

CHAPTER 2
INSTRUMENTATION

The Zeiss - Coude' refractor of 150 mm diameter and 2250 mm focus is mounted in the dome of the observatory which is about 3.75 m diameter. The dome is about 20 m above the ground thus avoiding the turbulent layers of the atmosphere which produce bad solar seeing. The telescope has an achromatic objective on an equatorial mounting as shown in Figure 2.1. A plane mirror, 150 mm diameter, is situated at the end of the telescope tube. The converging light beam from the objective is reflected at the first mirror to a second mirror 140 mm diameter situated in the polar axis. The second plane mirror can be tilted into two alternative positions, perpendicular to each other, to provide two positions of coude' focus for observations, one at the front end and the other at the rear end of the polar axis. A projection screen is located at the rear end. The telescope is driven by a synchronous motor with three different speeds for the sun, the moon, and fixed stars. It is coarsely set in both axes by means of cranks which can easily be operated from the observer's seat, and is finely set by means of manually operated potentiometers.

Visual observations of the solar disk are made at the rear end of the telescope by projecting the solar image to the screen. Photographic observations are made both at the front end and the rear end of the telescope; the front end for first image photographs and the other for enlarged image photographs. At the front end, a double eyepiece revolver with an uncoated plane mirror designed for solar observation is used to cut down the intense radiant energy.

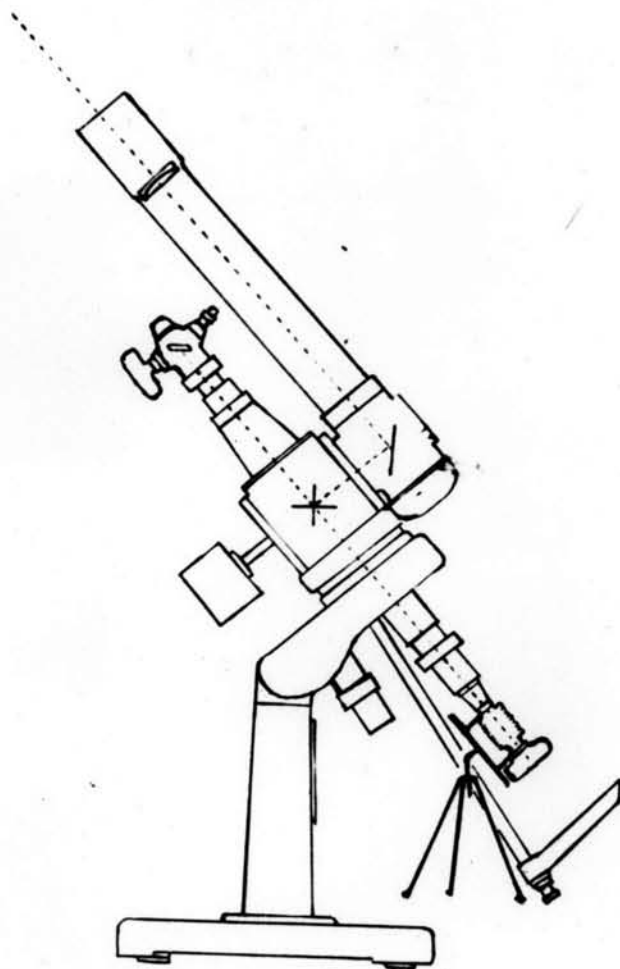


Figure 2.1.- The 150 mm-Zeiss-Coude' Refractor
showing position of camera attachment
for photographic observation.

An orange filter (OG 2) and a 35 mm Exacta camera have been fitted to the revolver to photograph the whole disk image. The average diameter of the solar image is about 20 mm depending upon the actual distance of the sun on the particular day of observation. A selected filter and a 10 mm eyepiece are used at the rear end with the camera. In most observations, an O G 2 orange filter, or an R G 2 or R G 5 red filter, is used. The O G 2 and the R G 2 filters are more transparent than the R G 5, and a 1 % neutral filter is used with them to reduce the radiation intensity. The image size at the rear end, with adjustment to obtain 10 times magnification over the first image, has a diameter of about 200 mm.