

## I. PHYSICS

### Astrophysics

## REPORT ON ECLIPSE OBSERVATION

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*(Received 13 October 1980)*

THE aim of the experiment was to observe the solar eclipse through a telescope installed on the top of a building, and catch the image of the sun photographically and record the changes due to effect of the solar eclipse.

**Keywords :** Eclipse; Worm-Gear Drive for Polar Axis; Sun Projection Device.

### EXPERIMENT

#### *Equipment*

An 8" Dia (82/86") focal length Newtonian reflecting astronomical telescope was installed on the roof of our 3 storeyed college building on 20-12-1979. The telescope fitted with (i) a hand operated Worm-Gear Drive for Polar Axis and (ii) Sun Projection Device. A 10X eye-piece was used throughout the observation of the eclipse. Only 90 per cent of the solar disc is available through this eye-piece.

#### *Observation and Results*

- (1) Atmospheric temperature and pressure both dropped slightly.
- (2) The image of the eclipsed sun first appeared on the screen at 15<sup>h</sup> 4<sup>m</sup>. The Sun was covered with cloud for the first 17 minutes.
- (3) The image was constantly kept in position by rotating the gear drive.
- (4) Two sunspots (one big and one small) were observed on the image of the Sun. The bigger one was "devoured" first and smaller one a few minutes after that.
- (5) A crawling curve motion was observed on the Moon's boundary against the background of the sun which we believe is due to refraction in the optical density fluctuation of the terrestrial atmosphere.
- (6) The eclipse was partial and attained its greatest phase (nearly 96% as expected) at exactly the expected time 15<sup>h</sup> 57<sup>m</sup>.
- (7) We observed the atmosphere all around during this time for a while. A very pale shroud of light covered the earth—creating the peculiar unearthly sensation as never before have been witnessed by any of us. Some crows started crowing and flying on the sky.
- (8) The planet Venus was visible in the naked eye at this time at the expected position.
- (9) The telescope was not turned towards Venus. Venus looked like a big bluish white object. No other star or planet was visible.

(10) Eclipse ended at the expected time.

(11) A large number of black and white and colour photographs of the display of the Sun through the telescope were taken at frequent intervals.

#### PARTICIPANTS

Mr B. C. Roy and Mr N. L. Lahiri of Mathematics Department, B. K. C. College, Calcutta, India. Photographs were taken by Mr P. K. Chatterjee.