

44 *Messrs. Ellis, Description of a Miniature Observatory.*

for finding the polar axis might have a field of view of  $3^\circ$ , and the exact position of *Polaris* within the circumference might be determined by a micrometer adapted for the purpose; this would admit of the requisite corrections for refraction.

“Such a telescope attached in the same manner as a finder to the polar axes now used in observatories would serve readily to test the accuracy of their position, while in the Fraunhofer form of equatoreal it may be substituted for the polar axis, when we should obtain the advantage of making the axis of one telescope the fixed axis about which another may be made to revolve.

“As differences in the temperature of the water occasion some little variation of rate in the quantity delivered by the syphon, the rack-work should be graduated for these differences, or self-regulating clepsydras may be constructed either by using two cisterns and two syphons (one of the latter acting as a supply pipe to the cistern carrying the weight connected with the telescope), or if one cistern only be used by a thermometer carrying a piston attached to the syphon, the bulb of the thermometer being fixed under the lower surface of the float.

“If the telescope be not well balanced about its centre of gravity, more or less weight will be required to move it, as its direction is varied. If, however, the float cover a large surface of water, and the syphon, when adjusted for the mean temperature, be at some depth below this surface, no perceptible variation of rate will be occasioned.

“The action of the clepsydra produces a smoothness of motion not to be surpassed; and I feel assured it might be adapted to the requirements of an observatory, more especially as its rate may be so readily brought under the immediate control of the observer.”

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*Description of a Miniature Observatory erected at No. 200 High Street, Exeter.* (Latitude  $50^\circ 43' 19''.45$  N., and longitude  $0^h 14^m 7^s$  W.) By Messrs. Ellis and Son.

(Communicated by Dr. Lee.)

This Observatory is built over workshops at the back part of the premises in the above locality, about 40 feet above the ground, and at 175 feet above the mean level of the sea, which elevation commands the northern horizon ( $48^\circ$  below pole) as well as  $36^\circ$  of south declination. The upper chamber is 3 feet 1 inch wide (except that portion which falls into the return of the chimney, and which is a little wider), 5 feet 8 inches long, and 6 feet high. It has north and south doors, a chicket window, forming a convenient desk and cupboard, and a skylight, in the direction of the meridian, which is readily opened by means of a short lever. The eastern wall is painted; the others canvassed and papered. The doors and meridional opening are painted black. The roof being flat is covered with zinc.

The transit, a 20-inch instrument by Troughton, is mounted on