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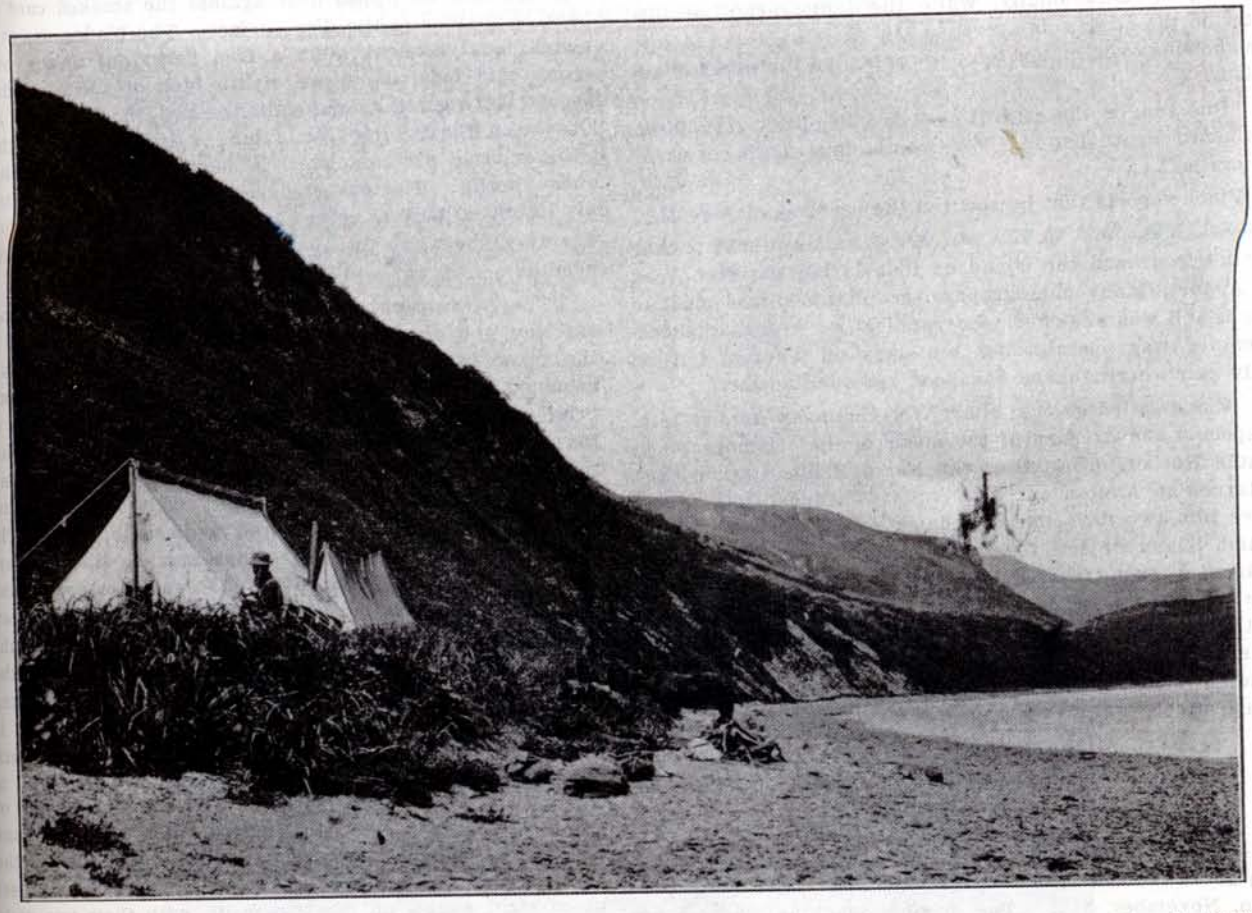

A camp in the Aleutian lands showing country quite simi'ar to Akutan. (Captain Harbor, Natl. Geog. Exped. 1928)

ALEUTIAN EXPLORATION 1931

The increase in work permitted to the Section of Volcanology of the U. S. Geological Survey by Act of Congress in 1931, as shown in the organization outlined in Volcano Letter No. 351, is based in part on recognition of the importance of the Alaskan Peninsula and the Aleutian Islands. These are essentially a long interrupted line of volcanoes, many of them active, adjacent to the great Aleutian Deep where many major earthquakes occur. This is an extension of the series of Japanese and Kamchatkan volcanic arcs, and offers a most fruitful field of study, in which at present it is possible to do only the barest preliminary work, but this work should be done as a foundation for more systematic and detailed investigations in the future.

The Lassen Observatory will expand its work in the volcano areas of California and Oregon, and during each summer, field work is provided for, on one of the volcanoes of Alaska, combined with inspection of seismograph stations at Kodiak and Dutch Harbor. The volcano on Akutan Island was selected for exploration this year and Mr. R. H. Finch did the work, taking with him as guide and packer John Gardner of False Pass.

Akutan is the volcano, like Stromboli, which is often seen smoking by mariners, on the left of Unimak Pass as the ships for Nome pass through to Bering Sea. It is not far from the middle of the Aleutian arc, counting Iliamna as the easternmost volcano far up the Peninsula. The peaks of Akutan are 3170 and 4100 feet high. The island is 17 nautical miles long, and it lies next NE of Unalaska Island. As a volcano it is relatively accessible as compared with great snowy peaks like Shishaldin, it is close by Dutch Harbor, it possesses a village, a harbor and a whaling station, and close at hand is the hot sulphurous deposit of Akun Island. It is just north of the 54th parallel and in longitude 166° west.

Mr. Finch took the steamer "Catherine D.," thanks to the courtesy of the Pacific American Fisheries of Bellingham, leaving that port July 1, 1931. Arrived at King Cove, the seat of one of their salmon canneries, near the west end of Alaskan Peninsula, he embarked on the mail steamer "Starr" July 16, Gardner joined him at False Pass, and the two disembarked at Akutan July 17. Two ascents were made to the summit crater, and on the second the party was caught in a fog cloud, which is a serious matter in these mountains.

The ascent of July 24 proved very interesting and Mr.

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Finch secured some good photographs. The crater is some two miles in diameter with a cone about 600 feet high near the center. "The cone is quite uniformly hot, though but little steam is escaping. The heat appears as a dry heat. The outer crater contains a lake in the southwest side. On one side of the lake there is ice, with small icebergs breaking off occasionally, while the temperature of the water on the other side averages 119° F., with small localities showing even higher temperatures, and there is boiling action."

"One vent in the central cone is still open. Rumbling was heard on August 11. Very recent lava flows occur in the crater."

Finch reports that he secured the services of Alec McGlassan, a resident of Auktan, to act as additional packer for a trip around the island on foot during the first week in August. Many photographs were obtained and most of the island was sketched topographically. A Jaggar shock-recorder was operated for ten days on Akutan, but on July 26 no earthquakes had been recorded so far.

Finch sailed on the "Starr" for Unalaska August 10th, inspected and overhauled the needs of the seismograph at Dutch Harbor, operated at the Naval Radio Station, then returned to Akutan on the "Victoria" August 16th. This gave him two days more to finish operations on Akutan, which island he left for the trip back to Kodiak on the "Starr" August 18th. He remained at Kodiak overhauling the seismograph there, in charge of Mrs. M. V. Watkinson, until September 5, when he sailed for Seattle on the Admiral Line steamer. His full report on the mapping of Akutan and the seismological work, with photographic illustrations, will be awaited with interest. T.A.J.

IMPROVED JAGGAR SHOCK-RECORDER

The photograph on Page Four shows a new form of the shock-recorder described first in the Scientific American, November, 1929. The original machine was set up horizontally, as though left side of picture were the bottom, a 10-pound lead cylinder being cast about two flat blades clamped in a vertical plane. This made a sensitive small horizontal pendulum hung like a door, with the blades as hinge, and a boom extending out from the weight has a brass pen pivotted at its outer end resting on a smoked cardboard disc. A common clock movement rotates the disc and moves itself along slowly so that a day's registration is like a gramophone record. The disc is changed every day, and fixed with shellac. The disc itself is a timepiece for subdivision into minutes.

This machine was of great service counting the hundreds of earthquakes that occurred near Hualalai in 1929. It was tested in the South Seas in 1930 and some models like it have been made in New Zealand. In Niuafoou I set up two complete weighted arms and clockworks at right angles to each other on the concrete floor of a warehouse. As each box was three feet long, this took much space. The object was to record separately east-west and north-south earthquake motion. There was also recorded the motion of rats, kittens, chickens, cockroaches and spiders, and these were not planned for. The apparatus must therefore be housed in a tight case, and tending such an extensive machine each day on the floor is laborious. Horizontal surfaces of the smoked cards are hard to examine and are tempting to insects.

An improvement in the machine, with the principle of action but slightly changed, is shown in the cuts. The cylindrical mass has its two flat hinge blades clamped horizontally below, the boom protrudes upward, and the recording disc is in a vertical plane like an ordinary clock. The pivotted pen on the top of the boom is arcuate and long, and may be tipped over against the smoked card at about 45 degrees to the disc surface. The blades are stiff enough to give the system a free period of nearly one second with only about one eighth inch of spring blades exposed between the lead cylinder and the clamps. At this period the inverted pendulum is stable and upright. If the exposed part of blades is shortened the period becomes shorter. This inverted pendulum system oscillates only in the azimuth at right angles to the hinge line, which was also true when the system was swung as a horizontal pendulum.

The advantages of the new system are that the clock can now roll along on pulleys on a rubber-shod track in the plane of the clock-work wheels. These pulleys are attached to the spring barrels and given a diameter appropriate to the travel-speed desired. The center sleeve of the disc plate slides on the minute-hand spindle, so that the card makes one revolution per hour. The whole apparatus is enclosed in an upright clock-case with glass front (not shown) and screwed against the wall. The boom is of balsa wood. The clock may be slid sideways on its tracks so as to move the disc under or away from the pen. When disc is removed the clock is wound, a new disc is smoked and screwed by a central button to the plate, and is slid back to the starting position under the pen. With a steel point the date and the time of starting and stopping are marked on the smoke. The card is smoked by twirling it over a smoking kerosene lamp until it is an even brown. The rear suspension of the clock is a free pulley on a second track. The pen and the top of the boom may be seen at the right in the cut on Page Three. A final advantage of this machine is that in the corner of a room two complete shock-recorders may be set up at right angles on the two walls, with their two dials side by side. Obviously the handling of the discs is easy, and almost no floor-space is required.

Several earthquakes have been registered and the seismograms are good. It is necessary to choose a very quiet cellar wall, as the instrument is extremely sensitive to the opening and closing of doors. T.A.J.

KILAUEA REPORT No. 1026

WEEK ENDING SEPTEMBER 20, 1931

Section of Volcanology, U. S. Geological Survey
T. A. Jaggar, Volcanologist in Charge

There are no essential changes in the bottom of Halemaumau pit. There is a little fume on the floor and vapor at the edges of the floor, and these increase in visibility after rain. Measurement of the rim cracks shows little change.

The seismographs at the Observatory registered 43 counted tremors, of which three were continuous, and one of these spells lasted from 6:33 to 7:50 p. m. September 20. There were many smaller tremors September 18.

Two feeble earthquakes were felt at Kilauea at 4:23 a m. September 18 and 6:14 a. m. September 19. These indicated origin distances of six and four miles from the Observatory. The first was accompanied by tilt away from the pit at Halemaumau. Neither was observed in Kona,