and marls, with occasional conglomerates; they are most folded and most eroded near the mountains, where subsequent valleys are developed along certain anticlinal axes; they are less folded and eroded near the coast, where structural arches and troughs are still expressed in the topography although the arches are well dissected by consequent streams and are cut across in antecedent fashion by the large rivers from the interior. The folded structure has been carefully studied, as some of these strata bear petroleum. Occasional hard beds form cuestas and ridges, but the strata are usually so weak as not to exhibit their folded structure in their surface forms. Here the soils creep and slide so readily down the slopes, especially in cleared districts and at times of heavy rains, that many valley floors are unevenly aggraded and converted into morasses, in which the streams are broken up and confused with the ground water; such valley floors are used for rice culture. The larger valleys, in the mountains as well as in the surrounding hilly belt, exhibit along most of their length the effects of intermittent upheaval in well-defined but discontinuous terraces at two levels; the higher one from 90 to 120 meters, the lower one from 30 to 50 meters, over the rivers. Corresponding wave-cut terraces and wave-built beaches, associated with coral-reef patches and shell deposits, are seen along the outer slope of the hilly belt at heights of 100 and of 40 meters: the coral-reef patches grow up from gravel beds. Low terraces in the main valleys are attributed not to a revival of erosion in consequence of recent uplift but to river floods, although some of the rivers are still deepening their beds. The low coastal plain is from 3 to 30 kilometers wide and from 10 to 15 meters above sea level at its inner border; it is here and there extended by the growing deltas of the larger rivers and by the growing marshes of lagoons enclosed by offshore sand reefs.

Volcanic activity, long continued, has intermittently and unsystematically superposed various features upon the forms above described. Several great cones have been formed in the different areas; one of the largest, Geureudong, is a complex mass which rises over the interior mountains inland from the mid-length of the northern coast; it is broadly truncated at an altitude of 3,260 meters (as if it contained an extensive crater); one of its lateral cones bars the upper course of a river and thus forms Laut Tawar lake, formerly larger than now, but still some 25 kilometers in length. A similar lake in another valley, now drained, is recorded in shore terraces and deltas. Extensive mudflows of volcanic agglomerates and tuffs, from 10 to 50 kilometers in length, bury parts of the hilly belt or flood its valleys, thus more or less completely extinguishing its relief; but these flows are now dissected by narrow, steep-walled ravines with cascading streams. One of the volcanic cones forms the island of We, about 10 kilometers in diameter and 730 meters in height, near the northwestern extremity of Atjeh; it is described in a special article by Zwierzycki (*Jaarboek van het Mijnwezen*, Vol. 45, 1916, pp. 1–11) as of well-dissected form, bearing three wave-cut benches, at 20, 40, and over 100 meters above sea level; the middle bench is the most distinct; it girdles the island and sometimes has a width of 150 meters. Remains of "coral banks" are found on each bench.

The photographic illustrations of the essay on Atjeh are fair; the outline figures in the text might be much better. The physiographic analysis bears every mark of accuracy; but, as it is the work of geologists, it is naturally given a geological phrasing which is avoided as far as possible in the above abstract.

W. M. Davis

Climate and Weather of the Philippines

José Coronas. **The Climate and Weather of the Philippines, 1903 to 1918.** 195 pp.; maps, diagrs. The Government of the Philippine Islands, Philippine Census, A. D. 1918. Bureau of Printing, Manila, 1920. 9 x 6 inches.

Several important studies of the climate of the Philippines have been issued during the past two decades. An extended discussion entitled "Climatología de Filipinas" (1899) was published as a part of "El Archipiélago Filipino," printed in Washington at the expense of the United States Government. An English translation appeared in Volume 4 of the Report of the First Philippine Commission to the President (1901, pp. 113–357). A summary was published in 1900 under the title "Interesting Climatological Data Concerning the Weather of Manila." To the 1903 Census of the Philippines, Rev. José Algué, S.J., Director of the Weather Bureau, contributed another report on climate, which included many of the illustrations and tables of the monograph embodied in "El Archipiélago Filipino," but revised to date. To Father Algué we are also indebted for two pamphlets on the climate of Baguio (1902, 1909). The rainfall has been discussed by Rev. Miguel Saderra