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Abstracts*

Abbott, W. Thermocouple measurements during the partial solar eclipse of February 25, 1952.

During the eclipse of the sun of February 25, 1952, which was partial in Greece, observations of solar radiation were made at the Observatory of Athens by the Meteorological Institute. The measurements were made by means of a Knoll thermocouple pyrheliometer, directed on the sun and having a field of 3° diameter, and a Grozynski thermocouple solarimeter registering integrated sun and sky radiation. The pyrheliometer measurements were made both without filter and with the following filters:

red, RG 1, transmitting from 2.8μ to 0.6μ ;
blue, BG 8, transmitting from 2.8μ to 1.2μ
and from 0.65μ to 0.35μ ;

yellow, GG 5, transmitting from 2.8μ to 0.45μ . Control measurements were made during the two days preceding the eclipse. These days were meteorologically identical with eclipse day. On all three days the atmosphere was very pure, so that the curves obtained on the three days are comparable. The comparisons show that the intensity of the radiation began to fall off not at first contact, but $1^h 30^m$ earlier. The effect is not equally marked on all color curves. Particularly convincing is a pre-first-contact effect, which occurred 12 minutes before first contact, and amounted to a falling off by 2.5 per cent of the solar constant.

According to our measurements the normal intensity of radiation was reached $1^h 27^m$ after last contact. Hence the return to normal radiation is symmetrical in time with the falling-off before first contact, though the intensity curves show distinct deviations from symmetry.

The observed effects are probably due to the influence of the penumbra on the diffused radia-

tion in the atmosphere as a whole and to the entrance within the field of the pyrheliometer of the point of intersection of the penumbra with the high atmosphere, a short time before first contact and its presence there for a few minutes after last contact. It is possible to calculate from the observed data the height of the level in the atmosphere at which such optical effects become appreciable. A formula applicable to the present case was developed.

It is suggested that similar observations be carried out at high altitude observatories. Observations outside eclipses, but at close appulses, will also be of interest. It is essential that meteorological conditions on consecutive days permit obtaining reliable comparison data.

*Observatory of Athens,
Athens, Greece*

Athay, R. G., D. E. Billings, J. W. Evans and W. O. Roberts. Preliminary intensities of Balmer lines from the flash spectrum of the 1952 solar eclipse.

Spectrographic observations of the flash spectrum at the February 25, 1952 solar eclipse at Khartoum, Sudan, were made by the High Altitude Observatory of Harvard University and University of Colorado. A primary purpose of the expedition was to obtain information about the hydrogen Balmer and Paschen series. This information, in turn, will be used to determine the electron temperature and electron density as a function of height in the chromosphere. The observations employed three slitless spectrographs covering the spectral range $\lambda 8800$ to $\lambda 3400$.

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