

Violent Nature

The ancient truth that the forces of nature can be inestimably more violent than anything man can do at his worst has been demonstrated anew in the Pacific, where a series of tidal waves generated by a disturbance in the ocean's floor have swept coast lines from Alaska to Chile, with heavy loss of life and property, and inflicted on the Hawaiian Islands their worst disaster since the Jap attack on Pearl Harbor. As the scientists have admitted of their atomic bomb, there is no defense against volcanic eruption or earthquake, and these can spread devastation over a vastly wider area than any nuclear gadget yet devised or contemplated.

Although the Pacific ocean is, in fact, relatively peaceful, it has its own terrifying phenomena. At Okinawa and elsewhere the Navy took heavy losses from the characteristic Pacific typhoon. Even more damaging is the so-called "seismic wave," caused by a submarine earthquake in one of the several "deeps" in the vast Pacific area. In the present instance it is probable that there was an underwater landslide, that an enormous block broke away from a cliff near the Aleutian Deep, a 15,000 foot chasm off the Alaska coast. The change of ocean floor contour displaced the water above, causing a "wrinkle" on the surface, from which the tidal wave spread at a speed of from 300 to 500 miles an hour, making its force felt within a majestically short time on shores as far away as 7000 miles.

Man cannot control these manifestations of nature, but he has learned enough so that he can at least forewarn himself. The disturbance is recorded on seismographs all over the world, and precautions may be taken against the waves. For example, when one of the frequent shocks is reported from the Aleutians area, the scientist in the Hawaiian Islands can reckon the time when danger may be expected. But to make assurance really sure, there should be a "permanent standby" on the recording instruments. The quake in this case was reported at 2 A. M. Honolulu time, when nobody was on watch. The waves arrived five hours later.

Preparations continue in full swing for the Navy's test of the atomic bomb at Bikini Atoll in the Pacific. But if we are really going to hold our Pacific bases, we must take account of the eccentricities of that "peaceful" ocean. It is conceivable that under certain circumstances they might inflict more damage than a hostile navy.

THE BOSTON HERALD, WEDNESDAY, APRIL 3, 1946

HARVARD UNIVERSITY SEISMOGRAPH STATION

$\phi = 42^{\circ} 30' 26''$ NORTH $\lambda = 71^{\circ} 33' 45''$ WEST

OAK RIDGE OBSERVATORY
HARVARD, MASSACHUSETTS

GEOLOGICAL MUSEUM
CAMBRIDGE 38, MASSACHUSETTS

L. DON LEET, SEISMOLOGIST IN CHARGE
MARY P. COLLINS, ASSISTANT

April 3, 1946

IN REPLY PLEASE USE
OUR Cambridge ADDRESS

Colonel Charles P. Nicholas
Military Intelligence Division
War Department General Staff
Pentagon Building
Washington 25, D. C.

Dear Colonel Nicholas:

Just to keep your file up-to-date on the subject of geophysical research in the Pacific area, it occurs to me that there are a few aspects of the recent tidal wave situation which are of interest.

For one thing, of course, it has been brought forcibly to the attention of the general public that forces of nature in the Pacific are still things with which to contend in making any long range plans for occupancy of that area. In that connection, I am enclosing an editorial from the Boston Herald of this morning. As you may suspect from its content, some of the ideas were planted with the writer when he phoned me yesterday for suggestions.

For another thing, the Army and Navy in Hawaii have complained to the Coast and Geodetic Survey that they should have been warned of the approaching tidal wave. Such warnings have been issued in the past for large earthquakes near the Aleutians, although the majority of them do not cause tidal waves. The warning is possible when earth-borne waves from the earthquake reach the Hawaiian Islands after a few minutes with enough information to permit rough location of the quake. The tidal wave then requires around five hours to make the trip, so that a warning of $3\frac{1}{4}$ hours is possible. On April 1, it happened that these earth-borne warnings arrived at 2 a.m. and, since even seismologists sleep once in a while, were not observed until too late. A coordinated program for defense against the forces of nature would have had these Hawaiian instruments and others in the area equipped with alarms which would have operated when triggered by large displacements on the seismograph, and thereby constitute what amounts to a 24-hour standby watch on earthquakes capable of causing tidal waves.

I have received a copy of S.1850 presented February 21, 1946 as the latest version of the National Science Foundation proposals. The details seem to be shaping up very satisfactorily. What we need now is action in securing passage.

Cordially yours,

Don Leet

L. Don Leet