

THE SUNSHINE OF MANILA

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Introduction.—Sunshine is an important factor in the climate of a place. The total insolation received in any given locality exerts great influence on growth of plants, on the activity of animal life and even on the well being of man. Two elements may be considered in the sunshine: the duration and the intensity. By duration is meant the number of hours the sun effectively shines above the horizon of a place. Although each one of these elements is, by itself and independently of the other, beneficial, if normal or detrimental, if excessive, yet the benefits produced by them are the effect of their combined and joint action. The purpose of the present paper is to study, not the intensity, but the duration of sunshine, not throughout the archipelago, but in Manila only.

Observations.—Since 1890, Manila Observatory has been publishing the observations of sunshine made at Manila. The observations from 1890 to 1901, both dates included, are to be found in the *Boletín Meteorológico del Observatorio*. With the change of sovereignty, the Weather Bureau was reorganized and the form of publications was rearranged. From 1902 to 1927, the column *Sunshine* of the Monthly Bulletin gives the number of hours of insolation. The same observations are to be found in that part of the Annual Report that contains the hourly observations of Manila. The monthly values of insolation are given also in the Summary which is added to Bulletins and Annual Reports since 1903. In cases of doubt, the values of the Annual Report are preferable, because the long time, that elapses between the publication of the Bulletins and that of the Reports, gives an opportunity for a revision of observations and correction of mistakes, if any. All data and observations of this paper are taken from the Bulletins and Annual Reports, save a few cases, in which the study of an individual observation has led to its rejection or modification.¹ Table No. 1 gives all the observations of the period 1890 to 1927.

Form of the publication of sunshine observations.—There is no absolute agreement among the meteorologists as to the best form of publication of sunshine records. Some think that only the monthly totals of hours of insolation should be published: others are in favor of publishing the mean daily insolation only. The arguments in favor of the second system are: first, it overcomes the difficulty of the varying length of the

¹ As far as it is known, Manila and Baguio are the only stations of the Weather Bureau where insolation is registered by means of a Campbell-Stokes or Whipple-Casella sunshine recorder. Recently at the request of Manila Observatory, the following Sugar Centrals have set up a Whipple-Casella sunshine recorder in their estates: Silay-Hawaiian Central, at Silay; North Negros Sugar Co., at Manapla and Victorias Milling Co., at Victorias, all in the Province of Occidental Negros. The Marvin thermometric recorder for the registration of sunshine is in actual operation at the weather stations of Aparri, Atimonan, Baguio, Cebu, Dagupan, Iloilo, Legaspi, Tacloban and Ambulong, at Camp Nichols for the U. S. Air Service and at Del Carmen, Pampanga for the Pampanga Sugar Mills. The number of insolation stations and records in the Philippines is too meager to even attempt the drawing of isohels.

At the end of 1910, England had 200 sunshine recorders in operation. In 1927, the U. S. Weather Bureau published the observations of 164 stations provided with thermometric recorders. The book "Archipiélago Filipino," Vol. I, pp. 154-161 and the Report of the Philippine Commission Vol. IV, p. 261 contain sunshine observations and the insolation curve based on the period 1890 to 1898.