

to the prism box. The outer end of the prism box, which carries the camera, is entirely unsupported and could be moved by a pressure of the hand three or four millimetres to one side or the other. I had always suspected that flexure might cause trouble, but had no idea, until I made a test, of the extent of the displacement of the spectral lines that would be caused by a movement of the telescope with spectroscope attached through two hours in right ascension, the duration of an exposure on a faint star. The test was made in a similar manner to those above described, by making a spectrum of the iron spark through the star diaphragm, and, after moving the telescope, a second adjacent spectrum through the comparison diaphragm. Any shift of the lines due to flexure will at once be shown, and the shifts at first were very marked. A movement of the telescope through two hours showed in some declinations a displacement of the lines equivalent to a velocity of 20 kms. per second. A rotation of the spectroscope of 90 degrees around the optical axis, when the telescope was at hour angle 0^h , declination 0° , showed a shift equivalent to about 50 kms. per second. These figures at once showed that it was necessary to stiffen the parts wherever possible. The frame work of the instrument consists of a hollow built-up structure of rectangular section, seen in the illustrations, which is fastened by four hinged clamps to the two supporting tubes of the adapter. The collar into which these tubes fasten can turn on an inner collar, which screws into the eye end of the telescope. The two tubes are of $1\frac{7}{8}$ inches diameter, of steel thick enough not to bend appreciably under the weight of the spectroscope. It was thought preferable to attach any stiffening trusses direct to these tubes rather than to the spectroscope frame which is not rigid enough for that purpose. The first truss made, shown at *E*, Plate IV., was built of thick sheet brass screwed to a brass rod which entered into clamps on each tube directly below the spectroscope frame, one of the clamps being shown at *F*. This triangular shaped brass plate, which had a second plate screwed at right angles underneath, extended diagonally across the back or base