steady.

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## JOURNAL

Day	Date	March 12, 1931
Thursday	March 12,	1931
Saturday	" 14,	"
Monday	" 16,	"
Wednesday	" 18,	"
Thursday	" 19,	"
Monday	" 30,	"

March 12  
9:30 a.m.

Spots north of 1930 cone are fuming steadily and strongly. A little slide occurred at the southwest point of Halemaumau lava floor.

Pit seismogram shows the whole Kilauea is very quiet. Tilt accumulated away from pit moderately from 39 mm February 28 to 54 mm March 3. Other days show a gradual increase of tilt away from pit.

March 14  
10:15 a.m.

No changes at pit.

March 16  
10:15 a.m.

Pit is very quiet. Seismogram showed a couple of small tiny tremors.

March 18  
3:10 p.m.

An avalanche occurred on the N wall of Halemaumau. Viewed from HVO.

March 19  
9:30 a.m.

Fuming on the two spots north of 1930 cone is still strong and both are steady. Rocks heard falling on the N wall.

March 30  
1:43 p.m.

Halemaumau pit remains very quiet. Fume is still coming out steadily at the same spots north of the 1930 cone.

No avalanches noticed. Talus is considerably less.

Pit seismograph recorded two quick period tremors, and tilt is still gradually away from pit.

BOND

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

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## JOURNAL

Day	Thursday	Date	April 2, 1931
	Saturday		" 4, "
	Tuesday		" 7, "
	Wednesday		" 8, "
	Thursday		" 9, "
	Saturday		" 11, "
	Monday		" 13, "

April 2  
11:15 a.m. Very little change at pit. Fume is still coming out at sulphur spots north of 1930 cone continuously. Pit seismogram shows a lot of slow period tremors 4 to 10 o'clock a.m. with almost regular intervals.

April 4  
9:30 a.m. No changes at pit. Pit seismograph still registered a few more slow period tremors.  
Fume is still coming out steadily at the sulphur spots. Very little steaming on S talus.

April 7  
3:20 p.m. No changes at pit. No tremors recorded on pit seismogram. There is a little steam on S talus.

April 8  
2:40 p.m. Dust was seen rising from a small avalanche at 2:40 p.m. at the center of Halemaumau pit.

April 9  
9:25 a.m. Fume is still coming out from sulphur spots; but is much less. Seismogram showed pit is very quiet. No steam on the talus at S.

April 11  
9:42 a.m. No steam at S talus and fuming is very much less at sulphur spots. The top edge of 1930 cone has caved in a little.  
Seismogram show no volcanic tremors. There was a sudden tilt of 14 mm. away from pit between 7th and 9th of April.

April 13  
10:05 a.m. No changes at pit. No steam on S talus. Sulphur spots seem  
3:30 p.m. brighter yellow.  
Saw dust rise from Halemaumau pit.

Tai On

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## JOURNAL

Day	Date
Friday	April 17, 1931
Monday	" 20, "
Saturday	" 25, "
Monday	" 27, "

April 17  
6 a.m.

Felt earthquake at residence 27 m. Shook house very decidedly with apparently a mauka-makai motion. A very slight preliminary bump was followed in about two seconds by harder shaking perceptible for from two to three seconds. Dog on ground underneath dwelling cried in alarm.

R.H.

10 a.m.

Seismogram showed that pit is very quiet. No steam on S talus. Fuming at sulphur spots seems entirely gone.

A good sized avalanche occurred at the middle of the wall above NE talus. Lots of rock falls and a thick cloud of dust rose.

April 20  
9:30 a.m.

Very little change at pit. Fume is coming out again north of 1930 cone. Pit seismograph shows that pit is very quiet. Only one very feeble shock recorded; quick period with a little tilt away from pit.

April 25  
9:25 a.m.

Fume is coming out north of 1930 cone, at the sulphur spots, strongly and steadily. There is a little steam at S talus. The sulphur stain n.e. of 1930 cone is very bright yellow. Seismogram showed no volcanic tremors.

Tai On

April 27  
8:45 a.m.

A thick dun-colored dust cloud rose from SW Kilauea rim and drifted rapidly in compact form toward the NE. When about opposite Keanakakoi it was slowed down by NE trade wind (which is mod. strong at HVO and gradually spread out, thinning.

This was repeated in about 10 minutes, and a short-lived gust of S wind was noticed at HVO. Apparently there are strong counter-currents of air meeting in crater. Dust from an avalanche N in Halemaumau was seen at 8:40 a.m.

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## JOURNAL

Day	Monday	Date	April 27, 1931
	Tuesday		" 28, "
	Thursday		" 30, "

April 27  
(cont'd)

10:20-11 a.m. Visited Halemaumau with Tai On to fix seis. and measure cracks.  
A few slight changes noted.

Pit was quiet; dust was entirely absent. Wind was mod. E. One or two falls of rocks heard at N niche and dust was seen sliding there.

11:30 a.m. Phone from Tribune Herald: Big wind storm in Kau this a.m. uprooted trees. (This explains the unusual dust)

R.H.

April 28  
2:35 p.m.

Fume is coming out steadily at the sulphur spot north of the 1930 cone. Steam on S talus is absent.

Two very feeble quakes were recorded on the pit seismogram April 24. Both with tilt away from pit.

At 12:30 p.m. April 28, felt quake in Dr. Jaggar's office. It was a sudden jerk. Pit record recorded a tiny tremor. Bosch instrument showed it was very close.

April 30  
9:25 a.m.

Pit is very quiet. Fume is coming out at spot. No avalanches noticed.

Tai On

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## JOURNAL

Day	Wednesday	Date	May 6, 1931
	Friday	"	8, "
	Saturday	"	9, "
	Thursday	"	14, "
	Saturday	"	16, "
	Monday	"	18, "

May 6  
9:20 a.m.

Little fume coming out of the sulphur spots. Very little steam on the talus at S.

Pit seismogram indicated a gradual tilt away from pit, up to May 2nd, then showed tilting in the opposite direction. May 2nd 29 mm. and May 8th, 20 mm.

May 8  
10:40 a.m.

Very little change at the pit. Very little fume at sulphur spot. Pit seismograph recorded one very feeble quake and a few tiny tremors.

May 9  
9:20 a.m.

A few more rocks noticed at the foot of N talus. Very little steam at S talus.

Tai On

May 14  
10 a.m.

With Tai On to change pit seis. No signs of change. All quiet. No steam at any vents. Center sulphur spot fumes very infrequently. One or two rocks heard falling NE and N.

R.H.

May 16  
9:15 a.m.

No steam at S talus. Center sulphur spot fuming unsteadily. Small avalanche occurred on the N wall at 9:25 a.m.

May 18  
9 a.m.  
10:30 a.m.

Avalanche occurred on NW wall of Halemaumau. Viewed on way to Uwekahuna. Fume at the sulphur spot coming out a little stronger than last trip down pit. Steam at S talus is very slight. The 9 a.m. avalanche occurred on the N wall; a little scar noticed.

Tai On

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## JOURNAL

Day	Thursday	Date	May 21, 1931
	Saturday		" 23, "
	Wednesday		" 27, "
	Saturday		" 30, "

May 21  
9:50 a.m.

With Tai On to change pit seismograph. No disturbances noted on record.

Pit quiet. Steam emerges from a wet streak on S talus, but nowhere else in Halemaumau. Sulphur spots show up brightly, against the black floor, particularly one on the far west side. The west-center sulphur area was fuming steadily.

Wind light SW.

R.H.

May 23  
9:45 a.m.

Pit is very quiet. Steam on the Talus at S is very slight. Fuming at center sulphur spot is coming out steadily.

Tai On

May 27  
11-11:15 a.m.

With Tai On to change pit seis. Magnet still gives trouble and apparently adjustment is very delicate, for it either gives no time marks at all or else pen does not touch paper except on high places. Should it be changed? It is very troublesome.

At pit steam is very slight: none on S talus, a little steams vigorously on SE rock bank, a little shows on big W talus. Fume is slight but steady at W center sulphur area. A big slide has occurred very recently from N rim, leaving a wide dusty scar. Heard one or two rocks loudly echoing at 11:10 as they felt NE.

1 p.m.

Much dust from an avalanche N. (Mr. Gandy)

R.H.

May 30  
9:15 a.m.

Steam on SE rock bank is coming out strongly. Fume appears at the sulphur spot, although it is still very slight. Very little steam on S talus.

Tai On

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## JOURNAL

Day	Monday	Date	June 1, 1931
	Wednesday		" 3, "
	Saturday		" 6, "
	Monday		" 8, "
	Wednesday		" 10, "

June 1  
10 a.m.

Very little change at pit. Very little fume coming out of sulphur spot. Steaming at S talus is very thin, but strong at the SE rock bank.

June 3  
9:30 a.m.

Pit seismograph showed pit very quiet. Fuming at sulphur spot and steaming on S talus are same as June 1st. But the SE rock bank isn't as steamy as on the previous trip to pit.

June 6  
9:45 a.m.

Very little steam at S talus and fuming steadily but thin at sulphur spot. Visitor at Halemaumau reported that avalanche occurred at the north wall about 9:30 a.m.

June 8  
9:40 a.m.

Pit seismograph showed pit very quiet. Steam on vents are very thin, except SE rock bank. Noticed a few puffs of fume coming out of center sulphur ~~xx~~ spot.

June 10  
9:45 a.m.

No fume noticed at sulphur spot at the center. Little steam at S talus. Noted new steam vent east side of S talus above the sulphur stain SE of crater floor.

Tai On

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Day	Date
Thursday	June 11, 1931
Saturday	" 13, "
Monday	" 15, "
Tuesday	" 16, "

June 11

6:52 p.m.

Very perceptible earthquake felt while sitting in home at 27 miles volcano road. Rocking was gentle and slow, feeling very much like the Hualalai shocks of 1929, but with apparent motion NE-SW. Duration about 5 seconds. Dog was greatly alarmed.

4:31 p.m.

A slight shock was felt at Keahou Ranch.

9:04 p.m.

Slight shock felt in Hilo.

Shock of 6:52 p.m. well recorded on Jaggar shock-recorder and pen was obligingly tipped back by a cockroach so as not to run through the registration.

R.H.

June 13

10:10 a.m.

Steam on vents are very thin. No steam on S talus. Fuming at sulphur spot is absent. Very windy at pit.

Had trouble with pit seismograph, mag. lifts pen up, and did not record that 6:52 p. June 11-1931 slight quake. Fix it by putting the magn. entirely away and have no time mark.

June 15

9:30 a.m.

Small slide occurred at the N wall; reported by soldiers at 9:15 a.m. Very little steam at S talus, but there is quite a lot coming out of SE rock bank and spot below, at the edge of S talus.

June 16

2 p.m.

A feeble quake recorded on pit instrument. Showed no tilt with quake.

Fume is entirely absent; little steam at S talus.

Tai On

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Day	Thursday	Date	June 18, 1931
	Saturday		" 20, "
	Monday		" 22, "
	Tuesday		" 23, "

June 18  
9:15 a.m.

Very little change at pit. Steaming spots are same as previous trip to pit.  
No fume coming out of center sulphur spots.

June 20  
10 a.m.

Demagnetized needle of pit seismograph, experiment as to have hour marks written on, harder lines.  
No steam anywhere seen at bottom of pit, not even at SE rock bank.  
Fume seems absent.

June 22  
9:40 a.m.

Pit seismograph showed pit is very quiet. Very little steaming at S talus but none elsewhere in crater.

June 23  
2:25 p.m.

Repaired magnet with non-magnetic soft wires. Working splendidly.  
No steam is seen at bottom of Halemaumau pit. Dust very dense near the N talus due to wind or avalanche. Very windy at pit.

Tai On

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Day	Date
Saturday	June 27, 1931
Monday	" 29, "
Tuesday	" 30, "

June 27  
10:10 a.m. With Tai On. Very windy at pit. Dry; no steam, no changes seen. No dust on lava floor. Sulphur areas less yellow, except a bright one on the far side.

R.H.

June 29  
11:15 a.m. Pit remains very quiet. Very windy at pit. No steam at S talus.

June 30  
2:15 p.m. No changes at pit. Very windy at pit and dusty. No steam at S talus and SE rock bank.

Tai On

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Day	Thursday	Date	July 2, 1931
	Friday		" 3, "
	Monday		" 6, "
	Tuesday		" 7, "
	Friday		" 10, "

July 2  
6:15 a.m.

Halemaumau appeared quiet in later afternoon light. No sounds heard above the strong trade wind. No changes observed, but the sulphur areas appeared in stronger contrast than in sunlight, against the very black lava floor.

R.H.

11 a.m.

A few rocks heard falling from the North rim caused lots of dust. Pit is very dry. Pit seis. showed pit is very quiet.

July 3  
3:06 p.m.

No steam at any talus. Few rocks heard falling from N wall. Very windy at pit.

July 6  
11 a.m.

Steam on S talus is absent and pit is quiet as usual. Very windy at pit.

Pit seis. did not record noticeable quake.

July 7  
3:20 p.m.

There is a new place smoking directly north of cinder cone at the sulphur stain. The edge of high sulphur spot has caved in a little.

No steam on S talus. Pit seis. recorded a few slow motion tremors; no tilting.

Tai On

New smoking area is in sulphur patch (stain, crescent shaped) between 1930 cone and old area of fume. Ranger Williams says smoke here and at bright sulphur area on far NW was seen afternoon of July 2.

July 10  
4:30 p.m.

Quite a bit of light dun-colored dust rose from a slide NE and drifted to the E (str. trades at HVO), and spread out over part of the pit.

R.H.

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Day	Date
Tuesday	July 14, 1931
Thursday	" 16, "
Friday	" 17, "
Saturday	" 18, "
Monday	" 20, "
Wednesday	" 22, "

July 14  
10:30 a.m.

Pit is quiet and without changes. No steam and no fume seen.

R.H. for H.Y.

July 16  
11 a.m.

Could see nothing new at Halemaumau. No fume or steam. A few rocks were heard falling N. Made circuit of Kilauea Crater by way of Uwekahuna and desert over recent Park auto trail.

July 17  
9:40 a.m.

"Fair-sized" dust cloud from an avalanche NE (reported by J.N. Gandy).

Some feeble tremors during past 24 hours.

A hotel guest saw another avalanche about 5:30 a.m.

H.Y. says 9:40 slide was apparently from NW wall as there is a scar.

R.H.

July 18  
9:30 a.m.

No fume or steam noticed at bottom of Halemaumau pit.

July 20  
10:15 a.m.

No steam on S talus but there is a little at the SE rock bank.

Foggy at bottom of pit. Could not detect any fume from sulphur spot.  
Light rain.

July 22  
10:20 a.m.

Lots of steam from different cracks at bottom of crater floor and also S talus, and SE rock bank. South edge sulphur spot of crater floor. Fuming strongly as north of 1930 cone and also the spot between. Pit instrument showed strong tilt due to heavy rain, forming large pool of water.

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JOURNAL

Day Monday Date July 27, 1931  
Thursday " 30, "

July 27  
11:20 a.m.

No changes at pit. Some sulphur spots seem brighter yellow.  
No steam or fume can be detected in the crater.  
Pit seis indicates pit is very quiet.

Tai On

Mr. Wingate measured some cracks. No noteworthy changes.

July 30  
2:43 p.m.

Earthquake felt by HAP at HVO (slightly); sharply at Kilauea  
Military Camp. Felt as a bump at Volcano House. Very short P on  
HVO instruments.

R.H.

4:05 p.m.

No changes at pit. No fume or steam can be seen at bottom of pit.

Tai On

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Day	Date	August 1, 1931
Saturday		
Monday		" 3, "
Tuesday		" 4, "
Saturday		" 8, "
Monday		" 10, "
Thursday		" 13, "

August 1 Pit instrument registered a feeble quake with short preliminary and with no tilt.

August 3  
10:15 a.m. No fume can be detected from any of the sulphur spots. Little steam at the SE rock bank but none on the talus at S. Strip of sulphur edge of S talus seem spreading toward the 1930 cone. Measured cracks with Mr. Wingate. No widening showed.

August 4  
3:15 p.m. Fume is coming out steadily from the sulphur spot north of the 1930 cone. Little steam at SE rock bank but none on S talus. Pit seismograph recorded two small tremors with little tilt toward the pit.

August 8  
9:30 a.m. A few rocks heard falling on N talus. No steam or fume anywhere at bottom of Halemaumau pit. Pit seismograph recorded a few slow-period tremors.

August 10  
12:35 p.m. Very little change at pit. Steaming at S talus and SE rock bank. No fume can be detected. Pit seismograph recorded a few very feeble tremors with no tilt.

August 13  
9 a.m. Fume was coming out very thin N of the 1930 cone, at the sulphur spot. Very little steam at the SE rock bank but none on the talus at S. A large avalanche occurred above the NW, from middle of wall, and caused a lot of dust.

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## JOURNAL

Day	Date
Saturday	August 15, 1931
Monday	" 17, "
Wednesday	" 19, "
Friday	" 21, "

August 15  
9:45 a.m.

No fume or steam anywhere at bottom of Halemaumau pit.  
Pit seismograph recorded pit is very quiet. Rocks heard falling from N rim. Artificial?  
Mr. Wingate reported that he saw dust rise from pit. View from Uwekahuna at 9:20 a.m.

Tai On

August 17  
10-11 a.m.

To pit with Mr. Wingate and Tai On to measure cracks and change pit instrument. Found a few changes in cracks. Pit quiet and a very little fume seen.

Showed E.G.W. crack measurement system and locations of points and their numbers.

N.P.S. is putting wood culverts in gulches of Uwekahuna-Pit road. This will help considerably in case of another hard rain, in view of the use this road gets while the east road is under repair.

August 19  
11 a.m.

Pit is quiet and lacking in changes. Fume is visible at the usual horseshoe-shaped sulphur area north of the 1930 cone.

R.H.

August 21  
9:30 a.m.

No changes at pit. Fume is coming out steadily at sulphur spot north of the 1930 cone. Steam is absent both at S talus and at SE rock bank. Pit record indicates no tremors.

Tai On

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## JOURNAL

Day	Date
Saturday	August 22, 1931
Monday	" 24, "
Tuesday	" 25, "
Wednesday	" 26, "

August 22  
9:45 a.m.

No noteworthy changes at Halemaumau. Fume shows thinly, also there is thin steam at rock slope SE.

Down the center of SW talus there is a yellowish streak caused probably by a slide, but can not see what sort of shift of dirt, as it is not near the wall and could not be made by rim rocks falling.

R.H.

August 24  
9:45 a.m.

Soldier said that fume was coming out of the sulphur spot N of the 1930 cone on afternoon of 23rd. But none noticed today. Steam is absent both at S talus and at SE rock bank.

Pit seismograph recorded a very feeble quake at 11:05 p.m., 22nd, with slight tilt away from pit.

Tai On

August 25  
2 a.m;

An earthquake was felt at residence at 27 miles Volcano road as very slightly perceptible, accompanied by a prolonged gentle rattle of a window. No other sounds, such as pheasants squawks or dog's cries, heard, as is the case with more noticeable shocks. Motion was E-W.

R.H.

August 26  
9:40 a.m.

An avalanche occurred at the N wall. It registered on the pit seismogram.

Fume is coming out strongly and steadily. No steam, on both S talus nor SE rock bank.

Tai On

## JOURNAL

Day	Sunday	Date	August 30, 1931
	Monday		" 31, "

August 30  
6:53 a.m.

Very slight prolonged tremor felt at 27 mile residences, motion  
E-W.  
Felt more perceptibly in Olaa and Hilo..

R.H.

7 a.m.

Avalanche at NE of pit; the dust was very thick.

H.Y.

Caused by quake?--R.H.

August 31  
11a.m.

Pit is very quiet. No fume on sulphur spot and no steam on taluses.  
The 7:52 a.m. quake of August 30 dismantled pit seis. It has a  
good preliminary and the long wave recorded almost across the drum.  
Measured cracks with Mr. Wingate after moderate quake but no  
widening showed.

Tai On

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Tuesday	Date	September 1, 1931
	Thursday		" 3, "
	Saturday		" 5, "
	Sunday		" 6, "
	Monday		" 7, "

September 1  
3:25 p.m. Fume is coming out steadily and strongly at the sulphur spot N of the 1930 cone, after rain.  
Very little steam on SE rock bank and none on /S talus.  
Dust rose from Halemaumau pit at 11 a.m., probably on N wall.  
Viewed from HVO.

September 3  
9:30 a.m. A few rocks heard falling from the NW wall. Fume is coming out steadily at the sulphur spot north of 1930 cone. Steam is absent both at S talus and at SE rock bank.

September 5  
9:45 a.m. Fume is still coming out but it is very thin. Sulphur spots where it is fuming, and another north of that is turned bright yellow.  
One feeble tremor with short pre. has a tilt away from pit and two tremors besides had little tilt away from pit.  
No steam seen anywhere at bottom of Halemaumau pit.

Tai On

September 6  
9:20 a.m. Avalanche SW accompanied an earthquake.

H.Y.

September 7  
The pit seismograph records a series of 9 tremors with tilt into the pit. Period of tremors are quick. The Bosch instrument recorded only 5 with an easterly tilt; on Sept. 6, 1931.  
Yasunaka reported he saw a cloud of dust rise from Halemaumau pit.  
View from Uwkeahuna, at 9:20 a.m.

Tai On

10:45 a.m. Weather misty. Wind ESE. Fume fairly strong SE spot. Steam N end S talus and S wall above Sulphur patches not so bright.

E.G.W.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

## JOURNAL

Day	Tuesday	Date	September 8, 1931
	Saturday		" 12, "
	Monday		" 14, "

September 8  
2:15 p.m. Very thick fume from sulphur spot at N of cone. Sulphur can be smelled when standing on S rim, when wind is blowing in that direction. Made new points with nails and washers, for crack measurements. Result is to get accurate measurements by using new, fine adjusting caliper/ points between nail head centers.

September 12  
9 a.m. Pit is very quiet. Fume is thin at sulphur spot, north of cone. Little steam at SE rock bank; none on S talus.

Tai On

10:29 a.m. HAP and EGW felt small quake at engineering lab. E.P. Leavitt called this a blast shock. Felt at Park office and Navy Camp.  
5:19 p.m. Shock felt at hotel and elsewhere in vicinity.  
8:50 p.m. Shock not felt but as large on seismogram as a.m. shock.

R.H.

September 15  
10:15 a.m. Went to pit with Mr. Wingate and put up two tri stations. Measured cracks but they showed no changes. Feeble quake of 5:19 p.m. Sept 12, 1931 recorded only a faint tremor on pit seis. Preliminary on Bosch seis show very short distance felt at hotel and navy camp. Fume is very thin at sulphur spot. No steam on S talus and little on SE rock bank. A quake occurred at 9 a.m. above date. Did not record on Bosch or Haw Seis. Was right on the hour gap. Felt by Doerr and recorded NW.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Tuesday	Date	September 15, 1931
	Thursday		" 17, "
	Friday		" 18, "
	Saturday		" 19, "
	Monday		" 21, "
	Tuesday		" 22, "

September 15      No changes noticed at Halemaumau pit. Fume is fairly thin. Pit  
3:15 p.m.      seismograph indicates two tiny tremors.

September 17      Pit is very quiet. No noticeable changes occurred.  
9:50 a.m.

September 18      The 4:23 a.m. quake was recorded on the pit seis with no preliminary  
11 a.m.      with a tilt about  $\frac{1}{2}$  inch away from the pit. Amplitude was over an inch  
across the drum with low magnification. The distance of that quake  
was six miles on the Bosch.

Fume seem very strong after rain. No steam on S talus, and little  
at the SE rock bank.

September 19      The 6:14 a.m. quake didn't have any tilt; but is the same character  
10:30 a.m.      as the 4:24 a.m. quake only with bigger amplitude. One pen dismantled  
at the Uwekahuna instrument and the other had no pre.

Measured cracks with Mr. Wingate after the two quakes center at  
Halemaumau pit, but no widening showed.

September 21      Very little fume at sulphur spot. Comes out in puffs. No steam  
10 a.m.      on S talus and little at SE rock bank. Measured cracks show no widening.

September 22      Pit seismograph showed Halemaumau pit very quiet. One very feeble  
3:15 p.m.      quake has a long distance pre and was registered. Fume is very thin  
and steam is coming out both at S talus and at SE rock bank.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Date
Thursday	September 24, 1931
Saturday	" 26, "
Monday	" 28, "
Wednesday	" 30, "

September 24  
9:30 a.m. No remarkable change at Halemaumau pit. Fuming and steaming is usual as on previous trip.  
Survey with Mr. Wingate.

September 26  
10:25 a.m. Pit seismograph registered one feeble quake which had no pre. and showed no tilting with the quake.  
Fume is thicker today due to rain. Steam along the rim is very thick also. Little at SE rock bank and on S talus.  
Went to pit with Mr. Wingate to take elevations and locations of different points on Sept. 25, a.m.; very strong wind.

September 28  
9:45 a.m. Strong steam coming out of SE rock bank, and along the rim, but none on the S talus. Fume is fairly strong, in puffs. Strong NE wind.  
Measured cracks with Mr. Wingate.

September 30  
10:15 a.m. Much steam is coming out of cracks at bottom of Halemaumau pit, SE rock banks and S talus, after considerably heavy rain. Fume is fairly strong at sulphur spot.  
Pool of water in front of pit seismograph caused an artificial gradual tilt away from pit.  
Road washed out in places, but Rangers are repairing it.

Tai On

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Thursday	Date	October 1, 1931
	Friday		" 2, "
	Monday		" 5, "
	Tuesday		" 6, "
	Thursday		" 8, "
	Saturday		" 10, "

October 1  
6-8 a.m.

Good fume SE spot.  
Two small slides N wall 7:35 and 7:40 a.m.  
Usual steam after rain.

October 2

Fume and steam as usual.  
Small slide 7:30 a.m. N.  
Faint sulphur smell on W side.

E.G.W.

October 5  
10:15 a.m.

Fume is fairly thin. No steam any where at bottom of pit.  
Cracks measured, but showed no widening. Mr. Wingate took  
snapshots of different cracks.

October 6  
2:45 p.m.

Little steam appeared on S talus and SE rock bank. Fume seen  
to be slightly increased than on previous trip. Foggy and slight rain.  
Pit seismograph showed pit to be very quiet.  
Several blasting between 12 to 1 o'clock by road builders.

October 8  
3:15 p.m.

Very little change at Halemaumau pit. Seismograph a few quick-period  
tremors.

October 10  
9:45 a.m.

Fume is very thin. Comes out unsteadily and is hardly visible.  
No steam in bottom of pit.  
The two o'clock teleseism of October 9 recorded faintly on pit  
seismogram.

Tai On

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Monday	Date	October 12, 1931
	Tuesday		" 13, "
	Friday		" 16, "
	Monday		" 19, "
	Tuesday		" 20, "
	Wednesday		" 21, "

October 12

All quiet, usual amount of fume at SE spot and steam after heavy rain. Good sized pool by seismograph.

E.G.W.

4 p.m.

Avalanche N reported by Naturalist Doerr. Not much dust as wetness prevails.

R.H.

October 13

Fume is less than usual. No steam on S talus.

October 16  
9:15 a.m.

Noticed no fume. No steam on S talus. Little steam at SE rock bank. A few rocks heard falling on the N side.

October 19  
10 a.m.

Pit seismograph show pit is very quiet. Fume is absent. Very little steam on SE rock bank and none on S talus.

October 20

Little steam on S talus and SE rock bank. Fairly thin fume appeared on the sulphur spot. Cracks measured with Mr. Wingate but they showed no widening.

October 21  
3:30 p.m.

Mr. Craik reported that the pit is acting unusually; fume seems moderately thick. He said he watched it for an hour and a half.

Went down with Mr. Wingate. Fume seem fairly thicker than usual, and appeared in puffs. But probably due to shadow and light rain. Seismograph showed no sudden tilting.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Thursday	Date	October 22, 1931
	Saturday	"	24, "
	Monday	"	26, "
	Tuesday	"	27, "
	Thursday	"	29, "

October 22  
10:15 a.m.

Fume and steam are entirely absent at bottom of pit. Seismograph did not show any trace of noticeable tremor. Two large boulders on crater floor between S and SE taluses.

Tai On

October 24  
8:10 a.m.

Large avalanche north, lots of dust, reported by Ranger Williams.

R.H.

October 26

Measured cracks with Mr. Wingate, but showed no widening. Put two new points on the NE rim cracks. There are a few new fresh cracks on the NE rim.

Put two wooden surveying points in place of pipes. One at the Tourist Stand and the other on the N rim.

Fume and steam are absent.

October 27  
3:15 p.m.

Fume is fairly thick and steady after rain. Steam on both S talus and SE rock bank, and also SE edge of crater floor. Seismograph indicates no noticeable tremors.

Tai On

October 29  
7:30 a.m.

Pit visited shortly after shock. Fume considerably stronger and steady. No apparent avalanching from quake. Pit seis indicated tilt away from pit.

E.G.W & T.O.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Monday	Date	November 2, 1931
	Tuesday		" 3, "
	Wednesday		" 4, "
	Thursday		" 5, "
	Monday		" 9, "
	Tuesday		" 10, "
	Thursday		" 12, "

November 2 Pit is very quiet. No fume on sulphur spot. No steam at bottom of pit.

Tai On

November 3 Avalanche dust over N rim.  
1:50 p.m.

H.A.P.

November 4 Thick fog and mist down at pit. Fume is coming out steadily. Steam on both S talus and SE rock bank.

November 5 Measured NE rim cracks: 8 10/16; 15 11/16  
Fume and steam are absent.

November 9 Measured cracks with Mr. Wingate. NE crack point showed widening from 15 11/16 to 16 00/16. Fume is very thin and little steam issues from SE rock bank. Rain down at pit.

November 10 Fume is fair. No steam on S talus. Little at SE rock bank.  
3 p.m.

November 12 Pit seismograph indicates no noticeable tremors. But it shows a steady tilt away from pit. Fume is fairly thick after rain. Steam is slight on S talus and at SE rock bank.

Crack on NE rim showed a steady widening from 16 00/16 Nov. 9 to 16 5/16 Nov. 12, 1931 by careful measurements between nail points. It widened exactly  $1\frac{1}{2}$  inches.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Monday	Date	November 16, 1931
	Tuesday		" 17, "
	Thursday		" 19, "
	Friday		" 20, "

November 16 Less fume and little steaming. Measured cracks with Mr. Wingate. The NE crack is 16 11/16 compared with 16 5/16 of the last measurement, November 14, 1931.

November 17 Fume is fairly strongish. Noticed no other changes. NE rim crack  
2:45 p.m. showed 1/16 widening since November 16. Mr. Wingate took pictures of the cracks.

November 19 Surveying with Mr. Wingate at pit. Measured NE rim crack 16 14/16.  
a.m. Widened 2/16 since November 17. A few rock fell from NE rim, where crack measurements are. Fume, fair.  
Pit seismograph did not indicate any noticeable tremors.

Tai On

November 20 At pit with Tai On. Conditions quiet. Some fume. New fine  
3 p.m. debris covers near N end of big sill and talus beneath.  
Measured crack 25 as noted :  
No. ? 8 11/16  
" 25 16 15/16 Nov 12 it was 16 5/16

This area quite fractured in a small section, and apparently pit is merely adjusting its rim to retain circularity--which may have been upset by the considerable avalanching a year ago in the 14-ton boulder section. Note that wall under cracking area is very precipitous.

R.H.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Monday	Date	November 23, 1931
	Tuesday		" 24, "
	Wednesday		" 25, "
	Friday		" 27, "
	Saturday		" 28, "

November 23  
10:15 a.m. No fume can be detected. Pit is very quiet. Measured cracks with Mr. Wingate. NE crack is 17 3/16 compared to 16 15/16 Friday November 20. It also sank about one foot in that area, by actual measurement, according to Mr. Wingate, since October 26, 1931.

November 24 Surveying with Mr. Wingate. A good-sized avalanche occurred on the NE wall under the crack area at 10:35 a.m., causing a considerable amount of dust.

November 25 Work on Halemaumau map with Mr. Wingate. Fairly good fume. Driving towards the crater, quite an amount of fume could be seen rising. Crack measurement on the NE rim is 17 6/16.

November 27  
11 a.m. Fume is less at sulphur spot. Tractor working on road caused lots of tremors on the pit seismograph.

November 28  
9:18 a.m. Little fume appeared. No fume anywhere at bottom of pit. Crack measurement on the NE rim is 17 10/16 compared to last measurement 17 6/16

## No. 25 NE crack measurements

Nov. 20 - 16 15/16  
23 - 17 3/16  
25 - 17 6/16  
28 - 17 10/16  
30 - 17 11/16

November 30

9:20 a.m.

Little fume at the sulphur spot. No steam on S talus.  
Lots of artificial tremors caused by tractors working on pit road.  
Measured cracks showed no widening except the NE rim crack.  
Measurement is  $17 \frac{11}{16}$

Tai On

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Tuesday	Date	December 1, 1938
	Saturday	"	5, "
	Sunday	"	6, "
	Monday	"	7, "

December 1  
3:40 p.m.

Very little fume appeared. No steam on S talus or SE rock bank.

December 5  
10:15 a.m.

Considerably little fume. The NE rim crack is 17 5/16.

Tai On

December 6  
9:08 a.m.

Avalanche heard by Doerr at U.O. Dust N.

R.H.

December 7  
9:50 a.m.

Usual steam during damp weather. Fume appeared stronger and in puffs though not unusual for damp weather.

The area about crack #25 showed general widening of cracks and subsidence. A small slide from this part of the wall occurred at 10:06 a.m. Pt. #25 showed only 1/16" increase since Dec. 5, #5 measuring 18" flat.

4-4:30 p.m.

Slide occurred from Rim and wall at #25 and 24 measuring pts. Area of about 100-150 ft long by 1-20 ft wide fell in. New cracks observed in the ash for 250' N of pt. #25. Nothing new noticed S of #25. Except what appeared to be small new crack in the ash between #16-17. Several small slides occurred while at pit from NE wall. Boulders and gravel covered part of floor at foot of NE talus under #25 pt.

E.C.E.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Tuesday	Date	December 8, 1931
	Thursday		" 10, "
	Saturday		" 12, "

December 8  
10:15 a.m.

A moderate quake occurred at 10:20 a.m. while standing at edge of pit by the Tourist's Stand. At that instant, one slide started on SW wall and another bigger one occurred on the NE rim.

Note: Three slides occurred. On the SW wall and talus. The SE wall and the largest on the NE wall and talus under pts # 24 and 25. ---E.G.W.

The motions of that quake were back and forth in a NW-SE direction while I was standing at edge of pit.

Tai On

Two new measuring pts #31, 32, established on NE rim, #31 being a crack on a crack opened on December 7th.

E.G.W.

December 10  
9:45 a.m.

rather  
Saw/thick cloud of fume on way to pit, clearly. Found it was from fuming spot and thick due to the day being calm.

The pit instrument show pit is quiet after the moderate quake but that tilt is accumulating away from pit.

2:30 p.m.

Surveying with Mr. Wingate. Locate points on crater wall. Fume is as usual. Steaming a little on S talus. At 3:05 p.m. heard rocks falling on the N talus, and another 10 minutes later. Measured cracks.

December 12  
9:45 a.m.

Fume at sulphur spot is less than usual. No other changes noticed. Pit seismograph recorded a very feeble quake, with rather slow period. Measured No. 10 crack, 17 11/16, which shows no change.

Tai On

Since the avalanches of Dec 7 & 8 which released the tension on the NE and SE walls, Pts #24 and 25 have ceased to widen remaining at 8 12/16 and 18 4/16 respectively, their width as measured just after the avalanches. Pts 17 and 18 on the SE rim have shown a slight closing up due to the same release of tension. Several other pts have shown a tendency to widen, notably #9 at the rim just beyond the Tourist Stand 1/8" and #31 on new crack 1/8" increase.

E.G.W.

## DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

## Hawaiian Volcano Observatory

## JOURNAL

Day	Monday	Date	December 14, 1931
	Wednesday	"	16, "
	Friday	"	18, "

December 14  
9:30 a.m.

Fume is same as usual. A few rocks heard falling on the NW Side, at 9:55 a.m.

Pit seismograph recorded a feeble quake with short pre. and quick period. The amplitude is much larger than Bosch instrument.

Tai On

Crack measurements showed a closing apart the SE rim, slight widening on E and NE with Pt #25 still stationary.

December 16

Avalanche heard by Dr. Jaggar at 4:10 a.m.

Made circuit of pit in afternoon. Fume same as during previous week.

Slide apparently occurred on NE wall, from amount of debris at foot of talus, though fresh looking scars were seen on the NW wall, S wall and SE wall.

Cracks were measured, showing no changes and there was no evidence of fresh cracking about the rim. Steam strong after heavy rain.

E.G. W.

December 18  
3 p.m.

Visited Halemaumau seis. hut location with Jones and Tai On. Four men working - Craik, F. & B. Waltjen, Kauhi. Cellar depth is completed, and most of rock is removed. Some enlargement under way to permit safe installation of cement forms.

Material for construction to be delivered today by Okano. Contract is Davies \$265; Okano \$18.

Gasoline for local transportation of men etc. furnished by HVO; autos by NPS.

Saw two scars on far Halemaumau walls from Uwekanuna. One is Wingate avalanche at fresh crack area, wide from rim; other about 1/3 down from near tourist stand. Both show bright colors.

R.H.

## JOURNAL

Day	Monday	Date	December 21, 1931
	Wednesday		" 23, "

December 21 Measured cracks with Mr. Wingate. Fume is fairly thin. Seismograph station at pit is underway in construction.

December 23 Measured cracks with Mr. Wingate. Cracks showed very little  
10:30 a.m. changes. Fume is rather thin.

On way back to Observatory, Mr. Wingate noticed a cloud of dust rise from Uwekahuna bluff wall. Followed by another large one in Halemaumau pit. Lasted quite a while. Went back to pit to investigate. Learned strong quake occurred. Lots of new fresh cracks are found along the N and NE rim. Some cracks showed widening over an inch.

2:45 p.m.

Noticed continuous tremors recording on Bosche seismograph. Thought it was artificial at first. Notified Mr. Jones and Mr. Hodges. Learned activity of Halemaumau through telephone. Went down with Mr. Jones on Uwekahuna road. Fume was very strong and wind was blowing toward NE direction.

Tai On

## Eruption Notes by R.H.

2:45 p.m.

Harmonic tremor on Bosch instruments discovered by Tai On. He answered Park line and learned there was activity at Halemaumau. Pit obscured from HVO by clouds of vapor but what might be fume appeared dense in the pit locality.

Before this dust was seen rising from the pit rather continuously after the earthquake of 10:38 a.m.

2:55

Jones and Tai On departed in truck for pit. I tried to call Inter-Island but line continuously busy. Went to hotel and got Mr. Strathairn. Then got Mrs. H. Saw Wingate by Park office on returning. He stated he was putting in a mark on the trail by pit rim when he heard rumble, and looking in saw floor break up and lava fountains appeared. There were about 30. He tried to call Park office; no one there (all at hotel party for children). He did not know he could call HVO direct on line at pit.

I tried to get gas masks at KMC; none available. Captain Hedden doubted their practicability; said they are designed for toxic gases. Went to Uwekahuna and found all cars being held up there because approach to pit was in dense fume. Was allowed to pass and went down accompanied by Doerr, Park Naturalist, who had just returned from Hilo. Found fume very thick but rising high over desert (probably forced upwards by S Kilauea rim), but on descending to lava floor fume was low and choking. We closed car windows on entering fume and drove through the smoke,

December 23

2:55 p.m.

(cont'd)

4 p.m.

beyond usual parking place, to a high location on sand spit near landing field. Left car there (other cars also there) and hiked across rough lava.

Approached NE rim, met Jones returning. Fume blowing all around but he directed us to go to a point of Wingates well around NE side. Wind made approach very difficult - sand and fume quite annoying. After waiting for fume to clear, we saw first the line of fountains from a crack trending NE-SW. Later the immense fountains just under us were visible from a better viewpoint. Several glimpses obtained, but fume made observations very difficult. The sun showed blood-red through the blue and brown smoke. A few pictures were attempted.

Departure from the rim was difficult, more so than the approach. Clouds of fume blew low across the ground, sucked in toward the pit by convection. Found we could not breathe through our noses, but had little difficulty by breathing through our mouths, and holding our breaths in the thickest fume, refraining from breathing.

Return from the crater was made by same route, closing car windows tight while passing through the fume, en route to Uwekahuna.

In five eruptions witnessed, (the first in July 1927) this one has densest fume as there are more fountains.

R.H.

Strongly felt swaying quake at 10:38 a.m. which upset things and damaged seismograph at Uwekahuna Museum and shook down numerous avalanches on Uwekahuna bluff and in Halemaumau.

Visit pit at noon. Steady small slides on W and N and NE. New dust along floor edge NE and N. Cannot detect fume at sulphur spot W of 1930 lake. Some steam at other places. Cloud of dust hangs over pit. Forms in hole for new seis cellar at pit. Drive down by Kilauea Iki road, clear but a little muddy. Return by Uwekahuna rd.

At 2:36 p.m. volcanic vibrations begin. Wingate at pit hears and see floor split NE to SW across center and gas and lava come up. Great clouds of brown-blue SO<sub>2</sub> fume rising.

Pit unapproachable SE because big fts in NE edge of floor, high N wind, eddying fume over NE lip and sweeping past terminal.

December 23  
(cont'd)

I return from Hilo and with Jones go to pit by Kilauea Iki and make wide circle to E and N reaching edge at N and NNW. Already at 5:30-6:30 p.m. floor completely covered and line of about 30 dome ft units counted, very straight, from under NE dike to a pt slightly to the W of SW caverns. In other words directly on the Mauna Iki rift line of December 1919.

Biggest clouds of blue-brown fume I have seen in recent eruptions. Many tornado whirls with grit and low blue fume spreading occasionally eastward from pit. Inward convectional draft from N and W, clouds roll off to SW and SE. Fume said to be bad on Uwekahuna road from first bluff on, going E.

The main feature of this phase was a group of 3 to 4 very large continuous fountains of spreading dome type, probably 100 or more feet high, directly under the middle of the big NE sill, and at the NE end of the new split across the 1930 floor which gave rise to the eruption: that is, at NE end of the new line of fts. These formed the corners of a triangle or a square, bombarding base of NE talus with spatter, making a roar, and sending up clouds of fume and spray and Pele's hair. The line of smaller fts were some merged, some isolated, and there were outlying fts, and concentric patterns of bright lines lay about the centers of major activity clear to the edges of the big lake. At the edges there were toes and minor ftg.

The phase of big ftg made brilliant illumination. Seeing was obscured by much fume.

December 24

Went to pit about 10 a.m. and took photographs with Pan Kodak, 5 x 7 film roll, 5 x 7 cut pancrom., F. filter deep red: results mostly poor owing to defect in lens release and pyro stain, from big fountain, rectangular arrangement of small ft lines, SW grotto and W talus, streaming belt from big ft NW: big ft has been migrating SW.

Situation greatly changed by cessation at 2 a.m. this morning of the big NE fts. Volcanic tremor at HVO changed to small at same time. Now a single long ftg group trending with rift in center of lake. Concentric skins of pahoehoe pattern. Belt of stream skins center to NW. Grotto at S side of W talus.

Line of small fts across S end of lake at rt angles to main rift and very straight. Another line parallel to main rift across NW part of lake (see Phot. 8). Looks like other cracks in 1930 floor.

Occasional fountain in NE corner where big fts were to mark the rift extension. Crusts make islets where 1930 cone was and off base of W talus. Rampart of piled slabs and piled toes all around lake uniformly. The NW edge has some clifflets in rampart suggesting recession of lake: the SE edge has piled lake flow toes suggesting encroachment by lake: overflows thro the rampart.

The pit was moderately bright in the evening. The central ft group had migrated SW in afternoon. Activity remained same. Light evening was not so great as night before.

## PHOTOGRAPH RECORD

Day Thursday

Date December 24, 1931

time	sta	subject	no	pl	scr	stop	ex	cam
<u>December 24</u>								
10 a.m.	T'st sta.	Bottom of pit, ESE from center, looking WNW.	1					Pan kodak
"	"	Same looking NW	2	film roll		f/22	$\frac{1}{2}$	5 x 7
"	"	" " SSW, shows relation of SW grotto to 1919 cavern. Panoramic inclined with #2.	3	" "		f/22	"	"
"	N	W wall of Pit, pan. incl.	4					"
"	"	Center " " " "	5					"
"	"	East " " " "	6					"
"	NW	NE corner of floor, spatter made by big fts, one ft left, edge rampart & NE taluses.	7		F	f/32	20	"
"		S corner of pit, fummy from big 8 fountain, rectangular arrange- ment of small ft lines, SW grotto and W talus, streaming belt from big ft NW: big ft has been migrating SW.	8		F	f/16	10	"
T.A.J.								

December 25 At pit 11:30 a.m. to 12:30 p.m. Took photos 5 x 7 panchrom.  
11:30-12:30 p.m. from S. rim.

The situation shows greater force to the fountains and the volcanic tremor corroborates. Fume (blue-brown) rises up W wall. High NE wind. The liquid lava about the central fountain makes slow waves from ft outwards. The ft waxes and wanes, some individual spurts of fling going up 200 ft during a time of high pressure. Fine pattern around central ft bounded by a hyperbola on SW side, beyond that is a belt of big crusts more stationary.

8 p.m. Revisit pit for photo at night.

T.A.J.

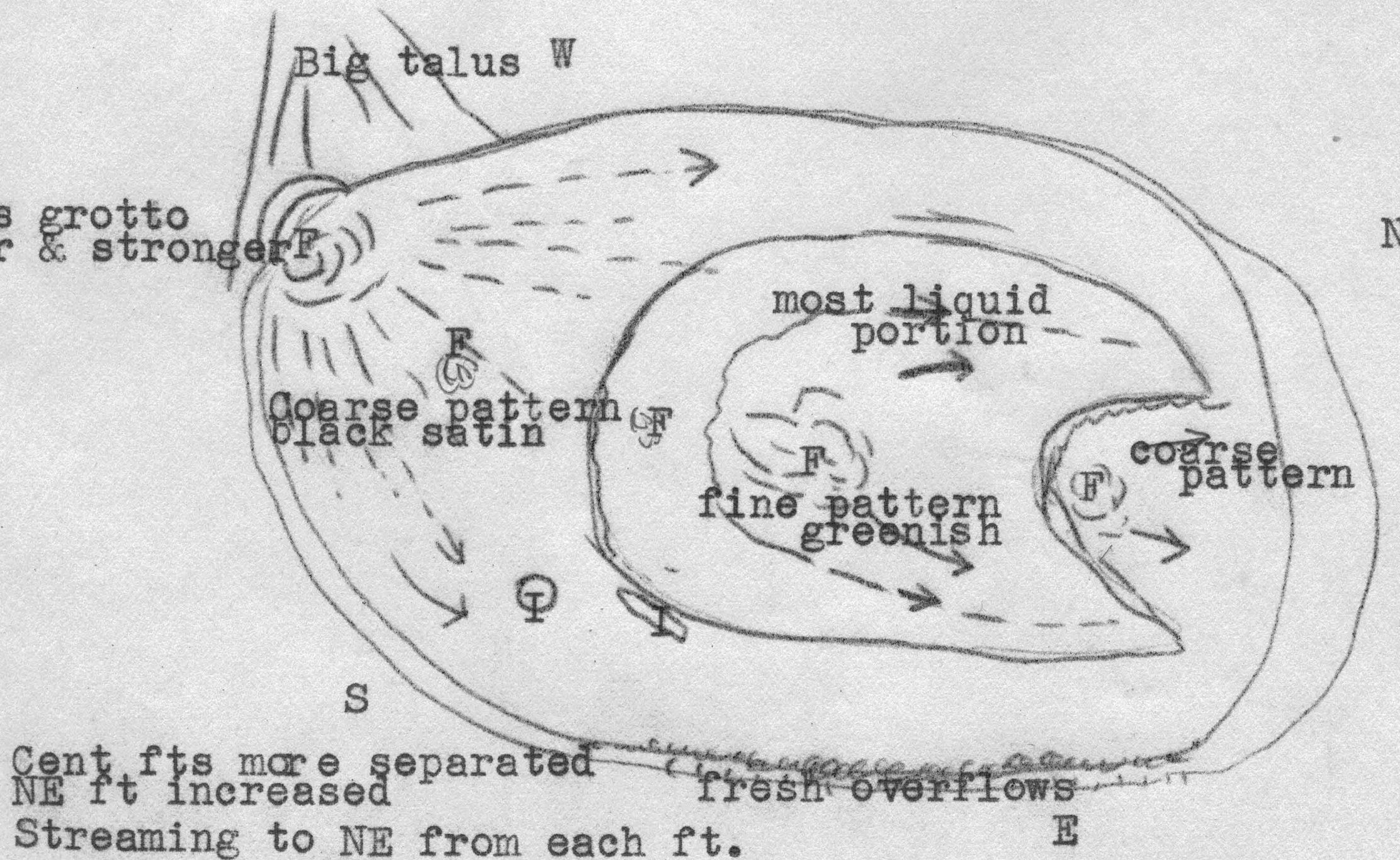
December 26 Visited pit. Three fountains, a new one in line with the others and NE of the elongated center one. Rangers call it a new fountain but it is probably merely a clearing of one of the vents first active. The fountain at foot of big west talus is most voluminous and highest, while "new" fountain is smallest. Latter is three or four hundred feet NE of center.

SW fountain has a considerable "armchair" grotto built behind it, and lake edge on that side is more irregular in line than formerly.

R.H.

12 noon

This grotto bigger & stronger  
fts.



Ft pressure increasing SW. Horseshoes of flow from Sw to NE.  
Cent Lake bed rising.

T.A.J.

## PHOTOGRAPH RECORD

Day Friday

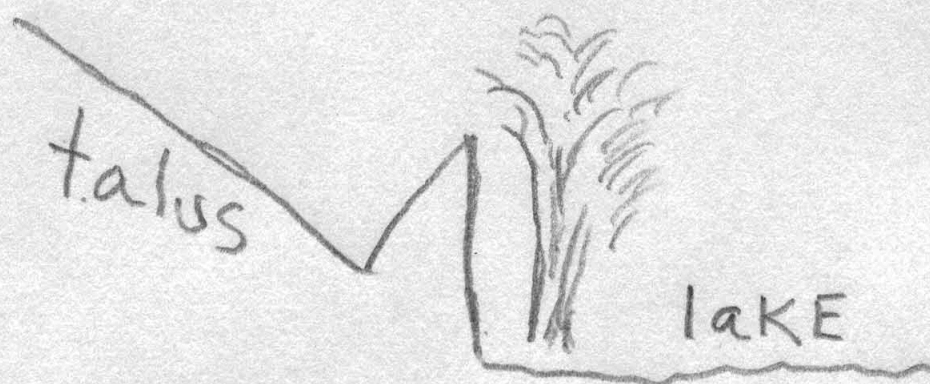
Date December 25, 1931

time	sta	subject	no	pl	scr	stop	ex	cam
<u>December 25</u>								
11:30 a.m. to 12:30 p.m.								
	S	SW grotto (old film)	1	panchrom	B	f/16	3/4	5 x 7
	S	Cent ft. (old film)	2	"	"	"	"	"
	S	Pit (new film)	3	"	F	"	6	"
	S	Pit (new film)	4	"	F	"	8	"
8 p.m.	WP	Center & N	1	"		f/6.3	5	
	WP	SW	2	"		"	"	
T.A.J								

December 27  
5:30 p.m.

At pit. Met Wingate en route who gave me some figures--average depth of lake 90 ft; deepest pool is S 115 ft.; acreage 90; cu. ft. new lava about 260 million

Central Fountains have lessened in activity, and the "new" one NE is only a sluggish gushing and receding on the lake surface. The SW grotto is more active than ever, a beautiful sight. Powers states (later) that from SW rim this bench formation protrudes upwards thus.



Detonations accompanied high spurts or jets.

R.H.

December 28  
7:30-9 a.m.

SW fountain has been very active overnight and continues so--it has thrown spatter over 1/3 of the area of the SW talus and better than half way to its top.

New steam vents noted as follows:

N talus E side and just west of remaining spatter from fountains of Dec. 23.

S end of NW talus.

3 beneath Tourist Stand

N side  $\frac{1}{2}$  way to top of SW talus.

No noticeable filling around edges .

4 fountains along rift. Larger one has moved SW along line.

Considerable doming about SW grotto fountain.

Misty day with fair NE wind.

Made circuit of rim.

Noting new cracks from quake of December 23 as follows.

From NE rim NE to Little Beggar

3 cracks concentric with rim.

Nothing in line of rift- SW-NE.

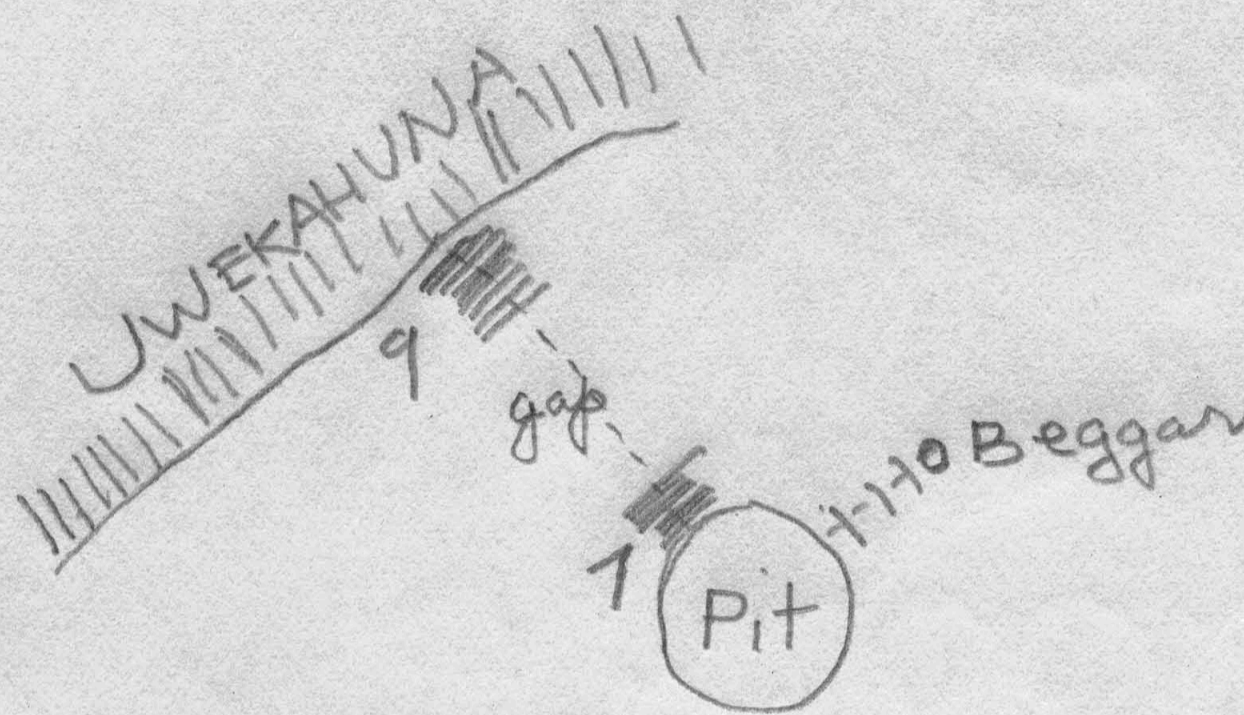
N rim NW to Uwekahuna along trail.

7 cracks concentric with rim within 500' of rim and 9 similar cracks close under Uwekahuna cliff.

December 28

7:30-9 a.m.

(cont'd)



W, SW and S sides showed widening of old cracks and some new ones. Gathered several large chunks of spatter. Found tropic bird which had been dashed against pit wall by wind and then blown out; still alive but quite bloody.

Heavy steam at SW vents.

One boulder 3' diameter had been thrown 200' plus out from Uwekahuna wall by quake.

E.G.W.

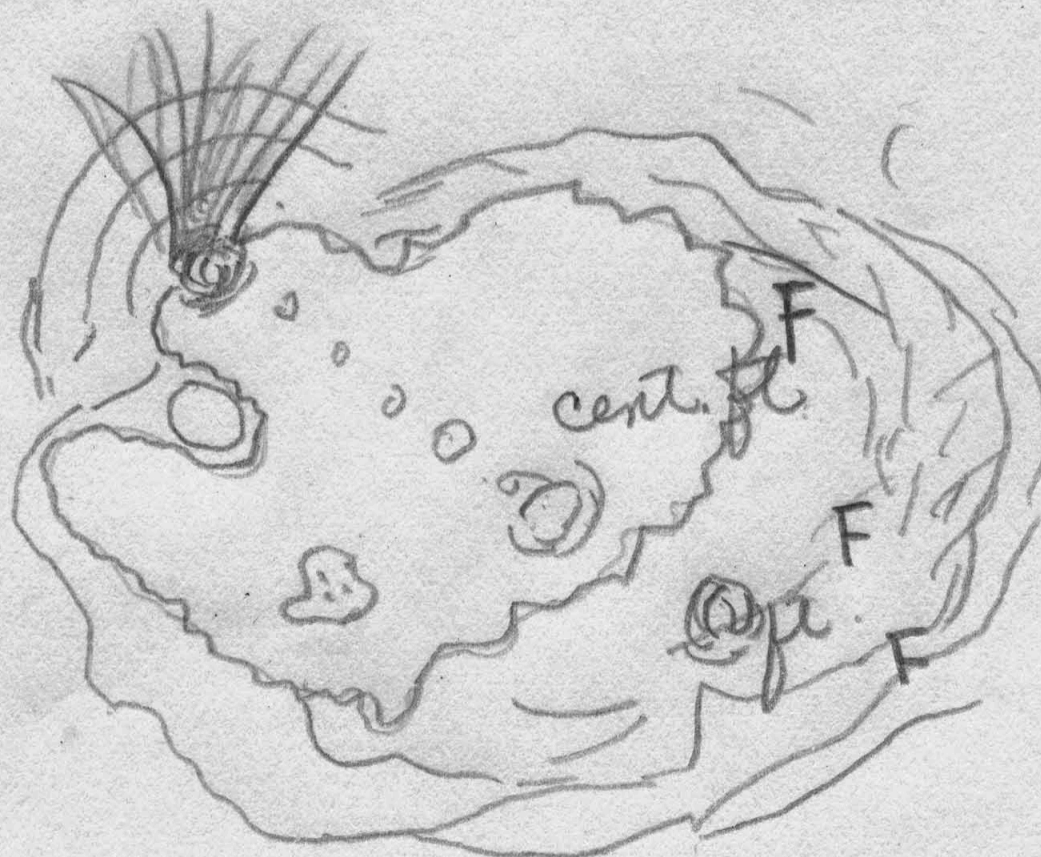
11:20 a.m.

Concentrated big ft 350 to 400 ft high at SW grotto and spatter half way up big talus. Precisely like Alike situation at source. Great heat on edge. Central ft a bubbling pool, occasionally sending up a string of slag 500 plus-minus ft high: higher than the steady spray SW.

Both cent ft and N cent ft making explosive bursts with really loud detonations, some of which sound like a chemical explosions. At the area of this northern vent there are 3 flows pouring northward down from an edge of crust.

This means a lake within a slag heap about the 18 fts from center to SW.

The whole area of the NW, N, and NE edges of the floor is cracked and mashed into pressure ridges and recalls the slopes in those directions from the lake of 1930. There are 4 or 5 blue fume jets in this slope area. There is a wide patch of crust about where the big cone of 1930 was. The SW ft is forming the big horseshoe half-cone of 1931. The lake is a leafshaped affair with the SW ft at the stem.



F equals fume

December 28  
(cont'd)

The lake is at the top of the heap and measurement shows 115 ft gain SW, 40 ft NW center. The highest topography at present is at SW lower W and E.

A cloud of blue fume rises always from SW ft and in puffs blue fume comes up from the two noisy vents and a small amount of fume from the line of small fts. Pit is perfectly clear for seeing.

KGU, the Advertiser broadcasting station, sent a national broadcast out from a hut at the E edge of Halemaumau at 10:45 a.m. for 30 minutes. A microphone was held on the end of a long timer so that listeners could hear the roar of the big ft and the explosive bursts of the Central and North Cent vents.

The SW ft, like the Alika ft, is a hose jet playing at a high angle on all sides and swinging slowly around a central vertical position.

The analogy to Alika source is enhanced by the resemblance of the minor fts and the 2 explosive vents to the "growler lighthouse" and other northern vents of the Alika series.

T.A.J.

4 p.m.

Two sluggish small fountains in SW center along rift. Grotto fountain still active but much lessened. Some lava flowing from grotto but sluggish. Grotto fountain about 50' at most.

8:30-9:30 p.m.

Fountains along rift had all but disappeared. Grotto fountain only bubbling for about  $\frac{1}{2}$  hour. Afterwards renewing activity and sending out sluggish flows.

E.G.W.

Day	Tuesday	Date	December 29, 1931
	Wednesday		" 30, "

December 29

8:30 a.m.

At pit. SW fountain has revived and practically as strong as I have ever seen it. No other action at former fountain vents. Jones states bright glow seen over pit, from his house, at 3:30 a.m. Took snapshot of seis hut under construction. Cement forms in place and men getting ready to mix. Also photographed fountain (my camera).

R.H.

## Wingate Elevations

Top of grotto 2860, or 34 ft. above Sun.

NE end of horseshoe spatter from grotto, at edge of lava, 2763; edge of lava N end of island at center of grotto, 2764; edge of spatter, cold lava, and SW talus at W side of grotto, 2754; lava level SW floor 2763; top of small cone center of pit, 2761; bottom of same at edge of lava, 2754 (diff. 7 ft); elev. NW floor 2738 (a rise of 4 ft); elev. NE floor doubtful (2760?); elev. at edge of floor in bays remain the same. West Bay 2744; NW Bay 2743; NE Bay 2740.

There has been a slump of 5 to 10 ft over most of the floor and lava from the grotto is slowly filling the slumped-in area in its vicinity.

E.G.W.

December 30

8:30 a.m.

SW grotto appears same as yesterday, fairly strong at times, and then weakening. Some jets went as high as at any previous time. "Lobster claw" effect of flow from grotto not apparent the morning as the island in front has enlarged and blacked the flow tongue on the SE side. Flow on the NW side is correspondingly greater and moves majestically forward, spreading over the crusts of previous flows.

Some glow was seen on NE edge of new fill. Are the inactive fountain vents still putting out fresh flows, for that side of lake is otherwise all black?

Powers noted gas accumulation and explosions at central vents yesterday p.m.

R.H.

## PHOTOGRAPH RECORD

Day **Tuesday**Date **December 29, 1931**

time	sta	subject	no	pl	scr	stop	ex	cam
<u>December 29</u>								
8:30 a.m.		Seis hut under construction Cement forms in place and men getting ready to mix.						R.H. Camera
		Fountain.						R.H.
8 p.m.		Flow from SW cone: W stream & flows on floor.	1			f/6.3	10	W.P.
	Uvek.	Halemaumau	2			"	15 min.	"  T.A.J.

Day	Wednesday	Date	December 30, 1931
	Thursday		" 31, "

December 30  
(cont'd)  
8 p.m.

The situation is the same as was photographed last night.  
The SW cone is growing outside and on top and caving in continually on the inside.

Two streams pour from it E and W of the island in front of it. The West stream is arched over with crust at its narrowest part so that from the froth pool around the fountain it pours like a cascade.

Bright all night.

Felt earthquake 11 plus p.m.

December 31  
9:30 a.m.

Flow from SW cone as before.

The area of flows is widening and in front of SW ft above former floor. The cone is growing. Only west flow from cone flowing on surface. Some fts 400 ft. Fluctuations. Frontal flows N and NE edges of heap.

Even brighter than last night.

T. A.J.

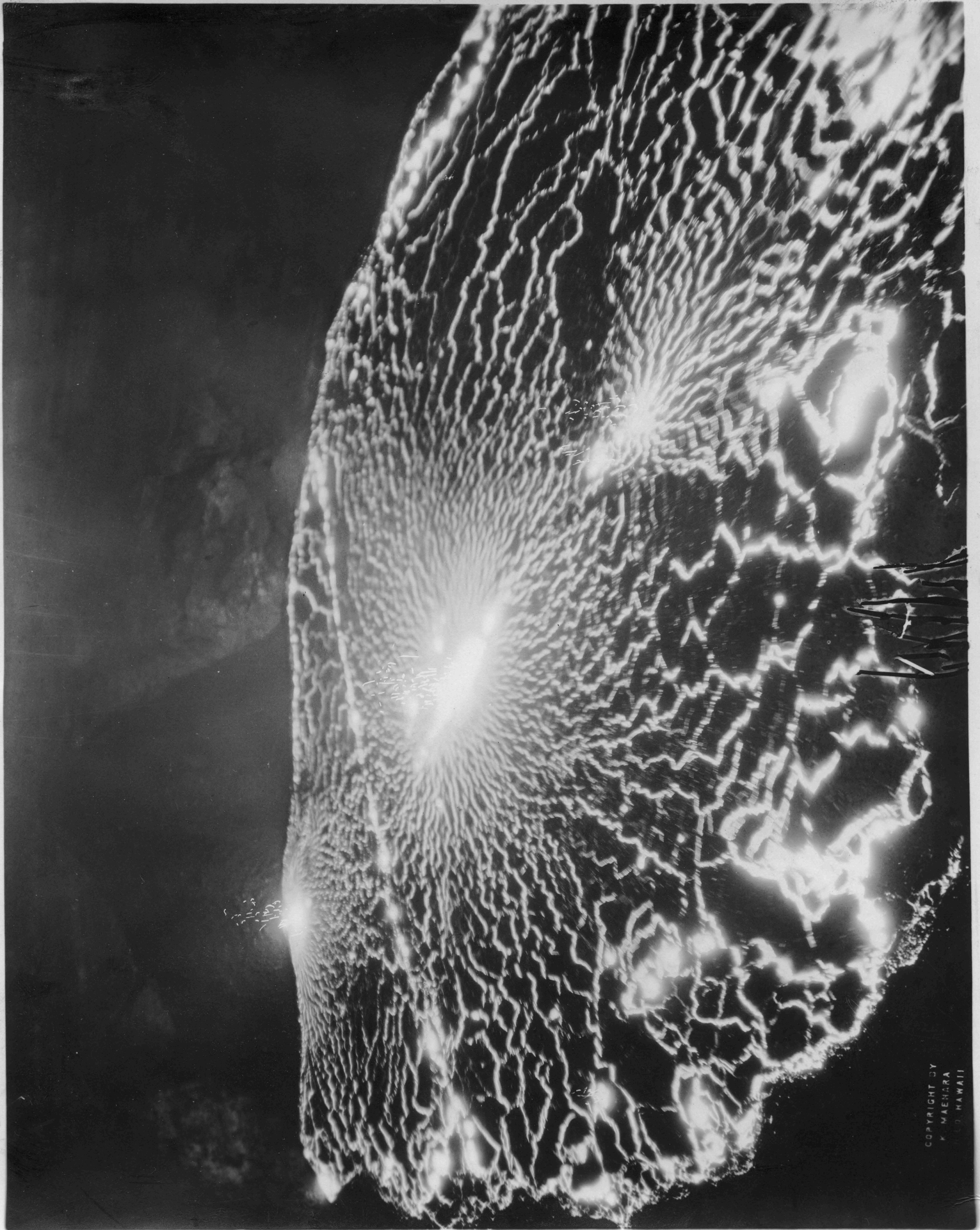




B-3905-II-PS.A.C.T.H.X II-25-30-9:30 AXC12-3000D HALEMAUMAU IN ACTION, KILAUEA VOLCANO HAWAII, T.H.

Halemaumau

Photo: Maehara



JOURNAL

Day

Date Dec. 25, 1931

2:30 p.m.

Halemaumau



JOURNAL

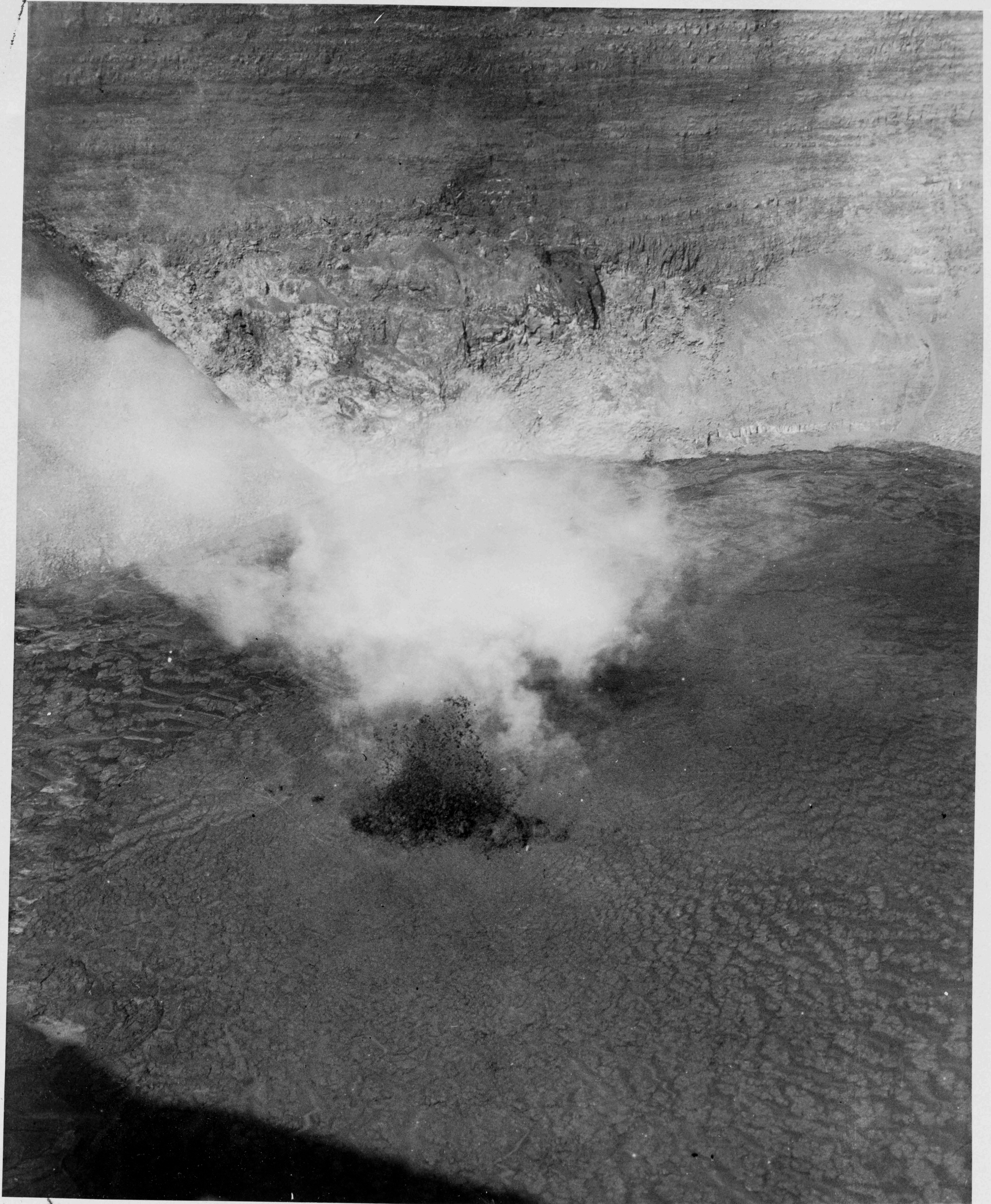
Day

Date

Dec. 25, 1931

10:00 a.m.

Halemaumau



Halemaumau



JOURNAL

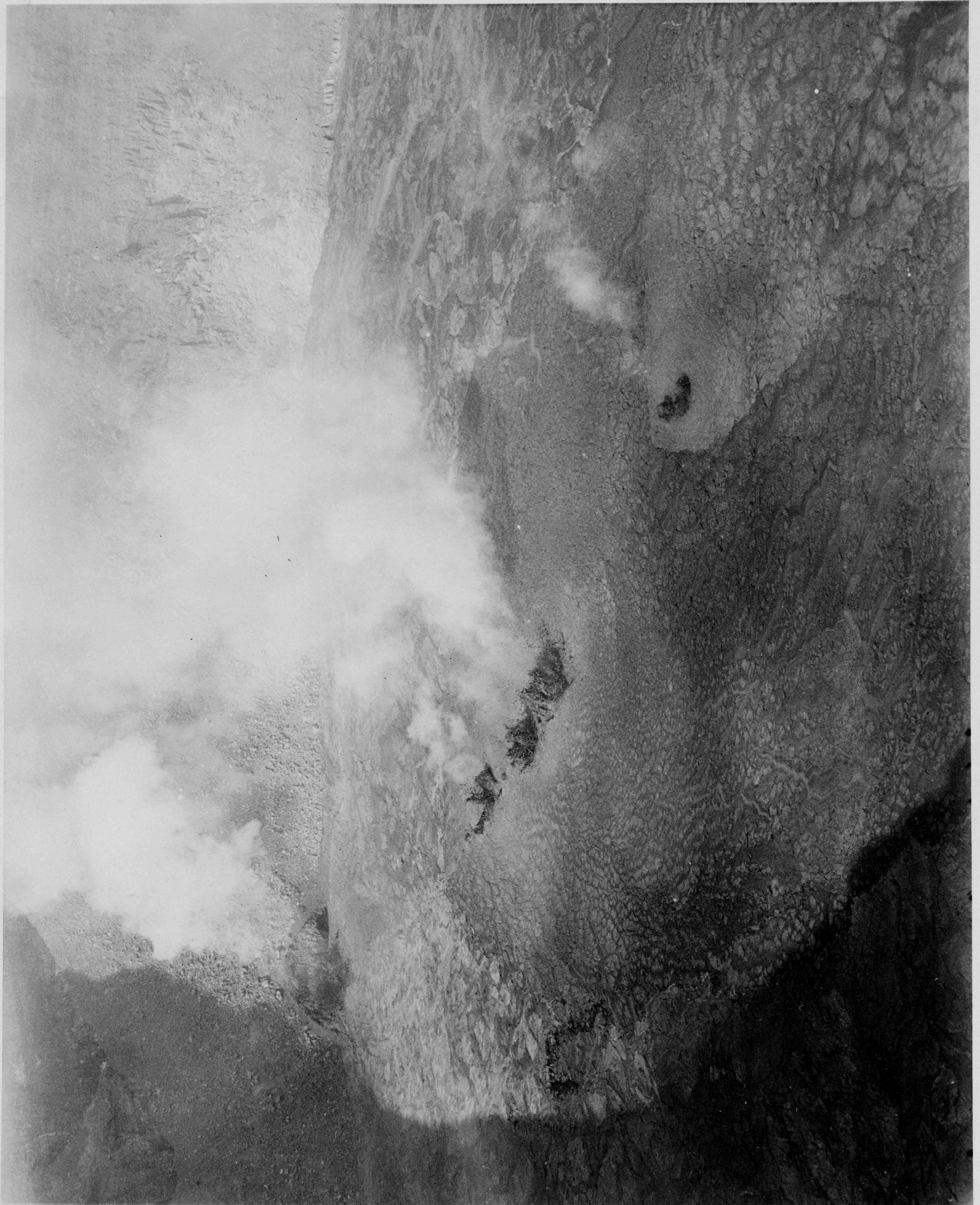
Day

Date

Dec. 26, 1931

10. am.

Halemaumau



JOURNAL

Day

Date

Dec. 26, 1931

Halemaumau

S.E. margin of lake.



JOURNAL

Day

Date Dec. 28, 1931

Halemauamu  
E side radio shacks



JOURNAL

Halemaumau

Day

Date

Dec. 29, 1931  
3 p.m.



JOURNAL

Day

Date

Dec. 30, 1931

11:00 a.m.

Halemaumau  
from N.E. B.M. #1

