LICK OBSERVATORY

UNIVERSITY OF CALIFORNIA

BULLETIN No. 5

OBSERVATIONS OF THE SPECTROSCOPIC BINARY η PEGASI

The binary character of η Pegasi was discovered in August, 1898, from observations made with the MILLS spectroscope, and announced in the *Astro-physical Journal* for October, 1898. It was the first one of some thirty-five spectroscopic binary systems

No.	DATE. Greenwich M.T.	VELOCITY. Kilometers.
1	1896 August 27.8, +	7.10
2	September 23.7, +	5.10
3	1897 July 8.9, -	6.37
4	September 28.7, -	2.21
5	1898 August 29.8, +	16.54
6	August 30.8, +	15.62
7	September 4.7, +	16.46
8	September 15.8, +	15.74
9	October 18.7, +	10.99
10	October 24.8, +	11.51
11	October 26.8, +	10.83
12	November 28.7, +	6.06
13	1899 January 23.6, -	0.84
14	May 2.0, -	6.44

The period of revolution of the system was early found to be about two years and a quarter. The observations are distributed over more than two complete periods.

The probable error of one observation, ± 0.47 kilometer, determined by Dr. CRAWFORD, is very satisfactory under the circumstances. It is based upon all the observations secured. These include those made in 1896, with a very imperfect camera lens. The first thirteen observations were obtained before the special temperature control was installed. The thirteenth observation was made when the star was low in the west, in the early evening, with the temperature changing rapidly. Experience has shown that observations taken under such conditions are not only useless, but are apt to be harmful, and No. 13 might well have been rejected. It furnishes the largest

discovered in the past three years with this efficient instrument. As a basis for determining the orbit of the bright component of this system, the following velocities in the line of sight were observed:

No.	DATE. Greenwich M.T.	VELOCITY. Kilometers.
15	1899 May 9.0, -	5.94
16	June 21.0, -	8.02
17	June 27.0, -	8.31
18	July 26.9, -	7.14
19	September 6.8, -	6.81
20	December 19.7, -	3.86
21	December 25.7, -	1.44
22	1900 May 14.0, +	10.89
23	June 7.0, +	14.06
24	August 1.9, +	18.89
25	September 25.7, +	21.40
26	October 9.7, +	20.37
27	October 24.8, +	19.88
28	December 11.7, +	15.17
29	1901 May 9.0, -	0.18

residual, and its rejection would have reduced very materially the computed probable error of a single observation.

The spectra were measured, in all cases, soon after they were secured, in six different years. The 26th, 27th, and 28th plates were measured and reduced by Dr. REESE, and the remaining twenty-six plates by myself. If they could have been measured in quick succession, by one observer, no doubt the results would yield a much smaller computed probable error, as the personal habits of measurement change appreciably with time.

Messrs. HUSSEY and AITKEN have carefully examined η Pegasi with the 36-inch refractor, but have been unable to detect the companion star.

W. W. CAMPBELL.

1901 July 24.