Hawaiian Volcano Observatory Record Book 1934

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 Wednesday Date January 10, 1934
Thursday " 11, "
Friday " 12, "
Sunday " 14, "

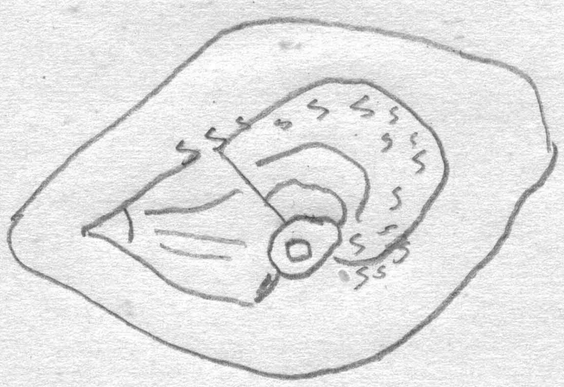
January 10
9:45 a.m.

Rain. No steam in pit. NE drift outside. Wind lite SW at S & inside Hal. Condensation over pit. Big cloud. Begins above NE edge & slightly inside.

Vapor in bottom at S talus NE floor & W. Sulphur f SW taluses. None form SW cone & wall E end . Big NE sill.

January 11
11:30 a.m.

Big cld rolling off from NE over Hal as seen from Uwekahuna. At edge the interior is clear, steady rain. Tails of steam around floor NE, NW, SE. None at or ner SW cone. The rain which has been steady has penetrated. The nudiated cloud above shows how deceptive a"steaming crater" might be. Heavy rain from this cloud move to leeward.



T.A.J.

January 12
11:30 a.m.

Vapor tails have stopped, on floor, & S talus vapor very slight. From Uwekahuna the moisture cloud at 9:30 a.m. over pit was thin & stringy. Rain is dwindling. Drizzling now & bright sky. The small talus with white stain NW is part dry as tho hot. No rain cloud over pit now.

January 14
10:20 a.m.

Stones trickling NW. Nothing else new. Cloudy NE wind.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Thursday Date January 18, 1934
Mon-Sun " 15-21 "
Wednesday " 24, "
Friday " 26, "

January 18 Yasunaka reported fresh rock at the foot of the NE talus in the morning. Later in the day small slides were reported in the pit at unknown positions.

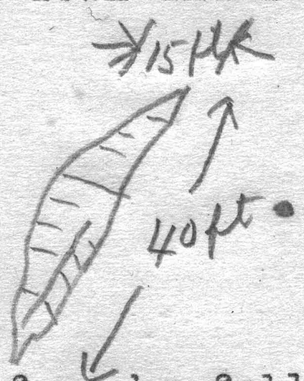
January 15-21 During the week there were 32 seis disturbances. A feeble shock was recorded at 9:37 p.m. January 19. It was not reported felt, and was 20 miles distant.

31 tremors were recorded.
Seis (0-12 mi = 0) (12-66 mi = 1.00) weekly 8.75
Tilt

41	164	M
47	165	L
42	167	L
46	171	L
44	173	L
42	165	M
45	162	L
44	167	ave past week
40	167	cor ave week prior
4 s	--	slight S tilt

During the past week 3 cracks opened
9 cracks closed
for an aggregate of 0.3 cm. closing.

January 24 Apparently a small amount of sliding from above the canoe sill. Also a trough shaped chunk of several tons has been broken from the N end 40 ft up and down and 15 ft wide. Note rocks falling at 9:28 a.m. No soldiers.



2:52 p.m. Noise of rocks falling from N Buttress, cloud in pit, rainy.

January 26 Fume appeared somewhat stronger (still weak) in the corners of the pit.

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Day Saturday Date January 27, 1934
Monday " 29, "

January 27 Some steam from pit due to heavy rains. Workmen thought there was an eruption coming right now.

January 29 Removed seismograph from Pit Seis on account of water dripping. The fume in the darkened corners of the pit appears as strong as on Friday, 1/26/34

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

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Day		Date		
	Sunday		February	4, 1934
	Monday		"	5, "
	Tuesday		"	6, "
	Wednesday		"	7, "
	Thursday		"	8, "
	Monday		"	12, "

February 4 — Craik & men removed roof SE seis sta yesterday & today. Made inner form for concrete reinforced ceiling & airspace above that & boards on stringers above that, & gable air space under iron roof above that.

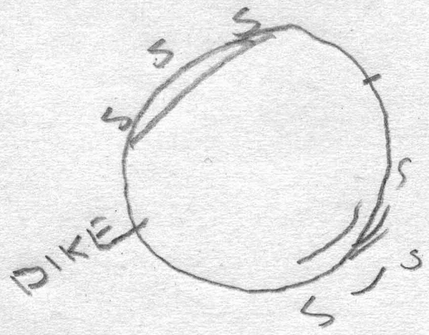
Pit quiet: dust west about 2:30 p.m.

February 5
10 a.m. — Concrete ceiling poured. One stone heard to fall near S tunnels.

February 6
10 a.m. — Light trickling slides E & NW.

February 7
9 a.m. — No change. Inspected sulphur patches with spectacle field glasses. No trace of rising fume. Inspected NE, SE, & N approaches to bottom. W talus incomparably the best.

February 8
8:50 a.m. — No change . SW wind. Steam up S talus in line of east spindle cracks. Note E & W upper steam. None over NE & SW vertical walls.



T.A.J.

February 12 — Small slide about 300 feet S of NE dike from 2/3 the way up the NE wall.

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Day Wednesday Date February 14, 1934

February 14 Fume quite plain in shadowed corners of pit. Appeared denser than my last report of fume some weeks ago.

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Saturday Date March 3, 1934
Mon-Sun " 5-11 "
Monday " 12, "
Tuesday " 13, "

March 3 Mauna Loa

At 5:30 p.m. from H.V.O. observed a thin blue vertical stream of fume against setting sun (to the left) over summit crater M.L.

Evidently made visible by sunlight background. Remnant of December vent. The fume remained visible, pink with sunset light, for half an hour, and extended in a streak blown west by the summit wind.

Disappeared after sundown, and not seen in clear air next morning.

Purely optical.

T.A.J.

March 5-11 No noticeable changes in Pit. No slides were noticed. Almost no fume could be seen. July data in from instrumental records and crack measurements.

A.E.J.

March 12 Yasu reports nothing.

A.E.J.

March 13
8:42 a.m. Small slide at NE wall. Stiff NE wind makes a new impulse for the sliding perhaps.

Pit otherwise quiet. No fume detected.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day		Date			
	Monday		March	19,	1934
	Saturday		"	24,	"
	Tuesday		"	27,	"
	Wednesday		"	28,	"
	Saturday		"	31,	"

March 19
1:20 p.m. Boys at Volcano House saw a slide in the Pit about 1:20 p.m.

A.E.J.

1:45 p.m. Dust from a slide over W side of Pit.

T.A.J.

March 24 A small slide occurred at 10:56 a.m. over the N end of the Canoe Sill. Big rocks could be heard thumping down.

Ranger Christ reports that he and "Henry" who have been visiting Mokuaweoweo at close intervals (6 times) agree that the sulfur fume (blue not steam) has definitely increased at the most recent cone, over what it was a few weeks ago. They last visited it at noon March 23, 1934. They are packing up materials for a rest house at the brink of the crater.

March 27 Roundabout reports indicate that workers heard noise in direction of Makao Puhi Sat. p.m. Mar 24. Few tremors then.

March 28 Inspected 4 or 5 craters. Could find no slides.

March 31 On my trips to the pit I have noticed nothing new or unusual for the past six days.

A.E.J.

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Day Sunday Date April 1, 1934
Wednesday " 11, "
Thursday " 12, "
Friday " 13, "
Saturday " 21, "
Wednesday " 25, "
Sunday " 29, "

April 1 — Small slide occurred over North end of Canoe Sill at 10:24 a.m. Some dust noted in NE corner as if a small slide had occurred since yesterday.

A.E.J.

April 11 — One small fall of rocks NW.

April 12
8:30 a.m. — NE rock fall at 8:30 a.m.

T.A.J.

April 13
00:57 p.m. — A slide fell from Kilauea Crater wall, S of Uwekahuna. Dust hung in the air for 5 minutes, until in N end of crater.

April 21 — Rocks trickling down NW buttress.
9:18 a.m.
10:15 a.m. — Small slide in NE bay 3/4 way up.
10:38 a.m. — Rock avalanche from top NW buttress.
10:46 a.m. — Rock avalanche from top NW buttress
1:15 p.m. — Slide in pit.

A.E.J.

April 25 — Slide at NW talus. Fall of rocks from wall.
10:12 a.m.

April 29 — Lueck 6 hrs in Mokuaweoweo.
No more blue fume 1933 vents. Smelt in Jan. No smell now.
1914 cone making blue & yellow smoke.
One cone E of trail 6 mi down steaming from its crater not seen before.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Tuesday **Date** May 3, 1934
Tuesday " 8, "
Thursday " 10, "

May 3
3:20 p.m. (Observation by Ranger K.J.Williams)
Avalanche northeast made thin dust cloud rise very high and straight in a strong NE wind. Observed from Steaming Bluffs Trail.

(Reported by RH)

May 8
9:20 a.m. NE trickle - slides & small ones all day. (sounds)

Ranger Williams

May 10
10:10 a.m. Big quake made 3 slides in Pauahi Crater, noticed by Rangers Eaton & Peck putting up a tank at the shelter.

T.A.J.

10:10 a.m. Earthquake felt; 2 shocks, first short followed immediately by a stronger shock which caused light fixtures to swing. The children were playing in storeroom, and Richie came in saying, "What makes the storeroom shake?"

12 noon Another shock felt about this time.

Mrs. Hodges
27 miles

Earthquake of 10:10 a.m.

In Hawaii Meat Market cans fell in N-S shelf toward the W. Did not fall in E-W shelf.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Thursday Date May 10, 1934
Friday " 11, "

May 10
(cont'd)

Strong eq. of 10:10 a.m. Nothing in pit.
SE sta wrote E-W: dism. N-S
Clinoscope SE dismantled-Record normal

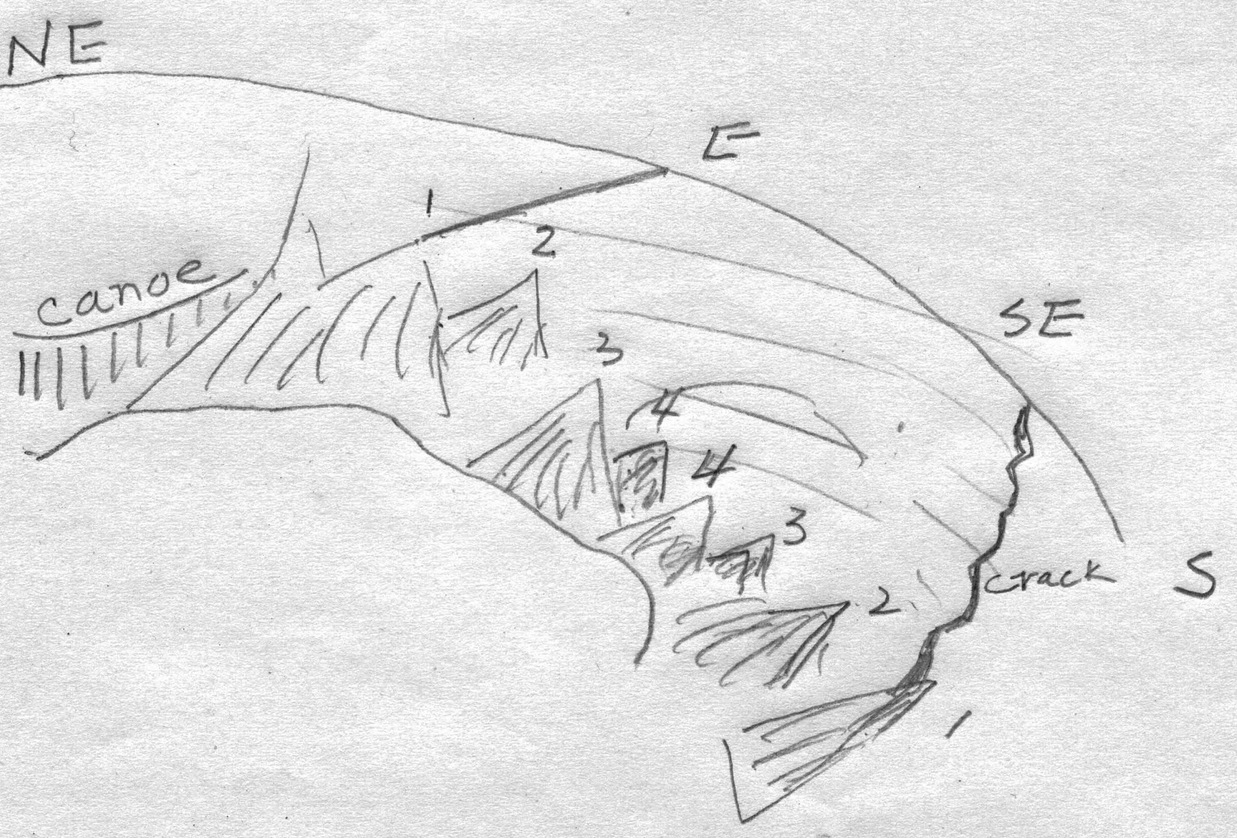
S60E	10.5	9:08 a.	TJ	Both pivots off
N48W	52.0	11:40 a.	TJ	Reset
00	00	11:50 a.	TJ	Centered
W sta N85W	4.5	12:00 n	TJ	
(N70W	4.3	8:45 a.)		
00	00	12:10 p.	TJ	(Card was touching boom)
N sta N50W	0.5	12:38 p.	TJ	
00	00	12:48 p.	TJ	Centered

May 11
9 a.m.

The stg eq of 10:10 a.m. May 10, 1934 shook down fresh red rock fragments at the north part of the NW taluses. The break from the wall was just above the low part of the talus.

Rock trickling heard in that region now 9:05 a.m. again 9:12 a.m.

Note: Gradation in size eastern taluses. Bigger at the cracks.



T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Sunday Date May 13, 1934
Monday " 14, "
Sunday " 20, "

May 13

3:23 p.m. Earthquake shook home moderately at 27 miles.
Was standing still.

3:25 p.m. Smaller shock rattled door.
Motion NW-SE.

3:38 At pit; all quiet, misty. Scars on N wall would indicate instability. There has been a slide from top edge of W wall. Remained at pit 10 minutes.

4:10 At HVO. Bosch not dismantled; has a fine record of shock.

R.H.

May 14

8:20 p.m. Still drizzly morning. Vapor up SE & W walls, over SW talus, voluminous tails of steam up S talus at wall SW rift, all along upper rim cracks, E & W, but notably absent up & down walls & taluses north & northeast. Walls of pit wet & red. No steam tails whateber rising from lava floor or cone.

8:40 a.m.



Note: Cracks radiate NE from cone, including SE & SW wall cracks. Wall cracks in floor are looking NW NE & E. These represent the tension strain on the bottom dome in the general belt of the southwest rift tunnels.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Wednesday Date May 23, 1934
Wednesday " 30, "
Thursday " 31, "

May 23 Christ reports increase in sulphur deposits in Mokuaweoweo crater in last month.

A.E.J.

May 30
10 a.m. New Uwekahuna-Halemaumau road washed out yesterday SW side of Kilauea crater.

Yet only about 1/5 of an inch of rain at raingauges both SE sta of Halemaumau and HVO. No pools on Kilauea floor and only moderate color in Halemaumau walls.

At 11:15 cloudburst today on Uwek, 2 cascades, lasting 15 min.

May 31 1/3 of an inch of rain. Pools over Kilauea floor. Road more washed in deep side ditches. Hal steaming walls SW & SE, walls all dark colored.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

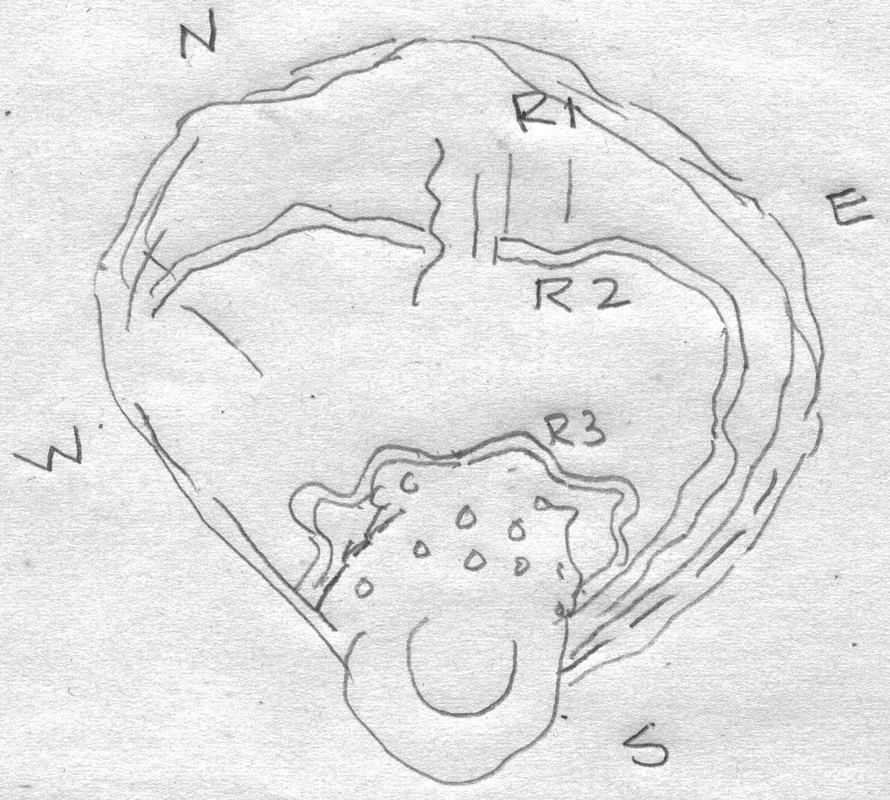
JOURNAL

Day Friday **Date** June 8, 1934
Wednesday " 13, "
Friday " 15, "

June 8
about 5:30 p. E. G. Wingate reports a slide from notch to east of North Buttress. No tremor at that time.

A.E.J.

June 13
8:30 a.m. There are ramparts of recession of lake in Hal floor of 1932.



The lake was thus receding to the cone funnel.

June 15 Fresh fall of rocks in a broad gray sweep on E talus under E prow of Canoe Sill. Gray & dry fragments contrast with wet red talus on either side.

Note: On 12th harmonic tremor in spells all day.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Saturday Date June 23, 1934
Saturday " 30, "

June 23 While at the W side of Halemaumau at 9:42 a.m. we saw a small slide start from under the tourist stand at the SE about halfway up the wall.

June 25 The crack (#37) is extending across the road. (see map) So far it consists of a series of hair cracks in echelon.

A.E.J.

June 30
10:57 a.m. Avalanche from N bay.
11:21 a.m. Avalanche from North Bay.

H.Y.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day		Date	
	Friday	July 6,	1934
	Saturday	" 7,	"
	Tuesday	" 17,	"
	Thursday	" 19,	"
	Friday	" 20,	"

July 6
9:35 a.m. Yesterday July 5 at 1:15 p.m. dust rose north side of Hal.
Now there is a fresh break in the wall and fresh debris on the talus, at the W end of Canoe Sill of NE wall. The break is 1/3 way down wall from top.

July 7
10:20 a.m. Small slide N, same place.

T.A.J.

July 17 J.H. Christ reports fume heavy in Mokuaweoweo.

A.E.J.

July 19
9:33 a.m. Slide N above end of Canoe Sill

T.A.J.

July 20
2:45 p.m. Started by Quake.
Slide from N wall, down N talus larger slide from E corner, rocks still falling there at 3:05 p.m. No cracks in tourist stand. Both components of Pit Seis off. Tiltmeters there dismantled to NW, when reconnected was S45E about 5 cm off scale, centered. Some rocks fell in crack by pt. 39. More dust fell in cracks 100 ft SW point 24. Cracks to E & N showed no changes. N clinoscope showed little tilt to N. Cr point 37 opened $\frac{1}{2}$ mm.

Quake was barely felt at HVO, was not noticed at Park Headquarters bldg.

Mr. Twig Smith had just stepped out of his car, on the road on the SW rim, when the quake occurred. He felt a swaying motion and immediately saw a fair-sized slide start from the E corner of the pit, and a smaller one fall from the N Buttress.

People at the tourist stand noted it.

Quite a large dust cloud rose above the pit.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

JOURNAL

Hawaiian Volcano Observatory

Day Saturday **Date** July 21, 1934
Sunday " 22, "
Tuesday " 24, "

July 21
10:15 a.m.

Slide at the NW talus

T.A.J.

Slide reported in pit, middle of afternoon.
Much dust was seen from the Volcano House.

A.E.J.

July 22
8:40 a.m.

A few rocks sliding N.

T.A.J.

Christ reports having heard two blast sounds at top of M. Loa. Were about 20 sec. apart and in direction of Kilauea.

July 24
1:45 p.m.

Small rock trickle.
W. N60W 6.00 p.m. 0:01p.m.
N. S20W 2.00 2:07 p.
SE locked
31 pts measured. No important changes.

A.E.J.

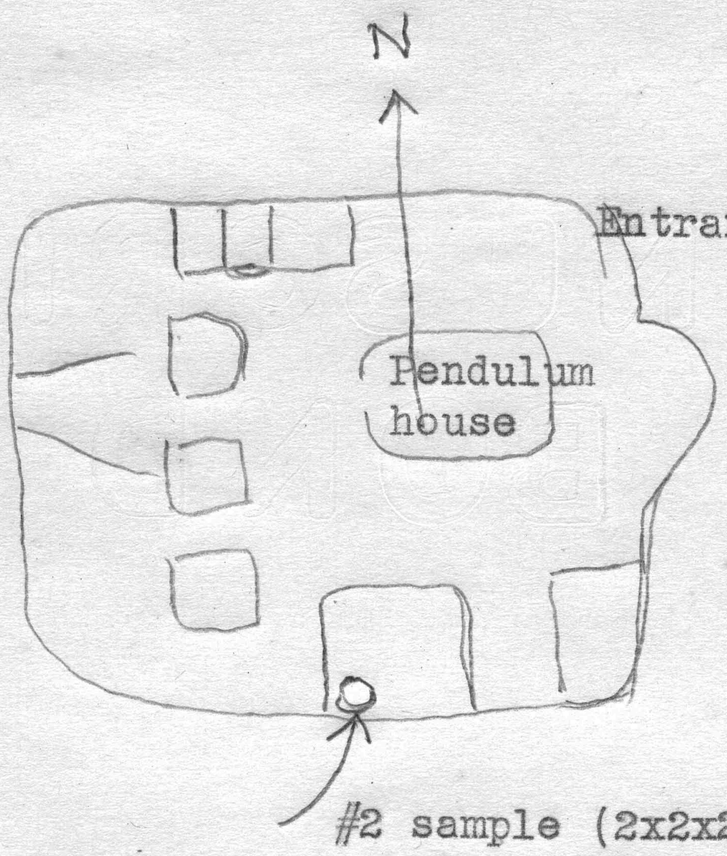
DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Wednesday Date August 1, 1934
Friday " 3, "
Saturday " 4, "

August 1



Wilkes M. Loa Camp
Sketch 8/1/34

#2 sample (2x2x2) ft. block thrown here by volcanic action probably since Wilkes Camp made.

A.E.Jones and survey party, went up Mauna Loa July 30. The new rest house prevented some of the usual suffering from the cold that is experienced by visitors. The four days spent on the mountain were generally clear and comfortable, though the temperature dropped to freezing at sunset (32°F) and was usually 20°F at daylight. The crater of Mokuaweoweo was as quiet as it was a month prior to the eruption of 1933. Sounds of falling unlocated rocks were heard occasionally. The new lava was found to be very treacherous, breaking easily under foot and at times spilling the surveyors with right smart losses of skin. The most dangerous location was at the vents of the eruption. Here the footing was insecure, sulphurous fume was strong, and the ground was hot enough to be uncomfortable to the feet.

A.E.J.

August 3
10 a.m. Small slide NW.

August 4
9:10 a.m. Halemaumau S wall small slide.
9:12 a.m. Another North

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Sunday-Sunday Date July 29-Aug 5, 1934
Sunday Aug 12, "
Sunday " 19, "
Saturday " 25, "

July 29-Aug 5

Cracks July 28

-.05		plus .05	
-.05		.10	
-.05		.05	
-.05	8	.05	6
-.10		.05	
-.05		.05	
-.05		.35	
-.05			
.45			
.35			
- 1 mm			

Cracks Aug 4

-.10		plus .05	
-.10	4	.15	
-.05		.05	
-.05		.15	
.30		.05	
		.05	
		.50	
		.30	
		plus 2 mm	

T.A.J.

August 12 — About 11 a.m. a small slide was noted, from the Crater wall, in front of the Military Camp.

August 19 — Avalanche N side of Pit at 9:25 a.m. , a second about 1:15 p.m.

T.A.J.

August 25
10:34 a.m. — Ranger Lamb, standing at Museum observed dust cloud rising from slide in N end of Pit. Size of cloud would indicate quite a large slide.

XXX

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Wednesday Date September 5, 1934
Thursday " 6, "

September 5 A slide was seen by Lamb about 10:10 or 10:30 a.m. Jones saw a slide in the NE corner of Pit at 4:30 p.m.

XXX

September 6 Eruption of Halemaumau. about 2:35 a.m.

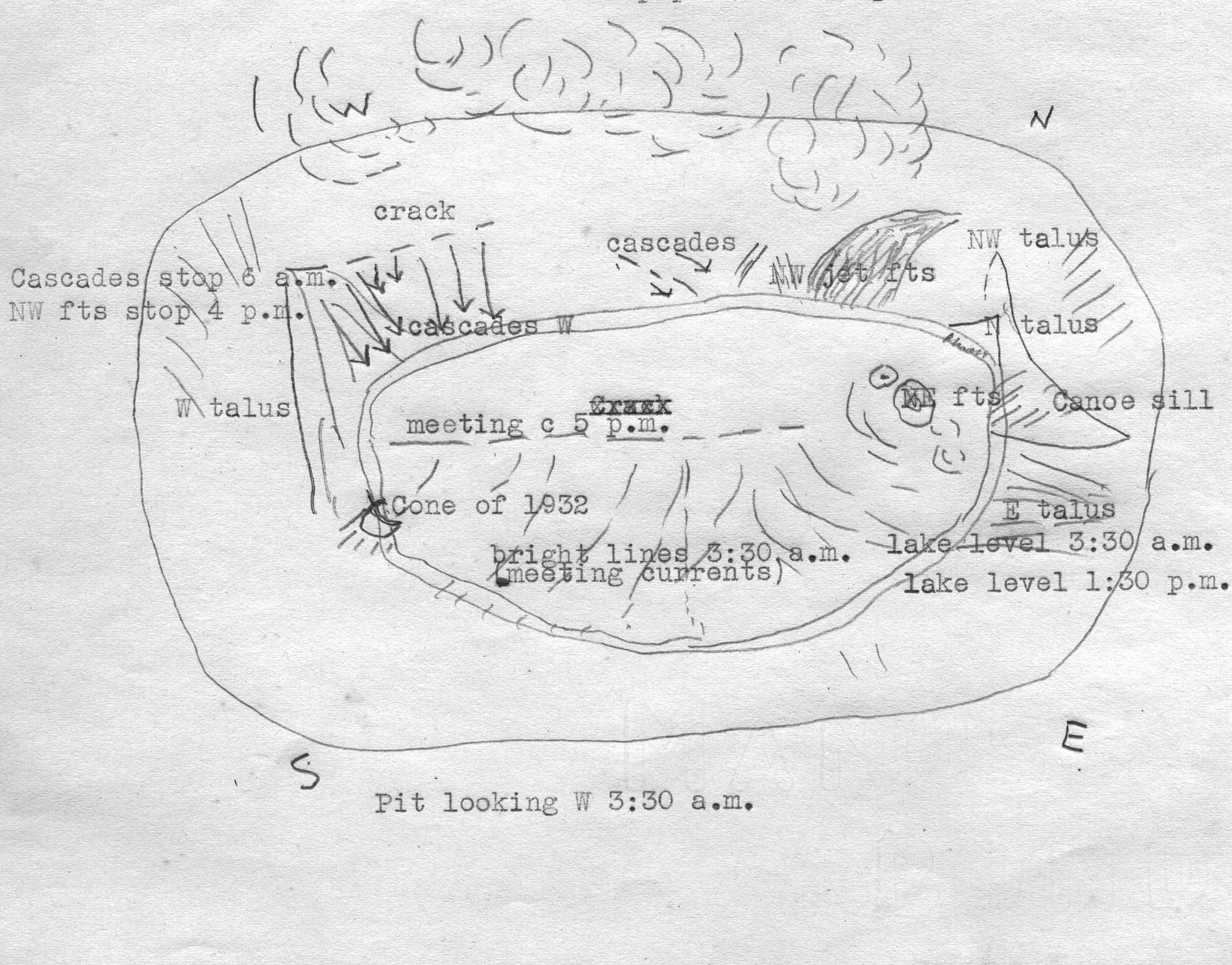
About 2:35 a.m. Mrs. Jaggar felt a twisting earthquake at Kilauea, NE edge residence. No glow appeared immediately thereafter at Halemaumau.

About 2:45 a.m. the Volcano House watchman is said to have seen glow at Halemaumau.

At 3 a.m. the pit was brilliant with fume column, salmon-colored, like ginger in transmitted light (absinthe) rising up north edge.

At 3:30 a.m. T.A.J. reached edge of Halemaumau by the western road. Shower of clinkers on road SW of Kilauea: northeast wind made many whirls and squalls of wind blowing up dust clouds W & SW.

The fume from pit migrated apparently from N edge to W edge, indicating that the opening of cracks in bottom of pit was first the NE wall crack, then NW, then the high talus crack making cascades (a rock crack) approximately 350 feet above bottom, its orifice a horizontal line 900' north from the top part of the great SW talus.



Pit looking W 3:30 a.m.

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Day Thursday Date September 6, 1934

September 6 (cont'd)

At 3:30 a.m. seen from Tourist Lookout SE, there were about 30 fts, from three main locations (1) athwart lake NE, (2) base of wall WNW, (3) cascading high crack W.

The filling of bottom was very rapid, estimated by contour shape of fill in craterlet of 1932 cone, as 40 ft deep by 4 a.m., 60 feet deep by 8 a.m.

The lake away from the fts was a quiet bright-line pattern apparently level. The meeting-line of two surface currents made a bright groove in the crusts SE-NW.

The skins were of black watered-silk appearance.

3:30 a.m. the north group of fountains at 3:30 a.m. trended NW-SE. across the NE part of the lake, about a dozen fountains in a line, with one very large one spurting up in pulsations 200 to 300 feet: this largest fountain was a peaked dome of M.L. type becoming drowned rapidly by the lake surrounding it. It was towards the NW end of this NE line.

The NW group of fountains was a plexus of hose-like jets criss-crossing which had started by rupture of the wall-crack of the 1932 cake. It followed the small-talus margin of the 1932 floor at base of large talus & thence 500 feet to the SW. This made a steady roar more violent in gas emission than the two other fissure groups of fountains. At the SW this group was a series of cascades from the NE end of the crack behind the wall-slab, which, farther on to SW, lay in front of the crack emitting the high horizontal line of cascade sources. Between these minor cascades & the big cascades, the crack above appeared sealed.

The most unusual feature of the eruption was the horizontal line of fountaining vents <u>half way up the wall</u>, athwart the upper part of the WSW big talus, and straight along the wall north of there. The fissure was an upright one behind a buttress slab below. About 10 ftg vents along the crack made grotto niches of spatter against the wall above them, and ribbon cascades for 350 feet down the wall below. The biggest (400 ft above 1932 floor) cascading stream gathered in a golden river down the north edge of the big west talus, and other torrents poured over the talus itself. The more northern ribbons flowed directly into thelake edge.

The roar was the usual surf like rumble. The fume smelled of SO_2. The green color in the fume above the fountains was as usual. The fume hugged the west wall and rose 3000 or more feet in volutes and swept away in a long train to the south point of Hawaii. The general action was like the recent eruptions 1930, 1931-32 etc. The seismographs show very large harmonic tremor, even the vertical components, and several earthquakes. The tilt migration of pen at SE pit instrument is west tilt. Eqs & tremor are bigger Uwekahuna than HVO, bigger SE pit than Uwekahuna. The west side of Halemaumau was the country disturbed.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

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JOURNAL

Day Thursday Date September 6, 1934

September 6 (cont'd)

Yasu and I walked around pit completely by N & W: Jones read N & SE cellars. Tilts on all clinoscopes were beyond the dials.

Looking down on big N fountain showed it bright yellow, the fume greenish below, absinthe red above. The west wall region was fumy so no photos could be taken. West and SW clinker fell: Yasu picked up fragments red hot within, one about a foot long. Tornadoes incessantly formed about western steam cracks, and violent winds bombarded us with cinder & sand. In places we had to crouch down.

Went to W clinoscope and read it. Steps all covered with cinder. The red fume shot hundred of feet above our heads and clouds of clinker fragments like burnt paper shot up and floated down on W, edge of Halemaumau.

SW of the pit, 200 or more feet back, fresh breaks in the dirt, an echelon, parallel with the pit edge, & can be followed for a quarter of a mile. The crack measurements show a cm of opening at No. 37, 800 feet back of the rim SE, & much disturbance S & W. Much less N & E . Left the pit after daylight 5:30 a.m. The ribbon cascades W down the wall were dwindling, & had ceased altogether across the big W talus. By 6 they stopped on the W. wall, & the NW jets became more violent.

8 a.m. Returned to pit at 8 a.m., rain had begun & mist at V.H. Small slide at W end canoe sill. Ribbon cascades all black. N ft getting swallowed in lake. NW jets violent, shooting up criss-crossing like hose jets 200 ft or more. 1932 cone now a mere crescent & lake about 60 feet deep.

Jones at 9:30 a.m. estimates it 70 feet deep. Violent tremor shown on clinoscope needles & on all seismographs. Jones & Stephens measure all cracks about 9 ~~+~~ a.m.

12-1:30 p.m. Another visit to pit shows deep rumbling & 200 ft jets at NW, the NE line of fts greatly dwindled, and cracking & foundering crusts in SE half of the lake. This foundering is along lines of small bubble fountains, about 80 or 90 of them counted.

The NW talus is completely covered with pumiceous spatter. Wingate estimates height lake NW 85 ft over 1932: I estimate it 75 ft at the 1932 cone.

A new feature is a bench all around beginning to form with the lake sagging away from it. This takes the form of a crust islet at south horn of 1932 cone. The bench is wider about the flatter slopes of the taluses; a narrow solidification lip, overhanging liquid lava, at the vertical rock walls.

There are grottoes where the northern cascades were, near NW talus. The solidified ribbon cascades show brown clinker in their channels, and glossy driblet knobs overlapping downward, on the sides. There is pumice spatter at base of NNE talus from the fling of the larger NE ft.

September 6 (cont'd) The old west boss, which was red hot after the 1924 explosive eruption, is the part of the west slab, backed by the new cascade eruption, which was not cascaded over.

Walked again around the SW side of the pit and found the dirt cut by new steaming wet cracks, 300 or more feet back of the rim over the 1920 rift, approaching nearer to the rim (100 ft ±) and becoming more open and finally a single crack 1" ± open at the 1921 broken ground. At the west this is many cracks, which are west lines, merely, of steaming, making the gravel dark.

Wingate estimates acreage 1932 88, acreage now 95, acreage depth 65 feet, cubic yards 9,500,000.

SE clinoscope- off disc 6 cm. N 37° W
W " " " 2 cm. SW
N " " " 18 mm. (1.8 cm)
SE seismograph agrees. S 10 W

That means SE cellar showed very strong inward tilt: W cellar showing very strong tilt toward Kau rift SW.

N cellar showed strong tilt toward the pit.

This suggests a graben block from W side of pit lowered, making SE & N clinoscopes tip toward it, and also tilted SW-ward, carrying W clinoscope with it.

Seismogram shows 1st of several spasms of quaking 1:51 a.m, strongest quake at 2:22, another at 2:45± and the harmonic tremor continuous from 2:44 on, with numerous spasms of tremor after 2 a.m. The main fountaining thus began at 2:44 a.m.

At 1:30 p.m. examination of SE seismograph cellar showed the newly set clinoscope recovering to SE from its NW tilt, and the tremor still strong.

At about 3 p.m. the tremor diminished rapidly and the big fume cloud over the pit (photographed at 2:40) disappeared gradually between 3 & 4. Jones at pit phoned 4 p.m. that the NW line of spurting big fts were going out of action, while the NE central fts continued. The sudden quieting of tremor & diminishing of the fume volutes gave erroneous impression that the whole eruption was stopping.

5-5:30 p.m. Returned to pit by west road. Many people, 5 army & 2 Navy airplanes. Weather clears. Very strong winds (NE) at pit, especially eddies south.

5:30 p.m. Bottom an enormous lake, filling continues with islet at SW cone smaller, 6 or 7 large quiet fts across NE, straight line of bubble fts at meeting of 2 currents across NW side of lake trending NE-SW, benches wider along all taluses. Big avalanche (NE?) about 4, small slide ~~xxxxx~~ above big W talus 5:15. No trace of jet fts NW. NW talus plastered, & the niches of the recent fts caving in red hot at N end of line of black grottoes. White dense fume from cascade crack above W boss. Scattered fts E of center. Cracking & foundering S. Thin blue fume rises. The great cumulus billows to leeward no more. Pit shows thin

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Thursday Date September 6, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
September 6								
5:15 a.m.	SE	Pit (daylight)	3					Kodak Panoram
"	SSE	Looking North	4					"
"	SSE	Looking W. cascades black	5					"
2:40 p.m.	HVo	Pit fume cloud	6					"
								T.A.J.
		Eruption cloud over Uwekahuna	1			f/22	1/25	G234
2:23 p.m.		Eruption at 2:23 p.m.	2			f/11	1/25	"
3:50 p.m.		Pit				f/6.3	1/25	"
5:50 p.m.		(out of focus)						
5:50 p.m.	HVO	Halemaumau fume				f/6.3	½	"

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Thursday Date September 6, 1934
Friday " 7, "

September 6 (cont'd) blue fume as seen at a distance, and the winds blow up clouds of dust SW of pit and in desert.

Large crowds at pit. Steady action of N ft group, large lake steady , pit variously bright as seen from HVO, fume not thick rising from N corner, white thick vapor jet rising from N end of cascade crack half way down west wall over west boss.

Tremor steady at seismographs.

In afternoon saw a tropic bird fly about over the fts and finally settle to the lake crust, burst into flames & sink. These birds show curious insistence on flying to the fountains and on disregarding the fume until they commit suicide. They may have nests in the cliff.

T.A.J.

Lava broke out in Halemaumau at 3 a.m. accompanied by a felt quake. D?E.J. felt quakes 3:45 a.m., 4:25 a.m. and about 5 a.m. "Harmonic tremor" is larger than that recorded 1931, and is almost Feeble in intensity at the Pit.

Soldiers report that the line of fountains from the crack about 350 ft up the west wall, stopped about 6 a.m.

At 7:30 a.m. (now) the lava has covered the E spur of the little cinder cone. Fresh cracks around #45, 43, 34, 37 & 100 ft from 41.

XXX

September 7
8:30 a.m. Temp crack #37 at road S of road: Air 24°C crack 54°
N of road: Air 24°C crack 59°

9 a.m. N ft booming sometimes 300 ft high, SW & NW cascades & plastered talus black, 1932 cone with lake & ramparts somewhat higher than yesterday, rainbow at left inside pit, 2/3 of the circle. Drizzle, fume & half-sun.

8:30-9:30 a.m. Early about 5 a.m. marked return of strong harmonic tremor. This returned 8 a.m. to normal moderate tremor like the night. Drizzly morning NE wind

8:30 a.m. At pit big blast-like sounds began from N ft. This one of about 8 fts in line between NW talus & N talus & out from the lake edge. It is opposite the wall between the two taluses. Sounds like a shot. Each time the fountain bellies up, makes stringy flings, bright orange color, & some of the flings go 300 feet up, with puffs of brown fume. Sounds like

September 7 (cont'd) a chemical explosion. Blue fume rises from the whole ft. group. The explosions are apparently due to confinement, and perhaps pressure on a gas mixture, and chemical explosion may be super-added to expansion at certain times?

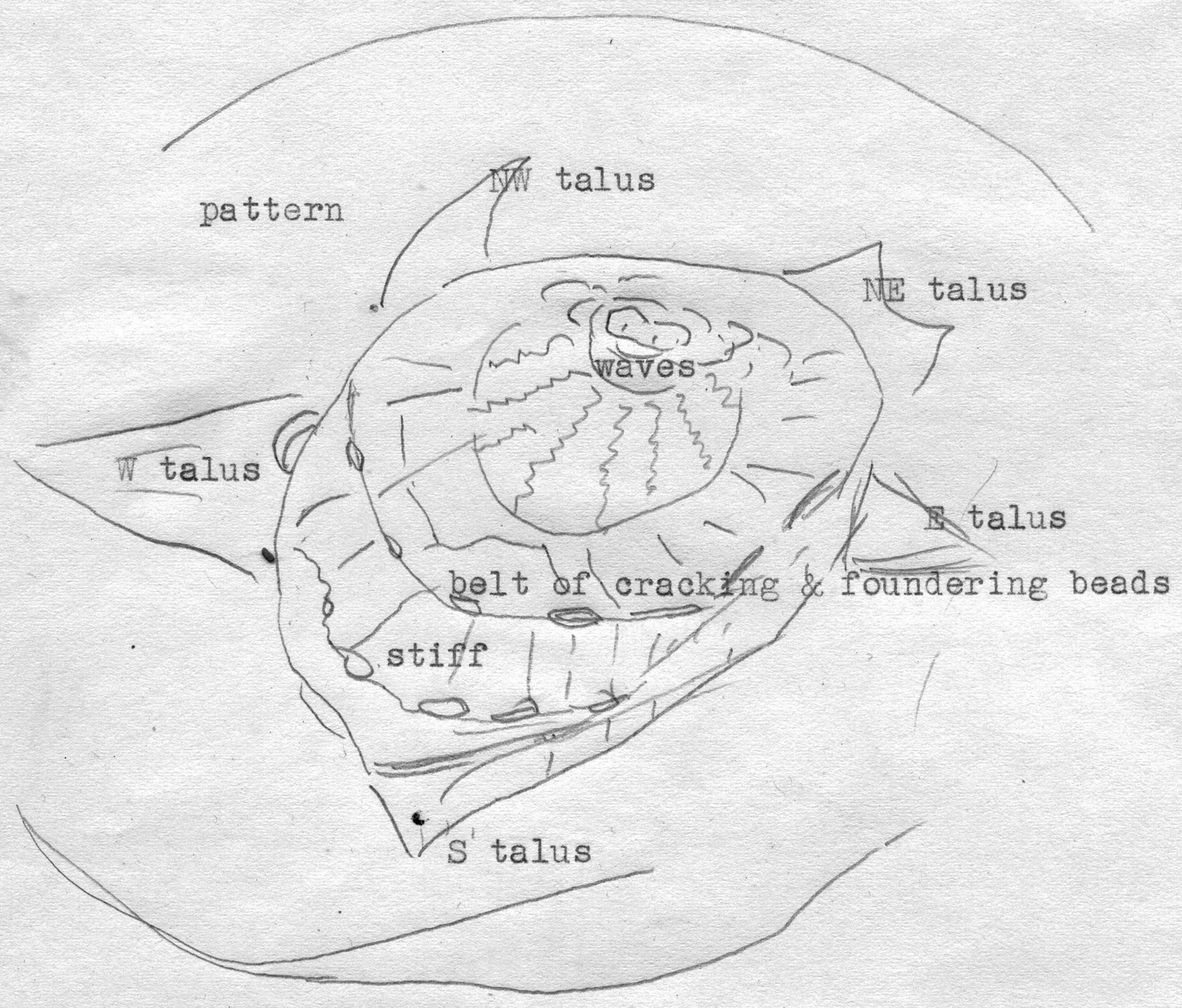
The harmonic tremor got bigger at pit from 2 a.m. on, and at H.V.O. from 5 a.m. on, declining to 8:30, and increasing 8:30 to 10 a.m. This increase rang No. 1 bell of annunciator seismophone every few minutes: the annunciator was recording the N fountain explosions. This demonstrated clearly that the ft. bursts make this type of tremor.

11 a.m. Strong NE wind is making great clouds of dust from air disturbances, to leeward of the hot pit.

Tremor died down, after waxing to great strength about noon, in the afternoon and the fume became very thin.

6-6:30 p.m. Line of 17 little fts and big at N ft locality, no more explosive snorts, no very big flings, quiet stiff bright line pattern.

6:30 p.m.



Cumulus caps occasionally high over pit. Weather clear.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Friday Date September 7, 1934
Saturday " 8, "

September 7 (cont'd) The only part that is liquid makes rings of heavy slow waves out from the ftg oval & the bright radial zig-zags beyond that appear stationary. The southern part of lake is stiff with bright bead-like lines of cracking & foundering. This also all around the shore. The ft flings are heavy & pasty. The noise has greatly diminished. The W wall is all visible from E. The only marked blue fume column is from the little vent at N end of cascade source line, in W wall. The area of 1932 cone which lake has covered is black & crusted. The beach is widest south, the end opposite the ftg source. The wind whirls of dust, and great migrating clouds of dust, blow across SW part of Kilauea & into Kau desert.

September 8 Clear a.m. Almost no fume except the cascade vent. Cumulus cap away up occasionally.

Hot vent SW over 1920 rift Air = 23 c
Near clinoscope road Vent= 76 c

* Ferns killed by fume in cracks W. Today the leeward fumes are slight & tornadoes small. Aval. 9:36 a.m.

SW of pit the violent wind sweep from the north and thousands of whirls have broken up all the basaltic pumice, swept 1924 gravel & pumice past all the embedded bowlders of 1924, had a grinding effect on the cemented ash floors, and so like "sastrugi", the bowlders stand with wind-ground channels on each side and a protected hump of hard ground standing up on lee side. The gravel is in streaks at right angles to the wind like ripple drift, with cemented ash between the ridgelets. The grass is clipped where it had existed at all. The flats of ash are pitted, with flakes making escarpments to windward.

T.A.J.

Arrived at west edge of Pit about 8:05 a.m. found several fountains much smaller than day before, spouting lava about 25 to 50 feet above the new floor of the Pit. The lava lake appears to have sunk about 10 feet below what it was at 5 p.m. 9/7/38.

Heard noise like rocks falling, may have been lava.

Found new crack about 50 feet SE of road at Parking place, towards and 11 to crack 37.

Avalanche in NE corner of Pit at 9 a.m.

XXX

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Friday Date September 7, 1934
Saturday " 8, "

time	sta	subject	no	pl	scr	stop	ex	cam
September 7								
9 a.m.	SE edge	to West	1					Pan Kodak
September 8								
8:30 a.m.	SW rim	NE Pit	1					Pan Kodak
10 a.m.	Head Kil.Iki	Kilauea	2					"
		Series of 5 photographs						T.A.J.
10:30 a.m.		Pit				f/22	1/10	

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

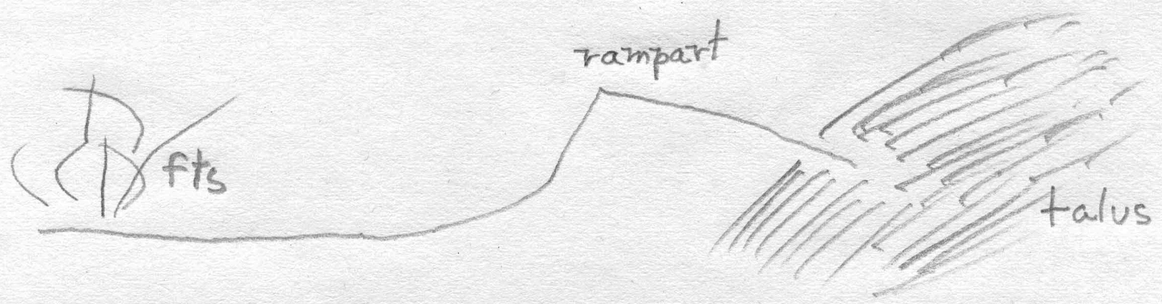
Day Saturday Date September 8, 1934
Sunday " 9, "
Monday " 10, "

September 8
(cont'd)
8 p.m. Broadcast at edge of pit by KGU. I take part.

Lake has circular bright line area around N fts. Latter 6 or 7, mild, tremor continues all night moderate. S end of lake nearly black. Blue fume from high cascade vent. Thin blue fume fts. mod. light over pit all nt.

September 9 Visit S edge pit at 11:30 a.m. Ft area smaller than last nt. Tremor continues. High rampart around subsidence at N edge lake, low beach of insagging at S end. Cone of 1932 shows circle of craterlet by subsidence, & 2 S. hummocks of 1932 have reappeared by subsidence.

Blue fume rises from high cascade vent. Thin jets of blue fume from several places in center of lake. Aval fall at N end old NW talus. Single stones of rock-fall on new lava E, & SE. All around E, W, & S the border inslope is like the "beach" of K. Iki. and probably 10 ft down: at least 15 to 20 ft black grotto rampart N, NW & NE with overhang in toward the lake.



The lake ftg area is lowering more than the crusted S area.

September 10 Lake about half of what it was Sept 8: an oval pool with fts on
9±a.m. its N side. 10 fts more or less.

Tremor keeps up. Lake around fts defining itself within its own rampart.

8 p.m. Lake makes small overflows over its rampart. Fts fewer & more noisy.

Another local broadcast. Doerr-Jaggar-Lycurgus-Wingate-Thyssen (Director)-Christ.

Some ft flings 200+ feet. Found large fragments pumice NW by going north of windswept area. Marked contrast windswept to non-windswept. The windswept began where the hot column W made hundreds of tornadoes. The collected tornadoes moving with the trade wind did the big sweeping. Some large pumice fragments show agglutination of smaller pieces. Sulphur on NW talus cone.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Monday Date September 10, 1934

Tilt - Pit

September 10
8:53 am

W - N65E

September	9	Sun.	N65E	13.5	9.33	a.m.
	8	Sat.	N60E	1.0	8.18	"
	7	Fri.	N50E	9.0	8.54	"

N

September	6	Thu.	S45W	1.5	8.36	"
	7	Fri.	S50W	3.0	9.16	"
	8	Sat.	S50W	3.5	9.42	"
	9	Sun.	S50W	4.0	10:09	"
	10	Mon.	S50W	5.0	9:20	"

SE

September	5	Wed.	N30E	6.0	9:15	"
	6	Thu.	N37W	10.cm off scale		3:33
	7	Fri.	S80E	6.0	8:43	"
	8	Sat.	S80E	3.5	8:43	"
	9	Sun.	S65E	4.5	9:45	"
	10	Mon.	S50E	6.0	10:23	"

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Monday Date September 10, 1934
Tuesday " 11, "

September 10 (cont'd) 1 p.m. Walked soldiers trail from Uwekahuna to Pit to look for cracks due to the eruption. Found one hair crack at end of a larger crack ||to Uwekahuna cliff about 100 feet from cliff. No more cracks were seen until about 50 feet of Pit edge, on trail. Cracks in that section somewhat less noticeable than on Thursday 6th.

Fountains noisy, small avalanche about 1:45. Estimate that fountains occasionally spurt 60 ft. above lava lake. Lake is about the same in area as last evening. Appears to be higher than immediate floor, as small lava flows a few feet in length were noticed spilling out on to floor.

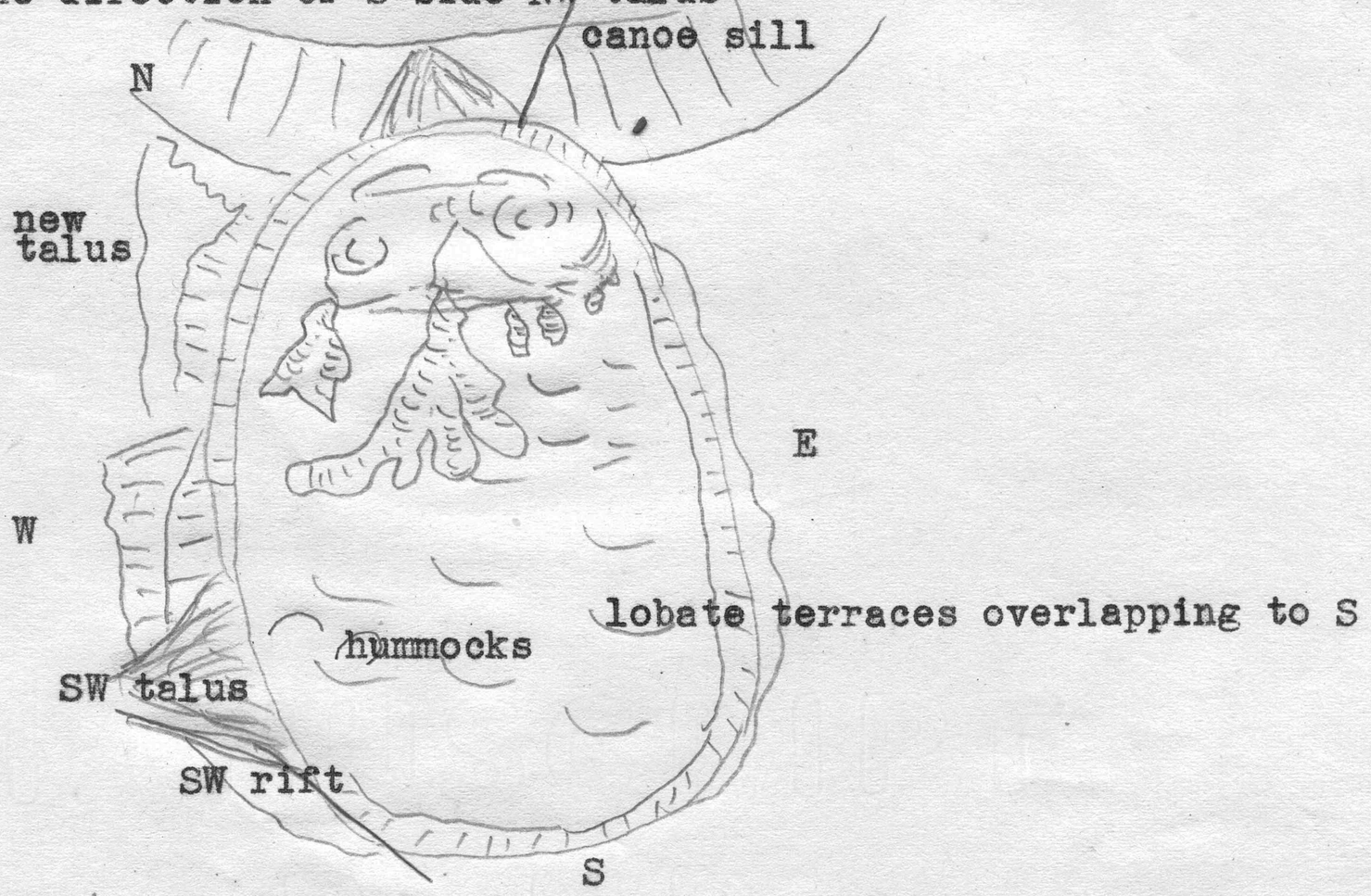
September 11 9:20 a.m. 3 fountain groups noisy. Deep booming. Increase tremor. Lake an oval flat on top of terraced heap. Lobate terraces in slope S from lake.

Small overflows around edges lake, 2 big overflows to SW from lake. Narrow stems and tree-like branching at delta fronts. Lake 1000 ft by 400. Slump bank all around edge of floor. This appears 20 to 30 ft high N of lake. The E & W ft groups are making grotto ramparts on their north sides (beginning of conelets). Occasional gassy rushing blasts, loud, from fts. Fresh rock falls on new lava. Sulphur depositing at blue fume vent of high cascades.

Blue fume vents, small, at E & W edges, at one of the hummocks in front of 1932 cone, at top of collapsed bank NW talus. Sulphur at base of NNE talus where spattered.

Lake shows double-lobe streaming pattern E & W from the 2 ends of ftg groups. Steepest slope out from lake is where the streams are, in the direction of S side NW talus

10 a.m.



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Tuesday Date September 11, 1934
Wednesday " 12, "

2 p.m. Thunderstorm. National Broadcast.

Thyssen, Jaggar, Doerr, Wingate; many tails of steam & whirls on S half of floor Halemaumau. Ft more noisy, the W one increasingly continuous jet 200± high. Lake extended N of spatter bank of E ft. The flows quiet & lake shrunk. A big flow against wall, NW of lake. Tremor from detonations renews at 4:30 p.m. & 8 p.m. the ringing of annunciator bell. At night pit ~~xx~~ bright, fume abundant, brilliant cloud above.

T.A.J.

Lava lake at pit has been spilling over sides all day. In the morning a fresh flow of about an acre was noticed to the NW of the fountains. In the evening it was noticed that several smaller flows had run out in different directions.

After 9 p.m. the NW fountain appeared to become continuous shooting from 30 ft to nearly 200 feet above the lava lake. The mound to the NE of it appeared to be 15 feet high.

XXX

September 12 Blue fume N half of pit.

Pit bright all night. Tremor continues.

8:45 a.m. Lake oval, a little shorter. Large ft west end of line. 5 smaller fts E. 3 spatter ledges the largest by W ft. 2 overflows together due S from lake. A few smaller ones E.

Noise of ftg, no detonations. Lake building up its heap, its longest slope S. W slope full of hardened flows. Steam on remnant of S talus. Ridge on lake from meeting currents E-W. E flows later. Hole in top E spatter heap.

7 p.m. Overflows crusted, some glow cracks. Lake bright. 9 fts. Big one W spatter heap. Noise mod. Tremor continues. Lake fts "crumbly" in appearance. Glow on cloud bright. Luminosity & tremor holding, eruption stable.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Monday — Date September 10, 1934
Tuesday " 11, "
Wednesday " 12, "

time	sta	subject	no	pl	scr	stop	ex	cam
September 10								
1:45 p.m.		Pit and fountain				f/11	1/10	
								Jones?
September 11								
9:20 a.m.	SW rim	Lake	1					Pan Kodak
11:10 a.m.	SE Tourist	NW in pit	2					"
	S of Tourist	N --includes tourists & lak.	3					"
September 12								
8:45 a.m.	SW rim	Lake	1					"
								T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

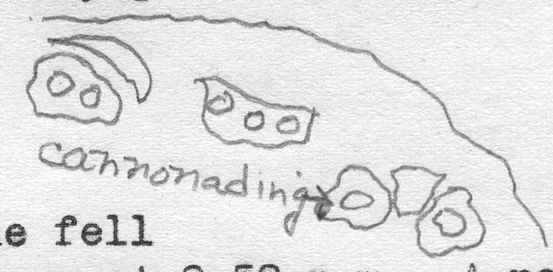
Hawaiian Volcano Observatory

JOURNAL

Day Monday Date September 12, 1934
Tuesday " 13, "

September 12 (cont'd) The fountains shoot, most of the time, 30 feet, sometimes 60 to 80 feet, and at times of explosions pieces may go to 200 feet.

8:45-9:15 p.m. At nine p.m. this one was as much as on the morning of the seventh. A noisy avalanche fell from high on the wall near the SW rift cavern at 8:58 p.m. A noisy avalanche fell from high on the wall near the SW rift cavern at 8:58 p.m. A noisy avalanche causing a little dust cloud fell from high over the N end of the Canoe Sill at 9:07 p.m. A very noisy avalanche causing a large dust cloud that mingled with the fume and sent a few small rocks into the molten lava, fell from high up above the N end of the canoe sill at 9:09 p.m. The fume cloud rise direct from the fountains, and was stronger than usual, several times it was noticed at the tourist stand by myself.



A.E.J.

September 13 9 a.m. No important change. Tremor steady. Uwek. seis clock stuck yesterday on starting. 5 fts. Big one west. Noise considerable. Lake plateau full. Large rampart behind W ft. Pressure ridge yesterday betw NE & SW halves of lake. Now it is betw E & W halves. This lake plateau is made of flows which pile skinramparts at their fronts. Overflows small now NE & SW of lake. These spreading along S side of lake. Valley between lake plateau & talus NE.



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Thursday Date September 13, 1934
Friday " 14, "

September 13 (cont'd) The overflows of the lake heap now make an entirely dif pattern than the lobate overlap pattern of the early floor S.

The collected evidence of the morning's observations Sept 13 is:

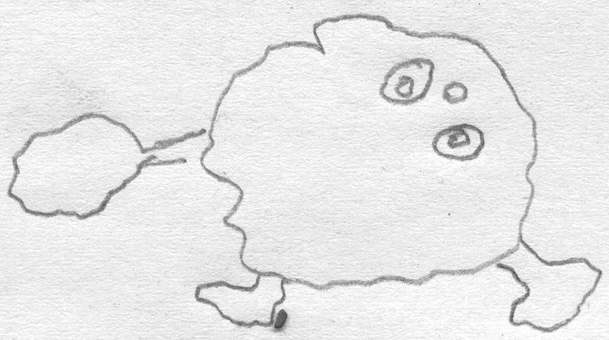
Tilts less.
Tremor at clinoscopes less amplitude in forenoon.
Tremor at SE seismo stg.
Fts & overflows stg.
Crack #37 is still opening at road where repair was made last week.
Seismic shocks none at present.
Eruption going on building a la ? plateau on a shrunken floor:
Lake somewhat rectangular 1000 X 600 feet.

T.A.J.

Fountains at 8:30 to 9 p.m. were shooting between 25 & 50 feet into the air, the greater part of the time. The extreme height was about 150 feet. No cannonading, explosions were very small.

Fume had apparently increased though atmospheric conditions did not allow such a large convection cloud over the Pit.

The lava pool was about 800 ft in diameter. A lava flow had broken out to the west and extended out about 500 feet. Other lesser ones had formed and all were still flowing.



September 14 Lake little smaller than last night. At 8:50 a.m. West fountain was averaging 80 to 100 ft high while other two had diminished in size and were only 15 to 20 feet high. At 9:15 they had revived some what and the west fountain had diminished. At 10 a.m. a small flow was noted spilling out of the SE side of the lake. Considerable fume was noticed.

Tremor is smaller than that yesterday afternoon
Crack #36 had increased to 27.85+ mm (over 27.80)

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Thursday Date September 13, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
September 13								
8:40 a.m.	SW	Pit (bright)						T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

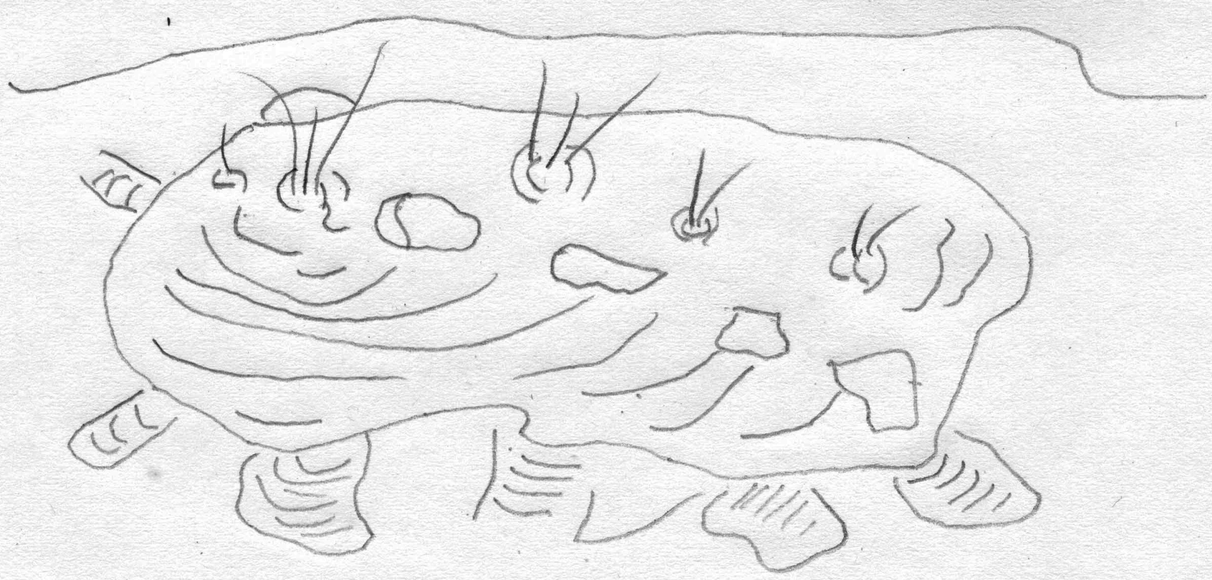
JOURNAL

Day Friday Date September 14, 1934
Saturday " 15, "

September 14 (cnnt'd) 5 p.m. Tremor continues. Fume continues. Fts continue. Bright at night. Cumulus hat at night. Lake shrinking & 4 islands at overflow front of lake S. Crag island E of large W ft. appears to be a detached home of the spatter bank behind the ft to N. Latter bank has caved. 4 or 5 fts lively & bright. Cooled flow glowing S of lake. 5 sulphur places W & N. Yesterday aft marked tremor increase.

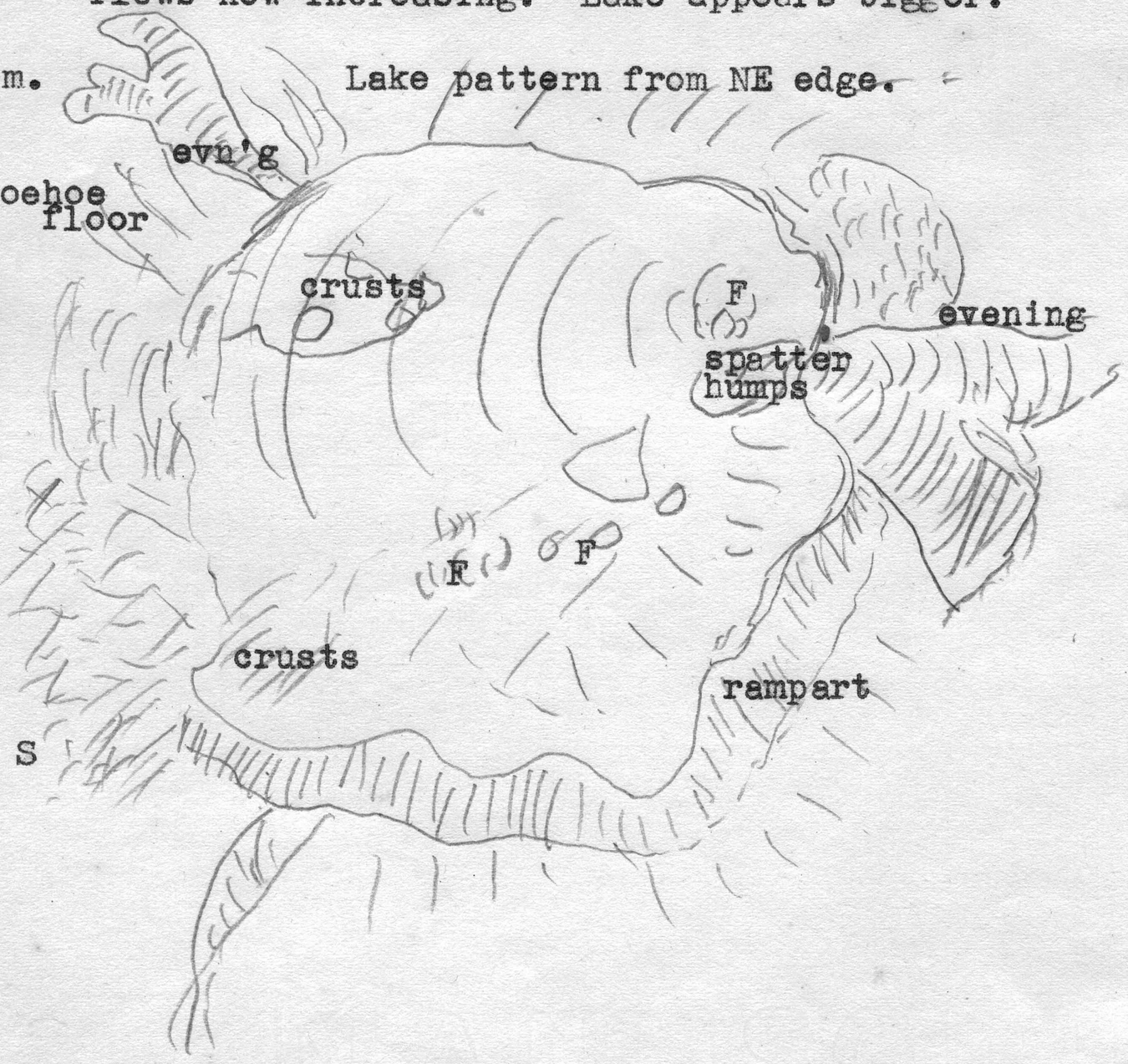
Where crack #37 crosses road 2 places of fresh repair have caved in.

September 15 9:18 a.m. top of NW talus avalanched on top of pumice below.
9:30 a.m. Before that at 8:30 saw small slide at same place.



Lake full & overflowing S edge. 4 principal fts W one biggest. Line of islands E to W formed where the meeting ridge was. Lake overflows now increasing. Lake appears bigger.

10:10 a.m. Lake pattern from NE edge.



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Saturday Date September 15, 1934
Sunday " 16, "

September 15 (cont'd) The western isl appears a broken off piece of the rampart behind ft. Satin skins on lake appear softer pahoe than 2 days ago.

Notice dry patch in drizzle-covered rd edge of Kau Desert straight to leeward in fume. Is this heat & SO_2 drying the cloud?

6 patches of sulphur ; 4 on cascade crack, 1 on NW talus, 1 on NW talus, 1 on N talus.

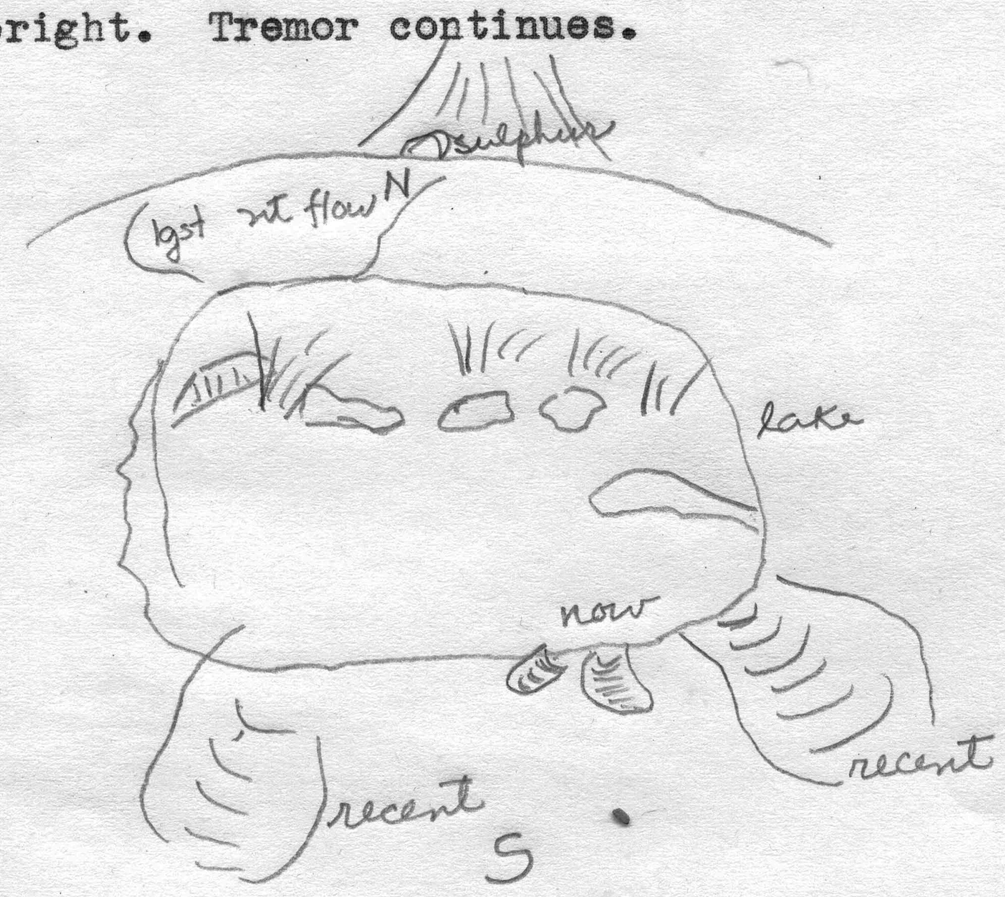
10:40 a.m. From NE. 4 flows pouring over S edge lake.

11 fts in lake, 4 of them bubble fts thru skin.

E & W fts bigger than before.

5:40 p.m. Fresh chilled overflows NW, NNE, E, and a flowing one SW. Big flow goes over rapidly to N against rock wall and over top of lip of former lake of Sept 6. Fts as before, spatter island growing high & lumpy against big W ft. E ft now small. No sign of lake diminishing. It has evidently been overflowing most of today.

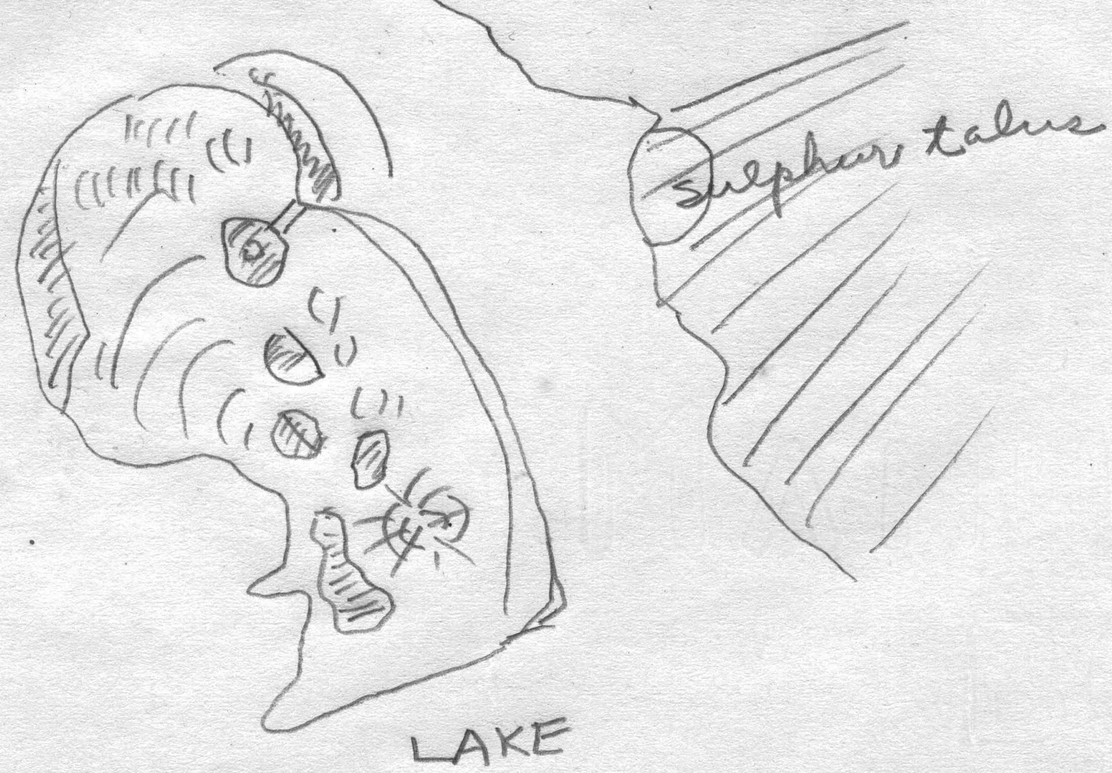
8 p.m. Lake bright. Tremor continues.



September 16
9 a.m.

Fts smaller. Isl line tends to divide lake in two. Last night's flow against wall & talus both. Small fume jet from cascade vent now very small. New bowlders at base W talus. 4 main fts, 9 in all counted. W & SW lake edge appears steepest slope outside.

11:45 a.m.



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Sunday Date September 16, 1938
Monday " 17, "

September 16 (cont'd) 11:45 a.m. Lake has rampart border. W ft down & small, hole in top of island beside it. This island now connected with the N ridge on the bank. 10 fts. The East ft large & continuous. As a consequence the lake pattern concentric with E ft. 6 isls & a peninsula.

There is sulphur & steam on small talus middle of canoe sill. There are 2 steam jets at foot of NNE talus.

Overflows SE at noon .

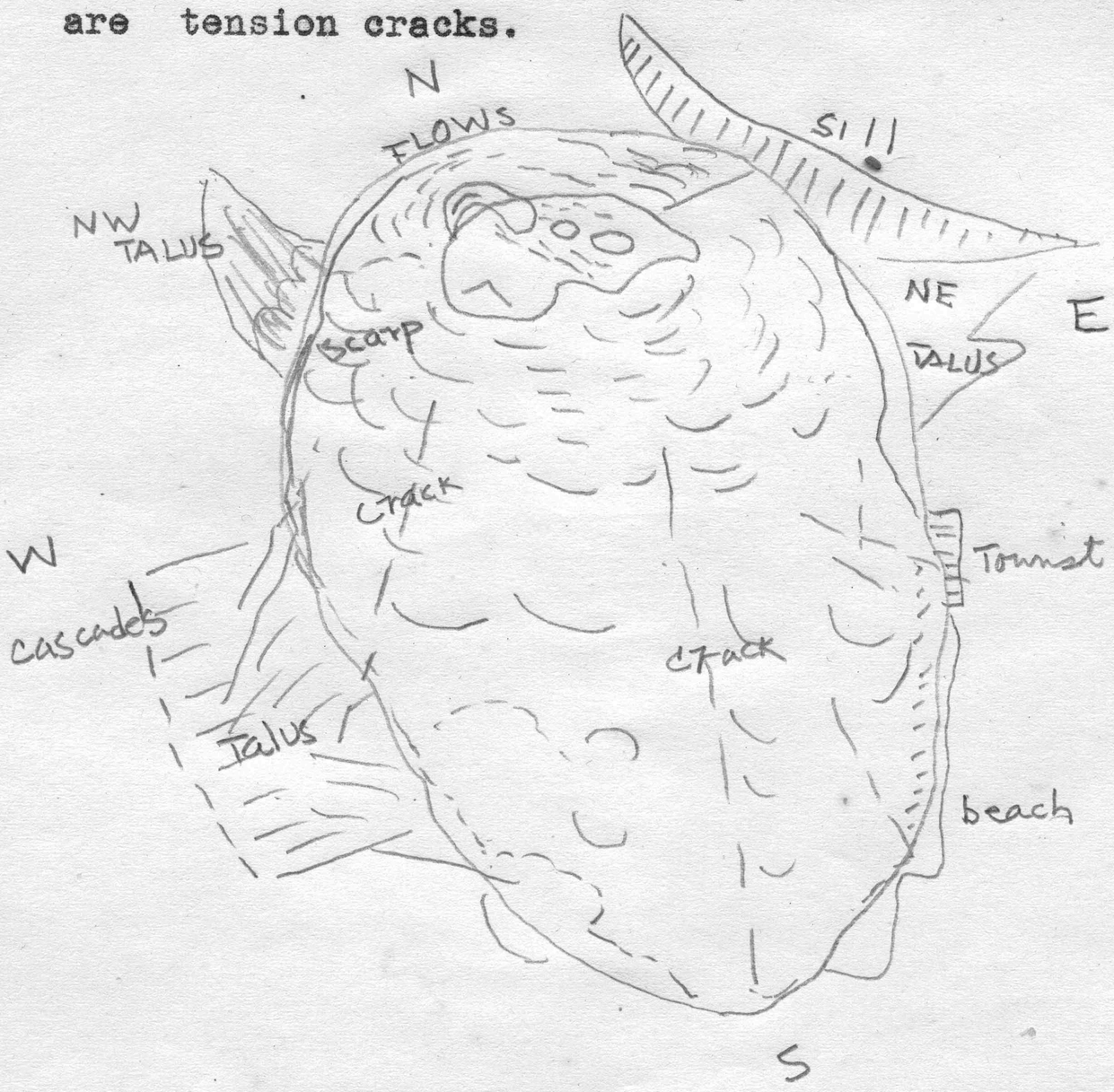
nt. Pit continues bright.

September 17 9 a.m. Kau Desert) Chasm) Ranger Williams reports a dry hot place on one of the Kau Desert fissure gulches similar to 1919 chasm.

Examine these gulches along new stone gutter on Bird Park Road along the slope to crater. Found nothing. Three places vaporing on 1919 chasm, N end. Temp of middle large hole 43° C, air 24°C. Steam smells normal. Some ferns are withered, not many. Damp morning.

9:40 a.m. Lake to W talus cascades 12 fts. E & W fts double & large. Islands, increasing, the E one a tipped crag its scarp to N. Lake divided into E & W halves by stagnant belt ~~in~~ islands. Channel E from W ft slant off & its isl a peninsula. Lake not now changing in size. The scarp around edge of pit floor along E & W sides of pit, but at north replaced by overflows from the lake. The entire lake area is thus building up against N wall of pit. It must be much higher than S edge of floor.

Cracks in floor NE-SW under W boss. Others E-W under S wall of pit. The W ones are en echelong tension cracks. There is another set of small cracks extending from middle of W talus toward the W side of labe. There is another set extending from S wall toward middle of lake. These are tension cracks.



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

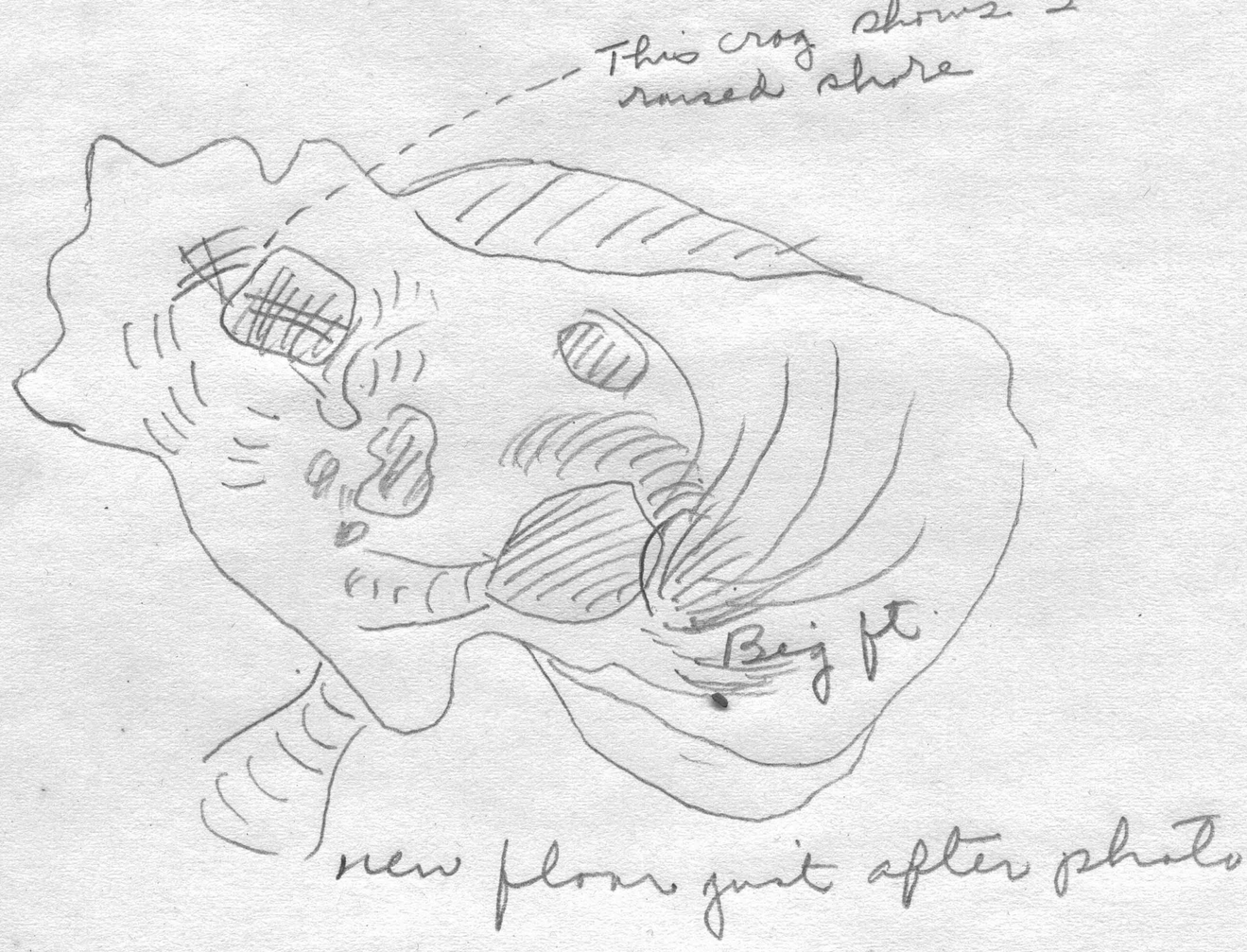
Day Monday Date September 17, 1934

September 17 (cont'd) Descrip. phot 3. Pan of lake. Live flow pouring to left. W Big ft now against N rampart wall. Radial festoons from E group of fts which have 2 islets NE of them. Channel now open betw W ft isl & W ft ramp. Lake basin appears higher within its edge (near overflow) W than E.

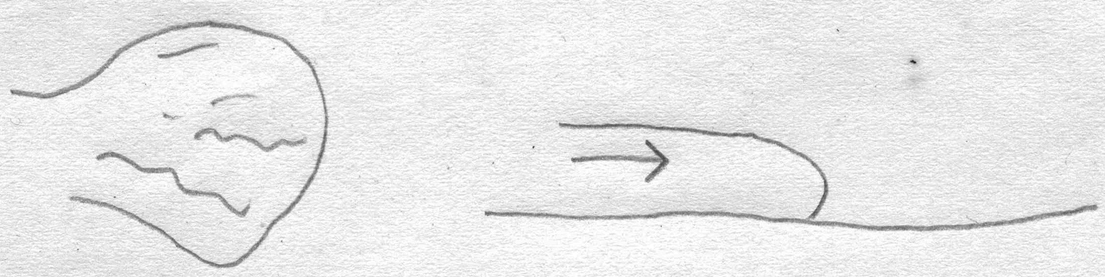
In floor, tension cracks from wall toward lake from NE talus, from Konishi talus under tourist stand and from betwe the 2 S talus es. The biggest & extending far toward lake, is the one from the S wall. There are a number from cascade foot to edge of flows from W side of lake. Cracks not yet in overflow belt.

The flow to the n was a stiff and pudgy pudding covered with bright lines. It did not festoon. It broke up skins & carried them. Its front was rounded down in a thick viscous leaf.

Phot. 2



Phot 3



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Sunday Date September 16, 1934
Monday " 17, "

time	sta	subject	no	pl	scr	stop	ex	cam
September 16								
9 a.m.		SW edge Halemaumau (camera tipped down)	1					
September 17								
9:40 a.m.	Vert SW rim	Lake to W talus cascades	1				slow	Pan Kodak
	steep angle NNE edge	to Lake	2					"
	Near NW flag	Vert pan of lake	3					"

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Tuesday Date September 18, 1934
Wednesday " 19, "
Thursday " 20, "

September 18 Description phots. Lake from N.
W & E fts both big. No marked change. Sev. new tension cracks seen in W floor.
10:45 a.m. Overflows all along S edge lake.



LAKE FROM N

T.A.J.

September 19 Two fountains (to the NW & SE had well defined crescent shaped (partial) cones about midnight of Sept 18-19. The central fountain was not very large at that time. Lava was moving out of the NW fountain.

At 7-7:30 p.m. Sept 19. All three were shooting 40 to 60 feet, and at times 100 feet. A small flow was taking place to the SE on to the cooler Pit floor. Fume was noticeable though not even moderate for the eruption.

A.E.J.

September 20 The lake is much the same. Pit glowing with thin fume all night. Large E & W fts & one middle group. The E & W fts are enclosing themselves with rough crescent craters of their own building on their east sides. Sweeping circle of streaming skins from W ft to W, S, & E. Small clot islets show the pool is shallow and change position. The middle S crusted area at edge of lake being overflowed in some places.

The radial cracks in floor are widening. There are at least six belts of cracking the S one the longest. A toe of the SW flows from lake looks as though it were cracked by the radial system. Otherwise these cracks do not yet penetrate the overflow heap. This suggests that the cracks may be, not tumescence, but crystallization shrinkage symmetrical to the ellipse. But properly if this were the cause,

September 20 (cont'd) the greatest tensional opening should be at right angles to the longest dimension of the ellipse, that is, SE-NW: the radiation from the lake and the biggest crack NNE-SSW, denies this, unless there is less solidification toward center.

Yesterday gave a talk to Fed. Bus Assn showing curve of intervals Hawn System. It is becoming evident that the difference between layering and free lava column is very fundamental. The curve of 1913-24 cycle that corresponds to 1924-35 cycle is the curve of overflow events. All the 1924-35 cycle are overflow events, weighting the wedge or the outside mt (1926), except Hual., which is an intrusive event. Query, were the downs of the free lava column years intrusive events?

Aval W buttress 8:45 a.m. started by wind.

7-8 p.m. Glow crack next to S wall in new floor. Stream W from E ft horseshoe cone. Small overflows on inner crusts S & E. Bright lines stiff.

Descrip phots

No. 1. Bank by W ft has slumped down. A channel very low at a smoking hole in middle of S side of lake margin, S of a wide crust area at lake border. Big ft E, small ft W, none in middle. E spatter cone has also slumped down on E side. E lobe of lake cracking & foundering. Small ftg grotto on NE side of W-ft crag. Lake margin full. The open crack at S wall base appears to be a wall-crack fissure (where glow is seen at nt). The opening of the wall crack fissures at edge of new floor is increasing W & S, right across the new fill of 1932 conelet, and also the radial cracks are opening.

No. 2,3,4. Panoram. E side canoe sill (look for dike thro middle of sill, and in lake picture a composite dike thro W, part of sill). The gulch above sill, curved stain around the buttress there on its rt sidde marked crack in floor from pt in wall by small talus pk, between it & northern of 2 south taluses.

All these days the ft fume nucleates the SW vapor holes on Kil floor & Kau desert.

11 a.m. From E small trickle flows breaking out edge of pit floor from under the new crust, at base of E talus, 2 places, bright red lava. Probably something similar accounts for glow spot in crack at edge floor last night south wall. Trickle flows now at lake over the S border of actual lake, inside the older border. Big ft E. Tremor pit instr strong. The crag seem S of lake is a down-dropped channel.

Marginal cracks around floor E & SE same as SW. One east radial crack makes a deep radial chasm outside of lake rampart close to lake, lining up with crack to E talus in outer floor.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Tuesday Date September 18, 1934
Wednesday " 19, "
Thursday " 20, "

time	sta	subject	no	pl	scr	stop	ex	cam
September 18								
9:10 a.m.	SW	Lake	1	Verich.	B & J A filt.	f/22	1	3A
9:50 a.m.	N	Lake	2	"	"	"	½	"
10:45 a.m.	tourist SE	Lake	3	"	"	"	½	"
September 19								
8:45 a.m.	Uwek. trig. sta	Pit	1	"	A	f/45	5	"
9:30 to 10 a.m.	Pit edge E of Ne trig flag to	Lake, looking down	2	"	"	f/22	1	"
		Same place to cascades, 1932 conelet, & 1920 tunnels.	3	"	"	"	1	"
September 20								
	S	Lake & W wall	1	Panchrom.	A	f/22	1	3A
	SW	Panorama	2					
			3	"	"	"	"	"
			4					

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

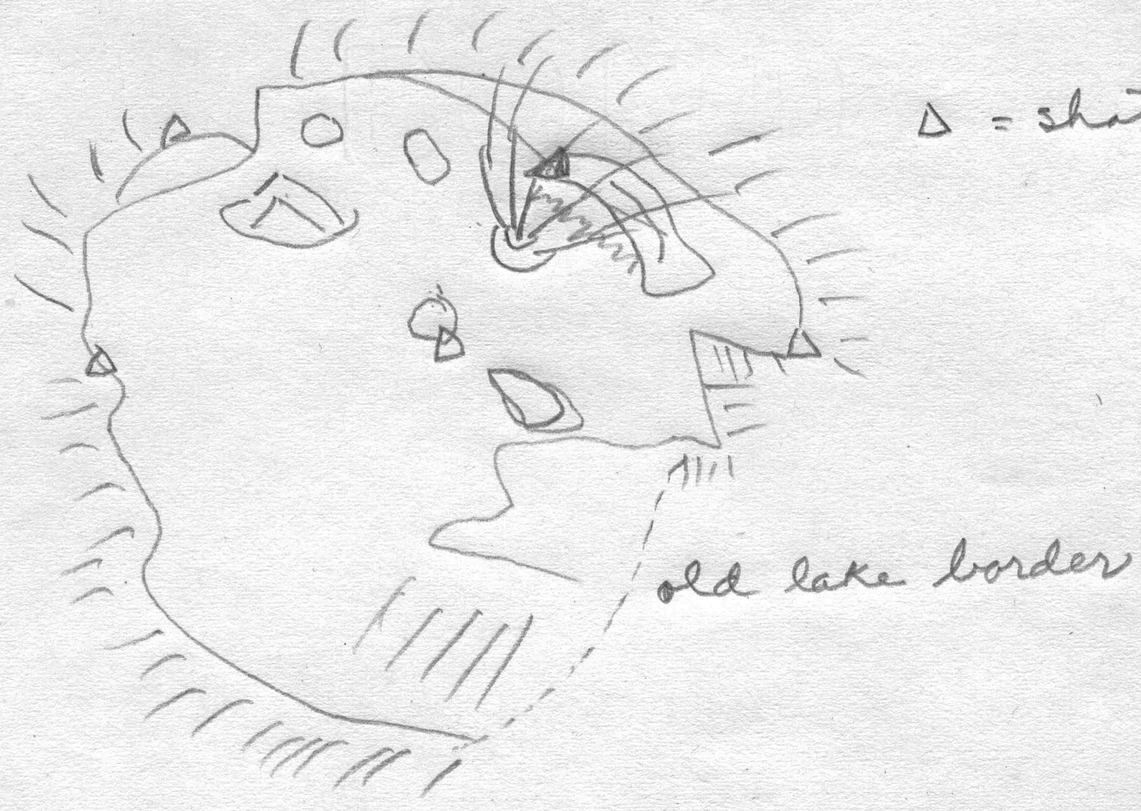
Hawaiian Volcano Observatory

JOURNAL

Day Thursday Date September 20, 1934
Friday " 21, "

September 20 (cont'd) 2:30 p.m. Overflows S & E from lake: heavy. At same time upwelling liquid lava for 100 ft base of S talus, flows E & W from hole at edge floor, just where steam crack is, of long standing. Note, like 11 a.m., overflow lake & floor-edge at same time.

September 21



New trickle flows back of rampart N & S of 1932 conelet, the northern one now trickling. Long stretch of them east. Another shorter south. All above rampart & up thro talus edge. Steam at NW, N & E taluses. Blue fume at the new E trickle flow. Only 2 fts, both big, with grottoes the E grotto seen caving. Lake brimming full. Sulphur patches NW & N getting bigger.

The radial cracks are definitely breaking the lake heap. E steam sometimes above edge of pit, dif color from the fume. This visible steam is increasing from both N & E steam jets.

At noon big overflow NW corner lake & small one E. Flows up behind the 2 horns 1932 cone & along wall crack. Extensive wall crack flows along S talus bottom E & W. This finally 8 p.m. along S wall.

T.A.J.

11 a.m. Dust from an avalanche rose over NNE corner of Pit also fume thicker there.

Some fume has been seen (all morning) coming up by the tourist stand. This probably from lava, that broke out along wall crack edge of floor both to the SW and NE of the tourist stand yesterday. The one to the NE was bright red for about 200 feet long at 5:30 p.m. Sept 20.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Saturday Date September 22, 1934

September 22

9 a.m. Big overflow thro SW side lake making forks & leaf shape. Another solidified from S side lake (in action 8 p.m. last evg) Large spatter islet S of W ft. 2 fts in E grotto, peaks at each end of its crescent heap, middle part broken down.

The wall crack fills are notably along E, S & W taluses & all along there.

10+ a.m. Betw 9 & 10 the E ft was a sinkhole grotto with lava streaming in, while W ft exploded violently. (3 mm. tremor at SE clinoscope)

The SW overflow nearly to wall, and up from wall-crack there, (S of NW talus among the small taluses) close to northern cascade loc, came wall-crack trickles along the wall-base.

The N side of E talus steams excessively as tho lava would rise there. The wall cracks there are gaping excessively. All the radial cracks are increasing.

11 a.m. E ft a sinkhole again, with gas explosions 10 sec apart, noisy gas rushes with high spray. A sinkhole cascade into a grotto.

Wall crack flow spreading S along W wall. New overflow 11:03 a. very voluminous thro rampart of lake W, 100 ft north of the live flow. Both going strong while the sinkhole at E makes its big explosions, and the W ft acts mildly.

11:10 The sinkhole backing up.



1 p.m. Drift of gas from S. Nucleation steam all over N Kilauea floor. Cloudy. White vapor over E half blue over W half pit.

5 to 6 p.m. Flow to SW cool but shows glow & toes. No wall crack streams. W flow very stg & several short flows E. E ft mod, no definite downflow, pool there crusted. W ft very strong, high, and noisy slops. Bright at nt, fume fluctuates.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Friday Date September 21, 1934
Saturday " 22, "

time	sta	subject	no	pl	scr	stop	ex	cam
September 21								
	SW transit sta.	Lake	1	Panch.	A	f/22	1	3A
	"	E wall border flows	2	"	"	"	"	"
September 22								
	SW tran. sta.				(red)			
9 a.m.		Lake & flow	1		F	f/22	15	3A
to								
		(Overexposed)	2					
10+ a.m.								
								T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Sunday Date September 23, 1934

September23
9:20 a.m. Fume & steam increasing. Big W ft noisy, high flings confined basin, big cascade pouring out of it to S. Overflow straight to NW from near it W. Ft basin has rampart E & W. 4 other fts, NE side of lake crusted. Streaming from big ft to the other fts. No visible sinkhole flowing. Marginal fume 7 places around floor. 3 of them steam. Big ft brown smoke bursts.

The radial cracks appear as if closed a little. The floor looks flat. Only the lake heap slopes up. The wall crack dike trickle is all along SSE, E, WSW, and one place NW. In other words, opp. where the outbreak took place. Is the cone-cake lifted by the wall crack lava and compressed, so as to close the cracks?

Small earthquake last night. Tremor strong: spells of increase.

10:20 a.m. Aval dust.

11 a.m. Aval pink dust over W end canoe sill: white stained chasm there trending N-S increasing.

11:05 a.m. Rocks fall at SW tunnels. Action of lake the same. Small overflow extreme NE end. NW flow crusted. Many rocks on edge floor at NNE talus. Line or sulphur stain up talus in middle of canoe sill. Dense white steam at N base of E talus. W ft rampart higher than yesterday.



12:15 p.m. Another pink dust aval at N gulch.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Sunday Date September 23, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
September 23								
9:30 a.m.	SW trans. Sta.	Lake (underexposed)	1	Panch.		f/22	1/25	
								T.A.J.

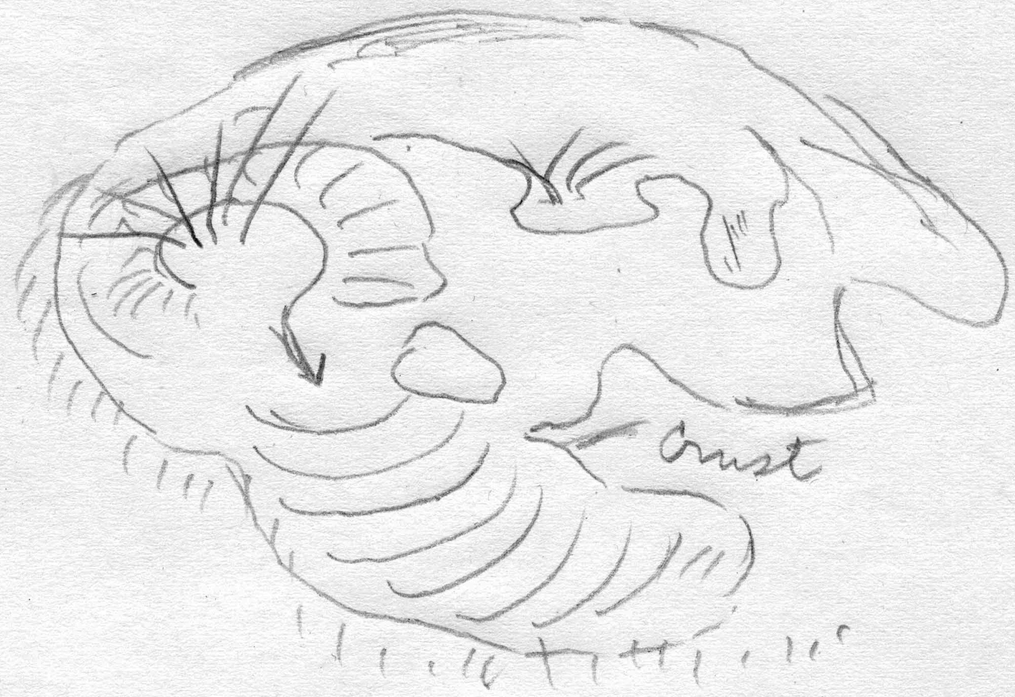
DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Monday Date September 24, 1934

September 24

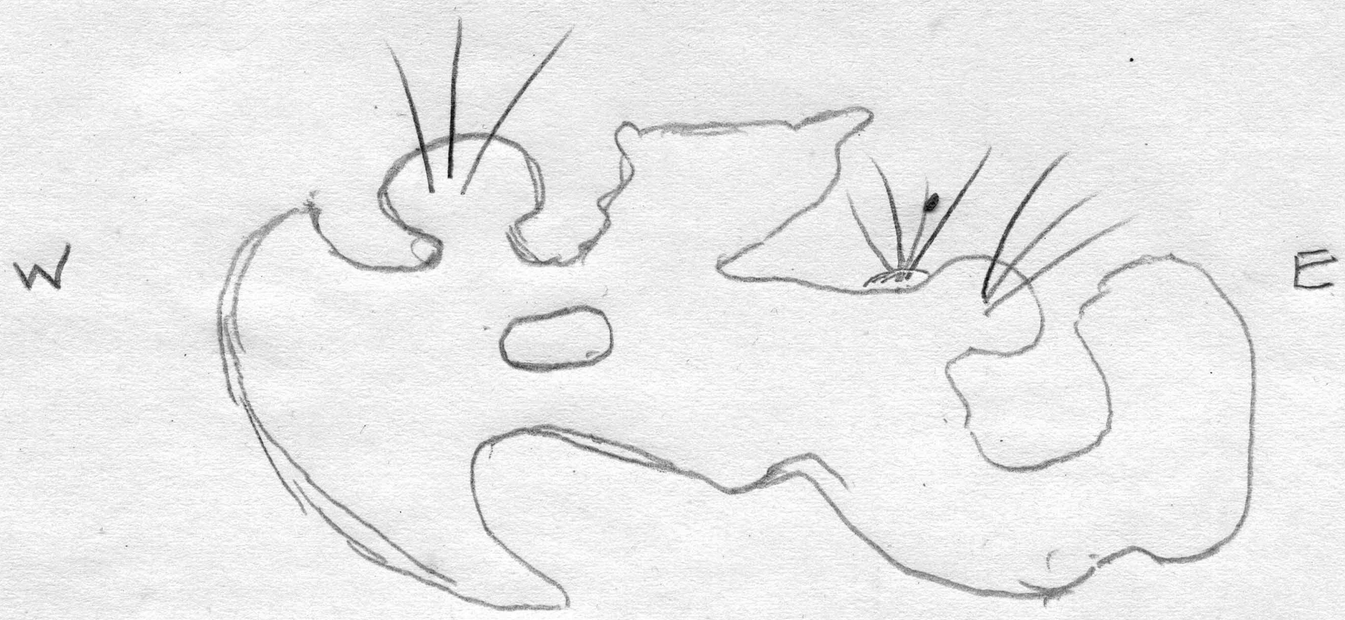


Craterlet of W ft larger. Detonation pot W side of E ft cone. This smokes. Whole pit more smoky.

4 fts E, 1 west. W ft very big & torrent pouring out of horse shoe cone.

The detonations from middle pot are in spells. They are deep thuds & jets of a few blobs go up. Probably a cascade sink crusted over.

10:30 a.m. From the SE. E ft large, W ft smaller. E ft streaming out as well as W. Occas puffs from pot wh glows & spits. Fresh train of aval debris on NNE talus. E ft cone, has a low spatter shore with a peak at each end of crescent. The pot is in the western peak. Lake making a new shape, elongating to the E and narrowing.



Evg. Very high flings from W ft. The W ft is becoming a source pond.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Monday Date September 24, 1934

time	sta	subject		no	pl	scr	stop	ex	cam
September 24									
	SW	Lake (overexposed)	X	1		F	f/22	10	3A
									T.A.J.

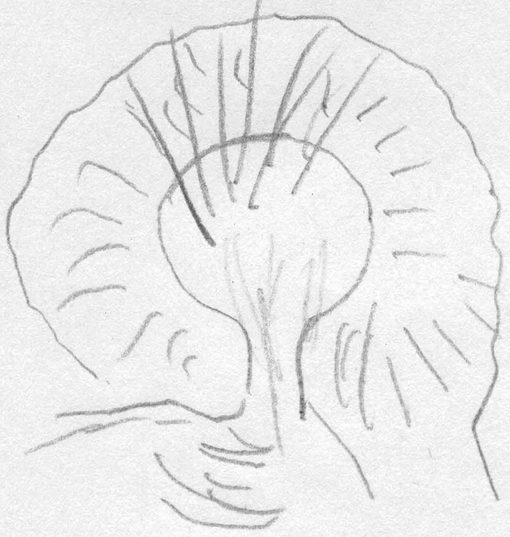
DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

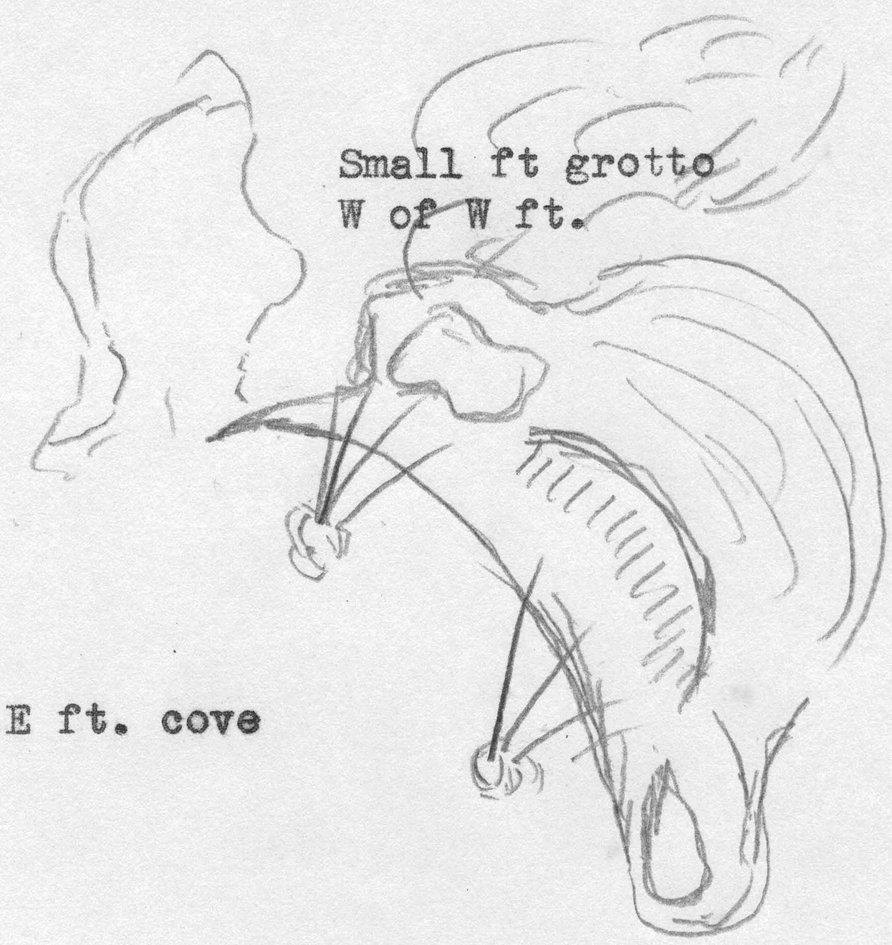
JOURNAL

Day Tuesday Date September 25, 1934
Wednesday " 26, "

September 25 W ft circular pond. Small brook of lava its outlet. Smoke blue-
8:45 a.m. white from W side of E Cone. E cone ft streaming out. Small stream thro gorge from W ft S. Lake somewhat sunken, bright line edge. Steam E & W side of base of N talus. More yellow. W ft makes umbrella fling & rushing bursts of brown fume. Noisy.



E part of lake
more or less crusted



Small ft grotto
W of W ft.

E ft. cove

There seems to be the establishment of 2-phase conviction going on. E grotto & W source.

Sept 23-23. Capt Boinean reports last 2 days about 2 p.m. lake drained out: one time came back thro E ft other time thro W ft vet^n, with explosions. Saucer shallow.

9-11 p.m. Red glow all along E talus wall crack & 1 place S talus. Steady cascade out of W cone pool. Big detonations 11 p.m. E souting hole. Slow indrift of crusts E ft. Some rock falls.

September 26 Paper reports drainage away last night 11 to 1:30 return with ex-
5:30 p.m. plosions very high.

Now nothing remarkable. Heavy rain all day. Steam tails on floor. W ft cascading mildly. E ft streaming to SE. Sout hole making rocket blasts. No glow detected in the wall crack fills. Tremor with big fluctuations.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

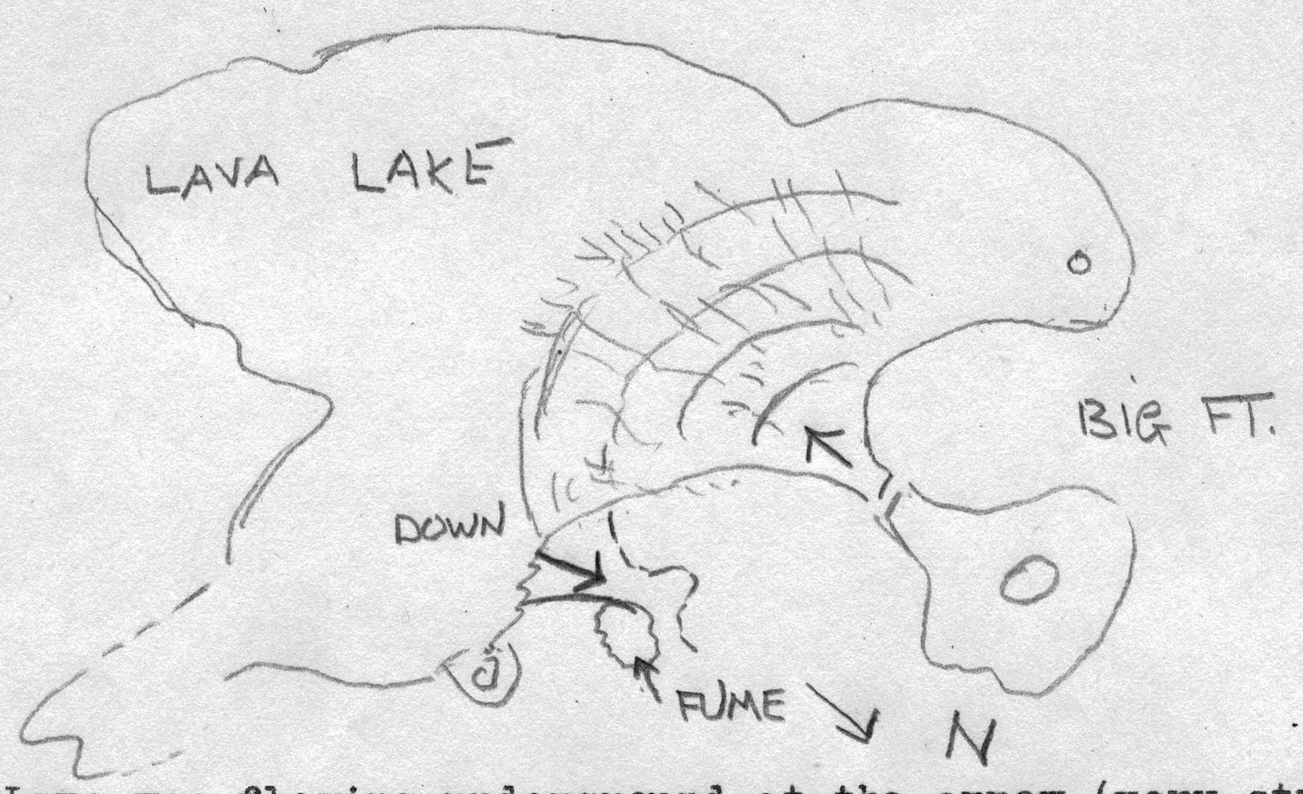
Hawaiian Volcano Observatory

JOURNAL

Day Wednesday Date September 26, 1934
Thursday " 27, "

September 26 (cont'd) Slide, 8:20 a.m. South corner of Pit. A few explosions were heard 9:10 to 9:40 a.m. At 9:42 a.m. larger explosions occurred (unlocated) and the lava river began to run more rapidly under the bridge and at times lap over it.

9:40 a.m.



Lava was flowing underground at the arrow (very strongly)

September 27

a.m. Blasts from spout hole & cascade west side of W ft cone.

11:15 a.m. No 1 annunciator bell intervals of 5 to 15 seconds, groups of big tremor waves.

12 noon at pit. Lake had gone down, 30 ft walls around lake depression, 100 ft cone around W ft well, small fts at E cove and cove W of W ft. Lake bottom covered with lake crust. Some cracking glows.

W ft well making cannon detonations 9 or 5 or 6 to the min. Other shots sometimes 12 to the minute. With each shot flings 200 to 300 ft high, often in rings, sometimes with a straightish rope of lava like a boa constrictor flung straight up and slopping down, either inside or on the rampart. The globular flings probably 200 ft in diameter. The E ft sometimes detonated.

12:15 p.m. The W ft pool began to rise, gray skin, mild central fts. At same time the two fts of E cove which had been spitting made a merging pool. Lava thus came back thro both vents.

12:25 p.m. The chasm W side of W ft cone gave vent to cascade into NW cove of lake. The flow spread out fanwise over the crusts of the lake. The E ft puddle also spread out. A small dribble cascade appeared S of W ft but did not increase. The fts in W ft well were ordinary.

A detonation crack W of E cove spit up with loud noise at intervals of 3 min.

12:35 p.m. Aval W end of canoe sill.

The flow on lake bottom from W ft cascade continued to spread eastward, the E one westward, the lake basin filling, the east spouter booming. There was no longer occasion for strong tremor.

T.A.J.

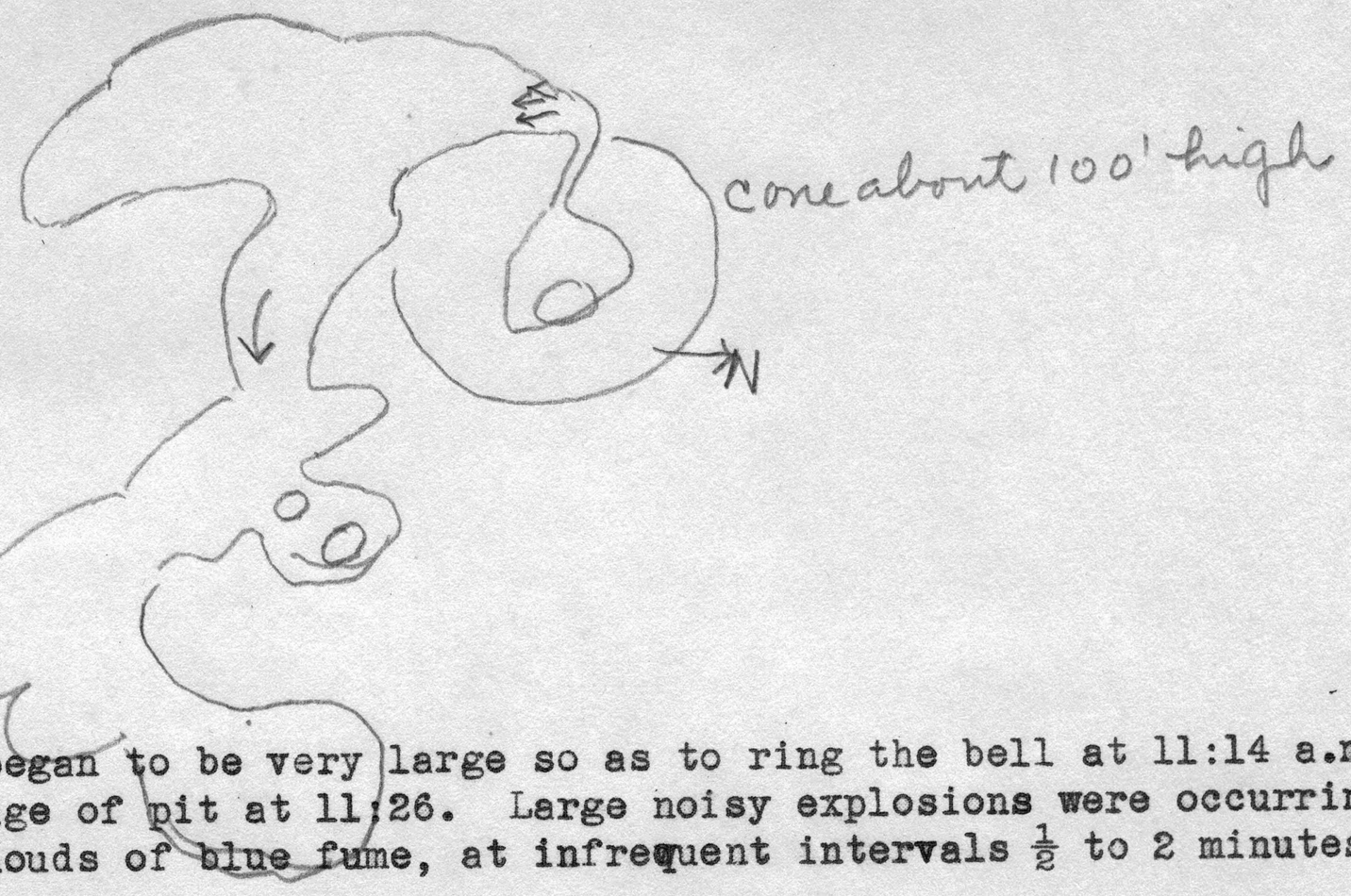
DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Thursday Date September 27, 1934
Friday " 28, "

September 27 Numerous explosions (6 per minute) followed by long hisses (5 sec) at 9:33 a.m.



Tremor began to be very large so as to ring the bell at 11:14 a.m. Arrived at edge of pit at 11:26. Large noisy explosions were occurring with small clouds of blue fume, at infrequent intervals ½ to 2 minutes apart.

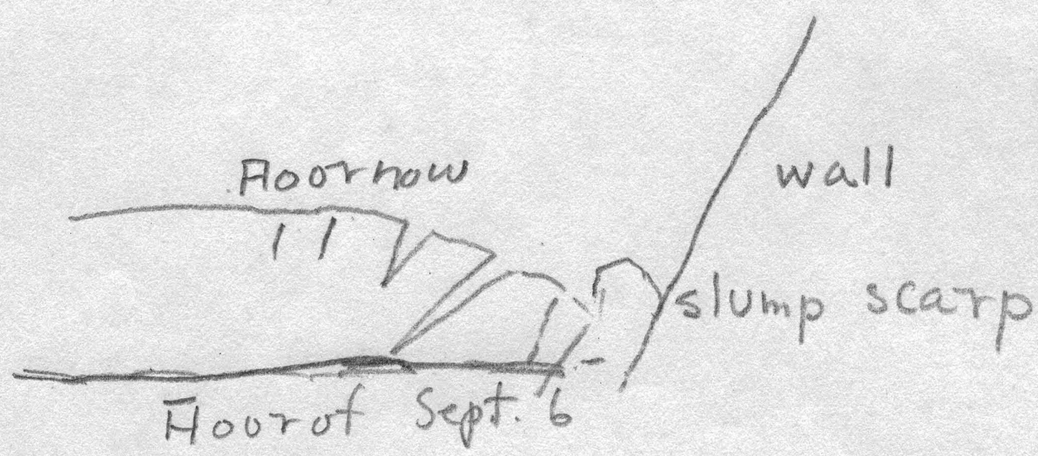
Smaller explosions were occurring about 12 to the minute. One small brown (tan) fume cloud was seen.

By 11:50 the lake as sketched had withdrawn, leaving ramparts 10 or 15 feet high.

A.E.J.

September 28 Lake full and overflowing. Overflows middle of S side 2 places.
4:30-4:45 p.m. E and W fts ordinary. Stream, not cascade, W from W ft into lake.

Border floor has swollen into an "elephant-back" along E talus and ENE wall, with border cracks gaping chasms, and a ridge above the slump scarp. Elephant-back perhaps 10-15 ft above slump scarp thus.



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Friday Date September 28, 1934

September 28 (cont'd) This is just like the "new lake" swelling of 1885 at the old lava locality NE on Kilauea floor. It is apparently laccolithic intrusion. In other words the whole floor is becoming an immense schollendome.

The drainage of lake are now explained. There have been 4 in last 24 hours. The lake lava is intruding as sills under floor periodically, and when the floor yields the lake disappears. Try setting up transit and lining on floor edge & v.a. the change from SW. The floor should lift. Probably the lift is progressing to dif parts of area.

The S wall cracks are wider. The floor at S talus appears about level with the wall crack fill. The radial cracks are part of the tumescence. The wall crack flows were the first form of escape of lake lava. The new form is intrusion. This makes it evident that the flow of source lava may not be diminishing at all.

The solfatara at N base of E talus is at place of max. swelling. Like the tumescence at "red solfatara" in 1919-20, later the source of outflow in 1921.

At 5 p.m. another overflow S from E arm of lake.

5:05 W pot quiet after a big burst. Its river stopped. Then it resumed. Streming now outward from E fountain E ft dome appears as big as W dome. E ft doming W ft spraying: skin pattern from E to W. and from E ft to E cove.

5:25 Aval N.

Until 6 p.m. signs of lowering lake, cracking & foundering east, streaming to east, cave in of cones, west ft pot lower, W ft bursts high sprays 250 ft & noisy. This the beginning of a sinking spell at 6:15 p.m. probably, for at that time annunciator bell was ringing at Obsy.

The sinkings tend to be at 1, 7, 1, 7 a.m. & p.m. or else at 12 and 6 o'clock, without lag.

The whole sequence since last week, cascading sinkhole, increased explosions, lake drainage, increased numbers of these, border fills, and now border swelling, indicates intrusive irruption supplementing extrusive eruption. The lifting of the lid is acting as an equalizer for lake overflow. Isn't this the whole explanation of rising & lowerings of former days?

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

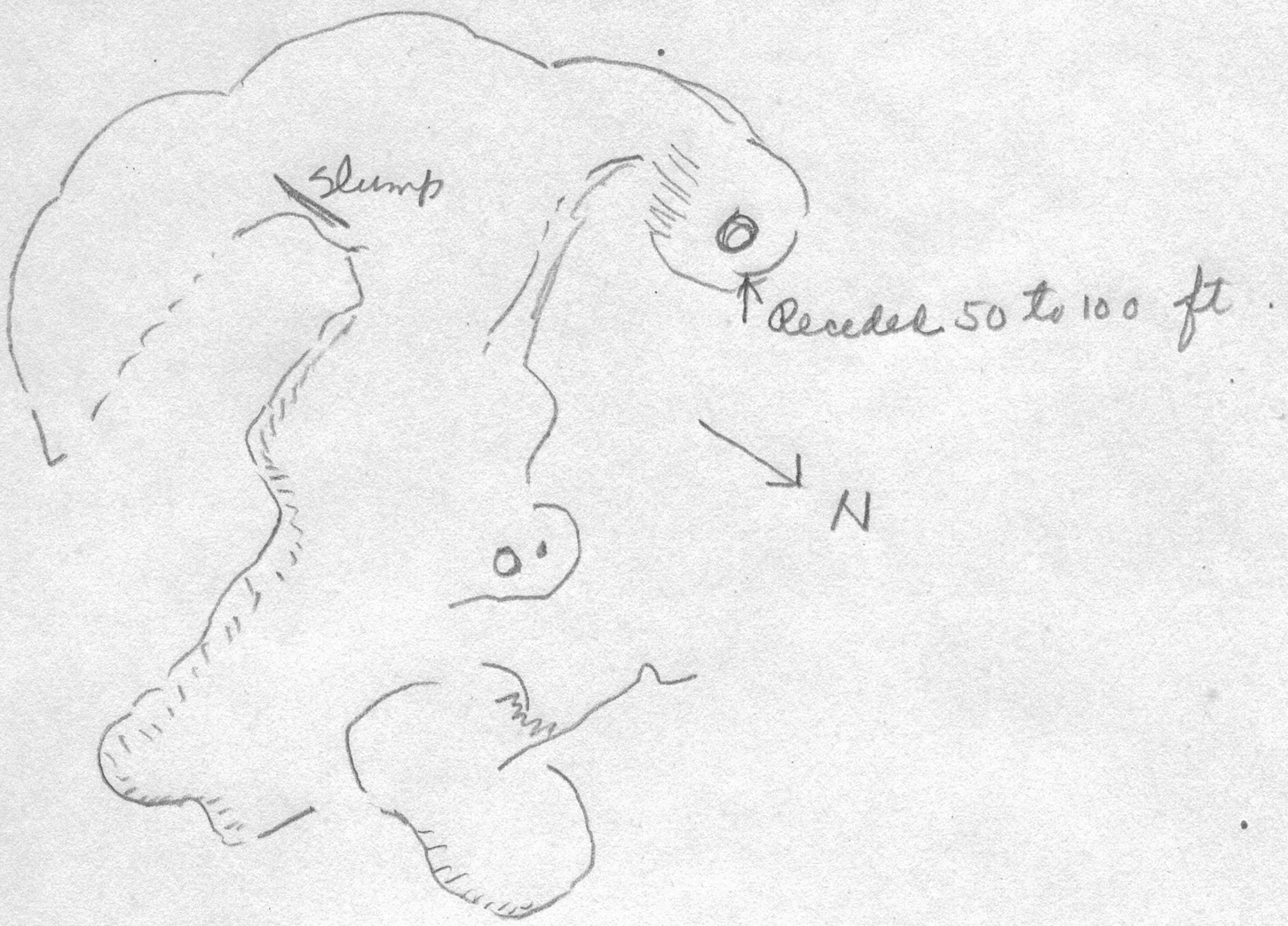
Hawaiian Volcano Observatory

JOURNAL

Day Friday Date September 28, 1934

September 28 (cont'd) Bell at HVO began to ring as an effect of increased tremor about 8:22 a.m. Arrived at Pit about 8:32 a.m. to hear cannonading. Sketched map 8:40 to 8:50 explosions less frequent. On return from N Clinoscope to edge found that W fountain had drained and was only doing a little fountaining. E fountain very weak (9:10) Piece broke off at side of lake, breaking crust, liquid underneath. Red line at margin of lake where crust pulls away. (:20) E fountainx seems to have more lava in it though bubbling only 10 to 30 ft high (9:27) lava definitely flowing away from E fountain, increase in activity at both W.F. appears to have some lava in it. W cone has been slumping (9:30 W.F. $\frac{1}{2}$ full lava acting normal, 20 to 40 ft high. 9:28 fume thick. (9:37 W.F. quite active 30-50 ft high.

8:40 a.m. Arrived to find lava lake empty and very little red in it. Explosions 10 per m. large exp 3/min.



9:35 a.m. Lava running out.

9:37 a.m. Lava appears to move 4 or 5 feet per second.

Tremor began to ring bell 12:57 p.m. Cannonading decreased 1:40 p.m.

Lava still moving towards West Fount. while lava appeared to be at a standstill in E.F. at 1:55 p.m. Barnett judged it to be coming back. Fountains rather quiet. At 2:03 lava is flowing out of E.F. while still flowing towards W.F.

Lava flowing out of W.F. at 2:16 .

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Tuesday — Date September 25, 1934
Thursday " 27, "
Friday " 28, "

time	sta	subject	no	pl	scr	stop	ex	cam
September 25								
8:45 a.m.	SW	Lake (overexposed)	1		F	f/22	10	3A
September 27								
12 noon	S edge Pit	Empty lake basin & globular fling				f/11	1/25	3A
September 28								
4:30-4:45 p.	SE	E talus and swollen floor in shadow.	1	Panch.		f/11	1/25	3A
								T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

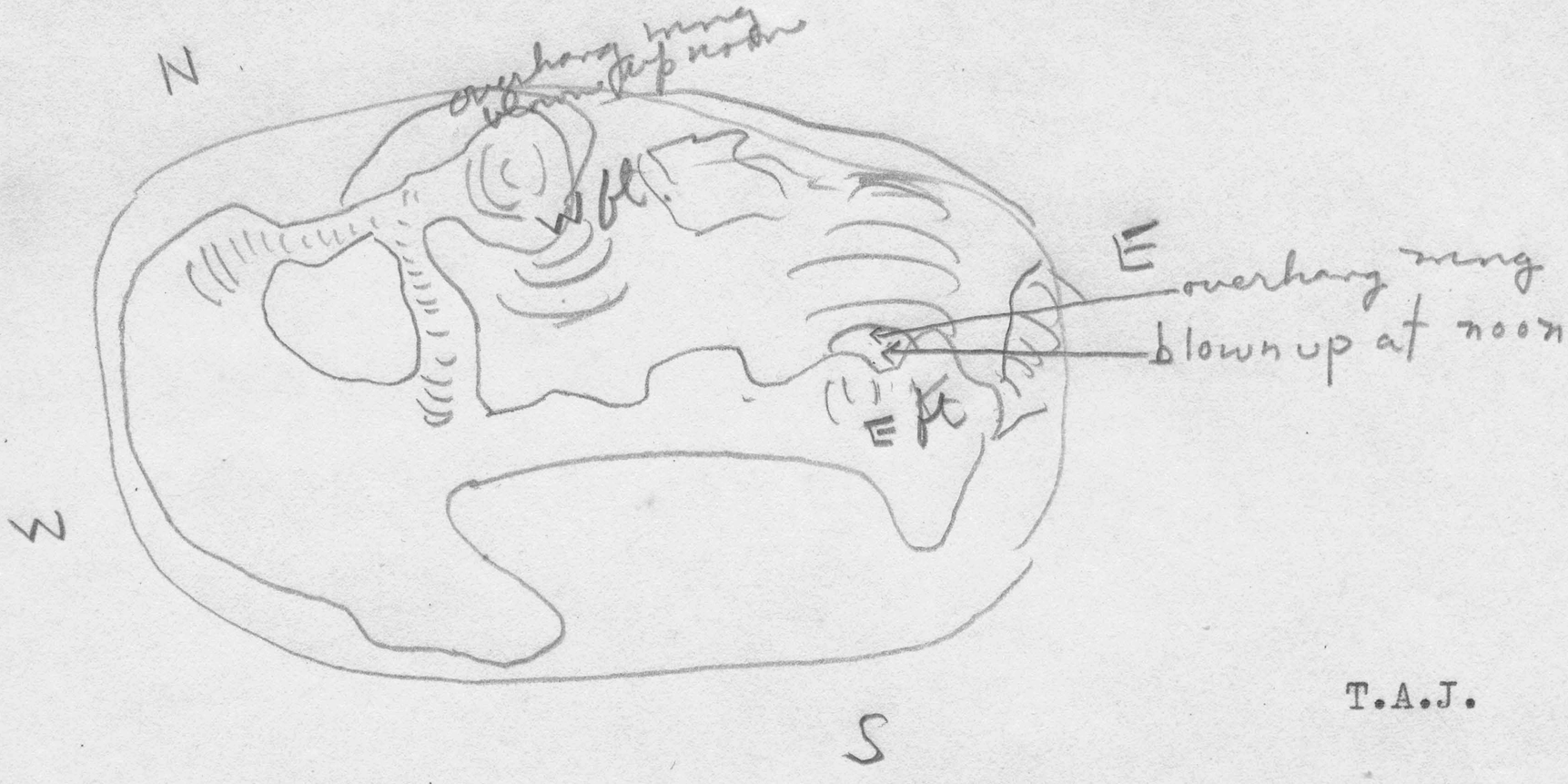
Hawaiian Volcano Observatory

JOURNAL

Day Saturday Date September 29, 1934
Sunday " 30, "

September 29 (cont'd) Lake overflowing at 9 cascades W & S from W pond. Gradually goes down 10-12. Goes out 12 noon. Explos from both wells, E well sends up brown broken fragments & brown smoke & dust. Comes back filling both ponds at 2 p.m.

2 small slides from W end. Canoe Sill. 1 rock-fall S. 1 ditto NE



T.A.J.

Between 8:30 & 10:15 a.m. the fountains were quiet. The W.F. was again running to the South (out of F. pool) the area of the lake is of 9/28 appeared to be covered with fresh lava but not filled, yet it was running out to the SE. It suggests doming since the banks of the lake were established.

Fume strong enough to taste.

September 30 At 9:22 a.m. Fountains were heard cannonading. Ca. 9:27 bursts were noted 12/ minute 250 ft high. Big burst at 10:00 300? feet radiating in all directions, noted brown fume (dust) arose from the fallen spatter. Big one 10:01 or 02 (400 feet) & 10:03, all from W.F. 10:04½ Big one, Brown fume only shadow of blue fume on lava floor. 10:06 another from W.F. noted tan fume did come from fallen spatter. Big one one at 10:06:40, 10:07½-11-12-14-142/3-15½-16½-17-18-19-20-21-21½-22-23-24-242/3-25½26-27-27¼. Lava has receded down throats of vent. Bursts are less frequent at 10:44. At 10:54 lava is seen increasing in floor of W.F. 10:58. lava is coming in E.F.

10:59 a.m. Lava has been ~~xx~~ returning quite rapidly in the West fountain . 11:08 flowing from E.F.

Above record of individual blasts is shown quite plainly on Pit record. Watch ½ minute slow with H.V.O.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Sunday Date September 30, 1934

September 30 (cont'd) Visited Pit about 8 p.m. A few small explosions began to occur in W.F. while E.F. was still running a river of lava. People said that it had more than doubled in the hour.

After about a half hour the E.F. slowly stopped. Explosions in the W.F. became less frequent 1 per min. E.F. began to explode sometimes 400 feet. W.F. began to explode on grander scale. Two very big explosions sent particles within 150 feet of top of Pit. West F. seemed empty. Once in a while it would spit a huge quantity of lava above its cone and it would run down all sides. At times 1/3 to ½ of the crust of the lake would founder, due to the disturbance of one or the other fountain. Particles of glowing lava were stuck 1/3 the way up the Pit walls. An area of the floor 4 times that of the lake was dotted with glowing specks of lava. The larger explosions of W.F. may have come once in 5 to 10 min. The more frequent explosions of the smaller fountain (E.F.) came 20 per min. for a time.

Reports are that some of the blasts were heard at H.N.P. warehouse 2.2 miles from Pit.

Bright spots (5) were noted along the edge of the talus from under the East end of the tourist stand towards the East corner or bay.

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Saturday Date September 29, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
September 29								
11:30 a.m.	SE	Lake (overexposed)	1	Panch.	F	f/22	2	3A
"	SE	Lake	2	Panch.	F	f/22	1	3A
"	SE	East-upright pressure edge (overexposed)	3	Panch.	F	f/22	2	3A
2 p.m.	SW	Lake (overexposed)	4	Panch.	F	f/22	2	3A
2 p.m.	SW	W cracks	5	Panch	F	f/22	2	3A

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Monday Date October 1, 1934
Tuesday " 2, "

October 1 At 9:10 a.m. 16 exp. per minute. Big explosions in W.F. at 9:14½ a. and 9:19 a.m. (photo 1/50 fll.) (9:24¼ a.m. huge with slide) 9:32⅓ -36- 40½-42½- one about 9:50½- two about 9:52½ a.m. stopped at 10:40 occasional whoosh in E.F. E.F. lava returns 10:46 a.m. W.F. fume 10:57 lava flows out E.F. 10:47 Explosion & cracked between two fountains acc. to soldiers. Noted some disturbances at point where fume occurs between fountains.

11 a.m. W.F. Shows action.

Yasunaka reports that it (the blasts) was heard like thunder at the vegetable gardens, near 29 miles.



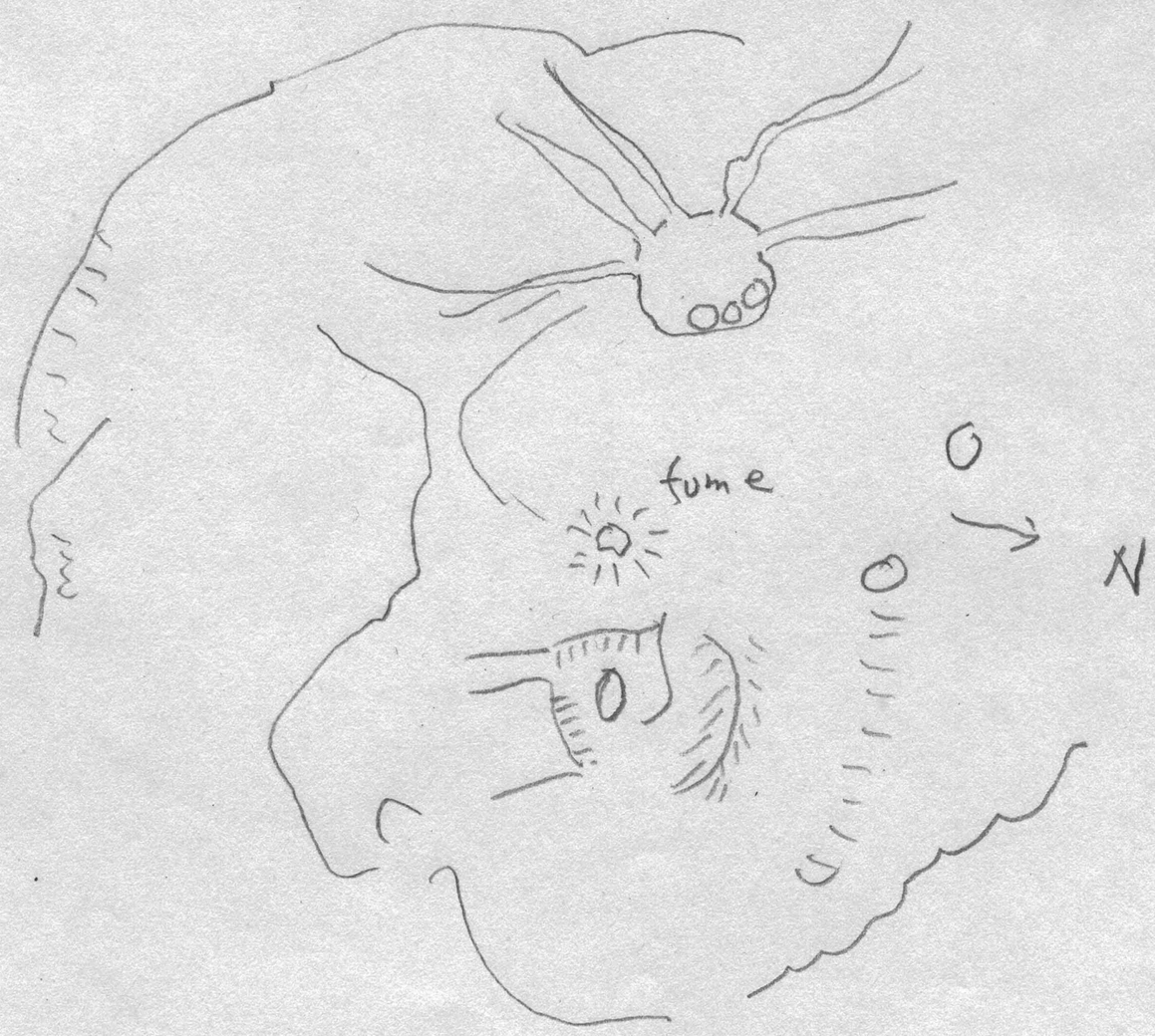
October 2 W.F. at 8:45 a.m. had built on lava cone. Seven streams of lava were seen coming down its slopes.

9:12 to 15 W.F. slowed down. E.F. had a sudden outpouring of lava river probably 120 feet wide.

10:10 Middle fountains are flowing all the lava spilling out to North.

10:12 E.F. flowing again.

3:30 to 4 p.m. E.F. & W.F. quiet except for occasional small movements in lava pools about 50 ft down. Center fountain supplying all the lava has overflowed to the N wall of Pit. New lake & rampart around it to N of E.F.



A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Tuesday Date October 2, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
October 2								
3:45 p.m.		Pit				f/11	1/25	
								Jones

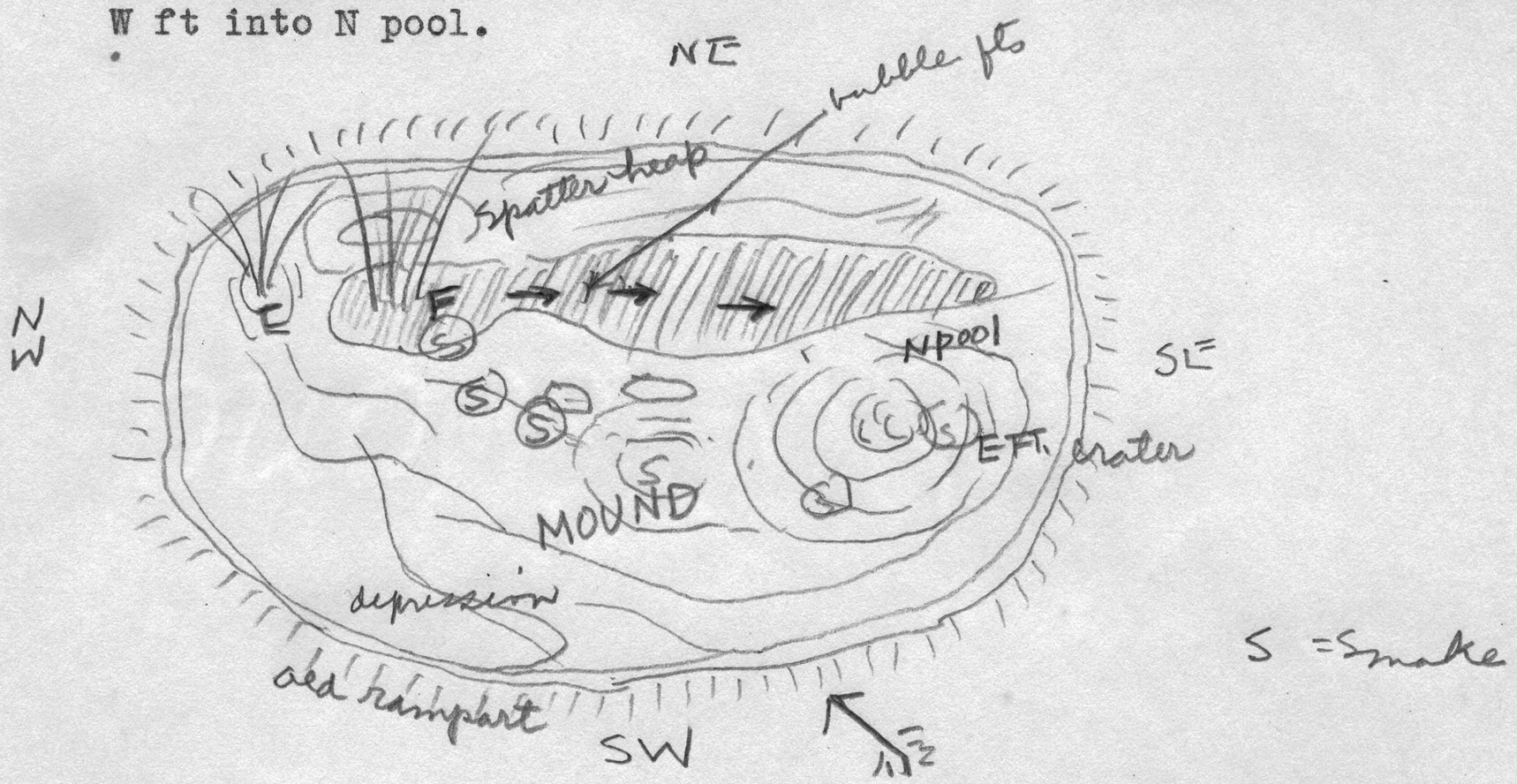
DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

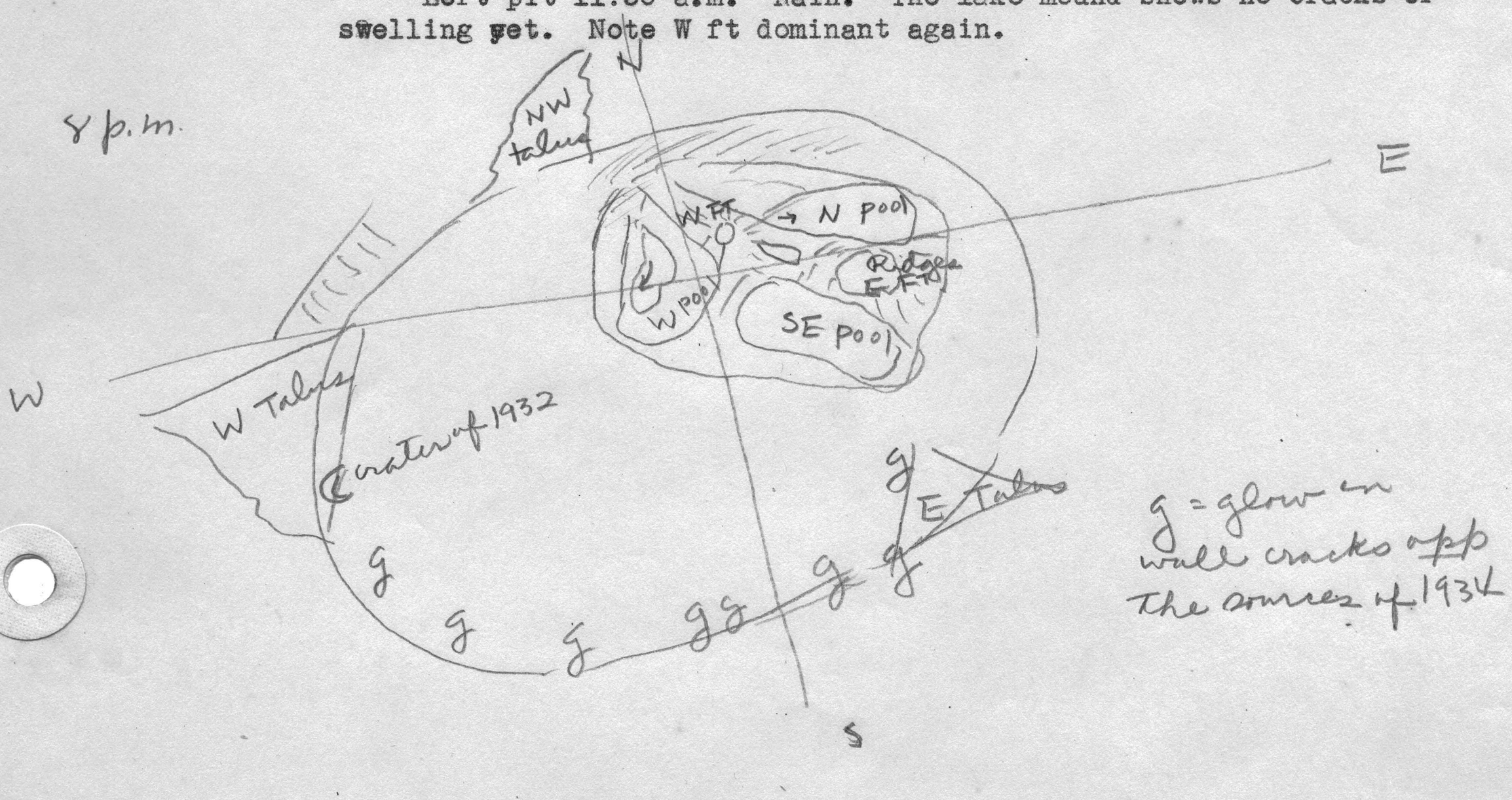
Day Wednesday Date October 3, 1934

October 3
11:30 a.m. From SE. Heap like Mauna Iki the whole length of former lake, active ft & grotto at W ft locality, stream down from it into elongate N pool on side of lake saucer next the wall. Nine smoke holes the length of the mound or ridge. Crater cup at E ft locality, looks like the last crater cup of ML 1926. N pool 300 ft long. A ft seen occasionally on W side of W ft heap. Outline of lake wal still visible. S, E. & W: 70 % of lake oval is now a mound. Snake flows congealed on top of W ft heap, which have recently trickled S. Trench and torrent E from W ft into N pool.



Yasu reports no explosions since evg of the first Oct. That morning so big they rattled the Archives Bldg. Sept 30 evg. so big the spray was as high as the pit rim seen at night. Tremor, small, continues.

Left pit 11:50 a.m. Rain. The lake mound shows no cracks of swelling yet. Note W ft dominant again.



DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Wednesday Date October 3, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
October 3								
10 a.m.		Pit				f/7.7	1/25	Jones

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Wednesday Date October 3, 1934
Thursday " 4, "

October 3
(cont'd)
8-8:30 p.m. Lake in 3 pools with partitions of ridge between. Appears quite different from the forenoon. N pool the most active. W pool streaming slowly in a hook on its w side.



SE pool like a bed of coals. E ft crater glows. W ft splashing in a pot at the top of the whole heap. Evidently tunnel flows from it E & W: there are E & W pots on top. N pool has ft at its inflow grotto W end and other fts in middle & E end from time to time. Glow in wall crack of floor all along taluses E & S & SW. Appears to be a wide band S. Very little ft noise much fume from heap.

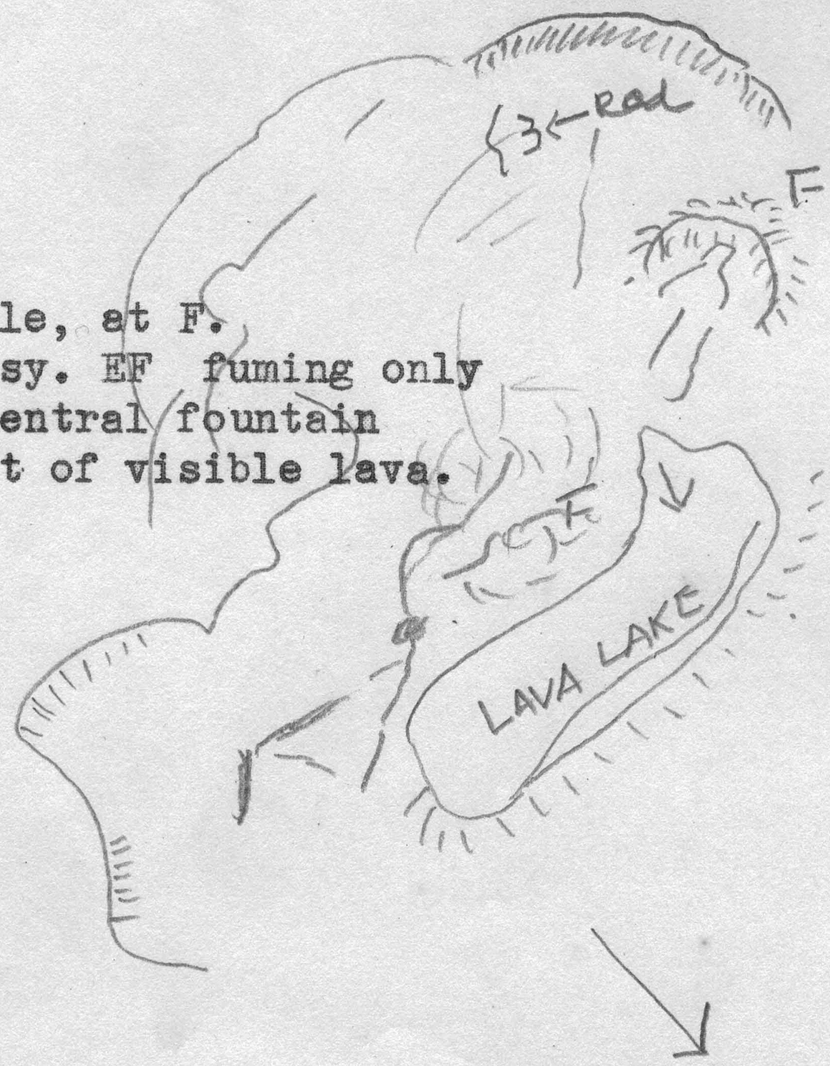
T.A.J.

9-10 a.m. Found the Pit fuming more than usual. Evidence is that heavy fuming started after 7 p.m. October 2. The fume only partly obscures the fountains and their cones.

The chief lava outlet at present is at a point about 1/3 the way from W.F. to E.F. It probably represents the outflow from W.F. as it was boiling vigorously (20-40 feet high inside its cone) The E.F. bubbles only occasionally (1 per min?) but there is some outflow to the SE. The lake as seen Oct. 2 to the worth of E.F. remains but the outflowx to the Pit N wall has stopped.

A.E.J.

October 4
10 a.m.



Fume noticeable, at F.
Fountains noisy. EF fuming only
WF boiling, central fountain
supplying most of visible lava.

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

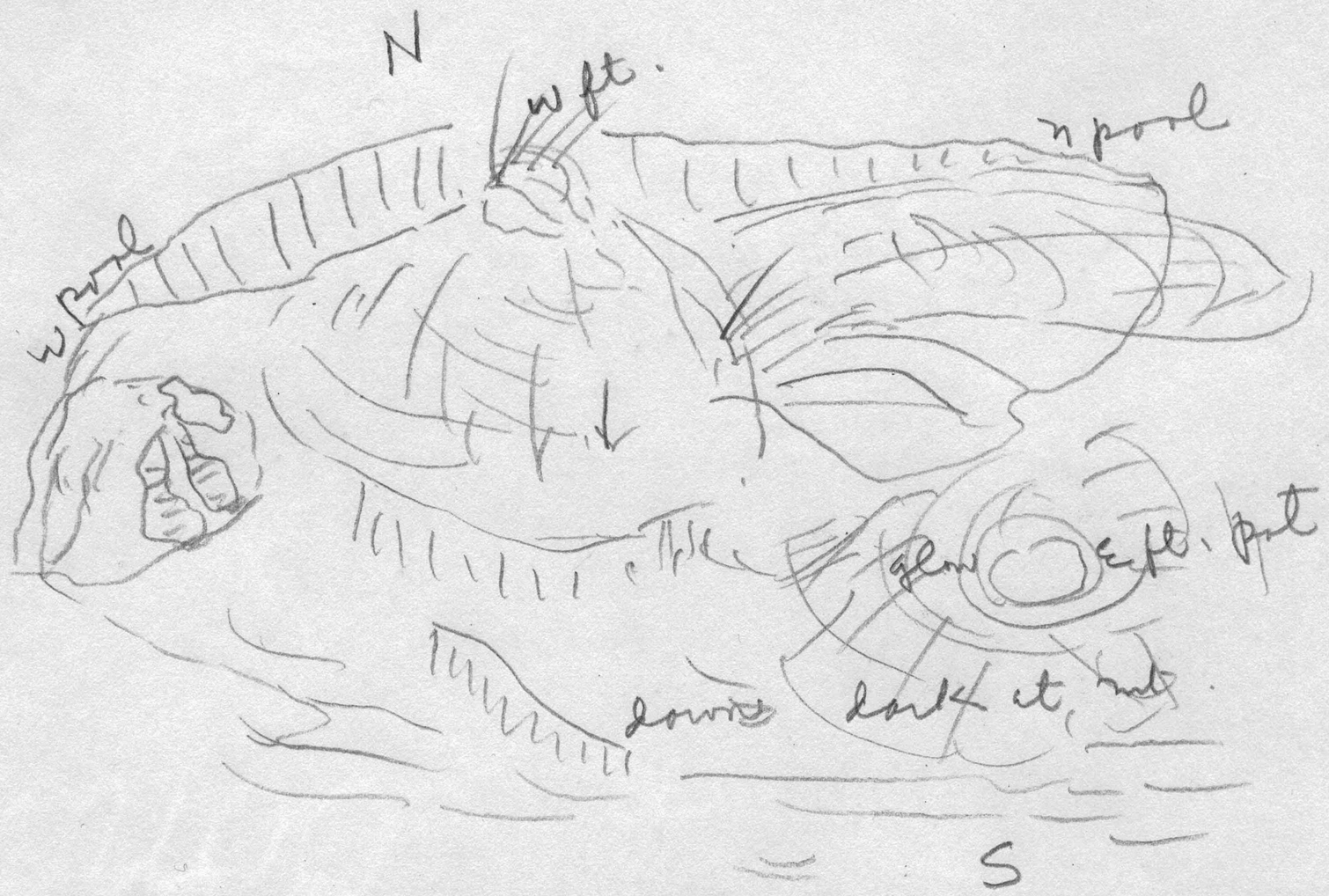
Hawaiian Volcano Observatory

JOURNAL

Day Thursday Date October 4, 1934
Friday " 5, "

October 4 (cont'd) 7:30-8 p.m. Pit bright. Fume abundant but blue and thin. SE pool dark. E ft locality makes a bright spark. W pool shows 4 or 5 trickle flows & glowing cracks. W ft in a high pulpit, flinging up crumbly orange lava on its eastern lip. N pool brighter and bigger. Has a flinging fountain at its W and building up a spatter heap. Flings at 45° to the E, & heap is east of the vent. Sometimes its sprays high. Appears to vent a tunnel leading from W. ft. Glow crusts & streaming in long N pool to E. Appears bright but pasty. Small grotto E end. Flames about W ft. Noises splash and blow. 4 glow spots wall crack E, 2 at S.

Oct. 4-5



October 5 11:30 a.m. Lake basin greatly collapsed compared with Oct 3. Entire oval is down & tumbled. The E cone big and dead. The W cone alive, with the W horn of arched grotto out in middle of its crusted pool, the live ft being inside the grotto. To S of the frozen pool is a dome heap sloping down. To the E of grotto hill is the jet cone (see drawing Oct. 4) and the jet is back of it N. From the jetting ft a big festooned streaming the whole length of NE pool, cracking & foundering at its E end.

Small trickle flows in W depression same as last night.

The lake basin probably 50 feet below its slump scarp, and quite possibly more.

Fume moderate, high NE wind.

4 p.m. Extraordinary swelling <u>all along wall NE</u>: casts heavy shadow.

T.A.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

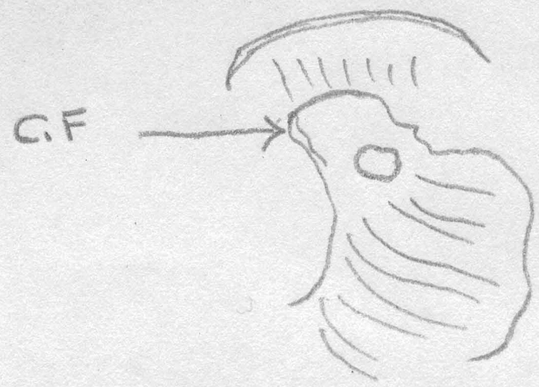
JOURNAL

Day Friday Date October 5, 1934
Saturday " 6, "
Sunday " 7, "

October 5 (cont) 10:40 a.m. Central vent feeding lava very slowly into North lava lake. W. F. bubbling some lava in it. Many fuming points between E & W.F. Some red lava noted at West end of old lake bed.

A lava tunnel has caved in, leaving a 20 ft hole in middle of old lake bed. ca. 125 feet S. of W.F.

Lava is not flowing out of central fountain but out from under lava to the north of c.f.



October 6 9-10 a.m. Area around E & W cone in Pit is fuming quite heavily.

North lava lake is appreciably lower (10-15 ft) and lava is coming in very slowly. Crust breaks and founders at times.

The middle cone has built up in the 24 hours.

A.E.J.

October 7 8:30 a.m. Dull bubbling noise in ft. Small slide W end canoe sill. Almost no steam from W cone. Big fume from small new cone E. of W. cone & from ground betw that cone & E cone. E cone not fuming. N pool depressed & probably glowing. Remainder of lake basin looks the same, but possibly floor up a little.

Steam has greatly decreased at N base of E talus. None at W base of N talus: fresh debris there. A little at E base of N talus. A little at bright alum-sulphur spot on NW talus pumice. None at other sulphur spots.

8:50 a.m. Aval next E of SW tunnels.

T.A.J.

Central vent only appears to supply lava. It has built a mound ower itself and lava flows out from under the bottom of the north side. It coughs steadily. The lava is moving so slow as to be scarcely perceptible.

The lake appears to be twice as deep below its rampart walls as yesterday. It is deeper than the older lake to the south of the cones.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

PHOTOGRAPH RECORD

Day Monday Date October 8, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
October 8								
3:35 p.m.	SE	Steam rising from SE of Pit				f/16	1/25	

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Sunday Date October 7, 1934
Monday " 8, "
Tuesday " 9, "

October 7 (cont'd) A small slide occurred at 9:30 a.m. from over the n. end of the canoe sill.

Dull thuds were heard twice from the direction of 1932 cone as though cooling lava was cracking.

A.E.J.

October 8

10 a.m. At SE heard hiss from middle fume cone at 10:10 and 10:15.

From NW at 11:25 a.m. prolonged sound like a talus sliding in N gulch. The W end of canoe sill is continually sliding and uneasy. The last flow was a short festooned trickle in N pool from small cone. N pool down. Small slide E of SW tunnel. Lake floor looks higher.

11:43 Slide top of W big talus.

Okuda reports 2 big slides N about 1 p.m. Big rocks on floor.

8 p.m. Pit glowing all around edge of floor & edge of lake.

Count 11 glow spots E & S wall crack. 12 spots at lake. App. flames at N spiracle N wall sliding continuously.

This glowing at E edge of floor has increased in 2 days. No glow over pit as seen distant.

T.A.J.

October 9

7:17 a.m. No fume over pit early a.m.

Aval. dust cloud N rim. Plenty of fume in pit as seen from Uwe.

Wingate says the big aval was 7± a.m. 9th (ethquake)

Avalanche N gulch 11:15 a.m.

Spiracle conelet has stopped fuming. Fume almost completely stopped. A little on W sie E cone. Big notch clear to the top for aval of 7:17 a.m.: west of 1894 scarp N. Red slide in N gulch 9:06 a.m. Lake looks a little more down. N talus greatly enlarged. Big bowlders out to lake edge. A few fresh bowlders NE. Big fall of fresh rock under tourist stand SE on wall crack fills where it glows. 10 radial cracks in floor. E and NE are the biggest swellings of edge the great steam in thunder storm yesterday 1:30 wall E side of pit: rain on intrusives below. Main pool & N pool of lake sunken within lake oval. W cone heap, E cone heap and S peninsula srand up. Even the NW sulphur and alum on NW talus, which steamed vigorously yesterday, appears dead today & less yellow. Big wash of yesterdays .89" rain. No sign of sinking edge of floor.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Wednesday Date October 10, 1934
Thursday " 11, "
Friday " 12, "
Saturday " 14, "

October 10
8:50 a.m. Fume doesn't show above pit, but plenty inside. Smoking places E & W base N talus, N base E talus, N side cone next to & W of the E ft cone. White & blue mixed at E base N talus. The festoons in depression of old 1932 craterlet were inward. The slope is now outward-showing uplift of floor edge since Sept 7. Rocks still trickling W end N sill.

October 11
8:30 a.m. Little change. From W the morning shadow shows slope of swollen edge S & W. Blue fume from E & W sides N talus and N side E talus mixed with white. Blue fume from crack N of center cone in lake area. Yellow sulphur on NW bank recovering after rain, and slightly steaming. The chasms along wall crack ridge S & W are big just as at NE. The tumble of rocks on edge of floor SE fell from the wall immediately above, low down: the floor contact itself apparently jostled the wall, perhaps by rising?

October 12
8:30 a.m. No marked change. Fume from same places. Notable swelling remains & big border chasms inside the floor. No slides heard. Small fume spots at 3 places in center SE of lake basin.

Tilting is going on moderately at clinoscopes and Jones has levelling and angle changes, toward subsidence, at Beggar etc.

October 13
5:30 p.m. Rainy. More steam on W surfaces in pit than E. No glow seen in twilight. No apparent shrinkage in floor. No slides. Vapor at taluses and at NW alum-sulphur and at cascade sulphur N side of W boss buttress.

Prolonged eq of Hualalai type at 7:14 p.m.

T.A.J.

Fume was noted in the pit at 8:30 a.m. For a time it was quite clear 9:15-10 a.m. At 10:12 a concentration of fume was noted, and again at 10:39.

The area of 1894 cliff showed numerous hair cracks in an area 20 ft ~~xxx~~ from Pit edge and 50 ft NW from the '94 cliff. Large cracks there seemed wider. The '94 cliff or crack prevented the small cracks continuing to SE, as none were noted on that side. (upper)

Crack #37 shows 1.5 mm for week.

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Sunday Date October 14, 1934
Monday " 15, "
Tuesday " 16, "
Saturday " 20, "

October 14
6:12 a.m. With Mr. Jardine chief of exp. sta. agric. Some snapping under floor. Taluses wet from recent rain. Slump heard at NW bank. Base of N talus dry & hot.Dry streak base of small canoe sill talus.

11:50 a.m. No change. One or two rocks fall N.

October 15
8:30 a.m. No change. SW wind . 11 floor & edge fumes. (not counting steam on S talus)

All fume spots are NE end of floor. 6 at taluses, 5 at lake area. Rock fall N 8:37 a.m. One snap heard in E floor. The 3 main chasms of swelling are E, W & S edges. These cracks break the edge fills.

October 16
9 a.m. No change. Calm air. Fume patches slight. SE wind. No sign of lowering.

12 or 15 remarkable small shocks this day Halemaumau & HVO, slow period or distant? source.

T.A.J.

Fume puffing from Pit quite constantly all afternoon.

A.E.J.

Calm and rising in units from SE talus. Puffing means force.

T.A.J.

October 20 A slide track, 100 ft wide, was noted 300 ft west of the north buttress. A few rocks are on the new floor. A block has fallen from the NE wall just over the lowest part of the Canoe sill, a few red blocks are distributed down that talus, one reached the new floor.

Considerable fume is coming from under the E talus.

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day - Monday Date October 22, 1934
Wednesday " 24, "
Thursday " 25, "

October 22
9:10 a.m. Rocks trickling N. 10 fuming places. The one at W end of lake basin no more. Two in N cent part of lake basin N side of central driblet cone, at W of E ft well, have greatly increased blue fume since last week. Fume is quite conspicuous above the pit chasms along edge floor. WNW appear more open.

Base of northern taluses hot & dry, upper parts wet. The center lake fume & N talus fume more blue than E talus fume.

The cone fuming seems bigger than anything else. I do not remember it forming. It is covered w rabbly spatter. It looks the highest thing on the lake ridge. It is destinctly W of the E ft cone which is broken down, and S of the last active cone wh is at W border of N pool. It is 4 times as large as the last.

The floor is not slumpy.

9:20 a.m. Rocks dribbling NW.

There is wall crack heat along base S & SE taluses dry line against wet.

October 24
8:30 a.m. No change. After rainy day and night no of fuming places appears same. No steaming places in pit are conspicuous as new made by rain. Blue fume places are rather thin, and not mixed with white vapor. One snap, & one rockfall heard E.

T.A.J.

October 25
10:22 a.m. Small slide from just above canoe sill ($\frac{1}{2}$ way up) .
Levels checked all around Pit, to 1 mm.

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Monday Date October 29, 1934
Tuesday " 30, "
Wednesday " 31, "

October 29
9:50 a.m.

Yasunaka reports that a block broke and fell under tourist stand. It was 100 to 200 feet above lava floor and made a great noise. It was at the same place that a fall occurred just after the end of the eruption Oct. 8, 1934.

Not much dust.

A.E.J.

October 30
9 a.m.

Plenty of blue fume in the pit as a whole.

9 fume places.

3 sulphur spots (1) on NW talus (2) base of small WNW cascades, growing yellower. (3) base N side W talus. Pit quiet.

The new cracks (and old) back from edge of pit SW on 1920 line all purring vigorously. Appear hotter. Steam. The transition from SW steam (idle) to vigorous puffs opp the 1920 tunnels & then idle steam farther E is striking. The harder purring is farther N than the crater depression & pit opp the tem. vents, but these purr somewhat.

October 31
8:45 a.m.

8 fuming places. Cannot detect fume at base of small NE talus any longer.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day		Date			
	Thursday		November	1,	1934
	Friday		"	2,	"
	Saturday		"	3,	"
	Sunday		"	4,	"
	Tuesday		"	6,	"

November 1
9 a.m.

No change. 8 fumes. The ones E & W base of N talus and at alum locality NW talus pumice are getting smaller.
Pebbles falling at top of W cascades.

November 2
8:25 a.m.

No change detected.

T.A.J.

November 3

Intermittant sliding between 8:30 and 10 a.m. a little at the east notch or bay mostly halfway up on the north end of the canoe sill.
Noted some fresh hair cracking near the 1894 pali, both at top and at bottom (NNE rim Hal)

November 4

Fume still comes in puffs. Appears as strong as for the past month.
Sliding continues on the N end of the canoe sill.

November 6

Appeared to be more fume than usual, for a few minutes 8:31 a.m., collected in the NE corner of Pit.
No slides noted.

A.E.J.

DEPARTMENT OF THE INTERIOR, U. S. GEOLOGICAL SURVEY

Hawaiian Volcano Observatory

JOURNAL

Day Monday Date November 12, 1934
Tuesday " 13, "

November 12
8:30 a.m. W end of Canoe Sill is sliding continuously. A fine-grained new talus on top of the coarse talus is formed below. There is a deep notch in the rock between this place and the N gulch and a fine-grained dry flow-talus underneath, at the mouth of the N gulch. At the foot of the N talus there is increase of blue fume, on W side: 3 patches, one up the talus, one at the W base, and one at N border of lake, NW corner of the N pool basin.

9 or 10 fuming places can be counted. It looks as tho the low buttress block W of end of Canoe Sill were going to fall. There is increase of blue fume from pit.

Large new fall of rocks on floor on E side of SW tunnel. The W corner of the buttress there has fallen on the swollen and crevassed floor edge. There is some new fallen material also under the tunnels.

The fume patch at base of E talus appears longer.

10:15 a.m. The slide debris under the SW tunnel has pink dust on floor all the way from 1932 cone to buttress E of tunnel.

The SE border floor is more swollen with stained crevasses than I have noted before.

The E talus fume has distinctly extended S to the middle of base of talus. The E radial cracks are very pronounced and there is a line of stained spots 150 ft SE of lake basin parallel to its edge. The W end of Canoe Sill has caved away leaving wall projecting beyond its end. The N talus is increasing.

The white stain outside of the alum-sulphur patch covers half the NW talus surface. It has greatly increased the staining of the pumice. There is a line of surface stain along the bottom of the outline of the W est Boss. There is white stain $\frac{1}{4}$ way up the N side of W talus.

When the sunlight struck the floor ridge at base of E talus, 3 new cracks outside of and parallel to the big crevasse were seen. The ridge has been swelling farther. This directly opposite the new steam.

T.A.J.

November 13
11 a.m. Dust from a slide appeared in northeast corner of Pit.

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Day Wednesday Date November 14, 1934
Monday " 19, "
Tuesday " 20, "
Wednesday " 21, "

November 14 Established a temporary measuring point on crack in small 1894 pali, On biggest crack about 8 feet above depression, 30 ft back from Pit edge.

26.85 cm.

Sliding continues at N end of canoe sill.

A.E.J.

November 19
9:30 a.m. Pit the same. Excessive opening of cracks last week may mean intrusions of fuming places. Hot dryness along bases of taluses. Excessive grass over the area SW of ash where the steam cracks puff, outside of Hal. Short tufty grass. Bright yellow sulphur base of WNW wall on floor. Notch bigger at W end of Canoe Sill. Stained area on top NW talus is more white rather than yellow abundant fume is pit as a whole.

November 20
9 a.m. Observed yesterday the tufty grass green all about the steaming places NW of pit. Now 7 fume places:

2 at NW talus, 2 at N talus, 1 (probably) base Cane talus, 1 N side Lake basin, 1 long one E talus.

The center & E lake fumes have ceased.

The fall pm buttress E of SW tunnel is larger & the top of its talus wet and steaming.

The fine grain small slides on top of N talus have changed its shape.

November 21
9 a.m. Same

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Day		Date	
	Thursday	November	22, 1934
	Monday	"	26, "
	Tuesday	"	27, "
	Thursday	"	29, "

November 22
8:40 a.m.

After more than one inch of rain walls of Halemaumau wet, and the hot vents made visible by present drizzle.

Count 20 places around edges of floor and on walls. Notably absent at lake basin of 1934. Vapor at cascade cracks. Edges of floor at swelling cracks not steaming, but at S, SW, W, NW, N, NE and E taluses much vapor. 2 places below & above vaporing on small Canoe Sill talus. Steam in inner wall high up NW, W, WSW, SE.

Puffing & purring in upland of crater floor SW very active.

November 26
8:30 a.m.

Pit as before.

It is seen in this light that the arc of stain on floor in front of pumice bank of NW talus, is a ridge with a valley between it and the bank, perhaps 10-20 ft deep. This is the site of biggest west fts of Sept 6, and the valley is where they receded.

November 27
9:15 a.m.

Very damp & rainy.

About 25 places around floor steaming. Taluses dark with moisture, bottoms dry. One or two deep snaps. Cracks in 1932 cone when wet yellow on top, red in fissures. Much fume over pit.

T.A.J.

November 29

Pit quiet. Fume average. Went down Chain-of-Craters. While stopped at Puu Huluhulu trail heard a pheasant to West. 200 yd very noisy for 10-20 sec at about 10:49 or 10:50 a.m. Coincides with v.f. quake recorded.

A.E.J.

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Day		Date	
	Saturday	December	1, 1934
	Sunday	"	2, "
	Monday	"	10, "
	Tues-Friday	"	11-14, "
	Sunday	"	16, "

December 1 — Almost no rock trickling this a.m.

December 2 — Pit Rainfall 3.66 inches. Much steam coming out of Pit until 9 a.m.
Visit to pit showed steam at every crack on lava floor. Took three photos. f7.7 time 1/25-100 ft.
Heard a slide rumble down the north wall? too wet for dust to rise.
Heard a loud (as above) hissing roar, did not sound quite a slide but might have been a very short fall of large rock. (near floor).
Rock falls frequent.

A.E.J.

December 10, 9:15 a.m. — 7 places fuming. Stain appearing at wall-crack lava upwelling, talus next E of S talus. This talus has wet streaks which steam. One snap heard in the floor. The densest fuming place is N base of E talus.

December 11-14 — No change

December 16, 9:25 a.m. — Rockfall at W cascade. W tilt on seis pit: dry cloudless day: vapor in pit only visible at base E talus. Marginal crack of upswelling, stained, back of rampart, in dike fill SSE. Base of NNW cascade brighter yellow & stain on floor.

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PHOTOGRAPH RECORD

Day Sunday Date December 2, 1934

time	sta	subject	no	pl	scr	stop	ex	cam
December 2								
		Three photos of steam from lava floor				f/77	1/25	A.E.J.

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Day		Date		
	Monday		December	17, 1934
	Tuesday		"	18, "
	Sunday		"	30, "
	Monday		"	31, "

December 17
9:25 a.m.

Strong NE wind. Sunny. Pit the same. Clouds of dust blowing far as eye can see in Kau desert.

The fume separates itself from the steam at base of E talus and rises to fill the air in pit and fail to dissipate the way the steam does. From Uwekahuna the air in the pit is fumy.

Whirls counter-clockwise W edge of pit.

December 18
9:42 a.m.

Clearing. Blue fume or white vapor or a mixture at 13 places around floor & taluses. After rain in night. Fume at small canoe sill talus. Fume E of lake area. White dry areas at base of taluses. Vapor at top of black cascades W talus. Vapor high on WNW wall.

December 30
9:48 a.m.

One snap heard like a detonation. 6 fume places around actual floor including blue fume at dry middle of small canoe sill talus. One place at base of talus SE at stain of dyke fill. Rocks trickling NE.

December 31
8:55 a.m.

No change.

T.A.J.