

## THE ORBIT OF $\omega$ URSÆ MAJORIS

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THE star  $\omega$  Ursæ Majoris,  $\alpha = 10^{\text{h}} 48^{\text{m}}$ ,  $\delta = + 43^{\circ} 43'$ , phot. mag. 4.8, was announced as a spectroscopic binary by Vogel in 1903.\* It was included in a list of 528 stars whose spectra were investigated by Vogel and Wilsing at Potsdam. Vogel states that on one plate he found an indication of the doubling of the K line, and the  $Mg$  line  $\lambda$  4481 doubled on one or two others.

It was first observed here in February 1908, and since then sixty-nine spectrograms have been obtained—fifteen with the old, and the remainder with the new single-prism spectrograph. This star is of the A type, according to the Harvard classification, the principal lines being measured being the  $Mg$   $\lambda$  4481, the hydrogen series and K. Only three of the plates obtained here show definite double lines. This is probably due to the faintness of the secondary component, whose mass, as will be seen later, is only about one sixth that of the primary, as well as to insufficient dispersion in separating the two spectra. The length of exposure required for a star of this magnitude forbade the use of the three-prism instrument. On this account also "Seed 27" plates were used for the majority of the spectrograms. Six were taken however on "Seed 23," and the finer grain gave a much better spectrum. The average length of exposure required for these was 90 minutes. The blending of the lines of the two spectra made the measurement of the plates rather unsatisfactory. In one plate in which the lines were separated those which showed doubling were the  $Mg$  line  $\lambda$  4481 and the two iron lines  $\lambda$  4325 and  $\lambda$  4308. In another the lines  $\lambda$  4308 and  $\lambda$  4101 ( $H\beta$ ) were found to be doubled, with faint

\* *Astronomische Nachrichten*, Vol. CLXIII, p. 145, 1903.