

The strongest earthquake of the month occurred at 10^h56^m on October 26 and originated near the summit of Mauna Loa. Several smaller quakes also came from Mauna Loa. Eastward tilting of the ground surface at the edge of Kilauea caldera, accompanied by less than normal northward tilting, may have indicated a small increase of volcanic pressure beneath Mauna Loa.

A series of landslides on the southwest wall of Halemauana crater began in late September and continued into October. A large segment of the crater rim, estimated to be 100 feet long, 75 feet high, and 5 to 10 feet thick, fell into the crater during the night of October 1. The last large slide occurred on October 10, but occasional small slides continued throughout the rest of the month.

November.—The Hawaiian volcanoes were very quiet through the month of November. The Bosch-Omori seismograph in the Whitney Laboratory recorded only 19 earthquakes during the month, the smallest number since February, 1953. The Sprengnether vertical seismograph at Uwekahuna recorded 100 quakes during November. The Loucks-Omori seismograph in the Mauna Loa station recorded 47 quakes, most of them very small.

An earthquake at 10^h37^m on November 2 was reported felt at Hilo, Pahoa, and in the Volcano district. It originated at a depth of about 10 miles on the east rift zone of Kilauea, near the caldera. On November 3 and 4 several tiny quakes felt in Naalehu originated very close to that town. A quake felt in central Kona at 8^h16^m on November 13 originated near Kealahou, probably on the Kealahou fault. At 15^h on November 21 a sharp earthquake was felt only in the Headquarters area of Hawaii National Park. It originated beneath the north-east edge of Kilauea caldera.

The Pahoa seismograph recorded 17 earthquakes during November. One of these, at 20^h15^m on November 29, was felt at Pahoa School. It originated at a depth of about 3 miles on the east rift zone of Kilauea southeast of Pahoa. Steam and sulfur gas continued to escape from the vents of the 1955 eruption, particularly those at the old Kalapana road, those south-southeast of Iilewa Crater, and those south of the Kapoho road. There had been no noticeable change in the temperature of the escaping steam since shortly after the end of the eruption. Several places in the last flows southwest of the Kamali-Opihiko road remained very hot. At one of them the temperature was still about 870°F. There were no signs whatever of any renewal of volcanic activity in Puna.

Tilting of the ground surface at the Whitney Laboratory was almost due eastward throughout the month. Normally at that season of the year the tilting is north-northeastward. The absence of northward

tilting during November appeared still to be the result of slow sinking of the top of Kilauea volcano south of the Whitney Laboratory that had continued ever since the end of the Puna eruption. The sinking is believed to have been caused by a small reduction in volcanic pressure beneath the volcano. The eastward tilting, combined with an absence of northward tilting, may have indicated a slight swelling of Mauna Loa volcano, but the evidence was inconclusive.

December.—Except for the continued liberation of steam along the vents of the 1955 eruption, Hawaiian volcanoes remained quiet during December.

Twenty-nine earthquakes, about the average for months of volcanic quiet, were recorded during December at the Whitney Laboratory. Only 10 earthquakes from the Puna area were recorded at Pahoa during December.

On December 12 and 13 a swarm of tiny earthquakes originated about 45 km beneath Kilauea caldera. The Sprengnether vertical seismograph at Uwekahuna recorded about 200 earthquakes from that source on those 2 days. A total of 307 earthquakes, mostly very small, were registered on the Sprengnether seismograph during the month.

A small earthquake which probably originated in Hualalai volcano was felt at Honokohau at 15^h15^m on December 7. The earthquake felt on the island of Oahu at 14^h23^m on December 26 was recorded feebly on the Uwekahuna seismograph. At 14^h14^m on December 28 an earthquake originating along the southwest rift of Kilauea was felt at the Kapapala Ranch. Later the same day, at 18^h02^m, an earthquake originating beneath the north rim of Kilauea caldera at a very shallow depth was felt at Kilauea Military Camp.

POSSIBLE VOLCANIC ERUPTION NEAR NECKER ISLAND

On August 20 the crew and passengers of a M.A.T.S. plane flying from Japan to Hawaii sighted an oval area of steaming, turbulent water about 1 mile across, between Necker and Nihoa Islands in the northern part of the Hawaiian Archipelago. The disturbance was first observed from a distance of several miles as a column of "smoke" rising from the water. The approximate position of the disturbance was 23°35' N., 163°50' W. The patch of turbulent water was surrounded by a thin line of yellowish surf, and near one end of the oval was what appeared to be an acre or two of dry land. Yellowish water drifted off down current. The next day all this had disappeared. Only a slick on the water surface marked the location of the previous day's activity, and a series of large waves swept outward from the area.