

(3) The telescope is of 12 feet focal length, and 8.5 inches clear aperture. The eye-piece is furnished with a system of twenty-three fixed vertical wires, (eight of which it is intended to remove,) and two horizontal ones, distant 8". There is also a horizontal and a vertical micrometer screw, the former carrying one vertical, and the latter four horizontal wires—a central pair, distant 4"/6, and two single ones, 2 1/4" each side of this pair.

(4) The circles are each 42 inches in diameter, and divided on silver to every 2'. The cylinder on the clamp-end of the axis also has a coarser division to every 10' for setting. The general character of the arrangement of circles, clamp, counterpoises, &c., may be seen by reference to Plate IV.

Notwithstanding its dimensions, the instrument is reversible, and the operation of reversing can be performed by a single person with great facility. The entire weight of the movable part of the instrument is only about 900 pounds.

(5) The sides of the central tube of the telescope are pierced by openings 2 1/4 inches in diameter, through which the collimators may be set on each other when the instrument is vertical. These are not shown in Plate III.

(6) The instrument is completely spanned from north to south by an arched flight of steps for reflection observations of stars. They are so figured that when the telescope is at any pointing between 120° and 240° of zenith distance, the eye-piece will be in a convenient position to look into. Above the fifth step the arch is bifurcated, so as not to interfere with the line of sight. The highest step is a platform three feet in length, suspended from the roof by iron bars and braces. Hand-rails, not shown in the plate, extend from the bars nearly to the floor.

(7) In the spring of 1867 another mechanical improvement, for convenience and certainty in observing the nadir point, was introduced. On each side of the platform, over the axis of the instrument, a seat is erected. The observer can sit astride of either seat and look into the eye-piece when the telescope points to the nadir. On the inside of each seat, between the observer and the telescope, a board, eight to nine inches wide, rises from the platform nearly to the eye-piece. Each of these boards is furnished with a pair of shutters of the same size, which the observer can turn so that the tube of the telescope shall be completely enclosed in a wooden hexagonal prism, or, more exactly, a frustrum of a pyramid, and thus protected from the heat of the observer's body.

(8) The steps for reading the microscopes need no explanation except that a hand-rail runs along the platform, by which the observer passes from one side of the pier to the other, without descending to the floor.

DETAILED DESCRIPTION, WITH EXPLANATIONS OF THE PLATES.

(9) Plate I is a plan of the observing-room.

Plate II is a section of the walls and masonry below the floor in the plane of the meridian of the instrument, with a view of the room as seen from the west.

E is the entrance from the main building. It is closed by two doors. The floor of the room being thirty inches lower than that of the main building, a platform and flight of steps is erected inside the door for convenience in entering the room.

(10) Below the floor all the masonry is of rough stone set in lime and sand mortar. The base of the masonry rests upon the ground about six feet below the flooring joists.

L L are the collimator piers, the bases being of masonry, three feet square, and the upper parts octagonal monoliths of marble.

SS are piers which support the turn-table, T, and the floor of the room under the instrument.

B, plate II, shows the masonry which supports the circle itself. B is a prism of the masonry already described, eleven feet from east to west, four and a half from north to south, and