

A REVISION OF THE ORBIT OF BOSS 809

By W. E. HARPER

The orbit of this spectroscopic binary was published in Volume IV, Number 4, of our observatory Publications and in it the writer deduced a period of 11.422 days. The work was completed in April, 1927, but the publication was distributed only recently.

It has been brought to my attention by Dr. Alexander Pogo of the Yerkes Observatory, that the published period does not suit the observations as well as a period just slightly under one day. While the writer has been long aware of the possibility of alternative periods slightly greater or less than the even day and related to the main one and has usually tested for the same before accepting any as final, it would appear that in this case he has been guilty of this omission.

A graph of the observations made by Dr. Pogo using a period of 0.9172 days showed much better agreement than was the case with the published period and, as he suggested, the agreement could possibly be improved by minor adjustments to his value of the period.

Moreover, six observations, omitted from the first determination by reason of the large residuals they gave, fall into line when plotted according to the short period.

A new determination of the orbit has accordingly been made. From the first plate made Nov. 22, 1918, to the last one secured two nights ago, Aug. 27th, there have elapsed 3,888 cycles and a period of 0.9171877 days satisfies all 36 observations. A sine curve seems best and on this assumption of a circular orbit the remaining elements are found from a least-squares solution.

Velocity of system	γ	+2.30 km./sec.
Semi-amplitude of range	K	95.61 km./sec.
Epoch nearest the sun	(T)	J.D. 2,421,191.9863

The probable error of an average plate, which in the original solution was ± 6.4 km. per sec., has by the use of this shorter period and new solution been reduced to ± 3.3 km. per sec. This in itself would be sufficient justification for the acceptance of the shorter period. To further strengthen the evidence though, a plate was made August 27th at a time when the predicted velocities according to the two different periods would have been markedly different. The measured velocity was less than one km. per sec. different from that computed on the short period basis, whilst on the longer period basis the residual was 68 km. per sec.

The evidence is overwhelming then in favour of the short period and my thanks are due Dr. Pogo for his prompt detection of the error and his communication of the same. A more detailed statement will be given in one of our Publications.

Dominion Astrophysical Observatory,
August 29th, 1928.