

ever measured owing to the close proximity of the  $H$  line of calcium and consequent overlapping. The helium series  $\lambda\lambda$  4713, 4471, 4388, 4143, 4121, 4026 and 4009 are all measurable and these, excepting the first and last, were among the most frequently used. The magnesium  $\lambda$  4481 and the calcium  $K$   $\lambda$  3933 are not so intense as either the helium or hydrogen series and do not appear in many of the spectra.

In view of the fact that a number of binaries have recently been discovered in which the calcium lines  $H$  and  $K$  give different velocities to the other lines it may be noted here that this is not the case with  $\nu$  Orionis; the velocities of the  $K$  line agree with those of the other lines. Another good line is the carbon  $\lambda$  4267. These were the lines most frequently measured but a 'tional lines in a number of cases have been seen, and where these have been measured the resulting velocities were always in agreement with the lines most commonly used. Among these additional lines may be mentioned:  $\lambda\lambda$  4572, 4563, 4549, 4528, 4452, 4383, 4325, 4308, 4233, 4131 and 4128. There are also indications of the second series of hydrogen.

On the first one hundred plates all the lines that were at all measurable were used. When the results were plotted with the provisional period of 131.4 days there were many little irregularities in the curve; its appearance was that of a wavy line. As no indications of a second spectrum had been detected, even though a fine-grained plate had been used at the time of maximum positive velocity, it was difficult to account for this. It was thought that a possible cause might exist in the selection of lines varying from one plate to another. To decide this point and incidentally see if the wave-lengths used needed any arbitrary correction a table was constructed of the residuals for each line from the mean of the plate. The result is contained in the accompanying table. Besides the twelve lines here listed there were various others which did not occur frequently enough to make mention of. The lines are arranged in order of frequency of measurement, the total number of plates being 100.