

Experimental Ionospheric Observations of the Solar Eclipse of 20 June 1955 at Baguio City, Philippine Islands

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Abstract—Studies of parameters for all the chief ionospheric layers are given for the eclipse of 20 June 1955 in the Philippine Islands, which reached its maximum phase (96 per cent obscuration) near noon. Values of f_{\min} showed pronounced maxima before the first contact and after the last contact. Stratification of the F layer was observed on the control days as well as on the eclipse day, and an intermediate layer between the $F1$ and $F2$ layers formed in the second half of the eclipse. There was no certain evidence of a corpuscular eclipse.

A SOLAR eclipse which reaches its maximum at a time when the sun is near the zenith should present an excellent opportunity for checking the ionizing influences responsible for the ionosphere. The eclipse over Baguio of 20 June 1955, beginning with first contact at 1047 and with last contact at 1349, had a maximum of about 96 per cent at ground level at 1220. Very noticeable changes in ionospheric parameters occurred on the eclipse day as compared with the characteristics scaled on the five days preceding and the five days following the eclipse day. By using a C-2 ionosonde (CARROLL, 1952) on loan from the United States National Bureau of Standards, ionograms were taken every five minutes on the ten control days beginning at 0900 and going to 1630. Prior to and following this, interval records were taken every quarter of an hour, and one minute after each hour. On the eclipse day a similar programme was followed, with additional records being taken from 1210 to 1245. All times are local mean time (120° east).

IONIZING AGENCY BEFORE AND AFTER THE ECLIPSE

On the eclipse day before first contact and after last contact the presence of an intense ionizing agency was noticeable, not only in the absorbing region, but also

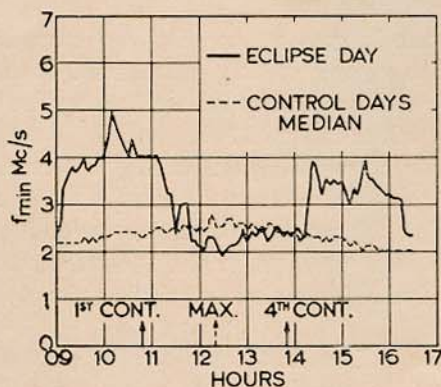


Fig. 1.

in the $F1$ and $F2$ layers. The values of f_{\min} (the lowest frequencies found on the ionogram, and presumably dependent on absorption in the D region) began to increase at 0900 (Fig. 1). At 1000 the f_{\min} value was so high that malfunctioning of the receiver was suspected. A check of the receiver resulted in the loss of the