

## FLEXURE DETERMINATIONS BY THE BONSDORFF METHOD.

BY J. C. HAMMOND, C. B. WATTS, AND J. E. WILLIS.

The method of determining flexure devised by Bonsdorff (*Bull. of the Pulkowa Observatory*, No. 66) has been applied to the 6-inch transit circle of the U. S. Naval Observatory. Apparatus consisting essentially of four light steel tubes attached rigidly to the cube and supporting a flat mirror in front of the objective was temporarily mounted on the instrument. The position of the spider lines was compared at various zenith distances with that of their reflected images formed by the mirror. The effect of small flexures in the tubes supporting the mirror was largely eliminated, as they caused the mirror to move nearly parallel to itself.

Measures of the flexure in both right ascension and zenith distance were made. The results showed no appreciable flexure in right ascension, indicating that the known variation of the observed right ascensions with the declination cannot be due to flexure of the instrument tube, including the objective and micrometer. These deviations are perhaps due to a bending of the axis of the instrument. The flexure in zenith distance was found to be free from discontinuities, and was symmetrical with respect to the zenith. It conformed approximately to the sine law of variation.

## THE SPECTROSCOPIC ORBITS OF BOSS 523 AND BOSS 4876.

BY W. E. HARPER.

*Boss 523.* This star was discovered to be a spectroscopic binary by the author in 1922. Since that time to the present 42 measurable spectrograms have been secured. In 1927, when 30 had been secured, preliminary work suggested that in addition to the main period of 93.50 days there was a longer one of about two years with a semi-amplitude of velocity variation of nearly 10 km/sec for this larger orbit. Publication was withheld and 12 additional plates have since been secured and the whole series measured anew. The trend of the residuals seems peculiar but as one year would suit the residuals almost equally well as the two-year period previously entertained it is preferred to consider them wholly accidental until some further investigation has been made. The eccentricity is 0.445,  $\omega = 100^\circ.95$ ,  $\gamma = +25.75$  km/sec,  $K = 19.43$  km/sec, and  $T = \text{J.D. } 2423389.995$ .

*Boss 4876.* Twenty-three spectrograms of this star, of photographic magnitude 7.6 and type A3, were made with single-prism dispersion. The period is 1.54039 days and is believed correct to the fifth decimal place. Five observations in 1919 are all positive and two in 1921 are both negative yet it is deemed the period is the correct one, and the probable error of a plate of  $\pm 4.1$  km/sec is set down to accidental error. The orbit is practically circular ( $e = .008$ ) while the semi-amplitude is 88.69 km/sec and the velocity of the system  $-29.79$  km/sec.