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The Tsunami of 9 March 1957

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Notes and Comment

The Tsunami of 9 March 1957

FATHER Bernard Doucette S. J. had just retired for a welcome night's rest when the imperious clang of a bell sounded in his bedroom. The time was 10:32 on the night of 9 March 1957. The alarm bell announced the disturbance of the "Cat's Whisker" on the visual earthquake recorders of the Manila Observatory atop Mirador hill in Baguio.

After the "tidal wave" of 1946 had smitten the Hawaiian Islands and claimed one hundred and fifty-nine lives and destroyed twenty-five million dollars worth of property the need for precautions and warnings against this source of catastrophe was appreciated by responsible authorities. Soon, then, a warning system against tidal waves was established whose purpose was to give, before the onslaught of rising waters, timely alerts to coastal villages, to ocean going vessels in harbors and to planes on beaches. This required the cooperation of suitably located earthquake stations besides the central clearing house at Honolulu. The stations would report at once to the center any quake which might have an associated tidal wave. At present, there are eight active stations in the Pacific system. Of these eight stations six, located in the western hemisphere, are maintained and supervised by governments or large universities. The two member stations in the East are established at Tokyo and at Baguio, Philippines. Only the Manila Observatory station at Baguio under the direction of the Jesuit Fathers operates with private funds in this scientific service.

A report on the activity at Baguio for the tidal wave of 9 March will illustrate how the warning system functions. The Baguio seismic recorders do not directly detect tidal waves but rather earthquakes. However they are adapted so that information about earthquakes may be had at once. Two recorders, known as the visual type since the records can be looked at while they are being written, are fitted out with a special attachment devised by Father Charles Deppermann S.J. He has called this device the "Cat's Whisker" more from its appearance than from its function. This invention triggers an alarm system day or night whenever a large quake originating anywhere in the world is detected by the sensitive earthquake recorders. It was this alarm system which summoned Father Doucette to the instruments at 10:32 P.M. on 9 March.

An earthquake with epicenter in the Bering Sea off the Aleutian Islands (in latitude 55° N and longitude 178° E) occurred at 10:22 at night. (We use Philippine Standard Time, i.e. eight hours ahead of Greenwich Mean Time.) This was just ten minutes before the alarm sounded at Mirador. So the travel time from the epicenter of the quake to Baguio was just that interval: 10 minutes. At the epicenter the motion of the earth on the sea bottom caused the sea waters to move in a vertical direction. If the bottom fell away the waters flowed into the depression, or if it was thrust upwards the waters rose in the crest of a wave. This vertical displacement of the water, even a matter of two or three feet, is the start of a tidal wave. It is thus clear that the word "tidal wave" is a misnomer since the sun or moon tides are not responsible for the waves. The technical name for this disturbance is taken from the Japanese: tsunami, or more familiarly seismic sea waves. Not just one wave but several waves make up a tsunami. It is not unusual for the third or fourth wave to be more severe than the first. Disregard of this fact on a devastated coast could bring great destruction and loss of life two or three hours after the first wave had subsided.

The two visual records were studied by Father Doucette as they were being written. The amplitude of the records showed that a report must go to Honolulu. Fifteen minutes after the alarm, the telegram of emergency priority was on its way to the Warning Center. Though this message was the third one to be received at Honolulu from the various stations (for Fairbanks and Sitka in Alaska had better communication facilities) still the Baguio message was the first to be filed. Father Doucette had

filed his message thirteen minutes before Fairbanks and twenty-six minutes before the Sitka station. It was 11:28 when the Honolulu Magnetic Center received the message from Baguio. Tokyo filed a message quite similar to the Baguio message but their filing time was fifty-three minutes later than the filing time at Baguio.

Besides the original quake which initiated the tidal wave many after-shocks were reported from the same area throughout the night and on the following day. These too played their part in making the night eventful and active for the observer at Baguio.

There can be no doubt that the seismic sea warning system has helped in the protection of life and property. Since the sea wave travels at speeds of about four or five hundred miles an hour it is quite possible to give adequate warning to island dwellers at distances of a thousand miles or more from the source of the wave. The tidal wave of 4 November 1952 destroyed no lives. Some credit is due to the warning system. In the case of the sea wave of March 1957 sufficient warning was given so that no lives have been reported lost due to the tidal wave. Yet each of these tsunamis tossed up walls of water capable of destroying many lives.

The Observer-in-Charge of the Honolulu Magnetic Center, when sending the log of messages handled by the Honolulu Magnetic station, has written to the Director of the Manila Observatory as follows: "We certainly appreciate your timely messages, not only on this earthquake but also for the many other earthquakes you report to us. You and Tokyo are the only two reporting seismograph stations we have to the west of us, so you see we really appreciate getting your reports."

JAMES J. HENNESSEY

The Cagayan Seminar

AMONG the most important events in the educational field during the school-year just ended must be numbered the Seminar on Education, the Home, and the Community held in November 1956 at Cagayan de Oro under the auspices of the Ateneo de Cagayan. Over 600 delegates and observers were present. The majority of these (446 to be exact) were representatives of public schools