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- 122. June 5, 11: 23, very feeble.
  - 123. June 6, 04: 48, very feeble. Kilauea.
  - 124. June 8, 16: 58, very feeble.
  - 125. June 9, 00: 44, very feeble.
  - 126. June 9, 00: 49, slight. Felt in Hilo. Kilauea (?).
  - 127. June 10, 00: 40, very feeble. Kilauea.
  - 128. June 11, 21: 27, no record at Kilauea (Kona, very feeble). Central Kona.
  - 129. June 15, 03: 24, no record at Kilauea (Kona, feeble). Central Kona.
  - 130. June 15, 20: 34, feeble. Felt in Hilo and Volcano district. Northeast slope of Mauna Loa about 3 miles N 30° E of Volcano House, near 19°29'N., 155°14'W.
  - 131. June 16, 11: 10, no record at Kilauea (Kona, very feeble). Central Kona.
  - 132. June 17, 02: 27, no record at Kilauea (Kona, very feeble). West slope of Mauna Loa.
  - 133. June 18, 03: 05, very feeble.
  - 134. June 20, 20: 55, tremor (Kona, very feeble).
  - 135. June 21, 07: 20, no record at Kilauea (Kona, very feeble).
  - 136. June 23, 17: 50, very feeble (Kona, slight). Central Kona.
  - 137. June 23, 17: 53, no record at Kilauea (Kona, very feeble).
  - 138. June 26, 17: 53, no record at Kilauea (Kona, very feeble).
  - 139. June 26, 20: 24, very feeble (Kona, feeble). Central Kona.
  - 140. June 26, 20: 54, tremor (Kona, very feeble).
  - 141. June 27, 10: 47, moderate. Felt in Volcano district. East slope of Mauna Loa about 3 miles S 60° E of Puu Kuluu, near 19°31'N., 155°23'W.
  - 142. June 27, 23: 12, tremor (Kona, very feeble).
  - 143. June 28, 20: 20, very feeble.
  - 144. June 30, 00: 45, tremor (Kona, very feeble). Central Kona.
  - 145. June 30, 06: 37, tremor (Kona, very feeble). Central Kona.

Distant Earthquakes

The following earthquakes of distant origin were recorded on the seismographs of the Hawaiian Volcano Observatory. Locations of the epicenters are from the notices of Preliminary Determinations of Epicenters published by the U. S. Coast and Geodetic Survey. The time given is that of the first detectable emergence of the quake on the Bosch-Omori horizontal or Sprengnether vertical seismograms, in Hawaiian Standard time.

- April 5, 14: 48, slight. Banda Sea, at 7°S., 132°E.
- April 18, 13: 48, slight. Off south coast of Mexico, at 10°N., 102°W.
- April 23, 06: 34, slight. New Britain region, at 4°S., 154°E.
- June 15, 08: 05, slight. Near south coast of Kodiak Island, Alaska, at 56½°N., 154°W.

Earthquake Data, April-June, 1953  
(Based on Bosch-Omori seismograph on northeast rim of Kilauea Caldera)

Week Beginning	Minutes of Tremor	Very Feeble	Feeble	Slight	Moderate	Strong	Local Seismicity*	Tele-seisms
April	5	6	0	1	0	0	2.5	1
	12	5	1	0	0	0	1.75	1
	19	12	0	1	0	0	4.0	1
May	26	17	0	0	1	2	9.25	0
	3	11	0	0	0	0	2.75	0
	10	15	2	0	1	0	6.75	0
	17	73	0	0	0	0	18.25	0
	24	149	3	0	2	1	45.75	0
June	31	38	6	0	0	0	12.5	0
	7	30	3	0	1	0	11.0	0
	14	48	1	1	0	0	13.5	1
	21	58	2	0	0	1	18.5	0
	28	15	2	0	0	0	4.75	0

\* For definition of local seismicity see Volcano Letter 371 or 512. Each local earthquake is assigned a seismicity value according to its strength, as follows: tremor, 0.25; very feeble, 0.5; feeble, 1.0; slight, 2.0; moderate, 3.0; strong, 4.0. These values are totaled to give the weekly local seismicity. Continuous volcanic tremor is ignored in the calculation. The strength assigned to the earthquake depends on the double amplitude of the maximum oscillation it causes on the Bosch-Omori seismograph, as follows: tremor, less than 0.5 mm.; very feeble, 0.5 to 4 mm.; feeble, 4 to 11 mm.; slight, 11 to 25 mm.; moderate, 25 to 60 mm.; strong, greater than 60 mm.

Table of Tilt at Seismograph Stations on Rim of Kilauea Caldera

Week Beginning	Whitney Station (Northeast rim)		Uwekahuna Station (West rim)		
	Amount	Direction	Amount	Direction	
April	5	1.4"	S 38° W	0.6"	N
	12	0.9"	N 56° E	1.3"	S 37° E
	19	1.3"	S 63° W	0.4"	N 45° E
	26	1.3"	S 80° W	0.7"	N 27° W
May	3	0.6"	N 79° E	1.6"	N 12° W
	10	0.4"	S 72° E	2.6"	S 14° E
	17	1.5"	N 14° W	2.2"	S
	24	1.3"	N 34° E	2.4"	N 23° W
	31	1.2"	N 17° W	1.3"	S 14° W
June	7	1.0"	N 7° E	0	0
	14	0.1"	W	0.7"	N 26° E
	21	0.7"	N 9° E	1.4"	S 27° E
	28	1.8"	N 20° W	0.4"	N 45° E

VOLCANO NOTES AND NEWS

VOLCANOLOGICAL SURVEY OF INDONESIA

The Volcanological Survey of Indonesia (Dinas Gunung Berapi Indonesia) is carrying on the work started by the Netherlands East Indies Volcanological Survey. Directly after the war the work was handicapped by a lack of funds and adequate personnel. Since 1950, however, rapid advances have been made in reconnaissance and mapping of volcanic districts, some of them previously unknown. Much of this has been made possible through the co-operation of the Air Force of the Republic of Indonesia. A summary account of the progress up to the end of 1952 is contained in *Berita Gunung Berapi (Communications of the Volcanological Survey of Indonesia)* 1 (1-2), Sept.-Dec., 1952.

Following the transfer of Sovereignty, Dr. G. A. deNeve became director of the Volcanological Survey, succeeding W. A. Petroeschewsky in September, 1950. It was decided that aerial reconnaissance offered the most expeditious way of obtaining a general view of the volcanic activity of the whole of Indonesia and determining which volcanoes are most urgently in need of more detailed examination. This reconnaissance was largely accomplished by mid-1951, and ground examinations and mapping had been carried on in some areas. As a result of this work 15 new active volcanic centers have been found on Sumatra,

northern Celebes, and Flores, bringing the total number of active volcanoes and solfatara and fumarole fields in Indonesia to 167, in place of the 152 listed by C. H. Stehn in 1940.

Additional work was done during 1952 by teams of investigators transported to and from their respective areas of study in Catalina amphibian planes. Special studies have been carried out on Semeru to delineate the areas in danger from cold lahars (mud flows) and at Kelud for the restoration of the tunnels constructed to drain the crater lake.

This energetic resumption of work on Indonesian volcanoes is deserving of great praise, and it is to be hoped that the work can be continued in a similar manner and its scope increased still further.

ACTIVITY OF TRIDENT VOLCANO

Trident Volcano, in Alaska, continues in mild activity. The lava flow issuing about a mile southwest of the old crater of Trident continued to grow slowly until June 2. George Snyder, geologist of the U. S. Geological Survey, reports that between June 2 and June 17 the rate of growth of the flow increased markedly. He estimated the thickness of the flow in the vicinity of the vent to be about 1,000 feet on June 17. The rate of gas emission is much decreased over that during March. Snyder

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reports there were two large explosions and constant gas liberation during an hour's observation on June 17. Steam is issuing from the crater of nearby Mageik Volcano. Robert R. Coats reports (U. S. Geological Survey Bulletin 974-B) that Mageik Volcano and the neighboring volcanoes Katmai, Martin, and Novarupta have been steaming almost constantly since 1912. A small cinder cone is reported to have been built on the southwest flank of Novarupta, in the Valley of Ten Thousand Smokes, in July, 1950 (Lowell Sumner, *Sierra Club Bul.* 37 (10): 45, Dec., 1952). George Snyder states (Preliminary Report of Mt. Trident Eruption) that according to the *Kodiak Mirror* for Feb. 21, 1953, Mageik Volcano last erupted in 1951.

The accompanying photograph shows the lava flow on the southwest flank of Trident Volcano on February 21 and the cloud of ash and fume rising at the vent from which the flow is issuing.

Snyder estimates that from the beginning of the eruption until March 11 the volume of lava and ash liberated by Trident Volcano was between 2.2 and 4.5 billion cubic feet (0.015 to 0.03 cubic mile) and that between March 11 and June 17 from 1 to 2.5 billion cubic feet of additional lava was extruded. Compared with this, the volume of ash and other fragmental material produced by the great eruption of Katmai Volcano in 1912 has been estimated at 6 to 7 cubic miles.

R. E. Wilcox writes that the last significant ash eruption of Trident Volcano was on June 30.

#### ACTIVITY OF GREAT SITKIN VOLCANO

Richard McDonald, seismologist of the U. S. Geological Survey, reports that on May 11, 1953, the Coast and Geodetic Survey ship *Pioneer* observed a spectacular column of steam rising an estimated 5,000 feet above Great Sitkin Volcano, in the Aleutian Islands. The steam column lasted about an hour. An earthquake felt at Adak on May 12, with an intensity of 5 on the modified Mercalli scale, had its epicenter on a line passing through Great Sitkin. On the afternoon of May 14 a steam cloud was seen to rise about 4,000 feet above the crater rim of Great Sitkin, and during the evening another earthquake occurred, slightly less severe than that of May 12, with its epicenter on the same line. Both quakes apparently were more severe on Great Sitkin than on Adak. When next observed, on May 19, the steaming of Great Sitkin Volcano was much diminished but still greater than normal. Subsequent observations on May 23, June 5, and June 7 showed only weak emission of steam. No ash eruption was observed during the period from May 11 to June 7, nor did the form of the basalt dome in the crater of Great Sitkin change appreciably.



FIGURE 2. Trident Volcano, Mount Katmai National Monument, in eruption on February 21, 1953. The cloud of ash and fume is rising from a vent on the southwest slope of Trident, and a small lava flow also is issuing from the same vent. Knife Peak Volcano appears on the left of the view, and Katmai Volcano, with its summit caldera formed during the great eruption of 1912, is on the right. Official U. S. Navy photograph.