## THE ORBITS OF THE SPECTROSCOPIC COMPONENTS OF THE B-TYPE STAR HD 176853.

By J. A. Pearce.

The fifteen spectrograms, obtained, with one exception, during July and August, 1927, are well distributed in phase. The orbital elements were determined from eleven plates on which both components were measured. The principal results of the investigation are as follows:

1. The spectra contain the normal lines, of good quality, of the classes B5 and B8. The secondary has approximately one-fifth the intensity of the primary.

2. Separate solutions as well as a combined solution were made. The elements and their probable errors from the combined solution are: $P$ (days) $= 1.849084 \pm 0.000055$; $e = 0.033 \pm 0.011$; $\omega_1 = 156°.16 \pm 11°.91$; $\omega_2 = 336°.16 \pm 11°.91$; $T =$ J. D. $2425074.648 \pm 0.062$; $K_1$ (km/sec) $= 150.58 \pm 1.84$; $K_2 = 241.18 \pm 2.63$; $\gamma = -12.86 \pm 1.26$; p. e. Br. $\pm 4.31$; p. e. Fr. $= \pm 6.37$; $m_1 \sin^3 i = 7.1 \odot$; $m_2 \sin^3 i = 4.4 \odot$; $m_2/m_1 = 0.62$; $a \sin i = 9{,}956{,}000$ km.

3. The measures of the fainter spectrum were accordant and these were given half the weight of the primary measures. None of the residuals, either primary or secondary, exceeded three times the respective probable error, so that the inclusion of the secondary measures was justified, and the probable errors of the elements in the combined solution are not illusory.

## GRAPHS FOR OBTAINING THE POSITION ANGLE AND DISTANCE OF THE APEX, AND THE GALACTIC COÖRDINATES FOR ANY STAR.

By J. A. Pearce and S. N. Hill.

The two recent determinations of the solar motion, that of W. W. Campbell and J. H. Moore from the radial velocities of 2119 stars and that of R. E. Wilson from the corrected proper motions of the Boss stars, agree closely with one another, their mean value assigning the apex of the sun's way, with respect to the naked-eye stars, to the point $\alpha = 271°$, $\delta = +28°$.

For this adopted value, two graphs have been constructed which give the position and distance of the apex for any star. The computations were carried out to the nearest minute of arc and the drawings made on the scale 10 degrees to the inch, so that the elements may be readily interpolated to the nearest half-degree, an accuracy more than sufficient for ordinary problems of stellar motions.

A third graph facilitates the conversion of equatorial coördinates into galactic coördinates.