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The following communications were read:—

I. Comparisons of the right ascension of Polaris, as obtained by observation, with that given in Bessel's catalogue for 1831; and observations of \( \lambda \) Ursae minoris and 51 (Hevelius) Cephei, made with a 5-feet transit at Blackheath. By Mr. Wrottesley.

II. Mr. Sheepshanks gave an account of the mural circle, with the methods of using it hitherto followed, and a description of the state and defects of the circle at the Cape Observatory.

The Council of the London University were kind enough to lend their beautiful model of a mural circle, which was placed upon the table; but a sufficient idea of the construction of the instrument, omitting the nicer adjustments, may perhaps be obtained from the following description. It consists of a circle, not very unlike a cart-wheel, attached by its centre and at right angles to one end of a long hollow conical axis. Upon this axis are two well-turned fittings, one near the circle, the other at the further extremity, which work in collars* firmly fixed at the front and back of a massive stone wall or pier extending beyond the circle. The telescope is moveable upon the face of the circle, on an axis concentric to and working within the axis of the circle, and is held in any required position by strong clamps at the object and eye end. The divisions are cut on the edge of the circle (similarly, to the milling upon our coin), and the reading microscopes are fixed against the pier. In large instruments there are generally six microscopes, at equal intervals of 60°. To relieve the bearing upon the collar, a pair of friction wheels support the axis immediately behind the circle, and thus a smooth and easy movement is secured. The friction wheels are suspended from one arm of a scale beam. The limb of the circle is turned upon its own axis (as on a lathe), upon which it is also divided after the method described by Mr. Troughton.

* In the Cape mural, Y's were adopted instead of collars, with the expectation that the instrument would thus keep its meridian better. An objection has been made against this construction, that the circle when turned round would probably ride up the inclined planes. This would not seem to have been the case in the Cape circle, as the instrument, though very much deranged, gives at all times the same readings with each microscope at the same place; but the objection, as will be seen hereafter, is of no weight. The riding may easily be detected; and would not, on any reasonable supposition, affect the results.