of the width of spectra made with the slit in different positions in the neighborhood of the star focus. The spectra were made linear by using a bright star, Vega, by opening the slit to half a millimetre wide, and by turning the spectroscope until the slit was parallel to an hour circle so that irregularities in driving would not widen the spectrum. The widths with the correcting lens were never less than 6″, and moreover did not change much as the slit was moved within and without the focus to the extent of 6 mm. on each side. Some of the out-of-focus spectra had a condensation in the centre, with diffuseness at each side of the strip, the whole appearance being decidedly characteristic of spherical aberration. In the spectra made without the correcting lens the width was about 3″, and with no evidence of condensation at the centre in the out-of focus parts.

The trouble, as stated above, was diagnosed as possibly due to spherical aberration, and the correcting lens was taken out of the cell and examined carefully. There were apparently no defects in the surfaces, for, so far as could be seen without specially testing, they were all spherical. One cause of the trouble might be the wrong placing of the elements in the cell, for if one of the elements were inverted it would probably introduce sufficient spherical aberration to cause the observed effects. The lens consisted of a double equi-convex, presumably of flint glass, and a double concave of crown. The curvature of the outside surface of the concave was the same as that of the convex, while the inside surface, against the convex lens, was of greater curvature. As it seemed possible when one of the surfaces of the concave was of the same curvature as the convex, that it had been intended to place them together, the paper separators were moved to the other side and the concave inverted so that the contact surfaces faced each other.

This seemed to remove the difficulty, for the illumination pattern on the collimator and camera lenses was now found to be practically uniform for all slit widths, and had the same appearance as that given when the correcting lens was removed. While