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THE RADIAL VELOCITIES OF 500 STARS

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THE RADIAL VELOCITIES OF 500 STARS

THE radial velocities of the 500 stars contained in this publication include all the stars in the Kapteyn areas from the north pole down to declination +15 degrees and to the photographic magnitude limit 7.59 as well as those stars in the immediate neighbourhood for an area 4 x 4 degrees square with the exception of a few stars whose velocities had already been determined. The programme as originally made out included an area 6 x 6 degrees square and some of the stars in this larger area have been included. Observation of the remainder of the stars in the larger areas is being continued. The observations have been made with the one-prism spectrograph attached to the 74-inch telescope. Observations were begun in June 1935 and completed in March 1939. Two cameras of 25 inch and 12½ inch focal length were available. The dispersion of the former is 33 A per mm. at Hγ and of the latter about half this. In the earlier months of the work, the 25-inch camera was used almost entirely. With this dispersion the spectra can be measured more accurately than with the lower dispersion. Owing to the number of nights when seeing conditions were poor and broken by clouds, it was soon realized that more rapid progress could be made with the shorter camera, and we have obtained nearly all the spectra with this camera. The results are adequately accurate for statistical studies or for the determination of binary orbits with medium range. The detection of the binary character of those stars with small range, less than 20 km., is uncertain and doubtless some of these have been included as of constant velocity.

The iron arc was used for comparison spectra using the wave-lengths recommended in the Transactions of the I.A.U., v. III, 1928. For the stellar wave-lengths of the O-B types and the A types, we have used the values given in the Transactions of the I.A.U., v. IV, 1932. For the later types two systems have been recommended based on the work of Adams and Harper respectively. The difficulty of compiling satisfactory wave-lengths for the late type stars increases as the dispersion decreases. The system given by the I.A.U. is quoted as being suitable for dispersions approximating 40 A per mm. Although our dispersion is only about two thirds of this it seemed best to use the published values. We have adhered fairly closely to the system given by Adams. The wave-lengths we have used are given in Table I.

TABLE I

λ	Auth.	Type	λ	Auth.	Type
3933.684	x A *	F-M	4325.652	x H	G-K
61.537	o A *	K-M	37.057	o A *	M
68.494	x A *	F-M	40.477	x A *	F-M
70.078	x A *	F	51.848	o A *B	G-K
4005.256	x A *	F-M	79.240	o A *	K-M
24.670	*B	F-M	83.559	x A *	F-G
35.683	o H	G-K	4404.763	x A *	F-M
45.827	x A *	F-M	07.694	*B	F-M
63.635	x H	F-M	08.368	x A	M
71.751	x A *	F-M	15.153	x H	F-M
77.726	x A *	F	27.258	x A *B	G-M
92.478	o H	G-K	35.226	o A	K-M
4101.750	x A *	F-G	43.814	*	F-M
18.681	o H	G-K	61.809	o A	G-M
27.840	o H	G-K	66.564	*	F-M
32.069	x A *	F-G	68.502	*	F-M
43.740	x A	F-M	82.214	o A *B	M
91.555	o H	G-K	94.575	o A *	F-M
4202.042	x A *	G-K	96.862	o A *	M
15.638	x A-H	F	4501.280	*	F-M
26.829	Y	F-G	08.293	o A *	F-M
35.951	x A *	F-G	15.345	*	F-M
46.838	*	F-M	22.707	o A	G
50.465	x A *B	F-M	22.809	o A *	K-M
54.348	x A *	G-M	28.629	*	F-M
60.415	x H	F-M	31.040	o A	G
71.545	x A	G	31.084	o A	K-M
71.586	x H	K-M	33.974	*	F-M
74.761	o A	K-M	49.597	*B	F-M
82.622	o A	K-M	54.038	*	F-M
89.632	x A-H	G-M	58.652	*	F-M
4307.914	x A	G-K	63.768	*	F-M
14.635	x A	M	71.982	o A *	M
14.668	x A	G-K	83.841	*	F-M
18.660	o A *	K-M	4629.344	*	F-M
20.816	x A	G-K	4861.344	o A *	F-M
4320.884	x A	M			

* Wave length in Sun
B blend
x I.A.U. Primary Standard
o I.A.U. Secondary Standard

A = Adams
H = Harper
Y = Young

The observation and measurement have been carried out by the various members of the staff as a joint programme. The following numbers of stars were assigned to the permanent members of the staff who were responsible for seeing that sufficient spectra were secured to obtain satisfactory velocities and for collating the results; F. S. Hogg, 151; P. M. Millman, 136; J. F. Heard, 127; R. K. Young, 86. The observing at the telescope was done by the astronomers mentioned above with the assistance of Mr. Longworth, night assistant and machinist, Mr. Tidy and Mr. MacRae, the last three observers taking nearly all the latter part of the nights. The measuring has been shared by various members also. In all 3387 measures were made. Of these Miss Patterson made 1218; Miss Northcott, 829; Mr. Tidy, 470; Mr. MacRae, 445; Dr. Heard, 190; Mr. Bunker, 119; Dr. Millman, 102.

For 61 of the stars, velocities published at other observatories are available for a study of systematic differences. Two of these seem to be variable and yield large differences. These have been omitted. The 59 remaining stars were divided into groups according to the types, B, A, F, G, K, M, and the average residual and its probable error computed as shown in Table II. Before taking these residuals the published velocities were reduced to the system of Moore's catalogue by applying the correction given by Moore.

TABLE II

Type	No. Stars	Alg. Residual	p.e.
B	5	−2.9	±0.8
A	9	−0.4	±1.3
F	14	+0.3	±0.5
G	10	+2.3	±0.7
K	17	+0.2	±0.3
M	4	+2.5	±0.2

For the whole 59 stars the average algebraic residual is $+0.40 \pm 0.03$. For the individual types the numbers are probably too small to give very reliable results but there seems to be an indication that the systematic error is more negative in the B and A type than in the later types. Some measures of standard velocity stars not included in the present table and not published tend to confirm this result. It is noteworthy that the systematic corrections given by Moore for the Mount Wilson velocities run from 0.0 in the A

type to −0.8 in the M type. This is in the same direction as we find for the correction to our velocities.

The results for all the stars are included in Table III in which the headings of the various columns have the following meanings.

1. The serial number in the Henry Draper Catalogue.
2-3. The right ascension and declination for the epoch 1900.0.
4. The visual magnitude from Henry Draper Catalogue.
5. The Harvard type.
6. The type as estimated from our spectra. The criteria for estimating the type have been made as simple as possible and agree in general with the Harvard system and more particularly with the system adopted at Victoria.

   For the A-type—Ao, K 0.1 times Hδ; A2, K 0.4 times Hδ; A5, K 1.2 times Hδ; A9, K 2.0 times Hδ. In the F-type attention was centered on the line 4227; F3, 4227, 0.1 times Hγ; F7, 4227, 0.8 times Hγ; F8, 4227 = Hγ; Go, 4227, 3 times Hγ. For the later types the absolute intensity of 4227 was compared with typical spectra from G0—K8 and for the M-type the strength of the titatium oxide bands was used as a criterion.
7. The velocity of the star, i.e., the weighted mean velocity from all the plates if the velocity seemed constant or variation not reasonably certain. Those stars which showed definite variation are indicated by "Var" or, if the variation was probable only, by "Var?"
8. The probable error of the mean velocity computed by the formula

$$P.\,E. = 0.845\,\frac{\Sigma v\sqrt{p}}{n\sqrt{\Sigma p}}$$

9. The number of plates.
10. The minimum and maximum number of lines measured on the plates.
11. The average probable error of a plate as judged from the agreement of the lines.
12. The observer responsible for the collation of the results and the progress of observing. H, Hogg; M, Millman; Hd, Heard; Y, Young.
13. Velocities published at other observatories. In this column, M refers to Moore's general catalogue; W, the Mount Wilson

list of stars in Ap. J., v. 88, p. 34; V, the Victoria list, D.A.O. Pub., v. VI, no. 10.

14. References—R refers to notes to Table III; IV indicates that the individual velocities are found in Table IV. In this column also reference is made to a number of stars which showed a somewhat larger range than the agreement of the lines would lead one to suspect. Such stars are indicated by an * followed by a number showing the extreme range which the velocities indicated.

The individual velocities for all those stars in which a velocity variation has been definitely established or for which a velocity variation is probable are shown in Table IV. There are 85 of these stars—that is a proportion of 1:4 which show variable velocity. This ratio is somewhat lower than ordinarily accepted since the low dispersion has prevented the detection of the binaries with small range. For most of these stars we have attempted to estimate a velocity which could be used in statistical work. Those who use these results can be guided in this regard by the probable error attached which has been computed in the usual way on the assumption that the variations in the velocities shown were of a purely accidental nature. Column 1, gives the H.D. number and the Julian day of the observation and the fractional part of the day; 2, the measured velocity; 3, the number of lines measured; 4, the probable error computed as in column 11 of Table II; 5, the weight assigned to the plate; 6, the camera used; 7, measurer—N, Miss R. J. Northcott; MR, D. A. MacRae; P, Miss F. S. Patterson; T, G. H. Tidy; B, A. F. Bunker; M, P. M. Millman; Hd, J. F. Heard; S, Helen B. Sawyer.

TABLE III

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	ē	Obs.	Pub. Velocity	Ref.
	h m	° ′											
3	00 00.0	+44 40	6.51	A0	A1n	−18.5	4.4	6	3–7	5.3	M		
370	03.3	73 41	7.42	A0	A0s	+04.7	1.4	5	4–7	4.5	H		
874	08.0	16 22	6.62	G5	G5	+10.6	0.8	4	14–24	1.9	Hd		
886	08.1	14 38	2.87	B2	B2s	+00.4	1.4	8	10–15	2.8	Hd	+05.0±0.5 M	R
1243	11.6	13 22	7.50	A3	A3	−01.8	2.8	8	5–12	3.9	M		
1375	00 12.8	+12 13	6.63	G5	G5	+03.6	1.2	4	19–25	1.8	Y		
1439	13.4	30 58	5.80	A0	A0s	−07.2	1.7	5	4–10	2.8	Hd		
1606	15.2	30 23	5.82	B8	B5	+03.8	2.0	9	3–7	5.6	H		
1632	15.5	32 21	5.97	K5	K5	−31.6	1.6	5	12–23	2.2	H		
1641	15.6	32 25	6.98	F5	F4	−03.0	1.7	5	7–11	2.0	H		
1662	00 15.8	+12 13	7.43	A3	A5	−19.7	1.4	4	9–15	2.9	Hd		
1826	17.6	28 55	6.89	A3	A5	Var.		5	15–29	2.8	Y		IV
2019	19.4	30 49	6.80	B9	B9	Var.		7	2–7	6.3	M		IV
2358	22.3	15 29	6.57	A5	A5n	+02.1	1.7	5	3–8	3.5	M		
2411	22.8	17 21	5.33	M6b	M6	+07.7	0.8	4	10–22	2.0	M	+05.2±0.8 M	
2436	00 23.0	+15 54	6.46	K2	K3	−11.1	2.6	4	17–22	1.8	Y	−02.0±0.6 M	*19
2453	23.2	31 53	6.71	A0p	A0sp	Var.?		5	13–21	3.1	Hd		IV
2628	24.8	29 12	5.26	F0	A9s	−08.0	1.0	4	19–39	1.7	Hd	−10.8±0.3 M	
2666	25.2	31 38	7.57	F5	F3	−08.0	2.7	6	8–16	3.1	H		*37
2767	26.1	33 02	6.08	K0	K0	Var.?		7	5–26	1.8	H		IV

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
2942	00 27.6	+27 44	6.38	G5	G5	−08.5	0.5	5	10–23	1.8	Hd	−14.2±0.8 M	
3291	30.9	44 06	7.33	B8	B8	−10.1	1.9	6	3–12	5.8	Y		R
3369	31 5	33 10	4.44	B3	B4	Var.		4	4–11	4.5	Hd		IV
3546	33 3	28 46	4.52	G5	G7	−81.8	1.4	4	11–25	1.4	Hd	−83.6±0.2 M	
3627	34 0	30 19	3.49	K2	K1	−08.2	0.4	4	19–23	1.4	Hd	−07.1±0.3 M	
4335	00 40.7	+14 18	5.99	B8	B9s	+04.5	2.6	5	5–9	3.9	Y		*17R
4701	44.0	47 13	6.97	A2	A5n	−14.6	2.3	6	5–11	6.8	M		
4817	45.2	61 16	6.36	K2	K2	−19.7	1.0	5	13–22	3.0	H		
5394	50.7	60 11	2.25	B0p	Bepv	Var.		4	4–10	1.9	Hd		R
5459	51.3	60 53	6.62	G5	G6	−07.6	1.8	5	18–26	1.8	H		*20
5914	00 55.6	+88 29	6.48	A2	A2	−11.0	1.7	5	4–11	3.8	H		
6130	57.4	60 32	5.94	F0	A9s	−01.1	1.1	5	8–27	2.0	H	−01.8±1.6 W	
6210	58.1	61 04	5.88	F8	F7	−14.8	0.7	6	12–17	2.2	H		
6175	01 00 7	59 20	6.78	A0	A0n	Var.		5	3–5	6.4	H		IV
7157	06.8	61 10	6.29	B9	B9s	−03.4	2.8	6	4–9	4.3	M		R
7374	01 08.8	+15 36	5.85	B8	B7	−16.2	2.0	6	4–6	4.6	M	−16.1±0.7 W	
8126	15.6	28 13	5 60	K0	K2	−34.9	0.9	5	11–27	1.3	Hd	−35.1±1.0 M	
8112	18.5	17 17	6.81	F0	F2	−15.7	1.3	6	7–18	2.6	H		
8815	21.8	29 16	7.18	F2	F2	−06.2	1.4	4	6–17	4.8	Y		
8909	22.7	30 02	6.87	F5	F6	−14.5	1.4	4	11–15	1.8	Y		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
8941	01 23.0	+16 34	6.75	F5	F7	+08.2	0.6	6	9–16	2.3	H	+08.5±0.2 W	
9100	24.5	17 51	5.96	A2	A3	+02.7	3.3	6	4–9	5.7	M		
9270	26.1	14 50	3.72	G5	G5	+15.1	1.1	6	16–36	1.8	H	+14.4±0.2 M	
9312	26.6	16 28	6.81	G5	G5	Var.		19	18–30	1.8	Hd		IV
9616	29.2	32 37	6.57	G0	G0	−25.2	0.8	5	15–24	2.2	H		
9709	01 30.0	+46 36	7.02	B9	B8ne	Var.?		9	2–4	3.8	Hd		IV
9996	32.5	44 54	6.34	A0	A0	+05.0	3.3	6	5–13	3.7	M		*31
10086	33.5	45 23	6.66	G5	G1	+06.8	1.1	4	21–27	1.9	H	±04.8±1.1 W	
10363	36.1	43 08	7.03	A0	A0n	−01.0	2.7	5	4–6	6.5	Y		
10407	36.4	29 01	7.38	A2	A1	+06.3	3.2	6	3–7	4.9	M		
10588	01 38.2	+31 43	6.42	G5	G5	Var.		6	22–27	1.9	Y		IV
10638	38.7	32 01	6.78	A3	A6	−00.9	0.5	5	8–20	3.1	Hd		
10681	39.2	27 58	7.31	A0	B9	−01.8	2.4	6	3–5	6.7	M		
10773	40.3	43 13	7.40	A0	B9n	−14.5	3.7	6	3–6	4.7	M		*21
10874	41.6	45 44	6.32	F5	F4	−03.6	1.0	5	9–15	2.5	Y		
11188	01 44.9	+46 58	7.14	B8	B8	Var.		6	4–8	4.3	M		IV
11336	46.4	44 19	7.48	B8	B9	−20.8	3.8	6	3–6	5.0	M		R
13596	02 07.6	14 48	5.99	K5	K5	+20.2	2.1	6	8–19	2.2	Y	+26.2±1.7 M	*21
14688	17.1	16 25	6.78	A0	A1s	Var.		4	8–23	2.0	M		IV
15227	22.1	16 12	7.26	F0	F0	+14.0	0.4	4	13–19	2.3	Hd		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	c̄	Obs.	Pub. Velocity	Ref.
	h m	° ′											
15992	02 29.1	+44 12	7.42	B9	B9	−01.0	2.6	6	5–7	3.9	M		R
16111	30 2	28 58	7.10	B8	B9n	+02.8	2.5	11	2–5	7.3	H		
16187	30.8	31 10	6.16	K0	G8	+03.7	1.1	4	14–27	1.6	Y		
16220	31.1	32 37	6.29	F5	F5	−01.6	1.4	6	12–18	2.4	H	−00.6 V	
16245	31.3	29 59	7.41	A0	A0	+04.7	2.7	6	4–6	4.4	M		R
16545	02 31.1	+43 40	7.25	A0p	A0p	+01.4	3.4	6	3–7	5.1	M		R
16580	31.4	29 21	7.45	B9	A0	+13.4	3.3	6	4–11	5.1	M		R
16594	31.5	31 53	7.50	A2	A2n	+01.3	3.2	7	3–5	5.5	M		
16933	37.8	46 26	6.98	F5	F4	+24.2	1.6	5	8–18	2.1	H		*13
17007	38.6	29 03	7.06	F0	F0	−08.0	1.0	6	7–23	3.3	Hd		R
17316	02 41.7	+43 13	7.35	B9	A2	−30.4	2.5	4	4–5	7.0	Y		
17656	45 0	46 25	5.97	G5	G7	−10.0	0.9	4	16–28	1.8	Y		
17891	47 3	46 44	6.73	B9	B9	+01.6	1.6	6	4–7	5.3	M		
18173N	53 1	59 17	7.35	A0	A0	Var.		6	3–8	6.0	M		IV
19536	03 03.5	60 15	7.26	A0	A1s	Var.		6	5–15	4.0	H		IV
19896	03 06.8	+16 07	7.32	A2	A4s	−06.5	2.3	5	13–27	2.2	Hd		*15
20134	09.1	59 41	7.51	B3	B4e	−15.1	3.8	6	3–9	3.2	M		*31
20158	12.4	13 29	7.42	A0	A0n	+01.7	5.1	6	2–7	5.7	M		
20536	13 1	61 38	6.65	B8	B8n	−08.3	1.8	7	2–5	8.4	H		
21062	18.8	28 18	6.99	A0	A3	+06.4	1.6	6	5–8	4.8	Y		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{c}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
21242	03 20.5	+28 23	6.51	G5	G5e	+16.9	1.7	8	7–32		H		R
21379	21.8	12 23	6.20	A0	A0	+16.0	2.6	6	3–10	4.4	M		
21611	24.2	29 12	7.51	A0	A0n	+13.2	3.2	6	3–6	6.2	M		
22124	28.8	31 41	6.62	F0	F2	Var.		30	11–27	2.3	Y		IV
22136	28.9	46 46	6.76	B9	B8sp	+10.7	2.4	6	3–10	4.1	Hd		R
22195	03 29.4	+31 21	6.83	F0	F2	+21.8	1.4	6	7–24	4.0	H		
22317	30.5	28 54	6.63	A5	A7	+20.0	1.1	4	15–19	2.9	Y		
22418	31.3	30 48	7.01	F5	F4	−38.3	1.7	5	9–13	3.2	Hd		
22963	36.1	32 38	6.67	F8	F7	−33.0	1.7	4	9–15	2.0	Hd		
23139	37.7	45 48	6.09	A5	A5	+10.2	1.1	4	9–22	3.1	Y		
23477	03 40.4	+43 46	7.07	B9	A0s	+06.8	1.5	4	4–6	4.5	M		R
23728	42.3	43 39	5.86	F0	F0	−15.9	2.3	4	6–20	3.6	Hd		
23838	43.1	44 40	5.79	G0	G0	Var.		12	9–29	2.0	H		IV
25473	57.7	73 18	6.88	F5	F4	−29.0	1.2	5	12–18	2.2	H		
26015	04 02.0	14 54	5.94	F0	F2	Var.?		5	17–27	2.0	H		IV
26039	02.3	+16 16	7.52	B9	B9	+15.4	4.4	6	3–6	7.1	M		
26171	03.4	13 08	6.02	B9	B9	−26.3	4.3	6	4–8	5.6	M		*47
26398	05.4	16 22	7.02	B8	B6e	+32.3	4.4	7	3–9	7.9	M		R
26546	06.8	17 02	6.30	G5	G5	+29.4	1.6	4	17–37	1.3	Y		
26703	08.3	12 30	6.49	K0	K0	+48.9	1.0	4	7–26	3.5	H		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	ē	Obs.	Pub. Velocity	Ref.
	h m	° ′											
26911	04 10.1	+15 09	6.35	F5	F5	+37.3	1.7	6	6–14	5.1	Hd		
27349	13.9	31 44	6.35	K5	K5	−16.2	0.8	4	13–28	2.2	Y		
27483	15.2	13 38	6.14	F2	F4	Var.		4	9–21		Y		IV
27561	15.9	14 11	6.71	F0	F3	+36.7	1.1	5	16–22	2.1	Hd		
27579	16.1	13 21	7.34	A5	A4	+09.6	2.0	5	7–17	4.5	Hd		
28150	04 21.3	+17 58	6.74	A0	A1	+18.5	0.7	6	4–9	6.9	M		
28271	22.5	30 09	6.26	F5	F5	Var.?		7	9–20	2.3	H		IV
29329	32.1	76 25	6.51	F5	F5	−05.7	1.9	5	7–13	2.4	H		*17
29487	33.5	43 55	7.32	B9	B8	+06.9	4.1	6	4–15	5.4	M		*52
29678	35.4	75 46	6.04	F0	F0	−01.4	1.6	5	4–14	4.6	H		
30090	04 39.4	+42 09	6.65	G0	G0	+29.3	1.9	5	16–20	1.8	H		*14
30736	45.1	45 46	6.69	F8	F8	+23.6	1.3	4	9–21	2.0	Y		
31069	47.7	43 54	5.98	B9	B9n	−00.2	4.1	7	3–6	4.8	Y		*39
31662	52.6	60 56	6.12	F5	F4	+10.8	1.9	6	8–25	2.6	H		
32356	57.5	61 02	6.27	K0	K0	−39.0	1.3	4	21–35	1.8	H		
33266	05 03.9	+61 44	5.99	A0	A1	−05.4	1.9	7	9–20	3.3	Hd		*21
33336	04.5	13 25	6.73	F2	F3	−00.6	1.8	6	7–12	3.3	Hd		
33618	06.4	59 16	6.36	K0	G8	+04.2	1.6	5	23–29	1.3	H		*14
34054	09.5	14 56	7.29	B9	B9	+13.2	3.9	6	3–5	6.4	M		
34547	13.2	13 29	7.5	B9	cA0	+08.4	0.3	4	5–15	4.0	M		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{c}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
35035	05 16.7	+28 22	7.36	A3	A3	+44.7	2.0	4	16–25	3.8	M		R
35036	16.7	16 01	7.38	A0	A0s	+47.1	2.0	7	2–7	7.3	M		
35076	17.0	28 51	6.39	B9	B9k	Var.		6	3–9	4.5	H		IV
35173	17.8	15 55	6.94	B8	B4	+21.1	2.4	6	3–5	6.7	M		
35189	17.9	16 36	6.09	A2	A1s	Var.		6	5–29	3.2	M		IV
35238	05 18.2	+31 08	6.37	K0	K0	Var.?		6	12–33	2.0	Hd		IV
35239	18.2	31 03	5.93	B9	B9	+08.3	2.6	8	3–5	9.2	H		
25522	20.2	15 23	7.04	B9	B8	Var.?		8	2–8	4.8	M		IV
35533	20.3	15 35	7.48	A0	A0sp	+24.2	3.0	6	3–9	4.7	Hd		*26R
35607	20.9	60 11	6.85	A0	A1	+05.6	2.0	5	4–6	5.0	Hd		
35693	05 21.5	+15 11	6.13	A2	A1	+21.6	2.4	6	3–11	6.0	M		
35909	22.9	13 37	6.26	A2	A3n	+27.8	1.1	5	4–5	4.9	M		
35984	23.4	29 07	6.21	F5	F3	+13.5	1.0	6	11–24	1.9	H	+11.0±2.2 W	
36468	26.8	43 52	7.18	B9	B9	+38.7	2.8	6	3–5	4.4	Y		
36756	28.9	44 15	7.17	F5	F6	+21.6	1.2	4	12–19	2.3	Hd		
38817	05 43.4	+43 59	7.45	A2	A1s	+31.5	1.5	5	13–25	3.0	M		
43043	06 09.0	16 04	6.73	G5	G5	+32.5	0.8	5	15–24	2.2	Hd		
43044p	09.0	14 38	6.82	B9	B9	Var.?		7	2–5	6.4	M		IV
43044f	09.0	14 38	6.82	B9	Aon	+14.5	3.2	6	3–6	9.2	M		
43496	11.4	15 53	7.18	B9	B9	+11.0	0.9	5	4–6	3.4	M		R

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	ē	Obs.	Pub. Velocity	Ref.
	h m	° ′											
43583	06 11.9	14 05	6.48	B9	B9	+09.1	4.6	5	3–8	4.2	M		*46
43683	12.4	14 25	5.98	A0	A0n	+12.2	3.1	5	4–6	5.4	M		
43931	13.8	13 29	6.96	F5	F6	+47.0	1.0	5	10–22	2.3	Hd		
43947	13.9	16 03	6.53	G0	G0	+12.5	0.7	5	12–30	2.1	Hd		
44033	14.4	14 41	6.02	K5	K8	+33.8	1.1	5	13–44	1.6	H	+35.0±0.5 W	
44250	06 15.7	30 01	7.06	A0	A0	Var.?		5	3–6	4.6	M		IV
44738	18.3	14 10	7.3	A0p	A0p	+21.4	5.0	5	7–10	6.0	M		*37R
44766	18.5	29 46	6.52	B9	B7	+28.1	3.6	6	3–7	6.5	M		
44867	19.1	16 07	6.35	G5	G7	Var.?		5	16–39	1.9	Hd		IV
44904	19.3	17.03	6.82	B9	B8	+01.9	4.0	6	2–10	5.6	M		
45180	06 20.9	+15 35	6.71	B9	B9	+08.8	2.5	7	3–8	5.1	M		
45194	21.0	13 10	6.59	F8	F8	Var.		8	3–15	2.7	Hd		IV
45412	22.1	30 34	Var.	G0	F8	Var.		2	23–25	1.2	Y		IV
45506	22 7	16 19	6.33	G5	G6	+11.9	1.2	4	22–37	1.2	Hd		
45721	24.0	28 17	6.85	A2	A3n	−05.2	4.5	6	4–7	9.0	Hd		
46016	06 25 8	+16 34	6.78	B8	B8	−05.9	1.6	5	3–11	5.5	Hd		R
46031	25.9	15 58	6.37	A5	A5n	+19.9	2.0	9	4–28	5.3	H		
47050	31.6	30 58	7.23	A2	A2	−12.8	2.2	5	4–6	5.1	M		
47255	32.6	31 51	7.31	A0	A1	+05.4	2.9	5	4–18	4.6	M		
47270	32.7	44 06	6.51	K0	K0	Var.		7	12–32	1.7	H		IV

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	c̄	Obs.	Pub. Velocity	Ref.
	h m.	° ′											
47395	06 33.3	+28 21	5.84	B8	B7	Var.		6	5–7	4.6	M		IV
47914	35.8	44 38	5.17	K5	K4	−69.3	1.2	4	22–51	1.5	Y	−74.8±0.5 M	
49949	45.8	44 58	6.10	A5	A5n	+00.1	4.2	6	4–7	8.1	M		
50315	47.6	43 04	7.27	A3	A5	+02.1	2.5	5	6–19	3.5	Hd		
52708	57.2	59 57	6.54	K0	K0	+23.2	1.5	4	23–43	1.6	H		*12
55283N	07 07.2	+15 21	7.39	A0	A0	Var.		6	4–7	5.1	M		IV
55383	07.6	16 20	5.31	Mb	M4	−07.9	0.8	5	9–35	1.6	M	−9.8±0.5 W	
56200	11.0	16 18	6.83	F5	F5	+22.6	1.2	4	10–20	1.8	H		
56537	12.3	16 43	3.65	A2	A4	−10.2	2.6	4	4–8	5.0	Hd	−13.8±1.9 M	
57049	14.5	15 21	6.47	A0	A1n	+21.4	4.7	6	4–7	6.0	Hd		*44
57728	07 17.4	+15 33	6.71	G5	G5	+01.2	2.0	6	6–27	2.2	Hd		R
58729	21.8	15 30	7.02	B8	B9n	+24.1	3.6	6	3–7	5.3	M		
58746	21.9	29 37	7.41	A5	A6	+09.4	1.4	5	10–35	2.3	Hd	+13.4±0.3 W	
59059	23.2	15 20	6.07	A0	A0n	+32.3	3.5	6	3–5	4.9	M		
60204	28.3	28 55	6.74	G5	G8	−11.3	1.3	4	18–44	1.6	Hd		
60335	07 28.9	+43 15	6.30	F0	F2	+20.1	1.6	6	16–30	1.9	H		*14
60383	29.1	28 51	7.02	A3	A3	−08.5	2.1	5	6–12	4.6	Hd		
60800	31.2	31 50	7.60	B9	B8	−02.2	1.0	4	3–5	5.0	Hd		
63312	43.2	46 03	7.06	A2	A2	+02.7	2.5	6	8–21	3.6	M		R
63630	44.8	46 12	6.53	A3	A5	Var.		17	6–22	3.8	H		IV

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	c̄	Obs.	Pub. Velocity	Ref.
	h m	° ′											
68461	08 07.4	+16 49	6.12	G5	G6	Var.		8	22–51	1.6	Y		IV
68776	08.8	13 22	6.48	K0	K0	Var.		8	14–25	2.5	Hd		IV
68903	09.4	16 23	7.18	B8	B9	+03.4	1.6	6	3 7	4.6	M		
69788	13.5	16 26	6.79	A0	A0n	+24.7	3.9	5	2 6	4.5	Y		
70338	16.3	13 57	7.08	A2	A6s	+24.6	1.2	5	19–26	2.2	M		
71555	08 23.0	+14 33	5.90	A2	A5	+ 9.8	1.4	6	7–19	4.5	M	−6.1±2.1 M	
73080	31.3	28 39	6.72	G5	G2	−27.2	1.0	4	12–20	2.0	Hd		
73190	32.0	73 31	6.93	A0	A0	+03.3	1.5	4	5–6	4.9	H		
73593	34.1	46 11	5.52	K0	G8	−34.6	0.7	4	31–43	0.7	Hd	−37.3±0.8 M	
73797	35 1	73 39	7.40	A2	A2	−14.7	1.6	5	4–10	6.3	H		
75523	08 45.4	+15 41	6.08	K0	K0	+13.7	1.4	6	11 29	1.4	H		*17
76216	49.7	58 36	6.90	A2	A2s	Var.?		6	8–19	2.8	H		IV
76238	49.8	46 09	6 93	F0	F0	−08.3	2.5	6	8–19	4.7	H		
77692	59 0	59 45	6.19	A0	A0	+09.5	2.1	5	4–6	6.1	H		
79554	09 09.7	15 22	5.57	K0	K0	+27.2	1.7	5	11–13	1.3	H	+25.0±0.1 W	
80613	09 15.7	+15 48	6.49	A0	A0n	+16.9	3.0	6	3–8	8.4	M	+17.8±0.4 M	
80654	15.9	13 33	6 58	F5	F5	−08.4	0.8	6	9–22	1.8	H		
82010	24 2	31 45	7.60	B8	B9	+30.8	3.5	6	2 6	8.3	Hd		
81737	42.1	46 29	5.20	G0	G1	+04.6	0.5	5	25–40	1.0	Hd	+05.4±0.3 M	
89993	10 18.1	30 07	6.46	K0	G8	−11.6	0.7	4	13–45	1.2	Hd		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
91181	10 26.5	+44 43	7.32	A5	A5	−01.9	1.7	6	13-20	3.5	M		R
93075	39.8	57 26	7.03	F0	A9	Var.		5	16-19	2.1	H		IV
94118	46.7	46 20	7.07	A2	A1	Var.		8	5-20	3.3	M		IV
94631	50.4	58 02	6.78	G5	G5	+11.2	1.9	5	25-34	1.7	Y		
96870	11 04.2	88 11	7.44	B8	B9	−23.8	1.0	4	5-6	6.5	H		
97889	11 10.5	+60 28	6.66	A3	A4	−06.0	3.8	6	5-16	5.3	M		
97938	10.8	13 09	6.73	A0	B9	+11.2	3.0	5	3-6	4.0	Hd		
98354	13.7	14 49	6.65	G0	F7	+24.9	1.3	7	12-30	2.0	H	+24.2±1.6 W	
98388	14.0	13 56	7.08	F8	F7	+06.2	2.5	4	12-15	3.1	Hd		
99267	20.3	30 32	6.88	F0	A8	Var.?		5	10-19	5.0	Y		IV
99832	11 24.0	+30 58	7.10	F2	F5s	−19.3	1.7	6	12-23	1.8	Hd		*18
99946	24.8	30 32	6.78	F0	A9n	−07.2	3.4	8	4-14	7.3	H		
100808	31.0	28 20	5.82	A3	A9n	+04.1	1.5	6	5-14	5.3	M		
100972	32.2	45 17	6.58	B9	B9n	+15.8	5.6	5	4-8	8.4	H		*31
105388	12 03.0	31 37	7.24	A0	A0	−08.5	1.5	7	4-13	8.1	Hd		
105678	12 04.9	+75 13	6.36	F5	F5	−18.1	1.5	4	15-21	2.1	H		
106022	06.9	29 06	6.40	F2	F2n	−16.5	1.2	7	11-20	3.1	H	−17.9±2.0 V	
106677	11.0	73 07	6.55	K0	K0	Var.		7	14-29	2.4	H		IV
106926	12.7	15 42	6.53	K0	K0	Var.		7	10-26	2.9	Hd		IV
107192	14.4	88 15	6.28	F0	F2	−05.7	2.2	4	15-18	2.9	H		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
107415	12 15.8	+16 05	6.51	K0	G6	−20.8	1.0	4	28–41	1.3	Y		
110834	39.8	41 39	6.31	F5	F5	−16.4	2.0	6	11–18	5.2	H		
112501	52.1	44 06	6.95	A0	A5	−9.8	1.2	6	11–25	2.9	M		R
112570	52.6	46 44	6.22	K0	G8	Var.		6	24–45	1.5	H		IV
112734	53.8	28 52	6.61	A5	A5	Var.		6	4–15	5.4	H		IV
112887	12 54.8	+28 37	7.09	F5	F4s	−08.2	0.6	4	13–25	2.7	Hd		
113021	55.7	32 18	6.72	G5	G5	+03.5	1.3	5	16–25	2.3	H		
113019	55.9	76 00	6.19	K0	K0	−14.0	0.9	5	21–35	1.5	H		
113817	13 01.4	45 48	5.72	K0	G9	−18.5	0.7	5	16–22	1.1	Hd	−19.2±1.5 W	
114092	03.2	28 04	6.40	K5	K6	−07.6	0.4	6	18–31	1.4	Y		
114446	13 05.5	+57 22	7.01	F8	F8	−34.2	1.5	4	14–18	2.0	H		
114723	07.3	32 39	6.66	F8	F7	−12.7	1.3	5	12–14	3.4	Y		R
116594	19.5	12 57	6.50	K0	G7	Var.		6	12–43	2.0	Hd		IV
119213	36.8	57 42	6.14	A2	A1s	−01.2	1.1	4	7–25	2.2	H		R
119842	40.5	60 39	7.06	A0	A1	−12.2	2.5	4	8–25	3.0	H		
120702	13 46.0	+43 02	6.90	F0	F1s	−18.2	1.7	4	14–21	2.1	Y		
121626	51.5	29 10	7.11	A0	A2n	−08.8	3.6	6	4–13	6.2	Hd		
126269-70	14 19.4	16 44	6.77	F5-A0		−19.8	1.4	5	7–38	2.3	M		R
130044	40.9	45 36	6.84	F0	F2s	−07.2	0.6	4	25–34	1.8	Hd		
130945	45.8	46 32	5.76	F5	F6s	−05.5	0.6	5	15–20	1.4	Hd	−05.4±1.7 W	

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
131764	14 50.4	+30 28	6.84	F2	F4	−35.0	3.5	8	6–12	8.1	Y		R
132445	54.1	44 52	7.22	A2	A2n	−11.9	2.8	9	3–5	7.1	H		R
133330	58.8	28 40	6.90	A0	A3n	+15.4	6.1	6	2–5	9.6	M		R
133909	15 01.9	59 55	7.26	A2	A5n	−09.6	5.5	6	6–19	8.5	M		
134305	04.0	12 52	7.16	A3	A5	−33.8	2.0	5	11–20	3.4	M		R
134323	15 04.1	+13 37	6.67	K0	G8	−48.4	0.6	4	26–39	1.4	H	−47.1±1.7 W	
134792	06.7	29 37	7.11	F5	F5s	+15.0	1.0	4	17–21	2.0	Y		
135438	10.0	32 09	6.22	K5	K5	+05.1	2.3	4	17–24	2.9	H		
138265	25.9	61 01	6.08	K5	K5	−42.8	0.5	4	25–45	1.2	H		
140612	39.5	46 04	6.90	F0	F4	−27.1	1.7	7	13–35	2.7	Hd		*19
141930	15 46.6	+44 49	7.57	A0	A1	Var.?		6	5–12	6.5	Hd		IV
142926	52.2	42 51	5.61	B8	B9e	Var.		26	3–3	1.6	Hd		IV
145368	16 05.5	73 25	6.95	F5	F5	−14.4	1.1	4	15–19	2.2	H		
145891	08.3	13 04	6.96	A3	A3n	−25.5	4.5	6	3–11	6.2	Hd		*32
148132	23.0	76 22	6.90	A3	A3n	−05.5	1.2	5	3–5	6.1	H		
150030	16 33.3	+46 49	5.95	G5	G6	−11.7	0.3	4	23–25	1.6	Hd	−17.3±1.2 M	
150203	34.4	43 46	7.15	A2	A2n	Var.?		8	3–5	8.4	H		IV
151388	42.0	43 24	6.07	K2	K2	−08.6	1.2	5	13–29	1.7	H		
151732	44.1	42 26	6.15	Mb	M4	−05.9	1.4	4	17–30	2.2	H		
151746	44.2	74 05	6.76	A2	A2	Var.		7	11–26	3.2	H		IV

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
152107	16 46.3	+46 10	4.86	A2p	A2p	−01.9	1.0	4	9–15	2.4	H	−01.4±0.4 M	R
152153	46.6	43 36	6.37	K0	K0	−18.8	0.8	4	27–31	1.3	H		
152812	50.6	47 31	6.30	K0	K0	−62.3	1.8	4	28–31	1.6	Y		
152877	51.0	28 17	7.12	F0	F2	−37.4	1.7	5	9–16	4.7	Hd		
152896	51.1	29 12	7.30	A5	A6	+01.1	1.0	4	19–26	2.6	Hd		
152951	16 51.5	+46 41	6.71	A2	A2	Var.		10	4–8	6.4	H		IV
153286	53.4	47 32	6.88	A2p	A4sp	−19.3	1.9	5	18–27	1.9	M		*14
153472	54.7	42 39	6.38	K2	K0	+32.0	1.1	4	22–29	1.5	Y	+22.7±0.7 V	
154160	58.7	14 41	6.52	K0	G7	−54.7	1.9	4	21–26	2.3	Hd		
154228	59.1	13 44	5.86	A0	A2	−28.7	1.9	5	5–8	4.8	Y	−37. ±1 M	
154278	16 59.4	+13 42	6.14	K2	K0	+47.1	1.9	4	16–27	2.1	Hd	+46.5±1.1 M	
154494	17 00.7	12 53	4.91	A3	A3n	−08.1	0.7	6	4–23	3.6	H	−01.5±0.9 M	
154713	02.0	43 57	6.36	A0	A4	−09.3	1.1	6	7–17	2.8	Y	−09.7±0.8 M	
154974	03.7	16 13	6.67	F8	F6	−26.9	0.6	5	10–21	1.8	Hd		
155092	04.4	28 23	6.99	F2	F3s	+03.0	1.2	6	7–16	2.5	Hd		
156341	17 11.9	+16 47	7.5	A0	A0n	−14.9	3.7	6	3–7	9.6	M		
156653	13.7	17 26	5.90	A0	A2	Var.?		6	4–16	3.6	Y		IV
157582	19.0	17 00	7.59	A0	A1	−22.4	4.7	6	2–9	6.3	M		
157741	20.0	15 43	6.25	B9	B9n	−26.2	4.4	5	3–5	10.9	Hd		
157935	21.2	16 29	6.69	F2	F2s	−49.3	1.2	3	12	3.2	Hd		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	c̄	Obs.	Pub. Velocity	Ref.
	h m	° ′											
158251	17 23.1	+16 32	7.16	F0	F0s	Var.?		5	8–26	2.5	Hd		IV
158485	24.5	58 44	6.52	A2	A2n	−31.5	2.9	6	4–7	6.8	H		
159330	29.1	57 57	6.50	K2	K2	Var.?		6	15–28	1.9	H		IV
160762	36.6	46 04	3.79	B3	B3s	−20.0	0.9	7	10–19	2.0	H	−18.1±0.6 M	
161569	41.2	45 05	6.61	B9	B9	−10.4	5.8	6	3–5	11.3	M		
161695	17 11.9	+31 33	6.25	B9	A0s	+02.4	2.0	5	6–13	1.9	Y		R
161797	42.5	27 47	3.18	G5	G5	−17.4	0.1	4	13–17	1.1	H	−16.1±0.2 M	
162555	46.5	29 21	5.61	K0	K0	−15.0	0.8	4	9–12	1.7	H	−14.2±0.4 M	
162668	47.1	30 01	6.68	A2	A3	−22.1	3.1	6	2–5	6.0	Y		
162880	48.2	44 56	7.22	F0	A6	Var.?		5	10–22	3.4	Y		IV
162936	17 18.5	+32 02	7.04	A0	A0	−16.9	1.6	8	5–12	6.0	H		R
163075	19.2	16 41	6.57	K0	K0	−27.3	0.8	5	13–21	2.1	Y		
163219	50.0	30 23	7.46	A3	A4	−39.4	1.5	5	5–11	6.0	M		R
163590	51.8	32 28	7.20	A0	A0n	−17.1	2.5	7	2–10	9.3	H		
163966	53.8	45 01	6.83	B9	B9	−31.6	1.8	6	3–4	4.9	Hd	−21.9±0.9 W	R
163993	17 53.9	+29 16	3.82	K0	K0	−01.5	0.5	4	15–37	1.4	H	−01.5±0.1 M	
164059	54.3	45 53	6.77	F5	F5	−27.6	1.2	4	13–17	1.9	Y		
164078	54.4	32 41	6.54	F5	F5n	Var.		7	5–11	3.8	Hd		IV
164136	54.7	30 11	4.48	F0	F0	−26.6	1.1	6	17–25	1.8	H	−22.0±0.3 M	
164429	56.0	45 28	6.22	B9	A0n	−15.6	2.6	7	3–8	5.2	H		*39R

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
164506	17 56.4	+28 45	7.37	A2	A2	+01.2	1.8	6	5–6	5.2	Hd		
164898	58.3	45 21	7.44	B9	A0	Var.		7	4–18	4.6	H		IV
165008	58.8	30 33	6.76	F2	F4	−36.4	1.4	5	11–13	3.4	H		
165170	59.6	11 15	7.22	F2	F4	Var.?		5	10–15	2.5	Hd		IV
165281	18 00.1	30 24	6.66	F5	F5	+02.3	1.9	4	14–17	2.6	H	+01.2±0.9 W	
165683	18 02.4	+32 14	5.92	K0	K1	+02.0	0.9	4	14–26	1.6	Y		
165908	03.2	30 33	5.21	F8	F8	+00.6	0.7	5	13–21	1.6	Y	+01.0±0.2 M	
166014	03.6	28 45	3.83	A0	B9	−30.2	1.2	11	3–7	5.6	M	−31.4±1.5 M	IV
166095	04.0	14 16	6.30	A2	A5s	−11.4	2.1	1	15–22	2.5	Y		
166180	04.4	30 59	7.32	A0	A0	−30.7	0.6	4	3–4	7.9	H		
166409	18 05.1	+11 06	6.64	F5	F5	−17.3	0.3	4	11–18	2.1	Y		
167131	08.8	16 14	6.72	F5	F6	−21.7	0.5	5	7–20	2.7	Hd		
168271	13.8	12 56	6.56	B9	B9	−13.1	2.8	5	1–5	5.4	H		
168431	14.5	12 09	6.93	B8	B3	−07.9	3.0	7	6–12	3.2	H		*40R
168481	14.8	15 47	7.00	A3	A5s	+00.3	2.3	1	8–23	3.9	M		R
169169	18 18.3	+11 57	7.31	A2	A3s	−15.8	5.4	6	2–7	6.6	M		*59
169223	18.6	16 38	6.38	K0	K0	Var.?		6	15–23	2.8	H		IV
169247	18.7	14 39	6.69	B9	B9	−16.6	5.0	6	3–4	6.5	M		*79
169491	19.8	15 36	7.40	B9	B5	−15.8	1.3	1	6–8	4.9	M		
169820	21.4	14 55	6.45	B9	B9	−25.4	5.5	6	3–8	6.0	M		*70R

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
171654	18 31.0	+46 08	6.66	A0	A0	−10.9	3.9	5	4–6	4.2	H		*30
172187	33.7	43 08	6 26	A5	A5	Var.		13	5–12	6.3	H		IV
172976	38.0	44 10	7.32	A5	A6	−08.9	1.6	5	13–22	2.7	Hd		
174177	44.2	46 12	6.47	A0	A2	−04.8	1.2	4	8–18	3.8	Hd		
174504	45.7	45 09	6.84	F0	F2	−13.1	1.7	5	11–18	2.7	Hd	−15.5±1.2 W	
174621	18 46.3	+43 37	6.79	G5	G4	−25.7	2.0	7	17–26	2.0	Y		16
175785	51.9	30 11	7.31	A0	B9	−25.8	5.1	6	3–4	7.9	M		
175865	52.3	43 49	Var.	Mb	M5	Var.		4	18–39	2.0	Hd		IV
176003	53.0	44 05	6.94	A2	A2	−14.4	3.8	7	5–16	4.6	Y		*30R
176053	53.3	31 52	7.10	A3	A3	Var.		7	3–11	4.0	Y		IV
176131	18 53.7	+46 37	7.08	A2	A3n	−05.2	2.0	6	3–4	5.4	Hd		
176209	54.1	45 43	7.21	A0	A1	−20.2	2.9	6	5–13	4.7	M		
176377	54.9	30 02	6.55	G0	F8	−38.2	1.7	5	17–23	1.8	H		
176626	56.1	43 35	6.90	A2	A1	−26.5	1.0	4	2–8	3.0	Y		
176798	56.9	43 07	7.19	A3	A5	−29.4	1.2	5	13–25	1.9	Hd		
176938	18 57.5	+29 23	6.64	A0	A0	−20.6	1.9	4	4–8	7.4	M		
177829	19 01.2	43 43	6.78	B9	B9n	−23.5	1.7	4	2–4	6.3	Hd		
178568	04.0	14 17	6.74	B9	B9	−27.1	3.6	6	3–5	4.9	M		*40
178947	05.5	30 24	6.68	B9	B8	−29.5	3.4	6	3–6	5.7	M		
179218	06.6	15 37	7.15	B9	B9	−04.2	4.3	6	3–8	8.4	M		R

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
179280	19 06.9	+31 28	7.14	F0	F0	−16.3	4.5	6	4–11	6.5	Y		R
179838	09.0	29 03	6.93	A0	A0n	−22.8	2.5	5	2–5	3.4	Hd		
180216	10.6	16 01	7.08	A2	A2n	−25.4	3.3	5	2–9	7.3	Hd		
180450	11.5	30 21	6.13	Ma	M1	−60.6	1.0	4	13–20	3.0	H	−65.5±0.6 V	
180451	11.5	15 59	7.04	F0	A9n	−51.0	1.4	4	10–13	4.6	Hd		
180583	19 12.0	+27 45	6.06	F8p	F6	−13.4	1.2	4	18–19	2.2	Y		
180778	12.8	59 31	7.46	A3	A2	−30.0	1.7	4	11–17	2.0	H		
181099	14.0	16 31	7.18	A3	A3	−36.8	1.3	4	10–18	3.5	M		R
181144	14.2	16 19	6.92	F5	F7	Var.		5	6–22	3.0	Hd		IV
181799	16.8	60 46	7.01	B9	B9	−19.3	1.7	5	4–7	4.1	H		
182239	19 18.6	+11 44	6.56	A3	A4	+12.2	1.3	4	12–23	3.5	Hd		
182381	19.3	15 49	7.42	A2	A0n	Var.?		5	3–6	7.3	M		IV
185955	36.6	45 43	6.34	G5	G5	−07.7	1.1	5	15–22	1.5	Y	−13.7±0.9 V	
186340	38.7	60 16	6 21	A2	A4	−01.2	1.2	5	5–12	5.0	Hd		
187160	19 43.4	44 05	7.03	G5	F8	+04.3	0.6	4	22–36	2.0	H		
187237	43.9	27 36	6.75	G5	G1	−35.9	2.4	6	12–25	2.2	Y		*24
187255	44 0	27 26	7.34	A0	B9	−23.5	3.9	6	2–5	7.0	Hd		
187613N	45.8	44 07	(7 7)	(B8)	B7	−12.8	2.5	6	2–6	6.8	M		
187613S	45.8	44 07	(8.2)	(B8)	B8	−15.0	3.6	6	2–7	5.7	M		
187981	47.8	30 53	6.94	A5	A5	+08.2	2.6	6	7–16	6.5	H		*21

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{\epsilon}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
188170	19 48.8	+28 44	7.17	A0	B8	−12.4	2.6	5	3–11	5.3	M		R
188651	51.1	29 56	6.36	B9	B6	−13.9	2.4	6	3–7	6.6	M		
189013	52.9	46 50	6.84	A2	A4	Var.?		6	4–10	3.8	Y		IV
189086	53.2	30 30	6.88	A0	B9	−19.3	2.5	6	5–9	4.7	M		
189213	53.8	28 36	7.05	A2	A3	−05.8	4.3	6	3–8	6.3	Hd		*38
189613	19 55.8	+31 33	6.69	A0	A0n	−17.6	2.4	5	2–6	8.7	H		
189689	56.2	32 31	7.21	B9	B8e	+06.2	4.0	5	6–10	5.8	Hd		R
189706	56.3	29 32	6.50	A0	B9n	−00.1	1.2	4	3–4	10.9	Hd		
189847	57.0	30 57	6.71	B8	B8n	−16.5	2.9	8	2–6	9.2	H		
190047	58.0	30 50	6.60	B8	B7	−11.6	4.3	6	2–5	6.5	M		
190167	19 58.6	+28 14	6.79	B9	B9	−28.3	3.8	4	5–10	6.0	Hd		
190227	58.9	31 40	6.53	K0	K0	−18.8	1.9	4	22–27	1.8	Y		
190537	20 00.3	30 57	6.87	A2	A3s	−30.1	1.3	4	17–33	2.2	M		
190603	00.7	31 56	5.69	B0	B0se	+29.2	3.0	5	5–11	4.1	Hd	+18.0±1.8 M	R
191048	02.8	15 47	7.48	B9	B9	−22.9	3.8	6	3–7	6.4	M		
191671	20 06.0	+27 58	7.6	B5	B4n	−00.8	3.4	6	4–8	7.4	M		R
191745	06.4	29 04	7.44	B9	B7s	−04.1	1.2	5	6–12	4.7	Hd		
191879	07.0	14 21	7.48	A0	A1n	+12.3	2.9	6	3–5	11.2	M		
191918	07.2	32 00	7.07	A0	A0	−18.9	2.2	7	3–7	5.0	Y		
192715	11.2	15 00	6.91	F0	A8n	−32.9	1.7	5	4–9	9.5	Y		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	ē	Obs.	Pub. Velocity	Ref.
	h m	° ′											
193349	20 14.7	+14 04	6.81	A0	A0sp	Var.?		6	7–14	5.7	M		IV
193472	15.3	13 11	5.96	A5	A5	−08.6	2.7	5	14–21	4.1	Hd		*20
193555	15.7	15 13	6.87	F8	F8	−27.2	1.0	5	7–13	3.8	Hd		
193556	15.7	14 16	6.34	G5	G5	+08.9	1.7	6	14–24	2.3	Hd		
193707	16.6	14 48	6.56	A0	A1	−23.3	1.2	4	4–10	4.5	M		
193819	20 17.2	+13 16	7.37	A0	B8	−10.5	3.1	6	3–9	3.3	M		*27
194012	18.2	14 13	6.22	F5	F7	+03.9	1.0	4	12–18	2.9	Hd	+3.5±0.7 V	
194115	18.7	15 03	7.09	A0	A0	−21.0	3.1	7	3–17	4.5	M		
194211	19.3	15 43	6.70	B9	B8n	−15.3	2.1	6	3–5	5.3	M		
197139	36.6	43 05	6.15	K0	K0	−17.9	1.1	4	22–25	2.3	Y		
197665	20 40.1	+76 29	7.07	F2	F3	−08.7	0.8	5	9–15	3.9	H		
197961	42.0	46 03	6.63	A0	A0	−04.6	2.0	5	5–9	4.7	M		
198151	43.3	46 10	6.26	A2	A3	−12.3	1.5	4	3–4	4.5	Y		
198414	45.1	45 05	7.47	A0	B9n	−21.4	5.1	6	2–5	7.5	M		
198626	46.5	30 32	6.75	A2	A5	−30.4	0.7	4	9–21	2.1	Y		
198726	20 47.2	+27 52	Var.	F8p	Var.	Var.		4	7–18	2.5	Hd		IV
198820	47.9	32 28	6.35	B5	B4s	−14.1	1.7	5	7–12	3.6	H		R
198915	48.5	46 21	7.30	B9	B7	−22.4	1.0	4	3–8	6.6	M		R
198976	48.9	29 17	6.40	K2	K0	−09.1	1.6	5	15–31	1.7	H		
199055	49.5	31 15	6.90	A5	A8n	−31.6	2.9	5	11–25	3.7	H		*24

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	ē	Obs.	Pub. Velocity	Ref.
	h m	° ′											
199098	20 49.8	+44 48	5.59	K0	G7	−19.6	1.6	4	15–22	2.0	Y		
199101	49.8	33 03	5.68	K2	K3	−09.9	0.6	5	6–22	1.9	H	−07.5±1.5 W	
199102	49.8	29 07	7.56	B9	B9n	−03.3	2.5	6	3–4	8.7	H		
199140	50.1	28 08	6.44	B3	B2sk	Var.		9	7–23	3.8	H	−07±05 M	IV
199169	50.3	27 41	5.24	K5	K5	+09.2	0.8	4	17–29	1.7	Y	+08.1±0.9 M	
199206	20 50.6	+44 44	7.42	B9	B7	−22.2	4.1	6	3–15	4.6	M		*42
199311	51.3	45 51	6.66	A0	A2s	−40.9	0.8	4	11 19	2.5	Hd		
199479	52.4	43 59	6.71	B8	B8	Var.?		5	3–8	6.3	Hd		IV
199492	52.5	74 16	7.39	A3	A3n	−15.3	2.9	6	3–10	4.8	H		
199511	52.6	43 02	6.79	B8	B8s	−31.2	2.4	4	8–11	6.6	Hd		
199837	20 54.6	+31 15	7.17	B9	B9n	−09.4	1.9	6	2–4	3.6	H		
199986	55.5	45 52	7.03	A2	A5	−01.5	2.0	4	4–9	6.3	Y		
200102	56.3	44 36	6.79	G5	G5	−23.2	1.0	4	12–22	2.0	Hd		
200877	21 01.1	14 56	6.62	F5	F5	−21.2	2.0	5	12–17	2.3	H		*18
201078	02.3	30 47	5.86	F5	F5	Var.		3	15–21	2.2	H		IV
201194	21 02.9	+30 12	7.51	B8	B4s	−21.5	1.4	5	3–8	4.0	Hd	−15.6±0.4 W	R
201196	02.9	15 16	6.52	K0	K0	−33.1	1.3	5	15–29	2.2	H		
201433	04.4	29 48	5.57	A0	A0	Var.		5	3–8	4.5	Y		IV
201912	07.5	29 18	6.77	B5	B5s	−01.7	1.9	4	3–8	4.6	Hd	−02.8±0.4 M	R
201939	07.7	30 12	6.75	G5	G8	−18.6	1.3	4	18–25	1.5	H		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	c̄	Obs.	Pub. Velocity	Ref.
	h m	° ′											
202109	21 08.7	+29 49	3.40	K0	G9	+17.5	0.9	4	13–24	1.4	Hd	+16.9±0.4 M	R
202314	09.9	29 29	6.25	K0	K0	−03.5	0.6	7	16–35	2.1	Y		
202351	10.1	16 04	6.74	F0	F0n	−21.4	3.5	5	5–8	3.5	Y		
202644	12.1	13 32	7.42	B8	B3	−14.2	1.6	6	3–15	4.2	M		R
203551	17.8	60 15	6.74	F5	F5	−14.2	1.1	5	14–18	1.8	H		
203574	21 18.0	+60 21	6.24	K0	G8	−25.6	1.6	5	16–27	1.7	H		*15
204889	26.5	61 00	7.11	F5	F5	−13.2	1.5	5	11–20	2.0	H		
205939	33.6	44 14	6.11	A3	A6s	+06.3	1.2	4	8–28	1.9	Hd		
206280	36.0	43 59	6.70	B9	B9sk	−13.8	1.3	6	4–10	4.2	H		R
206330	36.3	42 49	5.35	K5	K8	−28.7	1.3	5	17–22	2.4	H	−27.7±0.2 M	
206842	21 39.7	+58 48	6.21	K2	K2	−00.9	1.6	4	20–28	1.5	H		
206963	40.6	46 24	6.62	F5	F4	+09.0	1.0	4	10–19	2.8	H		
207431	43.8	43 32	7.58	A0	A0	−06.6	3.4	6	4–9	7.3	M		
208174	49.4	27 53	6.71	A2	A5v	Var.?		6	11–29	2.9	M		IV
208394	50.9	47 11	7.35	A2	A5	−25.9	1.6	5	11–22	2.7	Hd		
208835	21 53.9	+46 23	7 39	A0	B8	Var.		6	3 7	5.5	M		IV
209193	56 4	30 57	7 04	F0	F2	−08 6	0.4	6	4–21	2.3	H		
209205	56.5	31 03	7 19	A0	B9n	Var.?		6	2 5	8.1	M		IV
209469	58.6	42 20	7 06	B9	B9	Var.?		6	3 4	6.3	Y		IV
209484	58 7	29 44	7 01	B9	B9	Var.?		6	4–11	2.9	M		IV

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
209517	21 58.9	+29 33	7.39	B9	B8n	+01.1	3.5	8	2–5	7.2	H		
209679	22 00.1	43 52	6.57	A2	A1	+02.8	2.2	6	3–5	4.5	M		
209693	00.2	32 27	6.39	G5	G5	−19.7	1.1	6	19–30	1.8	H	−25.4±0.1 V	
209813	01.0	46 45	6.52	K0	K0	Var.		4	20–28	1.7	Y		IV
209833	01.1	28 28	5.58	A0	B9n	Var.		6	3–7	6.6	M		IV
210090	22 02.8	+17 32	6.43	Ma	M3	−08.2	2.1	4	8–22	2.6	M		
210130	03.1	12 34	7.56	A5	A5	−10.8	1.9	7	7–18	3.8	Hd		*29
210334	04.6	45 15	6.52	G5	G0	Var.		12	6–30		Y		IV
210387	05.0	44 22	6.72	A0	B9n	−10.3	1.4	7	3–5	6.3	Y		
210405	05.1	44 21	6.62	B9	B9	−05.8	1.4	6	2–4	3.5	Y		R
210461	22 05.5	+14 07	6.41	K0	K0	−40.7	1.8	5	22–36	2.0	H		*17
210594	06.3	30 04	6.38	A5	A5	+03.4	3.0	5	8–21	3.6	H		*21
210646	06.7	27 14	7.07	A0	A0s	+09.0	3.8	6	5–13	3.1	M		*29*R*
210661	06.8	28 45	7.44	A2	A1	−17.9	3.1	6	4–11	4.6	M		
211432	11.9	27 18	6.43	K0	K0	+16.7	1.2	6	15–25	1.8	H		
211733	22 14.1	+15 45	6.91	A0	A1	−24.1	1.0	4	4–14	3.6	M		
212075	16.6	13 52	6.94	A3	A3n	−05.2	2.3	5	2–7	4.3	Hd		
212186	17.3	15 08	6.69	A0	A0	−02.0	3.5	6	3–5	3.8	Y		*28
212442	19.2	14 46	6.73	A0	B8	Var.?		10	3–7	7.6	Hd		IV
212500	19.6	15 48	7.07	F2	F4	−37.6	1.6	4	10–16	4.2	Hd		

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
213126	22 24.2	+87 34	7.37	A2	A2	Var.		6	4–7	6.3	H		IV
215242	38.7	46 38	6.42	B9	A0s	Var.		6	4–10	4.4	M		IV
215566	41.0	44 14	7.04	B9	B8	Var.?		6	3–5	6.7	M		IV
215664	41.7	44 01	5.84	F0	A9n	−12.8	1.8	4	5–8	4.4	Y		
216511	48.4	46 01	6.70	B9	B9nk	−16.2	1.8	9	3–5	4.0	H		
216608	22 49.2	+44 13	5.62	A0	A4	Var.		4	19–26	2.6	Y		IV
217477	55.9	30 33	6.52	A0	B9	−01.3	2.1	6	4–8	2.9	M		
217491	56.0	44 50	6.44	A2	A3	Var.?		7	11–19	3.4	H		IV
217587	56.7	43 39	7.25	A3	A7n	+01.7	0.5	4	3–9	4.4	M		
217731	57.6	44 02	6.51	K0	G7	−08.0	0.8	4	13–26	1.8	Y		
217754	22 57.8	+31 14	6.46	F0	F2	−16.1	1.0	6	21–34	2.1	H		
217906	58.9	27 32	2.61	Ma	M2	+12.4	0.2	4	31–49	1.8	H	+08.6±0.2 M	
218043	59.8	30 45	6.78	F2	F2	−05.5	1.5	4	13–20	2.5	Y	−08.9±1.9 W	
218097	23 00.2	32 50	7.28	A0	A0n	+04.3	3.4	5	3–4	7.2	M		R
218235	01.3	17 59	6.14	F2	F1	−10.4	1.1	5	8–21	2.3	H	−15.6±0.7 V	
218395	23 02.6	+32 18	5.97	A2	A3	−04.8	2.6	6	4–6	5.3	Y		R
218428	02.9	29 31	7.25	B9	A0	+00.1	1.6	6	3–5	4.8	M		R
218472	03.2	30 55	7.28	A2	A4	−03.2	1.6	6	9–21	3.9	M		
218538	03.7	28 39	7.50	A2	A5n	−08.8	1.8	6	4–6	6.2	Y		
218767	05.5	31 57	6.89	B9	B9n	−05.2	5.3	6	3–7	6.7	M		*47

TABLE III—*Continued*

Star H.D.	α (1900)	δ (1900)	Vis. Mag.	Type H.D.	Type D.D.O.	Velocity Km.	P.E.	Plates	Lines	$\bar{e}$	Obs.	Pub. Velocity	Ref.
	h m	° ′											
218792	23 05.7	+17 03	5.94	K5	K5	+03.2	1.1	6	18–31	1.4	H	+00.7±0.9 W	
219110	08.3	28 54	6.34	K0	G7	+04.8	1.4	5	17–23	1.7	Hd		
219291	09.6	29 13	6.42	F5	F2	+08.0	2.0	5	6–12	5.7	Y		
219634	12.2	61 25	6.49	B8	B4nk	Var.		21	3–8	6.1	Hd		IV
219675	12.6	17 45	6.71	F0	A8	Var.?		5	12–22	2.3	Hd		IV
220091	23 15.9	+16 43	6.55	F0	A9	−19.6	2.2	5	7–18	3.5	Hd		
220102	16.0	59 44	6.66	F2	F2	−27.2	2.1	4	12–22	2.4	H	−21.9±1.0 W	*16
221114	24.1	15 28	6.98	A2	A2	Var.?		4	4–12	3.5	Y		IV
221115	24.1	12 13	4.67	K0	G6	−13.1	1.0	5	11–32	1.0	Hd	−15.1±0.3 M	
221237	25.2	58 01	7.06	A0	B9n	−05.0	3.6	6	3–8	7.8	H		
221671	23 29.0	+59 29	7.41	A0	A0s	−13.5	1.6	5	5–13	2.6	H		
222275	34.1	61 35	6.72	A2	A2	−34.5	3.0	5	5–13	3.6	H		*42
222386	35.0	74 43	6.04	A2	A2n	−04.0	1.6	5	3–5	4.0	H		
222387	35.0	73 25	6.08	G5	G5	+14.6	1.4	5	16–32	1.9	H		
222900	39.6	45 49	7.48	A0	B8	−09.4	2.4	5	3–7	3.5	Hd		
222922	23 39.8	+43 11	6.82	A0	A1n	+03.3	2.2	5	4–9	5.4	M		
224098	50.0	73 51	6.57	B9	B9	−14.1	3.5	6	2–5	8.1	H		
224166	50.6	45 48	6.84	B9	B9	−20.8	1.8	4	3–6	4.8	M		R
224720	55.1	46 23	7.25	A2	A2	−24.8	3.0	6	3–5	7.0	Y		
224801	55.7	44 42	6.25	A0p	A0p	Var.?		6	5–11	3.0	M		IV

Notes to Table III

H.D.

886 - 3933 is weak and diffuse, though all other lines are sharp; it is considered to be of stellar origin.

3291 - 3933 very sharp, other lines fair only, Si II present.

4335 - 3933 very narrow as if interstellar.

5394 - γ Cassiopeiae; the spectrum is peculiar, emission lines being the prominent feature; the measures are from the absorption lines; the velocity is variable; numerous other plates have been studied.

7157 - All lines sharp save H.

11336 - Si II present.

15992 - Si II visible on most plates.

16245 - Si II very faint; suspect He on some plates.

16545 - 3933 very faint; Si II very strong; Mg II present; other faint lines variable in appearance.

16580 - Suspect double lines in some cases; 4077 strong on last plate.

17007 - Double star, mag. 7.9−8.1, sep. 3″.2; attempts made to guide on the brighter star but only satisfactory when the seeing was good.

21242 - H and K strongly reversed; velocity of H and K apparently variable; a number of stellar lines are double on three plates; none of the 12-inch camera plates show doubling; maximum separation of the double lines, 120 km.

22136 - Si II unusually strong; 3933, 4481 particularly sharp.

23477 - Presence of He doubtful; 3933 very sharp.

26398 - Hβ shows emission core; strong emission at Hα; agreement of plates poor but measures probably unreliable because of the emission.

35035 - Many metallic lines visible; Cr, Ti II, Fe strong; relative intensity of metallic lines seems somewhat variable.

35533 - Si II particularly strong.

43496 - Spectrum may be composite; Fe II appears on some plates, also other faint metallic lines.

43583 - 3933 sharp.

44738 - Si II strong; Mg II weak; many diffuse metallic lines.

46016 - Si II present.

57728 - The velocity may be variable but one plate only gives discordant velocity.

63312 - Ionized lines prominent.

91181 - Fe and Fe II prominent.

112501 - Si II present.

114723 - Double star, mag. 6.9−7.1, sep. 1″.8, observed as one.

119213 - Ionized Sr unusually strong.

126269-70 Composite spectrum; K line = Hδ; 4227 = 0.5 Hγ.

131764 - Numerous fuzzy lines, a range of 26 km. is indicated but variation is doubtful.

132445 - Eight plates give fairly accordant results with a range of 20 km; one weak plate increases the range to 60 km.; variation is suspected.

133330 - Fe and Fe II show faintly; Si II on one plate; Hδ looks double in one case.

134305 - Sr II, Fe II strong.
152107 - 52 Herculis; ionized Sr very strong; metallic lines abundant and sharp; B has measured about 200 lines on one plate in a study of Ap stars.
161695 - 3933 exceedingly sharp, Si II present.
162936 - Poor lines; ionized strontium variable?
163219 - Lines fuzzy; Fe II strong.
163966 - Si II present.
164429 - Ionized strontium and silicon strong; He absent.
168431 - Good lines; neutral helium spectrum very completely represented.
168481 - Sr II, Ti II, Fe II and Cr strong; lines around 4634, 40, 48, 73, strong on some plates.
169820 - Suspect double lines on two plates.
176003 - Double star, mag. 6.9−8.5, sep. 0″.5.
179218 - Hβ probably emission.
179280 - Fuzzy line star; velocity may be variable.
181099 - Fe and Ti II strong.
188170 - Si II appears on some plates.
189689 - Hβ and Hγ show central emission; the velocities from hydrogen lines are often not in accord with those from weaker lines, possibly due to emission.
190603 - Listed as an emission line star in Ap. J., v. 78, p. 87; the early B-type lines are sharp; Hβ is weak—probably filled in by emission. The velocities from hydrogen lines are markedly different from other lines and have not been included. The mean hydrogen velocity is −09.1 ± 3.3. Calcium H and K are interstellar with a mean velocity −08.4 ± 1.5.
191671 - 3933 sharp, possibly interstellar; all other lines diffuse; Si III present.
198820 - He spectrum very sharp and strong.
198915 - Si II present; 3933 practically invisible.
201194 - 3933 seen on two plates only; from its appearance it may be interstellar.
201912 - 3933 sharp, but probably stellar; two measures give its velocity −08.9 km.
202109 - Very sharp lines; the velocity is known to vary over a small range.
202644 - Si II present on some plates.
206280 - Ionized silicon and calcium strong.
210405 - Star has a faint companion, 8.7 mag. 27″ dist.
210646 - Many faint sharp lines; Fe strong.
218097 - North and brighter component of close double; practically nothing but Ca II and H measurable. One plate of south component indicates it as an early A-type spectrum with many diffuse metallic lines.
218395 - Double star, mag. 6.8−8.0, sep. 8″.4.
218428 - No Ca II in this spectrum; faint metallic lines, Fe II and Sr II
224166 - Si II strong; He very faint and diffuse.

TABLE IV

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 1826							
8036.806	+22.8	20	2.5	1	12	N	A5. Mean velocity −1.1
	+27.4	19	3.3			MR	km/sec.; range 100 km;
8379.865	−07.4	15	3.0	1	"	P	a preliminary orbit gives
8412.768	−32.0	19	2.4	1	"	P	P=3.2832 days, velocity
	−25.9	20	2.2		"	MR	of system +2 km/sec.
8776.806	+32.5	15	3.9	1	"	P	Many fine lines. Y.
9188.654	−26.6	29	1.9	1	"	T	
H.D. 2019							
8039.817	+11.5	3	2.9	1	12	P	B9. Mean velocity −16.6
8455.686	−52.2	4	9.3	1	"	P	±7.1 km/sec.; range 68
	−52.5	4	6.8			P	km. Si II visible; some
8770.805	−18.5	2	10.8	1	"	P	faint unidentified lines
8811.662	+04.4	6	6.1	1	"	MR	suspected on some
8881.538	+05.6	7	3.7	1	"	M	plates; lines possibly
9133.860	−10.1	5	2.6	1	"	P	double on one plate.
9168.761	−57.0	3	10.0	1	"	T	M.
H.D. 2453							
8029.850	−28.8	13	2.3	2	25	N	A0 sp. Velocity probably
	−24.3	13	3.1		"	MR	variable; mean velocity
8382.851	−09.7	14	2.4	1	12	P	−19.2 km/sec. The
	−13.4	17	2.8		"	MR	hydrogen lines have nar-
8449.681	−05.7	20	2.6	1	"	P	row cores; many sharp
	−07.8	20	2.7		"	MR	metallic lines; 4128,
8799.747	−21.7	13	4.0	1	"	P	4130 strong. Hd.
8820.649	−20.8	21	1.5	2	25	P	
H.D. 2767							
8034.868	+07.9	15	1.1	1	25	N	K0. Velocity probably
	+01.1	15	1.8		"	MR	variable; mean velocity
8416.791	+11.8	22	2.5	1	12	N	+11.6±1.3 km/sec.;
	+11.1	23	1.7		"	MR	range 16 km. H.
8526.543	+21.4	26	1.4	1	"	N	
	+20.3	25	1.9		"	MR	
8741.872	+09.4	17	2.6	1	"	N	
8751.849	+09.5	18	1.2	1	"	N	
8761.846	+09.1	19	1.5	1	"	N	
9255.459	+18.2	5	8.2	0	"	N	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 3369							
8029.884	+32.2	9	1.1	2	25	N	B4. π Andromedae. These
	+27.6	11	1.6		"	Hd	observations are in sat-
8799.760	−08.6	4	6.9	1	12	Hd	isfactory agreement with
8821.712	−11.2	7	7.5	1	"	Hd	Pearce's orbit (P.A.S.P.
	−12.8	5	5.7		"	Hd	*48*, 215, 1936). Hd.
8835.667	−26.7	6	3.4	1	"	Hd	
H.D. 6475							
8389.878	−01.0	2	7.2	1	12	P	A0n. Mean velocity
	+05.0	3	3.8		"	MR	−00.5±4.8 km/sec.;
8425.838	−26.3	4	4.6	1	"	P	range 53 km. Poor
	−33.8	5	2.9		"	MR	lines; only hydrogen and
8503.617	−05.7	3	9.8	1	"	P	3933 measurable. H.
	+00.3	4	6.7		"	P	
8751.878	+05.4	4	3.8	1	"	P	
8926.506	+21.9	3	9.8	1	"	P	
	+23.7	3	12.0		"	P	
H.D. 9312							
8063.788	+08.1	21	1.2	1	12	N	G5. From 19 plates, mean
	+10.3	22	1.5		"	Hd	velocity +00.9 km/sec.;
8771.828	+18.4	18	2.2	1	"	Hd	range 62 km. An orbit
	+19.4	23	2.1		"	MR	will be determined.
8786.804	−28.2	19	1.8	1	"	Hd	Hd.
	−29.0	30	1.8		"	MR	
8806.782	+23.4	22	1.5	1	"	Hd	
	+21.0	24	1.7		"	MR	
H.D. 9709							
8102.642	−23.2	3	4.2	½	12	Hd	B8 n e. Velocity probably
8131.629	−06.6	3	1.4	1	25	Hd	variable; mean velocity
8164.522	−05.8	3	3.9	1	"	Hd	−10.8 km/sec. Hβ
8370.862	−35.8	3	4.0	½	12	Hd	shows double emission
8430.801	−23.4	3	3.4	1	25	Hd	superposed on very
8437.712	+17.3	3	4.1	½	12	Hd	broad absorption; the
8479.632	−16.5	2	3.0	½	"	Hd	other hydrogen lines
8491.620	+07.1	4	3.7	1	25	Hd	show evidence of similar
9184.689	−25.0	4	6.5	½	12	Hd	structure; 4481 and heli-
							um lines too weak and
							diffuse for measurement;
							3933 barely visible. Hd.

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 10588							
8412.820	−21.9	27	2.5	1	12	P	G5. Mean velocity −5.6
8763.842	+16.7	27	2.4	1	"	P	km/sec.; range 41 km.
8794.788	−15.6	26	1.8	1	"	P	Y.
8838.674	+19.1	23	1.8	1	"	P	
8894.490	−11.9	22	1.8	1	"	P	
9188.716	−19.8	25	1.3	1	"	B	
H.D. 11188							
8455.745	−33.8	8	6.9	1	12	P	B8. Mean velocity −10.1
	−21.1	6	4.0		"	MR	±6.6 km/sec.; range 53
8518.550	+01.4	5	1.9	1	"	P	km. Poor lines.
8804.776	+09.7	5	3.8	½	"	P	M.
8881.582	−43.6	8	5.1	½	"	M	
9144.903	+29.4	5	8.6	0	"	T	
9182.761	+02.5	4	5.6	1	"	T	
H.D. 14688							
8045.871	+69.4	11	1.6	1	12	N	A1s. Mean velocity
	+71.5	10	1.6		"	MR	+18.1±15.1 km/sec.;
8417.862	+42.8	23	2.2	1	"	N	range 95 km. Many
	+35.0	8	2.6		"	MR	strong metallic lines,
8479.675	−12.0	20	1.9	1	"	N	particularly Fe I, Sr II,
	−12.3	10	2.2		"	MR	Mg II; 4226 seems vari-
8934.496	−24.9	20	2.1	1	"	MR	able in intensity. M.
H.D.18473N							
8441.783	+17.9	7	7.1	1	12	MR	A0. Mean velocity −1.6
8801.777	−25.8	4	7.5	1	"	M	±7.0 km/sec.; range
8815.750	+03.7	5	5.3	1	"	MR	63 km. Si II very strong;
8909.533	−39.1	8	7.5	1	"	MR	4077 and 4233 strong on
	−27.0	6	9.1		"	P	some plates. M.
9168.800	+29.7	3	5.1	½	"	T	
9200.736	+13.1	6	3.0	1	"	T	
H.D. 19536							
8114.769	+11.9	15	1.5	2	25	P	A1s. Velocity probably
8425.902	+01.7	5	5.7	1	12	P	variable, mean velocity
	−11.9	5	4.9		"	MR	+12.8 ± 3.0 km/sec.;
8457.768	+33.1	8	4.8	1	"	P	range 40 km. All lines,
	+36.6	7	5.0		"	MR	especially 3933, 4481
8503.659	+15.0	5	5.7	1	"	P	and 4549 sharp. H.
8531.599	+04.5	5	3.4	1	"	P	
8879.660	+16.3	5	3.4	1	"	P	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 22124							
8082.822	+51.1	17	1.2	1	25	N	F2. Mean velocity +31.6
	+52.8	27	1.2		"	MR	km/sec.; a preliminary
8432.830	+21.1	25	3.0	1	12	N	orbit gives P=1.32638
8784.879	−00.7	11	3.0	1	"	N	days, range 120 km.,
	+07.7	19	2.2		"	MR	velocity of system 0.0
8838.765	+15.2	10	1.3	1	"	N	km/sec. Y.
9116.892	+38.5	22	2.4	1	"	T	
9167.863	+59.3	12	3.6	1	"	N	
H.D. 23838							
8160.614	+13.3	29	0.7	1	25	N	G0. From 12 plates, mean
	+12.5	17	1.1		"	MR	velocity +11.7± 2.2
8562.535	+27.2	22	2.2	1	12	N	km/sec.; range 41 km.
	+31.4	14	1.6		"	MR	H.
8778.899	+35.9	20	1.9	½	12	N	
8847.764	−02.5	12	1.7	1	"	N	
8906.605	+04.9	15	2.1	1	"	N	
8926.612	−00.1	14	1.5	1	"	N	
9151.924	+04.9	16	2.5	½	"	N	
H.D. 26015							
8404.905	+39.3	21	2.0	1	12	P	F2. ; Velocity probably
8510.673	+42.9	27	1.6	1	"	P	variable; mean velocity
8816.764	+32.7	18	2.0	1	"	P	+37.8 ± 1.7 km/sec.;
8847.782	+40.8	24	2.1	1	"	P	range 14 km. Companion
9143.913	+24.6	19	1.9	½	"	T	mag 8, sep. 4″. H.
	+32.6	17	2.6		"	N	
H.D. 27483							
8082.876	−16.8	10		1	25	P	F4. Double line binary;
	+80.6	9					approximate velocity of
8412.904	−42.6	12		1	12	P	thesystem, +33km/sec.;
	+122.5	6					it is not certain that the
8430.878	−25.5	21		1	25	P	first recorded velocities
	+97.9	19					refer always to the same
8484.700	−37.6	14		1	"	P	component. Y.
	+106.7	15					

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 28271							
8083.847	−35.6	20	0.9	2	25	P	F5. Velocity probably
8184.622	−26.6	16	2.1	1	"	P	variable; mean velocity
8510.700	−33.3	18	2.0	1	12	P	−35.4 ± 1.6 km/sec.;
8587.503	−24.9	15	2.6	1	"	P	range 18 km. H.
	−30.4	12	2.8		"	N	
8789.901	−42.8	13	2.6	1	"	P	
8966.572	−45.5	14	2.9	1	"	P	
	−44.9	9	2.6		"	MR	
8973.517	−36.6	10	3.4	1	"	P	
H.D. 35076							
8083.926	−09.1	9	3.9	1	25	P	B9k. Velocity probably
	−07.3	9	4.0			MR	variable; mean velocity
8510.729	+14.1	4	4.2	1	12	P	+07.7±4.3 km/sec.
	+18.1	3	2.4			MR	H.
8515.743	+17.7	7	4.5	½	"	P	
	+36.9	3	6.2			MR	
8864.808	+21.0	5	4.5	1	"	P	
8868.762	−10.3	5	7.2	1	"	P	
8879.762	+10.1	5	2.6	1	"	P	
H.D. 35189							
8064.910	+29.9	6	6.9	½	12	P	A1s. Mean velocity +19.9
8161.670	−35.1	15	2.8	1	25	P	±1.7 km/sec.; range of
	+70.6	9	1.7				single-line plates 18 km.
8484.819	+17.1	29	1.1	1	"	P	Many metallic lines vis-
8570.547	+25.2	13	3.1	1	12	M	ible; close double lines
9189.870	+11.6	10	3.2	1	"	T	show clearly on one
9325.502	+22.7	5	2.9	1	"	T	plate. M.
H.D. 35238							
8108.819	+52.6	18	2.2	1	12	N	K0. Velocity probably
	+56.1	27	1.7		"	MR	variable; mean velocity
8127.743	+40.3	26	1.7	2	25	N	+41.5 km/sec.
8563.585	+45.7	33	1.6	1	12	N	Hd.
8835.840	+34.7	16	2.2	1	"	N	
8967.606	+36.4	20	2.1	1	"	N	
9172.922	+37.4	12	2.3	1	"	N	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 35522							
8450.842	+22.4	5	4.2	1	12	P	B8. Velocity probably
8909.688	+00.9	4	5.4	1	"	MR	variable; mean velocity
	+02.5	5	9.4			P	+17.1 ± 4.9 km/sec.;
9178.935	+35.1	5	2.0	1	"	T	range 35 km. Presence
9263.694	+26.0	8	4.4	1	"	T	of Si II suspected.
9317.508	+00.5	8	6.1	1	"	T	M.
H.D. 43044p							
8849.792	+27.1	4	5.9	1	12	P	B9. Velocity probably
8858.796	+10.9	2	3.2	½	"	M	variable; mean velocity
	+27.0	4	4.1		"	T	+10.8 ± 6.0 km/sec.;
8955.608	+27.0	5	9.1	1	"	P	range 63 km.
	+48.2	5	2.6		"	T	Suspect double lines on
9200.850	+01.1	3	4.4	1	"	T	one plate. M.
	+27.5	7	7.1		"	B	
9339.549	−00.1	4	10.8	1	"	T	
	−08.8	5	4.1		"	M	
9347.549	−25.2	2	6.0	½	"	T	
9357.540	−24.3	3	10.7	½	"	M	
H.D. 44250							
8101.872	+29.6	5	3.2	1	12	P	A0. Velocity probably
	+06.1	6	4.5		"	T	variable; mean velocity
8823.901	−06.9	5	4.5	1	"	P	+ 7.0 ± 4.7 km/sec.;
	−05.8	5	5.5		"	N	range 32 km.
8860.901	−11.9	5	8.2	1	"	M	Suspect Si II present; a
8996.582	+24.5	3	6.5	½	"	P	few faint metallic lines
9263.769	+15.2	6	2.5	1	"	T	on some plates. M.
H.D. 44867							
8108.859	+80.6	17	2.2	1	12	N	G7. Velocity probably
8449.914	+84.1	27	1.6	1	"	N	variable; mean velocity
8491.792	+72.5	39	0.8	2	25	N	+74.2 km/sec.
8919.677	+69.1	18	2.2	1	12	N	Hd.
9272.684	+66.2	16	2.5	1	"	B	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 45194							
8472.904	+71.7	10	2.4	1	12	P	FS. Mean velocity −06.0
9208.890	−29.8	14	2.2	1	"	P	km/sec.
9209.867	−22.6	3	6.0	0	"	B	Hd.
9212.788	−23.5	10	1.9	1	"	B	
9272.726	−17.7	11	1.4	1	"	B	
9278.597	+08.8	13	2.4	1	"	T	
9283.664	+03.6	15	1.5	1	"	T	
9289.661	−54.5	8	4.0	1	"	T	
H.D. 45412							
8082.913	+03.0	25	1.1	1	25	P	FS. RT Aurigae. The
8544.681	+04.3	23	1.4	1	12	P	observations fit the curve of Kukarkin, Welno Bull. *13*, 1930, and are close to the curve of Duncan, L.O.B. They do not fit the curve of Kiess, Mich. *3*, 131, so well. Y.
H.D. 47270							
8128.831	−31.4	26	0.8	1	25	P	K0. Mean velocity −28.9
8167.728	−36.0	32	0.8	1	"	P	±1.6 km/sec.; range 17
8510.785	−17.2	22	2.7	½	12	P	km.
	−20.2	12	2.5		"	N	H.
8587.593	−21.4	25	1.7	1	"	P	
8837.904	−32.6	22	2.2	1	"	P	
8847.868	−28.3	25	1.5	1	"	P	
8966.657	−25.7	24	2.1	1	"	P	
H.D. 47395							
8091.938	+39.3	5	6.4	1	12	P	B7. Mean velocity +19.3
8815.941	+31.0	6	4.1	1	"	P	±1.2 km/sec.; range 36
8867.847	+10.4	5	5.9	1	"	M	km. Strength of helium
8907.724	+24.5	6	5.0	1	"	M	somewhat variable.
9290.687	+03.1	7	2.8	1	"	T	M.
9351.524	+07.4	7	3.4	1	"	M	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D.55283N							
8870.877	+06.2	5	8.6	1	12	M	A0. Mean velocity −16.5
	+04.7	7	4.0		"	T	±5.6 km/sec.; range 40
8937.704	−31.3	6	7.3	1	"	MR	km. Poor lines.
8951.655	−01.4	4	2.4	1	"	N	M.
	−00.2	5	6.4		"	P	
8972.638	−33.7	4	4.1	1	"	MR	
9336.636	−34.9	4	7.4	½	"	T	
9341.632	−08.9	5	1.1	½	"	T	
H.D. 63630							
8160.793	+51.7	22	2.2	1	25	N	A5. From 17 plates, mean
	+51.4	14	3.2		"	MR	velocity +22.5 km/sec.;
8219.670	+35.0	22	2.8	1	"	N	range 96 km/sec.
	+43.6	14	4.3		"	MR	Definition of lines varies
8491.931	+24.9	16	2.5	1	"	N	from plate to plate.
	+38.8	14	4.1		"	MR	H.
8515.855	+29.0	9	3.0	1	12	N	
8590.640	−19.4	6	3.1	1	"	N	
	−18.1	7	6.5		"	P	
H.D. 68461							
8124.958	−26.2	50	0.7	2	25	P	G6. Mean velocity −19.0
8229.639	−26.5	51	0.8	2	"	P	km/sec.; range 36 km.
8544.751	−12.1	28	1.4	1	12	P	Y.
8593.578	+02.8	29	1.6	1	"	P	
	+05.6	28	2.8		"	MR	
8635.562	−14.5	34	2.0	1	"	P	
8880.888	−22.3	27	2.4	1	"	P	
8985.612	−30.5	25	1.8	1	"	MR	
9279.747	−09.7	22	1.2	1	"	T	
H.D. 68776							
8568.728	+28.9	25	1.5	1	12	P	K0. Mean velocity +26.1
8575.650	+24.0	26	2.2	1	"	P	km/sec.; range 29 km.
8925.742	+33.5	15	3.5	1	"	P	Hd.
8940.686	+11.2	17	4.3	½	25	MR	
	+02.1	14	2.3		"	P	
9023.532	+17.9	20	3.0	1	"	P	
	+14.9	18	3.3		"	T	
9278.780	+27.7	16	1.3	1	"	T	
9289.783	+35.9	23	1.6	1	"	T	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 76216							
8128.946	−29.7	19	1.8	2	25	P	A2s. Velocity probably
8557.772	−17.7	16	3.0	1	12	P	variable; mean velocity
8657.562	−37.2	8	3.9	1	"	P	−27.6 ± 2.1 km/sec.;
	−32.7	13	2.8		"	MR	range 18 km.
8966.724	−17.5	14	2.7	1	"	P	H.
8973.682	−30.9	10	2.6	1	"	MR	
8984.638	−33.0	11	3.5	1	"	MR	
H.D. 93075							
9032.579	−55.1	19	3.2	1	12	P	A9. Mean velocity −29.8
9035.576	−18.7	16	1.7	1	"	P	km/sec.; range 52 km.
9306.819	−58.4	16	2.6	1	"	T	H.
9358.653	−06.6	16	1.8	1	"	T	
9369.658	−20.0	19	1.1	1	"	T	
9379.604	−10.1	9	3.9	½	"	T	
H.D. 94118							
8165.875	−22.7	20	1.9	½	25	P	A1. Mean velocity +5.4
8255.754	−04.7	7	1.9	½	"	P	±3.4 km/sec.; range 14
8280.635	+14.7	11	2.8	1	"	P	km. Most plates of this
8539.925	+21.8	13	4.2	1	12	P	star poor.
	+20.9	13	5.0		"	MR	M.
8999.627	−06.3	5	2.3	½	"	P	
9337.645	+04.2	14	3.2	1	"	T	
9340.685	+07.5	6	6.7	½	"	T	
H.D. 99267							
8950.799	+12.7	10	4.8	1	12	P	A8. Velocity probably
8964.753	+07.5	19	5.4	1	"	P	variable; mean velocity
9027.570	−10.8	10	3.0	1	"	P	−4.8±4.2 km/sec.
9041.587	−16.3	10	4.1	1	"	P	Many lines which are
9048.588	−17.0	17	7.7	1	"	P	rather difficult on 12-inch camera plates. Y.
H.D. 106677							
8622.734	−35.0	27	2.3	1	12	P	K0. Mean velocity −47.1
	−37.1	29	1.7		"	MR	±2.6 km/sec.; range 30
8636.641	−51.1	14	2.3	1	"	P	km. Fairly strong
8643.648	−50.1	24	1.9	1	"	P	emission cores in 3933
8655.673	−51.8	27	1.8	1	"	P	and 3968.
8984.701	−25.8	18	3.0	1	"	MR	H.
	−32.4	17	2.9		"	T	
9021.636	−58.8	21	3.2	1	"	P	
9026.647	−49.5	20	2.5	1	"	P	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 106926							
8575.841	−31.5	26	1.8	1	12	P	K0. Mean velocity −40.9
8653.624	−43.0	23	2.1	1	"	P	km/sec.; range 23 km.
8876.953	−29.2	19	3.9	1	"	P	Hd.
	−32.8	19	1.8		"	T	
8968.753	−52.0	17	3.8	1	"	P	
	−54.8	15	2.1		"	T	
8987.708	−42.9	10	2.4	1	"	P	
9009.710	−34.1	8	6.0	½	"	P	
9023.643	−42.3	17	1.9	1	"	P	
H.D. 112570							
8272.749	+04.9	45	0.7	2	25	P	G8. Velocity probably
8282.698	+01.5	44	0.7	2	"	P	variable; mean velocity
8314.747	+17.7	31	1.7	1	12	P	+08.5 ± 1.8; km/sec.;
	+20.1	28	2.0		"	MR	range 17 km.
8599.838	+15.2	32	2.1	1	"	P	H.
8685.603	+11.6	24	1.6	1	"	P	
8984.800	+09.2	24	2.0	1	"	MR	
H.D. 112734							
8626.776	+13.5	4	10.0	½	12	P	A5. Mean velocity −6.1
8657.639	+06.7	12	2.9	1	"	P	±3.4 km/sec.; range 34
9059.590	−07.1	12	4.1	1	"	P	km. H.
9064.625	−13.6	6	6.0	1	"	P	
9337.706	−05.3	15	3.8	1	"	T	
9358.785	−21.0	13	4.1	1	"	T	
H.D. 116594							
8262.749	−02.3	43	0.7	2	25	N	G7. Mean velocity −04.9
8624.756	+05.4	24	1.2	1	12	N	km/sec., range 33 km.
8653.668	−02.3	12	3.4	1	"	N	Hd.
8682.611	+04.0	18	1.4	2	25	N	
8995.752	−20.0	14	3.8	1	12	N	
	−16.8	22	3.0		"	MR	
9016.686	−25.8	13	2.4	1	"	N	
	−29.3	27	2.0		"	MR	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 141930							
8324.632	−12.1	8	3.3	1	12	N	A1. Velocity probably
	−10.6	9	5.0		"	P	variable; mean velocity
8610.908	−33.4	12	6.3	1	"	N	−20.2 km sec. The
8624.865	−27.8	11	5.5	1	"	N	hydrogen lines and 3933
8683.668	+20.9	8	5.4	1	"	N	and 4481 are broad; all
	−00.9	6	6.2		"	P	other lines very poor.
9023.718	−37.2	7	8.4	1	"	N	This star is double;
	−15.2	7	5.4		"	P	magnitudes 8.1, 9.3; sep-
9094.655	−50.8	4	13.0	½	"	P	aration 0".57; the com-
	−37.5	5	7.3		"	P	ponents were not re-
							solved on the slit. Hd.
H.D. 142926							
8206.977	−20.8	3	1.4	1	25	Hd	B9e. Announced as a
8220.952	−15.4	3	1.4	1	"	Hd	spectroscopic binary by
8221.940	−09.3	3	1.1	1	"	Hd	Plaskett (Pub. D.A.O.,
8228.949	−21.9	3	2.3	1	"	Hd	*1*, 287, 1921). From 26
8262.854	+05.7	3	2.0	1	"	Hd	D.D.O. plates, a prelim-
							inary orbit gives P =
							0.9763 days; range 25
							km/sec.; velocity of sys-
							tem −16 km/sec. Hy-
							drogen lines have sharp
							cores with broad wings,
							suggesting the existence
							of indistinct double emis-
							sion. Several panchro-
							matic plates show strong
							Hα, confirming this view.
							3933 is the only other
							line satisfactorily mea-
							surable. Hd.
H.D. 150203							
8657.807	−25.0	5	5.7	1	12	P	A2n. Velocity probably
8685.642	−38.5	4	4.6	1	"	P	variable; mean velocity
	−20.2	4	4.4		"	P	−17.2 ± 4.2 km/sec.;
8720.594	−23.4	3	10.7	1	"	P	range 61 km.
8727.594	+05.0	2	13.0	½	"	P	Only hydrogen and 3933
	+09.4	3	5.0		"	MR	measurable.
8735.594	−36.8	4	7.6	1	"	P	H.
8954.939	+30.1	3	10.8	½	"	P	
	+25.0	3	10.5		"	N	
9015.802	−10.3	5	7.1	1	"	P	
9143.563	−12.6	3	9.0	1	"	T	

TABLE IV—*Continued*

Star J.D.	Vel. Km. sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 151746							
8643.872	−17.5	21	1.8	1	12	P	A2. Mean velocity −10.8
	−14.5	16	1.5		"	MR	±2.6 km sec.; range 30
8664.821	−03.2	18	3.4	1	"	P	km.
8678.792	−03.2	15	3.9	1	"	P	H.
8709.633	−35.9	13	3.3	1	"	P	
	−27 8	14	2.8		"	N	
8728.636	−11.0	11	4.6	½	"	P	
9045.760	−06 0	23	2.7	½	"	MR	
9050.745	−02.1	26	3.1	1	"	MR	
H.D. 152951							
8265 894	+13.7	4	5.1	1	25	P	A2. Velocity probably
	+01.7	4	9.3		"	MR	variable; mean velocity
8371.617	+20.6	6	1.0	1	12	P	−02.5 ± 2.7 km/sec.;
	+19.5	4	1.9		"	MR	range 41 km.
8685 756	−08.1	7	3.4	1	"	P	Lines poor on most
	+00.5	7	5.1		"	MR	plates.
8707.695	−05.0	7	2.9	1	"	P	H.
8720.625	−14.0	8	4.5	1	"	P	
8727.630	−14.3	4	12.3	½	"	P	
	−01.5	6	9.1		"	N	
8735.636	+08.6	5	7.2	½	"	P	
	+30.6	5	9.5		"	MR	
8979 962	−01.3	5	10.0	1	25	MR	
9045.725	−21.0	6	4.3	1	12	MR	
9050.693	−11.3	5	11.3	1	"	MR	
H.D. 156653							
8019 562	+20.0	16	3.8	1	25	N	A2. Velocity probably
8656.814	+20.1	4	4.2	1	12	N	variable; mean velocity
	+18.9	6	1.7		"	T	−7.3 km/sec.; range 24
8719.635	+00.4	6	3.0	1	"	N	km.
8719.657	−06.9	4	7.2	1	"	N	Hydrogen and 3933
	−01.7	6	5.1		"	MR	strong and well defined;
8722.582	+11.0	4	4.1	1	"	N	25-inch camera plate
8999.785	−02.6	7	1.6	1	"	N	shows many well defined
							metallic lines. Y.
H.D. 158251							
8718.685	−04.6	18	2.4	1	12	N	F0s. Velocity probably
9009.862	−04.1	8	2.0	1	"	N	variable; mean velocity
9019.853	−13.5	16	2.9	1	"	N	−11.5 km/sec.
9112.574	−22.7	20	2.6	1	"	P	Hd.
9114.579	−12.5	26	2.5	1	"	N	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 159330							
8709.709	−09.4	15	2.8	1	12	N	K2. Velocity probably
8734.611	−18.2	15	1.9	1	"	N	variable; mean velocity
	−06.4	16	2.5		"	P	−12.7 ± 1.8 km/sec.;
8768.588	−15.1	16	1.1	1	"	N	range 23 km.
8984.912	−03.6	28	1.5	1	"	MR	H.
	−00.8	21	1.9		"	P	
9064.729	−25.7	22	1.7	1	"	P	
9141.542	−11.7	21	1.8	1	"	T	
H.D. 162880							
8379.614	+14.9	16	3.6	1	12	P	A6. Velocity probably
	+20.6	22	2.4		"	MR	variable; mean velocity
8684.740	−08.5	19	2.1	1	"	P	−00.1 km/sec. This
9093.612	−06.3	10	5.1	1	"	P	star is a double; magni-
9104.597	−01.8	13	4.5	1	"	P	tudes 7.8−7.8; separa-
9139.582	−01.9	21	2.6	1	"	P	tion 3".4; guided on
							south star. Y
H.D. 164078							
8017.595	−07.9	4	5.0	1	25	N	F5n. Mean velocity +03.1
8378.647	−09.1	7	2.2	1	12	N	km/sec.; range 45 km.
8773.554	+11.1	5	1.3	1	"	N	Hd.
8782.550	+29.9	4	3.0	1	"	N	
	+29.6	8	4.3	1	"	MR	
9112.649	−15.5	9	3.7	1	"	P	
9114.657	−03.3	11	5.8	1	"	N	
9116.589	+16.4	5	5.2	1	"	N	
H.D. 164898							
8362.694	+21.9	18	3.4	1	12	N	A0. Mean velocity −13.8
8380.690	−37.0	7	5.6	1	"	N	±11.5 km/sec.; range
8685.805	+31.6	7	1.9	1	"	N	93 km. H.
	+27.3	6	3.3		"	B	
8707.742	−66.0	6	2.8	1	"	N	
	−61.9	4	3.5		"	B	
8720.662	+24.6	4	7.2	1	"	N	
8727.672	−11.8	5	5.9	½	"	N	
8731.653	−61.5	8	5.0	1	"	N	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 165170							
8683.760	−20.0	10	2.7	1	12	N	F4. Velocity probably
9047.822	−09.2	11	3.1	1	"	MR	variable; mean velocity
9109.697	−28.4	15	2.0	1	"	P	−19.4 km/sec. This
9110.716	−14.9	15	2.5	1	"	P	star is double; magni-
9123.675	−24.7	14	2.3	1	"	T	tudes 7.8, 9.0; separa-
							tion 0″.53; the compon-
							ents were not resolved
							on the slit. Hd.
H.D. 166014							
7989.710	−40.9	4	9.2	1	12	M	B9. Helium weak, lines
	−25.4	3	2.5	1	"	S	poor but suspected
8221.965	−20.6	7	6.0	1	"	M	double in a few cases.
8298.881	−21.3	3	4.4	1	"	M	Velocities given here
8304.858	−42 3	4	4.2	1	"	M	show no evidence of the
8310.873	−27.5	7	8.3	1	"	M	21.90 day period listed
8316.767	−27.7	3	4.5	1	"	M	by Schnellar. This con-
8350.636	−34.1	4	2.3	1	"	M	firms the constant lum-
8350.640	−29.0	6	5.2	1	"	M	inosity found by Zverev
8350.646	−27.9	4	7.2	1	"	M	in Sternberg Pub., v. 8,
8356.649	−35.5	4	8.9	1	"	M	p. 99. There is the possi-
8356.658	−33.0	4	4.0	1	"	M	bility that diffuse double
							lines are present but not
							separated enough for in-
							dividual measurement.
							M.
H.D. 169223							
8720.744	+24.5	19	2.9	1	12	P	K0. Velocity probably
8758.617	+16.6	20	3.2	1	"	P	variable; mean velocity
8762.615	+10.8	19	2.9	1	"	P	+15.7 ± 1.9 km/sec.;
9058.849	+22.8	15	4.0	1	"	P	range 15 km.
9063.747	+09.6	22	1.7	1	"	P	H.
9156.567	+09.8	23	2.1	1	"	T	
H.D. 172187							
8003.729	−56.6	7	9.3	1	25	S	A5. Velocity variable;
8678.862	+22.0	9	5.9	1	12	P	mean velocity from 13
	+29.1	12	5.2		"	MR	plates; +06.9 ± 6.4
8735.711	+44.7	11	3.8	1	"	P	km/sec.; range 111 km.
	+47.8	10	4.7		"	N	Lines somewhat diffuse
8800.584	−53.1	8	8.1	1	"	P	and variable in defini-
8837.465	−26.7	5	7.6	1	"	P	tion.
	−09.3	4	6.0		"	MR	H.
9141.592	−01.7	7	6.3	1	"	T	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 175865							
8014.632	−29.0	39	1.5	2	25	P	M5. R Lyrae. The
	−25.1	32	1.6		"	P	velocity is known to be
8799.522	−32.3	18	2.8	1	12	P	variable.
8806.526	−26.5	21	2.1	1	"	P	Hd.
H.D. 176053							
8055.551	−14.1	5	4.9	1	12	P	A3. Mean velocity −37.0
8363.708	−22.0	11	4.8	1	"	P	km/sec. Lines rather
8412.585	−17.1	6	5.3	1	"	P	wide for measurement.
8432.536	−70.1	9	2.8	1	"	P	This star is a visual
	−71.8	7	4.9		"	MR	double, magnitudes 6.2,
9069.832	−56.1	6	5.3	1	"	P	8.0; separation 1".0
9083.681	−52.4	3	2.1	1	"	P	Y.
9188.483	−26.3	9	1.9	1	"	T	
H.D. 181144							
9082.758	+25.0	14	3.3	1	12	P	F7. Mean velocity −04.5
9170.583	−15.2	18	3.0	1	"	T	km/sec.
9172.540	−33.8	16	2.2	1	"	T	Hd.
9184.543	+18.0	16	3.4	1	"	B	
	+18.3	22	2.2		"	T	
9205.503	−28.2	6	3.8	½	"	T	
H.D. 182381							
8801.589	−19.4	3	2.6	1	12	MR	A0n. Velocity probably
9065.739	+31.6	4	9.0	1	"	P	variable; mean velocity
	+16.0	6	5.0			B	−11.1 ± 8.4 km/sec.;
9103.676	−39.8	4	8.7	1	"	T	range 64 km.
9131.660	−29.6	4	11.4	1	"	P	Very little but hydrogen
9133.626	+09.3	4	7.4	1	"	T	visible; presence of heli-
							um suspected. M.
H.D. 189013							
8377.717	+22.4	4	2.1	1	12	P	A1. Velocity probably
	+14.2	8	3.3		"	MR	variable; mean velocity
8736.717	+12.5	10	5.1	1	"	P	+7.5 km/sec.
8783.592	+06.5	8	3.3	1	"	P	Hydrogen, 3933 and
9104.724	+02.1	4	2.9	1	"	P	4481, and several metal-
9139.646	+12.0	6	3.9	1	"	T	lic lines well defined.
9157.624	−14.7	5	4.1	1	"	T	Y.
	+02.0	10	5.6		"	N	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 193349							
8077.553	−09.9	10	8.3	1	12	M	A0sp. Velocity probably
8823.499	−29.0	7	7.1	1	"	P	variable; mean velocity
9052.849	+00.9	12	6.7	1	"	P	−17.8 ± 4.7 km/sec.;
9120.681	−23.2	10	3.4	1	"	P	range 43 km. Spectrum
9182.502	−42.3	11	5.7	1	"	M	appears peculiar, pos-
9194.547	−03.1	14	3.1	1	"	T	sibly due to blending with another star; Fe and Ca I unusually strong; suspect He on some plates; Ca II weak. M.
H.D. 198726							
7994.751	−08.2	18	2.0	2	25	Hd	T Vulpeculae. Cepheid
8723.765	−11.3	16	2.0	2	"	Hd	variable. Spectral types
8773.687	+13.4	7	1.1	1	12	Hd	of these four plates are
8782.622	−01.2	14	4.9	1	"	Hd	F4, F8, (F8), F9. Velocities fit Beal's orbit (P.A.O. 3, 23) satisfactorily if the period be changed from 4.43578 to 4.43572 days. Hd.
H.D. 199140							
8000.780	−47.2	21	2.8	2	25	S	B2sk. Known binary;
	−59.9	23	1.9		"	N	Victoria mean velocity
8758.708	−51.0	8	6.6	1	12	P	−07±5 km/sec. Mean
8778.606	−04.6	10	5.9	1	"	P	velocity from D.D.O.
	−11.1	14	4.1		"	MR	plates −25.4 ± 8.5
9054.856	−33.7	9	3.7	1	"	P	km/sec.; range 124 km.
9064.851	−66.8	7	2.2	1	"	P	H.
	−70.8	9	4.0		"	B	
9169.565	−43.1	8	2.8	1	"	T	
9183.551	+18.2	12	1.7	1	"	T	
9206.501	+51.5	10	5.0	1	"	T	
	+60.4	10	4.4			B	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 199479							
8737.743	−16.4	3	8.6	1	12	Hd	BS. Velocity probably
	−18.2	7	5.2		"	T	variable; mean velocity
8771.660	−58.2	5	3.6	1	"	Hd	−07 1 km sec. Hydro-
	−18.0	3	6.4		"	MR	gen lines fair; helium
	−28.3	4	3.4		"	T	and 3933 and 4481 are
8777.628	−41.0	4	4.7	1	"	Hd	very weak.
	−03.8	5	10 8		"	T	Hd.
9110.808	+16.0	6	6.8	1	"	Hd	
	+03.6	8	6.1		"	T	
9114.769	+27.9	4	7.3	1	"	Hd	
	+10.7	7	4.6		"	T	
H.D. 201078							
8003.789	+16.3	21	1.3	1	25	N	F5. Cepheid variable;
8762.749	−05.4	16	3.2	1	12	N	orbit by Sanford.
8789.630	−14.5	15	2.1	1	"	N	H.
H.D. 201433							
8002.804	−08.2	8	2.6	1	25	N	A0. Known binary. Orbit
8803.599	−04.3	3	4.4	1	12	N	Pub. D.A.O. 1, p. 303.
8803.621	−16.2	3	5.7	1	"	N	These observations fit
8838.512	−40.4	6	1 7	1	"	N	orbit very well if period
8838.531	−41 2	4	8.0	1	"	N	be altered from 3.3137 to 3.3133 days. Previous orbit gives velocity of system = −25.8 km sec. Hydrogen, calcium, and rather poor 4481. Y.
H.D. 208174							
8073.628	+00.9	11	1.4	1	12	M	A5v. Mean velocity −8.4
8417.685	−03.4	16	3.8	1	"	M	±2.8 km sec.; range 28
9125.801	−24.0	16	6.6	1	"	P	km. Probably variable
	−28 0	29	2 9			T	velocity. Lines of Ca, Ca
9131 778	−13.3	13	3.1	1	"	T	II, Sr II and others
9147.656	−10.0	17	2 3	1	"	T	seem to vary in relative
9182.638	+01.7	17	2.2	1	"	B	intensity. M.

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 208835							
8042.657	+23.2	3	10.2	½	12	M	B8. Mean velocity +0.8
8403.717	+30.8	7	7.1	1	"	M	±10.2 km/sec.; range 81
8844.551	+34.7	3	1.1	1	"	N	km. Si II lines visible.
9119.758	−37.2	5	10.	1	"	T	M.
	−55.0	5	5.5			P	
9144.692	+07.0	6	3.7	½	"	T	
9175.617	−30.3	7	2.9	1	"	T	
H.D. 209205							
8047.710	+33.1	3	7.3	1	12	M	B9n. Mean velocity +4.8
9103.790	+21.3	3	4.9	1	"	P	±6.4 km/sec; range 63
9105.778	+09.2	5	14.	½	"	P	km. Probably variable
9117.802	−00.7	4	3.4	1	"	T	velocity.
9144 754	−12.2	2	12.5	1	"	T	M.
	−25.7	2	9.6			B	
9168.656	−10.9	2	2.4	½	"	T	
	−49.6	5	13.1			B	
H.D. 209469							
8036.687	−17.3	4	3.1	1	12	N	B9. Mean velocity −12.7
8763.728	−13.2	3	1.6	1	"	N	±5.0 km/sec.; range 67
8817.562	−44.5	4	8.1	1	"	N	km. Probably variable.
	−36.8	3	8.9			P	Y.
9104.818	−09.8	2	1.6	1	"	P	
9139.689	−22 0	3	3.1	1	"	T	
9188.564	+26.5	3	5.5	1	"	N	
H.D. 209484							
8070.606	−17.9	11	3.5	1	12	M	B9. Mean velocity −7.0
8350.836	−32.1	4	4.8	1	"	M	±3.4 km/sec.; range 34
	−20.1	6	4.1			T	km. Probably variable.
9115.790	+08.2	5	2.2	1	"	P	3933 and 4481 quite
9119 790	−03.6	5	4.2	1	"	T	sharp on most plates,
9147.693	+03.2	5	1.9	1	"	T	other lines poor.
9182.611	−06.1	4	1.0	1	"	T	M.
H.D. 209813							
8131.491	−34.2	26	1.6	1	25	P	K0. Mean velocity −5.1
	−31.1	27	1.0			MR	±6.5 km/sec.; range 50
8432.731	+20.5	28	2.1	1	12	P	km. Y.
	+11.5	18	1.7			MR	
8769.750	−08 0	23	1.4	1	"	P	
8798.644	+04.2	20	2.1	1	"	P	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 209833							
8039.694	−66.9	6	12.8	1	12	N	B9n. Mean velocity
	−31.2	7	7.1			B	−15.4±6.9 km/sec.;
8483.478	−02.1	6	12.0	1	"	N	range 63 km. Only H
	+15.0	6	9.1			T	lines clearly visible.
9095.810	+13.7	3	5.4	1	"	P	Suspect He and Ca II
	+15.2	3	3.1			T	but neither identified
9120.805	−30.9	3	8.6	1	"	T	with certainty. M.
9133 742	−26.0	3	3.7	1	"	T	
9168.692	−07.3	3	2.3	1	"	T	
H.D. 210334							
8068.645	−154.	12		1	12	P	G0. Velocity of system
	+ 70.	9				P	from 12 plates −32 km.
8375.828	−114.	19		1	"	P	Double line Binary.
	+ 78.	15				P	Y.
8380.780	−109.	11		1	"	P	
	+ 65.	15				P	
8381.799	−103.	11		1	"	P	
	+ 62.	12					
H.D. 212442							
8052.686	+13.3	4	9.1	1	12	Hd	B8. Mean velocity from
8449.588	−33.2	5	6.5	1	"	Hd	10 plates +04.0 km/sec.;
	−30.8	7	2.5			T	range 73 km. H lines
8479.519	−26.8	5	9.8	1	"	Hd	are good, the other lines
8718.854	+09.3	4	3.0	1	"	Hd	4026, 4471, 4481 faint.
8737.808	+38.0	5	10.6	1	"	Hd	Hd.
	+46.2	3	4.7				
H.D. 213126							
8433.682	+10.2	7	4.9	1	12	MR	A2. Mean velocity −05.7
8664.576	−07.1	4	8.9	1	"	MR	±5.2 km/sec.; range 43
	+01.3	4	7.9			P	km. Few poor lines.
8882.467	−27.1	3	1.5	1	"	MR	H.
	−20.6	5	7.5			P	
8896.965	+13.7	4	10.0	1	"	MR	
	+05.1	5	9.5			P	
8926.814	+06.0	5	4.6	1	"	MR	
9141.725	−29.1	5	3.8	1	"	T	
	−36.8	7	7.1			B	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 215242							
8429.685	+03.3	5	5.4	1	12	MR	A0s. Mean velocity −18.2
8760.726	−27.4	4	4.2	1	"	MR	±5.1 km/sec.; range 45
8858.499	−25.8	4	2.5	1	"	M	km. Many faint metallic
9125.839	−06.9	5	4.5	1	"	P	lines seen; 4025, 4046
9144.782	−02.9	4	7.0	½	"	T	and some others seem
9178.672	−41.9	10	2.9	1	"	M	anomalously strong.
							M.
H.D. 215566							
8417.731	−39.5	3	9.6	1	12	MR	B8. Mean velocity −23.1
	−38.4	5	12.			P	±5.0 km/sec.; range 41
8420.671	−12.2	3	7.5	1	"	MR	km. Probably variable.
8811.613	−11.6	4	5.2	1	"	MR	3933 very faint.
9117.846	−59.0	3	5.8	1	"	T	M.
	−42.7	3	7.7			N	
9137.809	−15.6	3	6.0	1	"	T	
9161.674	−09.5	3	3.9	1	"	T	
H.D. 216608							
8089.652	+05.4	26	1.8	1	25	P	A4. Mean velocity +16.2
8845.551	+35.4	15	4.2	1	12	P	±4.2 km/sec.; range 29
	+33.6	23	2.2			MR	km. Many fine lines.
8776.744	+17.3	19	3.0	1	"	P	Star is double magnitude
9188.585	+07.6	25	1.7	1	"	T	6.0, 8.0; sep. 0″.2 Y.
H.D. 217491							
8090.669	−07.1	16	2.3	1	25	MR	A3. Mean velocity −05.0
8380.812	+05.1	16	3.8	1	12	MR	±3.5 km/sec.; range 26
8440.692	−16.1	11	5.0	½	"	MR	km. Probably variable.
	−19.1	14	3.6			N	H.
8750.791	+08.7	11	5.6	1	"	MR	
8789.742	+06.6	13	3.9	1	"	MR	
9171.728	−18.4	13	2.4	1	"	T	
9183.685	−18.3	19	1.8	1	"	T	

TABLE IV—*Continued*

Star J.D.	Vel. Km./sec.	Lines	P.E.	Wt.	Cam.	M.	Remarks
H.D. 219634							
8368.863	−31.5	6	4.5	1	12	Hd	B4nk. Mean velocity
	−25.2	4	2.8			MR	−08.9 from 21 plates;
8370.824	−01.1	4	4.2	1	"	Hd	range 176 km. 3933 is
	+12.9	3	1.8			MR	interstellar and gives a
8374.868	+14.5	8	5.4	1	"	Hd	mean velocity of −06.3
	+40.1	6	9.7			MR	from 15 plates.
	+40.1	6	9.7			MR	Hd.
8378.879	−89.4	6	9.1	1	"	Hd	
	−106.0	5	8.8			MR	
H.D. 219675							
8029.789	+21.4	14	3.0	1	25	T	A8. Mean velocity +12.0;
8113.554	+02.3	19	2.0	1	12	N	velocity is probably var-
	−05.6	17	2.4			MR	iable; range 23 km. The
8521.458	+09.2	21	3.1	1	"	N	star is double 7.4 and
8742.864	+19.2	17	1.6	1	"	N	8.8, sep. 0″.41.
8771.736	+14.3	12	1.9	1	"	N	Hd.
H.D. 221114							
8019.849	+24.9	3	8.8	0	25	P	A2. Mean velocity +02.2
	+24.9	2	1.3			MR	±3.7 km/sec; Probably
8082.656	−21.2	8	1.8	1	12	P	variable. First plate
	−05.9	4	1.8			MR	very weak.
8784.762	+00.5	12	3.4	1	"	P	Y.
9146.755	+06.9	5	5.2	1	"	T	
9223.549	+14.9	6	3.6	1	"	N	
H.D. 224801							
8084.717	−14.3	5	0.9	1	25	N	A0p. Mean velocity −2.0
	−15.4	11	1.1			P	±2.8 km sec.; range 27
8511.483	+05.3	5	2.0	1	12	N	km. Probably variable.
	+11.9	7	3.8			P	Many ionized lines—
8804.704	+14.6	5	1.8	1	"	N	Si II, Mg. II, Sr. II.
	+09.0	6	4.3			P	
9105.856	−18.5	2	6	0	"	T	M.
9119.869	−01.6	5	2.9	1	"	T	
9144.799	−12.1	6	5.0	1	"	N	
9182.691	−03.9	5	1.5	1	"	T	