

made as he sits at the eye-piece. The amount of work of a certain class that can be done with the telescope is thus greatly increased. The form is, however, inadmissible in an instrument in which the highest optical power is aimed at, owing to the loss of light by the double reflection. In a large instrument, I should also fear injury to the images from the bending of the mirror, but no such effect shows itself, at least in any striking degree, in the Paris instrument, which is of about ten English inches aperture.

THE STRASSBURG MERIDIAN CIRCLE.

This instrument is commonly considered to embody the latest conceptions in astronomical mechanics. Its general design is founded on that adopted in the great meridian circle of the Harvard College Observatory which was constructed by Troughton and Simms, of London. The original design of the latter instrument is, it is understood, largely due to the late Professor Winlock. The most essential modification of the older plan is that the Y's and the reading microscopes, instead of being supported upon piers of stone, are borne by a massive metal foundation, the tops of the piers being below the level of the bottoms of the circles. The drawbacks arising from the unequal contraction and expansion of the stone piers, under the influence of variations of temperature, are thus almost entirely avoided, because the metallic supports rapidly assume the temperature of the surrounding air and of the instrument.

Every part of the instrument bears the impress of the thought and care devoted to its construction both by the makers (the Messrs. Repsold) and by Professor Winnecke, the director of the observatory. Even the form of the piers of masonry which support it and its collimators is highly original. The base of the principal pier is smaller than usual, and the amount of material in it is still further diminished by building it in the form of a Greek cross. The collimators are supported on cylindrical piers of the usual construction. Each of these three piers is protected from changes of temperature by having a hollow cylinder of brick built up around it from the ground. The thickness of the wall of this cylinder is that of one brick. To insure stability the different cylinders are connected together by brick arches, but these arches do not exert any pressure upon the interior piers supporting the instrument, which rests only on their foundation. A degree of stability is thus secured which I believe has never before been reached.

But this may be in great part due to the excellence of the foundation.