

**Observations of October 24, 1995 Total Solar Eclipse from Ground and from
Canberra Aircraft at 40,000 ft. altitude**

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Abstract

Photographic observations were made of the total solar eclipse from the ground (near Agra-village Jajau) and from a height of 40,000 feet on board a Canberra aircraft of the Indian Air Force. For this purpose two identical 70mm format Hasselblad cameras with $f/3.5$ and 100 mm focal length were used. In front of the camera lens, a polaroid filter was mounted, which could be manually rotated to take photographs at three orientations of the polaroid, 60 degrees apart, to determine the degree of polarization of the outer corona. For the Canberra airplane, the camera was mounted on a special stand which could be held rigidly and pointed towards the Sun through the optical flat window available on the side of the plane. During the totality, the flight path of the Canberra was over Bharatpur, Fatehpur Sikri upto Dholpur. A total of 15 exposures were obtained on Kodak Plus-X film, out of which 12 are of good quality. Due to the failure of the heater in the optical window, slight moisture condensed on the inner side of the window, which has given rise to some scattered light, extending in the east-west direction. The effect of this spurious scattered light will be removed in the analysis of the data. The exposure times were kept within 50 and 250 ms to avoid aircraft vibrations. Coronal extension is seen upto nearly 4 solar radii on individual exposures.

Photographic observations were also made from the ground with identical Hasselblad camera, as the one in Canberra (another one in MiG-25 plane), to compare the pictures taken from high altitudes and the ground. The ground pictures show extended coronal streamers in the East-West direction, upto nearly 4.5 solar radii, due to longer exposure time for these pictures (250 and 500 ms). All the films were calibrated with step wedge and developed in D-78 developer for 9 minutes at 21° C. Digitization and integration of the photographs are in progress to estimate the intensity and polarization of the outer corona.