PHILIPPINE EARTHQUAKE EPICENTERS

AREA COVERED

In this investigation we have restricted ourselves to those earthquake epicenters lying north of 14° 30′ north latitude. This restriction limits the work to that section of the Philippines which lies north of Manila. It may be said to embrace the "mainland" of Luzon and the Batan Islands in the extreme north. We say "mainland" of Luzon because the remaining portions south of Manila are little else than a series of peninsulas.

In broad outline the physiographic features of the main portion of Luzon are very distinct. An E–W cross-section, a short distance north of Manila, would show the Zambales Mountains on the west, then the great central plain, then the range of mountains bordering the whole east coast.

A section at 17° north latitude would show the Malaya range near the west coast, the Central Cordillera, sometimes styled the backbone of the island, the Cagayan Valley, and, finally, the same eastern coast range mentioned above.

As the whole Philippine archipelago may be looked upon as a partially submerged mountain mass, the neighboring sea beds must also be taken into consideration in treating of seismic conditions. Both to the east and west of Luzon the sea attains a depth of 5,000 meters, but, in general, the slopes on the west are steeper than those on the east.

There are two prominent deeps immediately west of Luzon. The Zambales, south of Cape Bolinao (23 on the map), and the Abra, off the NW coast. Depths of the order 3,000 meters extend to the northeast between the Batan Islands and Taiwan (Formosa).

TIME DISTRIBUTION

The specified time distribution, 1920–1929, was adopted because after 1920 the Milne–Shaw installation at Hong Kong and the Wiechert at Taihoku rendered data available that were lacking in previous years.

This decade of observations may also be taken as a basis for the review of older earthquakes for which accurate data were lacking, and as a guide for the future.

MATERIAL USED

The materials used in these determinations were the seismograms of the Manila Observatory, the seismographic reports of neighboring observatories, the macroseismic reports made to the Manila Observatory by the meteorological observers in the Weather Bureau stations, and reports made by the general public.

The International Summary was also consulted for data and comparison, but our results differ in some cases from those of the Summary.

The Rossi–Forel scale is used in the macroseismic reports.

The travel time tables of A. Mohorovicic, for focal depth of 25 kilometers, were used for distances up to 10°. For distances greater than 10° the travel time tables of St. Louis University were used. For P and S these are taken from curves based on the travel times published by A. and S. Mohorovicic in 1921.

In cases, in which it was possible to determine the epicenters accurately, all distances were calculated, using the formula derived from the spherical triangle.