A pivoted iron stairway whose weight is counterweighted, is attached to the stationary platform and when the observing platform is not in use is drawn up against the roof of the dome entirely out of the way of the telescope. When the observing platform is used this stairway is let down to the bottom of its movement determined by chains attached to the top of the stairway and to the roof of the dome directly above. In this position a handrail attached to the dome is in a suitable position to enable the observer to walk with perfect confidence and safety up and down to the observing platform in any possible position. It is hence not necessary to change the position of the platform in order to get to or from the observing floor and direct photography can be carried on with the greatest possible convenience, ease and safety. A general view of the observing platform and accessories in position for work at the Newtonian focus is shown in Fig. 22.

The dome is revolved at the rate of 60° per minute by means of an endless cable stretched around the interior corner of a circular angle attached to the lower member. This cable is led off by two guiding pulleys over a V-shaped groove in a motor driven wheel, on the ground floor, the correct tension and friction being maintained by a counterweighted idler pulley. The motor is controlled by either one of two operating handles on the auxiliary switchboards on the east and west sides of the south pier directly adjacent to the operating handles for the quick motions of the telescope. Current is led to the shutter-curtain and to the elevator motors by means of two circular trolley wires carried entirely around the dome and attached to the same supports that carry the revolving cable angle, and by trolleys attached to the building conveying the current to these wires.

The whole dome and accessories operate smoothly and comparatively noiselessly, especially since the original steel pinions on the motor shafts have been replaced by Bakelite. Indeed the whole mechanical equipment is so perfected and so convenient in use that it is a constant joy to operate.

CONCLUSION

It suffices to say in conclusion that the test of a year's actual operation of the telescope has shown it to be even more accurate, satisfactory and convenient in operation than had been anticipated. The quality of the optical parts is well shown in the results of the Hartmann tests, in the short exposures required for the spectrograph, and in the remarkable smallness and crispness of the star images in the direct photographs. As previously stated, the driving is perfect and no trace whatever of any period or irregularity in the following has been detected. The arrangements provided for operating the telescope, for setting on the star, work to perfection and I have yet to find any part of the design where any improvement could be suggested. In making exposures on star spectra the average time required in changing from one star to the next, from the end of the exposure on one star to the beginning of the next is less than three minutes and if the stars are not far apart is generally only two minutes. I do not believe that record is excelled by even very small telescopes and, when we consider that the moving parts weigh 45 tons, the ease of handling is a remarkable evidence of the perfection of design and workmanship.