TECTONIC LINES OF THE PHILIPPINE ISLANDS

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If one examines a map of the Philippine Islands he gets the impression that the central islands, the Visayas as they appear on the map today, are parts of a former whole. Furthermore that, if we disregard minor irregularities of coast line, the islands would fit well together if subjected to some gradual terrestial force capable of shifting them. This implied disruption in the past and the position of the mountain ranges have had a strong influence on the geologists who have attempted to locate the fault lines and tectonic lines involved in the formation and development of the Philippines.

Historical resume.—Becker(1) said,

> "So large a portion of the Philippines consists of volcanic rocks as to make it manifest that there must be in the Archipelago a considerable number of volcanic belts. Such zones form one of the most prominent features of Malaysia as a whole, and when these are passed in review it appears that the volcanic structure of the Philippines must bear complex and interesting relations to the entire region."

He then enumerates the persons who have given attention to this subject; J. D. Dana(2), Naumann(3), Perrey(4), Suess(5), Junghuhn(6), Centeno(7), Wichmann(8), Verbeek(9), Martin(10), Molengraaf(11), Koto(12). He gives an excellent summary of their views and incorporates the opinions of Centeno, Spanish engineer, and Abella, geologist. In the course of this review he makes a very good remark, namely, "To my thinking, too much effort has been made to show unbroken continuity of volcanic zones".

The old concept of a necessary connection between volcanoes and earthquakes, and the spectacular phenomena of the former, caused them to receive undue emphasis. The catalogue of Philippine earthquakes goes back to the first years of the Spanish occupation of the Archipelago but nothing was done on the localization of earthquakes until the latter part of the 19th century.

Centeno(13) wrote a report on the earthquakes of the Surigao Province in 1879 and ascribed their origin to Lake Mainit which may be the site of a former caldera. He also wrote a report(14) on the earthquakes of 1880. In this report he makes an attempt at drawing isoseismals which indicate the central region of the earthquakes. He takes Father Faura to task for connecting the earthquakes with an extinct volcano in the mountains of northern Luzon. The criticism is unfair because, as Centeno states, Father Faura based his statement on reports which he had received from the north, whereas Centeno's report was made after he had the advantage of having made a thorough field trip over all of Luzon. Moreover, Centeno himself had stated, four years previously, that there were evident signs of volcanism, including the cone Data, in the districts of Benguet and Lepanto.

Abella(15) wrote on the Nueva Vizcaya earthquakes of 1881 and the Pangasinan earthquake(16) of 1892 but he was influenced by the old theory of the volcanic origin of all earthquakes.

In 1895, Father Saderra Maso made a beginning of epicentral determinations(17). From macroseismic reports he plotted zones of intensity of important earthquakes and thus indicated, in a general way, the location of the epicenters. After an absence of