

VARIABLE STAR OBSERVATIONS, LIST No. 1

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INTRODUCTION

All observations were taken by the author himself at the Manila Observatory, from October 1929 to July 1930. Their scattered nature and apparent lack of homogeneity were due to many causes. In the first place, the whole undertaking was in the nature of an experiment, to determine the feasibility of variable star work in the uncertain "seeing" conditions of Manila; furthermore, it was limited mostly to the first part of the night by the pressure of other duties, etc.; lastly, it was handicapped by the uncertain nature of the weather itself.

I. THE INSTRUMENT

The observations were made entirely with the 19" Merz equatorial, the lens of which is thoroughly described in the Publications of the Manila Observatory, Vol. I, No. 6. The eye-piece used exclusively was a Huyghen's (negative) eye-piece, giving a field of about 30' of arc, i. e. just about that of the inner heavily marked square of the Series I-III Charts of the Atlas Stellarum Variabilium of Father Hagen of venerated memory. Excellent definition is obtained except near the edges. A little cup-shaped projection on the eye-piece protects the eye from foreign light. The field of view is just about right for star magnitudes best fitted for our equatorial. Rough settings of the telescope are indicated on two dials, the right ascension dial being run by clockwork and adjustable, so that the telescope can be pointed directly in right ascension after the dial is once set at the beginning of a night's observations. Exact settings in declination were first made with the finer declination circle, while rough settings in right ascension were made with the above dial. The variable is then quickly found by a little sweeping in right ascension.

II. WEATHER CONDITIONS

The weather at Manila is not very favorable for astronomical work. The Observatory, through force of circumstances, is practically at sea level, the surrounding country being a mixture of bay and of lake, of plains and of surrounding hills, warmed by a tropical sun, all productive of restless air currents. The usually humid atmosphere can condense in a very few moments into thin clouds, which may linger long or as suddenly disappear. Moreover, the various upper air currents are usually different in directions. The theoretical limit of visibility is about 15.2 magnitude for a lens of 19" aperture, but only rarely have stars of 14.7 magnitude been seen. This is not due to lens absorption, as naked eye observations of the Milky Way almost invariably show the sky to have a decidedly washed-out appearance. To this must be reckoned the prolonged rainy season, June or July to October, together with the straggling cloud remnants of thunderstorms from the plains to the north during the warmer months.

It is not surprising, therefore, that the sky is too unsteady for double star work and photography, and too variable for photometry. Since, however, visual observations of telescopic variables are limited to differential comparisons between stars in the very