POLARIZATION OF STELLAR RADIATION. III. THE POLARIZATION OF 841 STARS*

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ABSTRACT

The polarization of 841 stars is given in Table 2. The probable error of a single observation is 0.0022 mag.

During the last one and one-half years a large number of stars have been observed for interstellar polarization. In general, only stars of high luminosity were included in the observing program. Many of the stars in the finding list of O and B stars of high luminosity published by Nassau and Morgan,[1] cepheids, long-period variables, Wolf-Rayet stars, eclipsing variables, and one planetary nebula were in the program. Since the list includes over 600 stars not previously observed and since a new technique has been developed that promises even higher accuracy than that obtained with the present equipment,[2] it seems appropriate to publish the available observations at this time.

The photometric equipment employed in the present investigation consisted of the regular photoelectric photometer attached to the Cassegrain focus of the 82-inch reflector of the McDonald Observatory. For an analyzer, a piece of high-quality Polaroid, cemented between two glass plates, was placed in the $f/14$ convergent bundle, 8 inches in front of the focus of the telescope. This Polaroid occupied either of two angular positions 90° apart with respect to the photometer. The apparatus as a whole (Polaroid and photometer) could be rotated on the optical axis of the telescope to any desired position angle. In order to determine the polarization of a star, the following observing procedure was adopted. The photometer and Polaroid were set at some selected position angle. Three deflections were then made, the first and third at the same position of the Polaroid and the second with the Polaroid rotated by 90° from the other position. The photometer and Polaroid were then set at another position angle, 30° from the first. The three deflections were again repeated. If the star was polarized by 0.02 mag. or more, an estimate was made as to the position angle of the plane of vibration. Three observations were then made. One observation (with a total of five instead of three deflections) was made with the Polaroid approximately in the plane of vibration at one of its two positions. This observation determined the amount of polarization. The other two sets of observations were made in order to determine the position angle of the plane of vibration with maximum accuracy. This was done by setting the photometer at a position angle of 45° on either side of the estimated plane of vibration and obtaining three deflections at either position. When regions were observed in which the plane of vibration is relatively con-

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[1] *Ap. J.*, **113**, 141, 1951. I am grateful to Drs. Nassau and Morgan for permission to use this list in advance of publication.

[2] It is well known that seeing noise limits the accuracy of photoelectric photometry. In some types of observations where the star is compared with itself, there is an opportunity to eliminate the seeing fluctuations. One example is in spectrophotometry, when a narrow spectral region is compared with a broader one (W. A. Hiltner and A. D. Code, *J. Opt. Soc. America*, **40**, 149, 1950). A second opportunity is in polarization observations, when one plane of vibration is compared to the perpendicular plane. The seeing fluctuations can be eliminated if the seeing for all perpendicular planes of vibration is coherent. From tests at the 12-inch telescope at Yerkes Observatory and the 82-inch reflector at McDonald, it appears that the seeing is coherent and that a factor of approximately 10 in accuracy can be realized.

stant, such as in Perseus, the two preliminary observations were deleted. When the st... showed only slight polarization, a series of observations was made with the photome... and Polaroid set at intervals of 15°–30° in position angle. A complete set of observati... of one star required from 12 to 20 minutes. Frequently, from 40 to 55 stars were obser... in one night. The spectral region was limited by a Corning No. 3385 filter. The effect... wave length is near λ 5400.

The resulting observations were plotted (after any necessary systematic correctio... to be discussed shortly, had been made) with the difference in magnitude of the defle... tions when the Polaroid was rotated 90° against position angle. The plotted observations were then compared with a series of master sine-curves. The amount of polarization and the position angle were determined by the master-curve that best fitted the observations. Master-curves were available in steps of 0.005 mag.

The internal agreement of photoelectric observations of polarization of stars should be similar to that normally found in stellar photoelectric photometry. Under average conditions the probable error of a single observation is near ±0.003 mag. However, since differential extinction is of no consequence in the observations under consideration, a slight improvement would not be unexpected. The internal agreement was investigated from duplicate observations of 36 stars, with the observed amount of polarization varying from 0.008 to 0.154 mag. The duplicate observations are listed in Table 1 and are plotted in Figure 1. The observations were plotted in the following manner. For alternate stars the first observation was plotted as abscissa and the second as ordinate. The remaining stars were plotted with the first observation as ordinate and the second as abscissa. This procedure removed any possible systematic effects with time, with a resulting false impression of the true accuracy. One characteristic of the present observations is immediately apparent. The probable error of a single observation remains sensibly constant for all values of the observed polarization. This, of course, is expected but is in contrast to the observations made at the U.S. Naval Observatory by the "flicker method," where the probable error of a single observation increases with the measured value of the polarization.[3] The probable error of a single observation of Table 1 and Figure 1 is 0.0022 mag.

Since the error of the position angle of the plane of vibration obviously depends upon the amount of polarization of the star, no value for the probable error can be strictly given without reservation. In order to give a graphic representation of the internal accuracy of a position angle, duplicate observations of Table 1 are plotted in Figure 2. The amount of polarization is plotted along the abscissa and half the difference of the two measures of position angle is plotted as ordinate. With few exceptions, the two measured position angles do not differ from the mean by more than 1°. If we treat all the measures of position angle homogeneously, regardless of the amount of polarization, we have a probable error of 0°.86.

Systematic errors in the observed amount of polarization were investigated by observing near-by stars of no assumed polarization. Normally, HD 166620 ($\pi = 0''.097$), HD 13403 ($\pi = 0''.135$), and, to a much lesser extent, HD 13137 ($\pi = 0''.006$) were observed for these purposes. The largest systematic error observed at any position angle was 0.005 mag. except for a few observations made in October, 1949, where the systematic error was as great as 0.012 mag. These systematic errors, which were usually less than 0.002 mag., were constant for each observing period with the telescope. However, one or more of the above stars were observed on each night, usually near the beginning and end of the night. Consequently, the systematic errors were known with high precision and were applied. Hence no systematic error greater than 0.001 mag. should be present in the final value f... the polarization. The scale of polarization was obtained from the linearity of the amplifier.

[3] J. S. Hall and A. H. Mikesell, *Pub. U.S. Naval Obs.*, **17**, 16, 1950.

TABLE 1

Duplicate Polarization Observations of 36 Stars

Star	Date	δ (Mag.)	θ	Star	Date	δ (Mag.)	θ
30°2668.....	1950 Sept. 30	0.054	84	169034.....	1950 June 29	0.045	63
	1950 Oct. 7	0.062	82		1950 Sept. 2	0.040	66
108.....	1949 Oct. 12	0.031	80	183143.....	1950 June 15	0.136	180
	1950 Oct. 19	0.039	82		1950 Sept. 9	0.135	178
+62°79.....	1950 Oct. 9	0.064	73	187459.....	1950 June 29	0.056	33
	1950 Oct. 10	0.061	74		1950 Sept. 2	0.067	32
4841.....	1949 Oct 13	0.091	99	193237.....	1950 Sept. 12	0.024	35
	1949 Oct. 19	0.099	98		1950 Oct. 19	0.024	41
+63°102.....	1950 Oct. 9	0.157	102	E228841.....	1950 Sept. 12	0.030	174
	1950 Oct. 10	0.150	102		1950 Oct. 14	0.025	173
6675.....	1950 Sept. 29	0.034	124	E229221.....	1950 June 25	0.033	65
	1950 Oct. 13	0.038	122		1950 Oct. 14	0.034	67
9105.....	1950 Sept. 2	0.070	104	198478.....	1950 Sept. 11	0.062	5
	1950 Oct. 19	0.074	103		1950 Oct. 19	0.061	4
12301.....	1949 Oct. 13	0.055	112	198479.....	1950 Sept. 10	0.056	16
	1950 Oct. 12	0.047	107		1950 Oct. 19	0.057	15
14010.....	1949 Oct. 12	0.090	113	203938.....	1950 June 28	0.030	158
	1950 Oct. 19	0.095	112		1950 Sept. 2	0.030	161
14143.....	1950 Oct. 6	0.085	117	210221.....	1950 Sept. 3	0.041	44
	1950 Oct. 7	0.088	117		1950 Oct. 19	0.039	45
14322.....	1949 Oct. 11	0.065	113	211853.....	1950 June 15	0.086	45
	1950 Oct. 11	0.067	113		1950 Oct. 9	0.090	45
					1950 Oct. 10	0.086	43
14489.....	1949 Oct. 11	0.045	115				
	1950 Oct. 11	0.049	114	212466.....	1950 Sept. 2	0.055	48
					1950 Sept. 3	0.058	49
+56°595.....	1950 Sept. 30	0.076	111				
	1950 Oct. 6	0.080	114	E239994.....	1950 Sept. 3	0.054	53
					1950 Oct. 9	0.052	59
14818.....	1950 Sept. 29	0.080	114				
	1950 Oct. 11	0.084	114	223385.....	1950 June 29	0.031	55
	1950 Oct. 14	0.080	113		1950 Sept. 2	0.022	58
16779.....	1950 Oct. 6	0.105	114	223960.....	1950 June 28	0.066	79
	1950 Oct. 11	0.103	116		1950 Sept. 2	0.068	80
E237056.....	1950 Oct. 9	0.130	124	224055.....	1950 June 28	0.089	67
	1950 Oct. 10	0.126	125		1950 Sept. 2	0.086	67
20756.....	1950 Oct. 13	0.007	175	225094.....	1950 June 29	0.046	76
	1950 Oct. 14	0.008	167		1950 Sept. 2	0.054	75
21291.....	1950 Sept. 15	0.076	118	225146.....	1950 June 16	0.067	71
	1950 Sept. 29	0.074	117		1950 Oct. 19	0.068	73

All the measures of polarization made in October, 1949, and June, September, and October, 1950, are collected in Table 2.

The first, second, and third columns give the *Henry Draper Catalogue* number, the *Bonner Durchmusterung* number, and "Other Designation," respectively.

The fourth and fifth columns give the 1900 position, taken from the *Henry Draper Catalogue* where possible. Otherwise the positions were computed from the *Bonner Durchmusterung* 1855 position.

The magnitude in the sixth column was also taken from the *Henry Draper Catalogue* for all stars in this catalogue. For those stars in the *Bonner Durchmusterung* only, the magnitudes recorded in this catalogue are given in the column.

The spectral types in the seventh column were, in general, obtained from the *Henry*

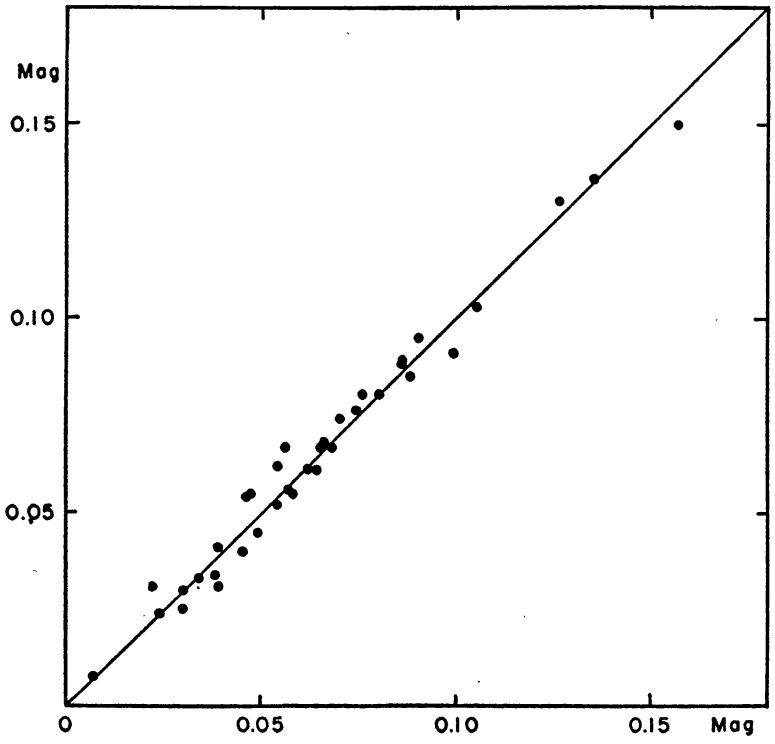

FIG. 1.—Duplicate observations of polarization

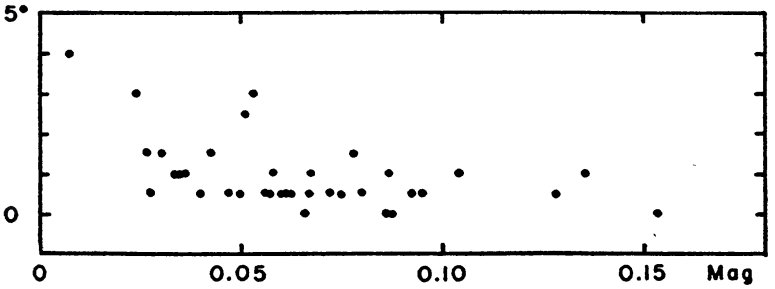

FIG. 2.—Duplicate observations of the plane of vibration. The amount of polarization is plotted along the abscissa, and half the difference of the two measures of position angle is plotted as ordinate.

TABLE 2

Polarization Observations of 841 Stars

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ′	E_1
	+60° 2668		0h 0m8	+60°19′	8.8		85.2	- 1.3	8.6	0.060	2.8	83°	92°	
108	+62 2363	MWC 1	0 0.9	+63 7	7.36	08fp	85.6	+ 1.4	8.6	0.035	1.6	81	90	+0.23
	+59 2829		0 1.5	+60 4	9.5		85.2	- 1.6	8.5	0.031	1.4	75	83	
593	+58 11		0 5.3	+59 6	6.70	B3	85.6	- 2.6	7.7	0.023	1.1	60	68	+0.06
E232121	+54 7	SX Cas	0 5.4	+54 20	var..	A7	84.9	- 7.3	7.7	0.010	0.5	39	47	
698	+57 28	MWC 4	0 6.3	+57 39	7.08	B5	85.5	- 4.1	7.4	0.030	1.4	63	70	+0.13
		SY Cas	0 9.8	+57 52	var.		86.0	- 3.9	6.7	0.010	0.5	36	43	
1070	+58 18		0 9.9	+59 15	8.2	A2	86.2	- 2.5	6.6	0.026	1.2	71	78	
1383	+60 25		0 12.9	+61 10	7.9	B1	86.7	- 0.7	6.0	0.029	1.3	81	87	+0.20
	+62 49		0 13.4	+63 1	8.7		87.0	+ 1.2	5.9	0.067	3.1	81	87	
1544	+61 38		0 14.6	+61 31	8.0	B0	87.0	- 0.3	5.6	0.040	1.8	89	95	+0.14
	+61 39	MWC 5	0 14.8	+61 54	8.9		87.0	0.0	5.6	0.059	2.7	91	97	
	+63 33		0 16.2	+64 3	9.1		87.4	+ 2.2	5.3	0.084	3.9	103	108	
	+60 39		0 16.2	+61 10	9.1		87.1	- 0.7	5.3	0.030	1.4	85	90	
1743	+61 48		0 16.6	+61 38	8.4	B0	87.2	- 0.2	5.2	0.040	1.8	83	88	+0.19
1810	+61 50		0 17.4	+61 41	8.2	B0.5	87.3	- 0.2	5.0	0.037	1.7	78	83	+0.14
1976	+51 62		0 18.9	+51 28	5.36	B3	86.6	-10.4	4.7	.....	...	....	....	+0.02
2083	+71 16		0 20.0	+71 15	6.94	B2	88.4	+ 9.3	4.5	0.035	1.6	95	99	+0.10
	+61 74		0 20.4	+62 0	9.3		87.7	+ 0.1	4.3	0.040	1.8	92	96	
	+62 79		0 20.9	+62 53	9.0		87.8	+ 1.0	4.2	0.062	2.8	73	77	
	+63 48	MWC 669	0 21.0	+63 52	9.0		87.9	+ 1.9	4.2	0.119	5.5	109	113	
	+60 51		0 21.0	+60 52	9.3		87.7	- 1.0	4.2	0.063	2.9	63	67	
2329	+57 85		0 22.1	+58 0	7.24	B3	87.6	- 3.9	4.0	0.025	1.2	65	69	+0.15
E236419	+59 61		0 22.3	+60 4	9.0	B2	87.8	- 1.8	3.9	0.047	2.2	81	85	
	+55 81		0 22.7	+55 51	9.5		87.6	- 6.1	3.8	0.037	1.7	68	72	
2451	+61 92		0 23.2	+61 57	8.6	B	88.0	0.0	3.7	0.041	1.9	84	88	+0.09
2619	+64 52		0 24.7	+64 43	8.2	B	88.4	+ 2.8	3.4	0.100	4.6	99	102	
2654	+61 101		0 25.1	+61 48	7.31	B3	88.2	- 0.2	3.3	0.018	0.8	69	72	+0.11
	+61 105		0 25.6	+61 53	8.8		88.3	- 0.1	3.2	0.074	3.4	81	84	
2789	+66 35	MWC 6	0 26.3	+66 36	8.2	B2e	88.6	+ 4.6	3.0	0.070	3.2	114	117	+0.25
2905	+62 102	K Cas	0 27.3	+62 28	4.24	B1 Ia	88.5	+ 0.4	2.8	0.032	1.5	85	86	+0.13
	+63 61		0 27.6	+63 27	9.3		88.6	+ 1.5	2.7	0.150	6.9	94	97	
2928	+61 113		0 27.5	+61 59	8.7	G	88.5	0.0	2.8	0.070	3.2	67	70	
3191	+60 71		0 30.1	+60 55	8.6	B1	88.8	- 1.1	2.2	0.055	2.5	53	55	+0.23
	+60 73		0 31.3	+60 49	9.4		88.9	- 1.3	1.9	0.086	4.0	60	62	
		No. 1	0 34.0	+60 25			89.3	- 1.6	1.3	0.054	2.5	72	73	
	+63 70		0 34.9	+63 22	9.0		89.4	+ 1.4	1.1	0.105	4.8	105	106	
3940	+63 81		0 36.9	+63 45	7.40	A1	89.7	+ 1.8	0.7	0.108	5.0	100	101	+0.40
3950	+51 133		0 37.0	+51 48	6.93	B3	89.4	-10.2	0.7	0.023	1.1	85	86	+0.14
	+61 153		0 37.1	+61 41	9.2		89.7	- 0.3	0.6	0.010	0.5	105	106	
	+64 76		0 38.9	+64 43	9.2		89.9	+ 2.7	0.2	0.148	6.8	94	94	
4362	+58 101	HR 207	0 40.9	+59 2	6.49	G0 Ib	90.1	- 3.0	359.8	0.024	1.1	67	67	
4613	+64 83		0 43.0	+65 2	8.9	F5	90.3	+ 3.0	359.3	0.110	5.1	96	95	
		No. 2	0 43.8	+60 27	9.0	B2	90.5	- 1.6	359.2	0.048	2.2	74	73	
4694	+63 97		0 43.9	+64 5	8.4		90.4	+ 2.1	359.1	0.148	6.8	98	97	
		XY Cas	0 44.1	+59 34	var.		90.5	- 2.4	359.1	0.041	1.9	82	81	
4717	+62 155		0 44.2	+62 37	8.8	A0	90.5	+ 0.6	359.1	0.100	4.6	103	102	+0.26
	+60 114	MWC 679	0 44.3	+60 22	9.5		90.5	- 1.6	359.0	0.035	1.6	78	77	
	+61 175		0 44.5	+61 50	9.1		90.5	- 0.2	359.0	0.063	2.9	76	75	
4768	+58 119		0 44.6	+59 7	8.0	B5	90.6	- 2.9	359.0	0.049	2.2	82	81	+0.25
4841	+62 160		0 45.4	+63 14	7.06	B5	90.6	+ 1.2	358.8	0.095	4.4	98	97	+0.31
4842	+62 161	VY Cas	0 45.4	+62 23	var.	Mb	90.6	+ 0.4	358.8	0.033	1.5	100	99	
	+63 102		0 46.1	+64 8	9.5		90.7	+ 2.1	358.6	0.155	7.1	102	101	
5005	+55 191		0 47.0	+56 5	7.7	B2	91.0	- 5.9	358.4	0.039	1.8	77	75	+0.11
5015	+60 124	HR 244	0 47.1	+60 34	4.93	F8	90.9	- 1.4	358.4	.....	...	....	....	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ′	E_1
		No. 3	0h 47m6	+60°16′			90.9	- 1.7	358.3	0.063	2.9	78°	76°	
	+63° 110	BM Cas	0 48.5	+63 32	var.		91.0	+ 1.6	358.1	0.123	5.7	97	95	
5235	+57 165	W Cas	0 49.0	+58 1	var.	Ce	91.2	- 4.0	358.0	0.050	2.3	96	94	
5458	+61 185		0 51.3	+62 1	8.6	B5p	91.8	0.0	357.5	0.051	2.4	101	99	+0.17
E236589	+55 215		0 52.1	+55 54	9.0	B0	91.7	- 6.1	357.3	0.033	1.5	82	79	
5551	+62 175		0 52.2	+63 11	7.7	B2	91.4	+ 1.2	357.3	0.085	3.9	93	90	+0.34
5552	+61 187		0 52.2	+61 24	9.0	B	91.5	- 0.6	357.3	0.068	3.1	101	98	
5689	+62 178		0 53.5	+63 5	9.2	B	91.5	+ 1.1	357.0	0.087	4.0	96	93	+0.18
5776	+62 181		0 54.3	+62 30	8.4	B8	91.6	+ 0.6	356.8	0.113	5.2	93	90	
	+62 183		0 54.9	+62.54	9.2		91.7	+ 1.0	356.7	0.119	5.5	92	89	
6048	+59 169		0 56.7	+59 36	9.2	B9	92.1	- 2.3	356.3	0.075	3.4	88	84	+0.09
6182	+61 200		0 57.8	+61 18	8.6	B0	92.1	- 0.6	356.1	0.084	3.9	100	96	+0.28
6327			0 59.2	+59 53		WR	92.4	- 2.0	355.8	0.067	3.1	91	87	
6343	+65 129	MWC 10	0 59.4	+65 26	7.10	B8	92.0	+ 3.5	355.7	0.038	1.8	98	94	+0.14
6675	+68 74		1 2.4	+69 10	7.1	B0.5 Ib	92.0	+ 7.3	355.0	0.036	1.7	123	118	+0.16
	+60 180	MWC 11	1 5.8	+60 47	9.4		93.2	- 1.1	354.3	0.092	4.2	89	83	
7103	+61 223		1 6.2	+61 21	8.6	B3	93.1	- 0.5	354.2	0.071	3.3	84	78	+0.34
E236664	+58 195		1 7.5	+58 33	9.4	B	93.5	- 3.3	353.9	0.053	2.4	98	92	
7252	+60 188		1 7.7	+60 21	7.26	B1	93.4	- 1.5	353.9	0.078	3.6	99	93	+0.10
E236689	+57 240		1 12.3	+57 51	9.0	B0	94.3	- 3.9	352.9	0.059	2.7	91	84	
	+57 243		1 12.5	+57 41	9.3		94.4	- 4.0	352.8	0.096	4.4	94	87	
	+61 242	AQ Cas	1 12.6	+61 51	var.		93.8	+ 0.1	352.8	0.107	4.9	110	103	
7861	+55 290	AA Cas	1 13.2	+55 48	var.	Mb	94.7	- 5.9	352.6	0.028	1.3	77	70	
	+57 252		1 13.2	+57 44	9.2		94.4	- 4.0	352.7	0.057	2.6	98	91	
7902	+57 257		1 13.6	+57 40	7.9	B6.5	94.5	- 4.0	352.6	0.065	3.0	95	88	+0.20
7927	+57 260	φ Cas	1 13.8	+57 42	5.25	F0 Ia	94.0	- 4.0	352.5	0.074	3.4	93	86	
	+60 219	XZ Cas	1 16.4	+60 39	var.		94.4	- 1.0	352.0	0.082	3.8	110	102	
	+64 156		1 16.9	+65 6	9.2		94.0	+ 3.3	351.8	0.116	5.3	103	95	
	+62 246		1 18.0	+62 16	8.8		94.4	+ 0.6	351.6	0.118	5.4	115	107	
E236740	+59 251		1 20.1	+59 46	8.3	B3	95.0	- 1.8	351.2	0.071	3.3	104	95	
8768	+62 254		1 21.4	+62 45	8.0	B	94.7	+ 1.1	350.9	0.085	3.9	100	91	+0.21
	+60 246	XX Cas	1 22.9	+60 27	var.		95.3	- 1.1	350.5	0.071	3.3	105	95	
8965	+59 290		1 23.3	+59 44	7.26	B5	95.4	- 1.8	350.4	0.062	2.8	103	93	+0.16
	+61 277		1 23.7	+62 13	9.3		95.1	+ 0.6	350.4	0.116	5.3	112	102	
E236762	+58 252		1 24.5	+59 13	9.3	B2	95.7	- 2.3	350.2	0.075	3.4	101	91	
9105	+62 259		1 24.6	+62 51	7.46	B5	95.1	+ 1.3	350.2	0.072	3.3	104	94	+0.33
E236768	+58 256		1 25.2	+58 52	9.0	B2	95.9	- 2.6	350.0	0.073	3.4	104	94	
	+60 261		1 25.9	+60 37	8.7		95.6	- 0.9	349.9	0.080	3.7	111	101	
9311	+59 271		1 26.6	+60 10	7.26	B5	95.8	- 1.3	349.7	0.072	3.3	100	90	+0.24
	+59 273		1 26.7	+60 7	8.5		95.8	- 1.4	349.7	0.080	3.7	105	95	
	+60 279		1 29.7	+60 28	8.5		96.1	- 1.0	349.0	0.070	3.2	104	93	
	+59 286		1 30.2	+59 26	9.0		96.4	- 2.0	348.9	0.083	3.8	102	91	
		RW Cas	1 30.7	+57 15	var.		96.8	- 4.1	348.8	0.062	2.8	89	78	
E236810	+59 296		1 31.8	+60 4	8.7	B3	96.4	- 1.3	348.6	0.081	3.7	97	86	
		No. 4	1 32.5	+57 39			97.0	- 3.6	348.4	0.059	2.7	95	83	
E236815	+59 297		1 32.8	+59 54	8.5	B3	96.6	- 1.4	348.4	0.062	2.8	98	86	
	+57 359		1 33.0	+57 20	9.4		97.1	- 3.9	348.3	0.067	3.1	92	80	
10063	+55 375		1 33.3	+55 17	7.61	B8	97.6	- 5.9	348.2	0.048	2.2	92	80	
10107	+58 273		1 33.8	+58 33	6.88	B9	97.0	- 2.7	348.1	0.015	0.7	99	87	
10125	+63 218		1 33.9	+63 40	8.0	B	95.9	+ 2.3	348.1	0.078	3.6	101	89	+0.16
10362	+60 312		1 36.1	+60 55	6.46	B8	96.8	- 0.4	347.6	0.028	1.3	91	79	
	+61 312		1 36.3	+61 57	8.9		96.6	+ 0.7	347.6	0.112	5.2	110	98	
	+62 297		1 36.4	+63 5	9.2		96.3	+ 1.8	347.6	0.103	4.7	100	88	
	+55 393		1 37.6	+55 40	9.5		98.1	- 5.4	347.3	0.050	2.3	106	93	
	+60 331		1 39.0	+60 44	9.0		97.2	- 0.4	347.0	0.115	5.3	98	85	
	+60 333		1 39.2	+60 44	9.0		97.2	- 0.4	347.0	0.110	5.1	100	87	
	+60 339		1 39.5	+60 45	8.8		97.2	- 0.4	346.9	0.105	4.8	99	86	
	+60 343		1 39.6	+60 45	9.1		97.2	- 0.4	346.9	0.130	6.0	103	90	
E232522	+54 372		1 39.6	+54 51	8.6	B0	98.6	- 6.2	346.8	0.035	1.6	103	90	
10756	+59 318		1 40.1	+60 10	7.71	B8	97.4	- 1.0	346.8	0.070	3.2	100	87	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ′	E_1
10898	+57° 399		1h 41m9	+57°58'	8.2	B2	98.2	- 3.1	346.4	0.085	3.9	95°	81°	+0.21
	+63 247		1 42.3	+63 50	9.5		96.8	+ 2.7	346.3	0.102	4.7	103	89	
	+59 335	VV Cas	1 44.2	+59 24	var.		98.1	- 1.6	345.9	0.090	4.1	94	80	
	+54 395		1 45.2	+54 58	9.5		99.3	- 5.8	345.6	0.045	2.1	102	88	
E236894	+57 409		1 45.4	+57 57	8.7	BO	98.6	- 3.0	345.6	0.085	3.9	96	82	
E232552	+54 398	MWC 19	1 45.8	+54 51	7.6	BO	99.4	- 6.0	345.4	0.047	2.2	115	100	
	+63 253		1 46.1	+63 42	9.1		97.2	+ 2.6	345.4	0.091	4.2	106	91	
	+54 404		1 46.5	+54 38	9.5		99.6	- 6.1	345.2	0.046	2.1	119	104	
11554	+57 425	MWC 20	1 48.4	+57 24	9.2	B	99.2	- 3.4	344.9	0.092	4.2	96	81	+0.19
11606	+58 331	MWC 21	1 48.8	+58 47	7.04	B3	98.8	- 2.0	344.9	0.063	2.9	96	81	+0.09
	+55 441	MWC 431	1 49.4	+56 4	9.4		99.6	- 4.6	344.7	0.060	2.8	100	85	
	+58 334	X Cas	1 49.6	+58 42	var.		98.9	- 2.0	344.7	0.085	3.9	105	90	
	+63 261	MWC 22	1 50.0	+63 33	9.1		97.7	+ 2.6	344.6	0.089	4.1	103	88	
		IC 1747	1 50.2	+62 23			98.1	+ 1.5	344.6	0.086	4.0	96	81	
	+58 343		1 52.1	+58 27	9.4		99.3	- 2.3	344.1	0.075	3.4	94	78	
11831	+59 364		1 51.1	+59 54	8.0	A3	98.8	- 0.9	344.4	0.113	5.2	97	81	
11857	+60 398	HR 561	1 51.4	+61 12	6.05	B8	98.5	+ 0.4	344.3	0.023	1.1	106	90	
	+58 351		1 53.7	+58 29	9.5		99.4	- 2.2	343.8	0.100	4.6	98	82	
12301	+63 274	53 Cas	1 55.6	+63 54	5.62	B8 Ib	98.2	+ 3.1	343.4	0.051	2.4	110	93	+0.18
12302	+58 356	MWC 23	1 55.6	+59 12	8.2	B3	99.6	- 1.4	343.4	0.044	2.0	88	71	+0.14
12323	+54 441		1 55.8	+55 8	8.96	B9	100.7	- 5.3	343.3	0.033	1.5	102	85	
12365	+60 423		1 56.1	+60 13	7.41	A0	99.3	- 0.4	343.3	0.025	1.2	103	86	
E232588	+54 448		1 57.1	+54 38	8.5	A7	101.1	- 5.7	343.0	0.058	2.7	109	92	
E236935	+57 469	MWC 24	1 57.2	+58 0	9.1	B2	100.1	- 2.5	343.0	0.093	4.3	91	74	
12509	+63 281		1 57.6	+63 54	8.0	B3	98.4	+ 3.2	342.9	0.074	3.4	113	96	
12567	+63 287		1 58.1	+63 49	8.8	B	98.5	+ 3.1	342.8	0.094	4.3	107	90	
12727	+56 425		1 59.6	+56 34	8.8	B8	100.8	- 3.8	342.5	0.075	3.4	105	87	
12740	+48 600		1 59.8	+48 41	8.0	B2	103.2	-11.3	342.1	0.032	1.5	107	89	+0.07
12856	+56 429	MWC 25	2 0.9	+56 38	8.4	B2	101.0	- 3.6	342.2	0.029	1.3	107	89	+0.14
12867	+57 492		2 1.0	+57 14	9.2	B3	100.8	- 3.1	342.2	0.076	3.5	101	83	
12882	+64 295	MWC 26	2 1.1	+64 33	7.54	B3	98.6	+ 3.9	342.1	0.064	2.9	109	91	+0.19
12953	+57 494	MWC 436	2 1.7	+57 57	5.90	A1 Ia	100.7	- 2.4	342.0	0.074	3.4	108	90	+0.11
12993	+57 498		2 2.1	+57 27	8.6	B3	100.9	- 2.8	341.9	0.089	4.1	109	91	
13051	+56 432	MWC 27	2 2.6	+56 31	8.0	BO	101.2	- 3.7	341.8	0.048	2.2	100	82	+0.15
	+63 300	MWC 703	2 2.9	+63 36	9.4		99.1	+ 3.1	341.8	0.106	4.9	108	90	
13136	+55 529		2 3.4	+56 5	7.7	K5	101.5	- 4.1	341.6	0.068	3.1	110	92	
13267	+56 438	5 Per	2 4.6	+57 11	6.36	B5 Ia	101.3	- 3.0	341.4	0.088	4.0	107	88	+0.12
13268	+55 534		2 4.6	+55 41	8.2	BO	101.8	- 4.4	341.4	0.060	2.8	110	91	+0.10
13338	+57 512		2 5.3	+57 28	9.2	B9	101.3	- 2.7	341.2	0.085	3.9	111	92	
	+57 513		2 5.5	+57 38	9.2		101.3	- 2.5	341.2	0.085	3.9	110	91	
	+57 515	MWC 28	2 5.7	+57 13	9.3		101.4	- 2.9	341.2	0.093	4.3	111	92	
13402	+58 396		2 5.9	+59 4	8.2	B0.5	100.8	- 1.1	341.1	0.116	5.3	104	85	
13476	+57 519	HR 641	2 6.6	+58 6	6.50	A3 Ib	101.2	- 2.0	341.0	0.090	4.1	109	90	+0.26
13494	+55 543		2 6.7	+56 6	9.2	B8	101.9	- 3.9	340.9	0.055	2.5	109	90	
13544	+53 480		2 7.1	+53 27	9.0	B	102.8	- 6.4	340.8	0.049	2.2	106	87	
13561	+55 547		2 7.3	+56 2	9.0	B8	102.0	- 3.9	340.8	0.066	3.0	110	91	
	+54 490		2 7.4	+54 35	9.2		102.5	- 5.3	340.7	0.069	3.2	110	91	
13590	+63 310	MWC 706	2 7.6	+63 34	8.0	B5p	99.6	+ 3.2	340.7	0.096	4.4	118	89	+0.19
13621	+54 494		2 7.8	+54 51	8.06	B1	102.5	- 5.0	340.6	0.050	2.3	107	88	
13659	+56 462		2 8.1	+56 28	8.9	B9	102.0	- 3.5	340.6	0.080	3.7	104	85	
13716	+57 525		2 8.6	+57 18	8.5	B1	101.8	- 2.7	340.5	0.088	4.0	112	92	+0.15
13744	+57 526		2 8.9	+57 50	7.8	A0	101.6	- 2.2	340.5	0.092	4.2	109	89	+0.30
13745	+55 554		2 8.9	+55 32	7.96	BO	102.4	- 4.3	340.4	0.063	2.9	110	90	+0.12
13758	+57 527		2 9.0	+57 17	8.9	B8	101.8	- 2.7	340.4	0.100	4.6	108	88	
13831	+56 469		2 9.7	+56 17	8.6	BO	102.2	- 3.6	340.3	0.066	3.0	105	85	+0.08
13841	+56 470		2 9.8	+56 34	7.21	B2	102.2	- 3.3	340.3	0.073	3.4	111	91	+0.13
13854	+56 471	MWC 31	2 9.9	+56 36	6.42	B1	102.2	- 3.3	340.2	0.083	3.8	112	92	+0.17
	+56 473	MWC 441	2 9.9	+56 40	8.7		102.1	- 3.2	340.2	0.095	4.4	111	91	
13866	+56 475		2 10.0	+56 15	7.7	B2	102.3	- 3.6	340.2	0.073	3.4	115	95	+0.14
13890	+56 478	MWC 443	2 10.2	+56 19	8.9	B8	102.3	- 3.5	340.2	0.075	3.4	107	87	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ'	E_1
13900	+56° 479		2h 10m3	+56°26'	9.0	B5	102.3	- 3.4	340.2	0.075	3.4	116°	96°	
	+56 482		2 10.6	+56 44	8.9		102.2	- 3.1	340.1	0.104	4.8	116	96	
	+56 484	MWC 444	2 10.7	+56 26	9.1		102.3	- 3.4	340.1	0.075	3.4	124	104	
13969	+56 485		2 10.8	+56 38	8.8	B2	102.3	- 3.2	340.0	0.096	4.4	114	94	+0.12
13970	+55 564		2 10.8	+56 11	8.6	B3	102.4	- 3.6	340.0	0.073	3.4	123	103	+0.10
14010	+63 315		2 11.1	+63 58	7.05	B9	99.8	+ 3.7	340.0	0.092	4.2	112	92	+0.23
14014	+55 567		2 11.1	+55 46	9.0	B9	102.6	- 4.0	340.0	0.056	2.6	114	94	
	+56 493		2 11.3	+56 24	9.3		102.4	- 3.4	339.9	0.079	3.6	126	106	
14052	+56 500		2 11.4	+56 45	8.6	B1	102.3	- 3.1	339.9	0.088	4.0	116	96	
14053	+56 498		2 11.4	+56 33	8.7	B2	102.4	- 3.2	339.9	0.065	3.0	115	95	+0.13
14092	+56 507		2 11.7	+56 18	9.5	B8	102.5	- 3.5	339.8	0.091	4.2	120	100	
	+56 512	BU Per	2 11.7	+56 58	var.	cM	102.3	- 2.8	339.9	0.086	4.0	114	94	
14134	+56 522	MWC 32	2 12.1	+56 40	6.66	B3 Ia	102.4	- 3.1	339.8	0.084	3.9	114	94	+0.22
14142	+58 439	T Per	2 12.2	+58 30	var.	cM	101.8	- 1.4	339.8	0.090	4.1	110	90	
14143	+56 530		2 12.2	+56 43	6.66	B2	102.4	- 3.0	339.7	0.086	4.0	117	97	+0.27
14162	+56 535		2 12.4	+56 41	9.4	B	102.5	- 3.1	339.7	0.091	4.2	115	95	
14250	+56 545		2 13.2	+56 39	8.6	B5	102.6	- 3.1	339.5	0.079	3.6	109	89	
14270	+56 547	AD Per	2 13.4	+56 32	var.	cM	102.6	- 3.2	339.5	0.077	3.6	119	99	
14302	+55 587		2 13.6	+55 52	8.8	B2	102.9	- 3.8	339.4	0.068	3.1	115	94	+0.16
14322	+55 588		2 13.8	+55 27	6.84	B8 Ia	103.1	- 4.2	339.4	0.066	3.0	113	92	+0.12
14330	+56 551	FZ Per	2 13.9	+56 42	var.	cM	102.6	- 3.0	339.4	0.084	3.9	115	94	
14331	+55 590		2 13.9	+55 22	8.81	B9	103.1	- 4.4	339.4	0.060	2.8	108	87	
14357	+56 555		2 14.1	+56 25	8.9	B3	102.8	- 3.2	339.3	0.096	4.4	113	92	
14404	+57 550		2 14.5	+57 24	8.6	cM	102.5	- 2.3	339.3	0.070	3.2	112	91	
14422	+56 565	MWC 37	2 14.7	+56 56	9.4	Bp	102.7	- 2.7	339.2	0.067	3.1	117	96	
14433	+56 568		2 14.8	+56 47	6.54	A1 Ia	102.7	- 2.9	339.2	0.086	4.0	112	92	+0.18
14434	+56 567		2 14.8	+56 27	8.5	B2	102.8	- 3.2	339.2	0.084	3.9	116	95	+0.11
14442	+58 455		2 14.9	+59 6	9.2	B0	101.9	- 0.7	339.2	0.090	4.1	113	92	+0.26
14443	+56 570		2 14.9	+56 42	8.6	B	102.8	- 3.0	339.2	0.062	2.8	117	96	
14469	+55 597	SU Per	2 15.1	+56 9	var.	cM	103.1	- 3.4	339.1	0.065	3.0	110	89	
14476	+56 577		2 15.2	+56 49	9.0	B0	102.8	- 2.8	339.1	0.078	3.6	113	92	+0.22
14488	+56 583	RS Per	2 15.3	+56 39	var.	cM	102.8	- 3.0	339.1	0.076	3.5	124	103	
14489	+55 598	9 Per	2 15.3	+55 23	5.22	A2 Ib	103.3	- 4.2	339.0	0.049	2.2	114	93	+0.09
14501	+57 551		2 15.4	+57 42	9.5	B3	102.5	- 2.0	339.1	0.080	3.7	111	90	
14520	+56 588		2 15.6	+56 38	9.2	B9	102.9	- 3.0	339.0	0.067	4.0	115	94	
	+56 589		2 15.6	+57 3	9.1		102.7	- 2.6	339.0	0.080	3.7	117	96	
14528	+57 552	S Per	2 15.7	+58 8	var.	cMe	102.4	- 1.6	339.0	0.108	5.0	133	112	
14535	+56 591		2 15.8	+56 47	7.46	A1	102.9	- 2.8	339.0	0.077	3.6	111	90	+0.26
14542	+56 593		2 15.9	+56 56	6.95	B8 Ia	102.8	- 2.7	339.0	0.067	3.1	116	95	+0.29
	+56 595		2 16.0	+56 45			102.9	- 2.8	338.9	0.079	3.6	113	92	
14580	+56 597		2 16.3	+56 46	var.	cM	102.9	- 2.8	338.9	0.090	4.1	114	93	
14605	+55 605	MWC 44	2 16.5	+56 8	9.7	Oe5	103.2	- 3.4	338.8	0.089	4.1	116	95	+0.35
14622	+40 500		2 16.6	+40 57	5.87	F0	108.9	-17.5	337.7	.....	...	....	....	
14633	+40 501		2 16.7	+41 2	7.7	O9	108.9	-17.4	337.8	0.010	0.5	103	81	-0.07
		No. 5	2 16.7	+57 53			102.6	- 1.8	338.8	0.085	3.9	109	88	
14662	+54 535	HR 690	2 16.9	+54 55	6.46	F7 Ib	103.7	- 4.5	338.7	0.063	2.9	111	90	
	+56 606		2 17.7	+57 2	9.0		103.0	- 2.5	338.6	0.085	3.9	111	90	
14818	+55 612	10 Per	2 18.2	+56 10	6.24	B2 Ia	103.4	- 3.3	338.4	0.081	3.7	114	92	+0.27
14826	+56 609		2 18.3	+57 0	8.5	cM	103.1	- 2.5	338.4	0.091	4.2	116	94	
14871	+55 616	DM Per	2 18.9	+55 38	var.	B9	103.7	- 3.7	338.3	0.050	2.3	117	95	
14899	+56 621		2 19.2	+56 47	7.42	B8	103.3	- 2.6	338.2	0.070	3.2	116	94	
14947	+58 467		2 19.5	+58 25	8.04	O5f	102.7	- 1.1	338.2	0.100	4.6	122	100	
14956	+57 568		2 19.6	+57 14	7.52	B2	103.2	- 2.2	338.2	0.076	3.6	117	95	+0.37
		SZ Cas	2 19.9	+59 1	var.		102.6	- 0.5	338.1	0.093	4.3	120	98	
15316	+57 576		2 22.8	+57 22	7.30	A2	103.5	- 1.9	337.4	0.100	4.6	110	87	+0.35
15325	+56 635		2 22.9	+56 48	8.5	B3	103.8	- 2.4	337.4	0.115	5.3	113	90	
	+60 493		2 23.2	+60 44	8.4		102.3	+ 1.2	337.4	0.099	4.6	113	90	
	+62 411		2 23.9	+62 58	8.0		101.5	+ 3.3	337.2	0.083	3.8	113	90	
15450	+56 642	MWC 48	2 24.2	+56 27	8.7	BOp	104.1	- 2.7	337.2	0.086	4.0	121	98	+0.21
	+60 497		2 24.2	+61 11	8.6		102.2	+ 1.7	337.2	0.125	5.8	116	93	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	ϕ	δ Mag	δ %	θ	θ'	E_1
	+60° 498		2h 24.5	+61° 7'	9.5		102.3	+ 1.6	337.1	0.134	6.2	125°	100°	
15497	+57 582		2 24.6	+57 15	7.20	B6 Ia	103.8	- 2.0	337.1	0.096	4.4	109	86	+0.40
15548	+56 647		2 25.0	+56 13	8.9	B8	104.2	- 2.9	337.0	0.108	5.0	125	102	
	+60 501		2 25.0	+61 2	9.2		102.4	+ 1.6	337.0	0.120	5.5	122	99	
15558	+60 502		2 25.1	+61 1	7.82	O6	102.4	+ 1.6	337.0	0.110	5.1	120	97	+0.31
15570	+60 504		2 25.2	+60 56	8.0	O5f	102.4	+ 1.5	337.0	0.131	6.0	117	94	+0.39
15571	+56 648		2 25.2	+56 59	8.0	B	104.0	- 2.2	337.0	0.093	4.3	124	101	+0.21
	+56 649		2 25.3	+56 15			104.3	- 2.8	336.9	0.080	3.7	126	103	
15620	+57 584		2 25.6	+57 31	8.2	B8	103.8	- 1.6	336.9	0.111	5.1	111	88	
15629	+60 507		2 25.7	+61 5	8.4	B	102.4	+ 1.6	336.9	0.109	5.0	120	96	
15642	+54 569		2 25.8	+54 54	8.0	B2	104.9	- 4.0	336.8	0.065	3.0	115	92	+0.02
15690	+56 656		2 26.3	+57 5	7.7	B2	104.1	- 2.0	336.7	0.116	5.3	112	89	+0.37
	+60 512		2 26.4	+60 57	9.5		102.6	+ 1.6	336.7	0.028	1.3	107	84	
15752	+57 589		2 26.8	+57 58	8.8	B0.5	103.8	- 1.2	336.6	0.112	5.2	121	98	+0.31
15785	+59 513		2 27.2	+60 6	8.41	B	103.0	+ 0.8	336.5	0.104	4.8	121	97	+0.28
	+62 419		2 27.2	+63 9	9.2		101.8	+ 3.6	336.5	0.100	4.6	114	90	
	+62 424		2 28.4	+62 31	8.5		102.2	+ 3.1	336.2	0.060	3.7	112	88	
E236979	+56 673	YZ Per	2 31.1	+56 37	var.	cM	104.9	- 2.2	335.7	0.053	2.4	124	100	
16243	+57 602		2 31.3	+57 23	8.5	B2	104.6	- 1.5	335.7	0.079	3.6	117	93	+0.31
16310	+58 498		2 32.0	+58 38	8.4	B0.5	104.1	- 0.3	335.5	0.112	5.2	122	98	
16429	+60 541		2 33.1	+60 51	7.8	F0	103.3	+ 1.8	335.3	0.049	2.2	128	103	
16523	+56 686		2 33.9	+56 18	9.98	Oa	105.4	- 2.3	335.1	0.071	3.3	117	92	
16524	+55 689		2 33.9	+55 51	7.49	B9	105.5	- 2.7	335.1	0.015	0.7	116	91	
16691	+56 693		2 35.5	+56 28	8.4	Oe	105.5	- 2.0	334.8	0.078	3.6	118	93	
16778	+59 535		2 36.3	+59 24	7.71	A2 Ia	104.3	+ 0.6	334.6	0.114	5.2	121	96	+0.51
16779	+57 620		2 36.3	+57 24	8.6	B	105.2	- 1.2	334.6	0.104	4.8	115	90	
16808	+57 622		2 36.7	+57 53	8.9	B	105.0	- 0.6	334.5	0.103	4.7	123	97	
16832	+56 703		2 36.9	+56 14	9.0	B	105.8	- 2.2	334.4	0.101	4.6	118	92	
17088	+57 632		2 39.5	+57 19	7.54	B9	105.6	- 1.0	333.9	0.085	3.9	116	90	+0.45
17114	+58 518		2 39.7	+58 55	9.2	B	104.9	+ 0.4	333.9	0.110	5.1	113	87	
17145	+57 634		2 40.0	+57 15	8.0	B6.5	105.7	- 1.1	333.8	0.096	4.4	116	90	+0.47
17378	+56 718	HR 825	2 42.2	+56 40	6.53	A5 Ia	106.2	- 1.5	333.3	0.102	4.7	120	93	
E237007	+59 549		2 42.7	+59 59	9.2	B	104.8	+ 1.5	333.2	0.075	3.4	113	86	
17463	+68 200	SU Cas	2 43.0	+68 28	var.	F5	101.0	+ 9.1	332.8	0.041	1.9	130	103	
17505	+59 552		2 43.4	+60 1	7.11	O7	104.8	+ 1.6	333.1	0.075	3.4	109	82	+0.24
17506	+55 714	η Per	2 43.4	+55 29	3.93	K3 Ib	106.9	- 2.4	333.0	0.020	0.9	118	91	
17520	+59 553		2 43.5	+59 59	8.7	B	104.9	+ 1.6	333.1	0.071	3.3	111	84	
		TX Cas	2 44.2	+62 22	var.		103.9	+ 3.7	332.8	0.077	3.6	120	93	
17603	+56 728		2 44.4	+56 38	8.6	B	106.5	- 1.4	332.9	0.106	4.9	114	87	
	+59 562		2 45.6	+60 3	9.5		105.1	+ 1.7	332.6	0.077	3.6	113	86	
	+60 586		2 46.4	+60 14	8.3		105.1	+ 2.0	332.4	0.053	2.4	114	86	
17857	+63 367		2 47.0	+63 43	7.78	B8	103.5	+ 5.1	332.2	0.102	4.7	112	84	+0.35
	+60 594		2 49.1	+61 1	9.1		105.0	+ 2.8	331.8	0.086	4.0	121	93	
18076	+58 534		2 49.2	+58 41	9.0	B	106.1	+ 0.8	331.8	0.130	6.0	112	84	
	+60 596		2 49.3	+60 16	9.3		105.4	+ 2.2	331.8	0.086	4.0	115	87	
	+51 659		2 51.6	+51 42	9.1		109.8	- 5.2	331.2	0.078	3.6	103	74	
18326	+59 578		2 51.6	+60 10	7.91	O8	105.7	+ 2.2	331.3	0.070	3.2	117	88	+0.24
18352	+60 608		2 51.9	+60 53	7.00	B2	105.4	+ 2.8	331.2	0.077	3.6	115	86	+0.12
18409	+62 504		2 52.4	+62 19	8.0	B	104.7	+ 4.1	331.1	0.093	4.3	115	86	+0.19
E237056	+57 681	MWC 720	2 55.0	+57 13	8.7	Oe5	107.5	- 0.2	330.6	0.128	5.9	125	96	
	+58 561	BSD9-57	3 0.4	+58 48	10.79	B6	107.3	+ 1.6	329.5	0.082	3.8	119	89	(+0.37)
19243	+61 525	MWC 61	3 0.7	+62 0	6.54	B2e	105.7	+ 4.3	329.3	0.050	2.3	130	99	+0.26
		BSD9-61	3 0.9	+58 48	12.40	B5	107.4	+ 1.6	329.4	0.131	6.0	102	71	(+0.81)
		BSD9-64	3 1.0	+58 54	12.28	B5	107.4	+ 1.7	329.4	0.084	3.9	101	70	
19341	+58 563	BSD9-73	3 1.5	+58 58	7.79	B9	107.4	+ 1.8	329.2	0.044	2.0	124	93	(+0.10)
19441	+58 567	BSD9-485	3 2.5	+59 9	7.83	B5	107.4	+ 2.0	329.0	0.100	4.6	116	85	(+0.33)
E237080	+58 568	BSD9-496	3 3.1	+59 11	9.14	B7	107.4	+ 2.1	328.9	0.085	3.9	116	85	(+0.31)
19644	+59 607	BSD9-524	3 4.6	+59 33	8.05	B8	107.4	+ 2.5	328.6	0.064	2.9	115	84	(+0.28)
	+58 574	BSD9-106	3 5.2	+58 34	10.63	B3	106.0	+ 1.7	328.5	0.105	4.8	112	80	
	+59 608	BSD9-555	3 6.0	+59 28	10.30	B7	107.6	+ 2.5	328.3	0.097	4.5	106	74	(+0.33)

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	ϕ	δ Mag	δ %	θ	θ'	E_1
19820	+59° 609	CC Cas	3h 6m.2	+59°11'	var.	O8	107.8	+ 2.3	328.2	0.105	4.8	114°	82°	+0.32
	+58 578	BSD9-123	3 7.0	+58 44	9.95	B5	108.1	+ 2.0	328.1	0.076	3.5	102	70	(+0.35)
E237090	+59 611	BSD9-579	3 7.2	+59 33	9.32	B5	107.7	+ 2.7	328.0	0.111	5.1	104	72	(+0.39)
E237091	+59 612	BSD9-586	3 7.3	+59 33	9.12	B5	107.7	+ 2.7	328.0	0.105	4.8	112	80	(+0.49)
20041	+56 798	HR 964	3 8.2	+56 45	5.92	A0 Ia	109.3	+ 0.4	327.9	0.060	2.8	116	84	+0.28
	+59 624	BSD9-633	3 8.9	+59 37	10.81	B8	107.8	+ 2.8	327.7	0.066	3.0	116	84	(+0.21)
		BSD9-146	3 9.0	+58 49	12.79	F5	108.3	+ 2.2	327.7	0.051	2.4	120	88	
20134	+59 625	MWC 64	3 9.1	+59 41	7.41	B5	107.8	+ 2.9	327.6	0.037	1.7	110	78	(+0.17)
	+51 704		3 9.1	+51 38	9.5		112.1	- 3.9	327.6	0.066	3.0	115	83	
		BSD9-638	3 9.1	+59 34	11.3	B9	107.9	+ 2.8	327.6	0.060	2.8	117	85	(+0.25)
		BSD9-156	3 10.2	+58 50	11.48	B6	108.4	+ 2.3	327.4	0.078	3.6	108	75	(+0.40)
20295	+59 630	BSD9-671	3 10.8	+59 17	8.5	B7	108.2	+ 2.7	327.3	0.055	2.5	106	73	(+0.17)
	+51 710		3 11.6	+51 40	9.4		112.4	- 3.7	327.1	0.095	4.4	107	74	
E237121	+58 587		3 12.7	+58 30	8.3	B2	108.9	+ 2.2	326.9	0.107	4.9	110	77	
20756	+20 543	τ Ari	3 15.5	+20 47	5.17	B3	131.9	-28.4	321.0	0.008	0.4	171	132	0.00
	+49 916		3 17.1	+49 18	8.9		114.5	- 5.2	325.9	0.046	2.1	130	96	
20898	+59 648		3 17.1	+60 8	7.66	B8	108.4	+ 3.8	325.9	0.047	2.2	108	74	
20959	+58 600		3 17.8	+59 5	8.2	B5	109.1	+ 3.0	325.8	0.095	4.4	120	86	
21212	+61 587	MWC 667	3 20.3	+62 9	8.7	B2e	107.6	+ 5.7	325.2	0.088	4.0	135	100	+0.31
21278	+48 920	HR 1034	3 20.9	+48 43	4.94	B5	115.3	- 5.3	325.1	0.017	0.8	128	93	
21291	+59 660	HR 1035	3 21.0	+59 36	4.42	B9 Ia	109.1	+ 3.7	325.1	0.075	3.4	117	82	+0.18
21389	+58 607	MWC 461	3 21.9	+58 32	4.76	A0 Ia	109.6	+ 2.9	325.0	0.075	3.4	121	86	+0.23
21483	+29 566		3 22.7	+30 2	7.06	B3	127.0	-20.2	322.2	0.030	1.4	176	136	+0.30
22253	+56 824		3 29.9	+56 23	6.79	B0.5	112.0	+ 1.6	323.4	0.040	1.8	127	90	+0.17
23193	+36 742	HR 1133	3 38.1	+36 9	5.57	A2	125.6	-13.4	320.5	.....	...	....	....	-0.01
	+31 643		3 38.3	+31 51			128.5	-16.6	319.7	0.035	1.6	146	106	
23675	+52 714		3 41.9	+52 21	6.76	B0.5	115.8	- 0.4	321.0	0.067	3.1	133	94	+0.30
23800	+52 715		3 42.9	+52 11	6.87	B2	116.0	- 0.4	320.8	0.058	2.7	123	84	+0.21
		No. 6	3 46.7	+46 35			120.1	- 4.3	319.9	0.041	1.9	145	105	
24431	+52 726		3 48.1	+52 21	6.70	O8	116.6	+ 0.2	319.8	0.041	1.9	118	78	+0.23
24432	+48 1019		3 48.1	+48 45	7.02	B5	118.9	- 2.5	319.7	0.056	2.6	135	95	+0.26
	+55 837		3 50.0	+55 38	9.2		114.6	+ 2.9	319.3	0.110	5.1	133	92	
		No.7	3 51.0	+56 55			113.9	+ 4.0	319.1	0.067	3.1	134	93	
	+56 864		3 51.1	+56 56	9.2		113.9	+ 4.0	319.0	0.084	3.9	136	95	
			3 51.1	+56 56			113.9	+ 4.0	319.0	0.077	3.6	138	97	
	+56 866		3 51.4	+56 49	9.5		114.0	+ 3.9	319.0	0.097	4.5	136	95	
E237204	+56 868		3 52.4	+56 37	9.0	B3	114.2	+ 3.9	318.8	0.082	3.8	134	93	
	+55 838		3 52.8	+55 13	9.2		115.2	+ 2.9	318.8	0.097	4.5	133	92	
25090	+62 643		3 54.1	+62 9	7.28	B1	110.7	+ 8.2	318.1	0.130	6.0	136	94	+0.25
E232874	+53 723		3 54.5	+53 27	8.5	B3	116.6	+ 1.7	318.5	0.011	0.5	95	53	
E237211	+56 873		3 55.3	+56 15	8.9	B5	114.8	+ 3.9	318.2	0.075	3.4	139	97	
E237213	+55 845		3 56.5	+55 43	8.7	B	115.2	+ 3.6	318.0	0.079	3.6	138	96	
25348	+52 752	MWC 80	3 56.6	+53 3	8.2	B	117.1	+ 1.6	318.2	0.030	1.4	122	80	+0.17
25443	+61 669		3 57.4	+61 48	6.75	B0.5	111.2	+ 8.2	317.4	0.115	5.3	136	93	+0.24
25517	+43 886		3 58.1	+44 0	8.9	B2	123.3	- 4.9	317.6	0.055	2.5	160	118	+0.19
25787	+51 861		4 0.2	+51 11	7.49	B3	118.7	+ 0.6	317.4	0.040	1.8	141	98	+0.08
25914	+56 884		4 1.2	+56 50	8.1	B5	115.0	+ 4.8	317.0	0.102	4.7	141	98	+0.32
26630	+48 1063	μ Per	4 7.6	+48 9	4.28	G0 Ib	121.7	- 0.8	316.0	0.024	1.1	147	103	
E232947	+53 765		4 17.6	+53 11	9.0	B	119.2	+ 3.9	314.0	0.137	6.3	149	103	
	+51 921		4 17.7	+51 48	9.1		120.2	+ 2.9	314.0	0.097	4.5	140	94	
27795	+45 931		4 18.2	+45 56	7.16	B2	124.5	- 1.1	314.0	0.052	2.4	132	86	+0.21
28149	+22 699	72 Tau	4 21.3	+22 46	5.41	B5	142.2	-16.4	310.8	.....	...	....	....	0.00
28446	+53 779	1 Cam	4 24.1	+53 42	5.42	B1	119.5	+ 5.0	312.7	0.050	2.3	151	104	+0.14
E237299	+57 831	MWC 87	4 32.9	+57 43	8.8	B2	117.3	+ 8.5	310.6	0.051	2.4	151	102	+0.22
E232999	+50 1043		4 37.0	+50 23	8.6	B	123.3	+ 4.2	310.5	0.082	3.8	158	108	
30353	+43 1069	MWC 738	4 41.8	+43 6	7.7	Ape	129.4	+ 0.2	309.8	0.050	2.3	149	99	
	+41 974	MWC 91	4 43.2	+41 30			130.8	- 0.7	309.6	0.026	1.2	159	109	
31327	+35 930	HR 1573	4 49.7	+36 1	6.18	B2	135.9	- 3.1	308.4	0.010	0.5	102	50	+0.28
	+30 748		4 52.1	+30 33	9.0		140.5	- 6.1	307.7	.....	...	....	....	
31617	+43 1147		4 52.2	+43 11	7.34	B2	130.6	+ 1.7	308.1	0.040	1.8	163	111	+0.10

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ'	E_1
	+43° 1168		4h 55m.0	+43°42'	9.0		130.5	+ 2.4	307.6	0.124	5.7	137°	85°	
32446	+44 1088		4 58.2	+44 55	7.97	B3	129.8	+ 3.6	307.0	0.030	1.4	147	94	+0.15
	+40 1189		5 3.3	+40 32	8.4		133.9	+ 1.7	306.3	0.043	2.0	160	106	
33357	+41 1101		5 4.6	+42 2	var.	A3	132.9	+ 2.8	306.0	0.047	2.2	154	100	
33461	+41 1106	MWC 101	5 5.3	+41 6	8.0	B3	133.7	+ 2.4	306.0	0.037	1.7	167	113	+0.16
33604	+40 1213	MWC 103	5 6.3	+40 5	7.32	B3	134.6	+ 1.9	305.8	0.026	1.2	165	111	+0.07
34626	+36 1090		5 13.8	+36 32	8.2	B2	138.4	+ 1.1	304.8	0.048	2.2	157	102	+0.09
34656	+37 1146		5 14.0	+37 20	6.71	O7	137.7	+ 1.6	304.7	0.057	2.6	167	112	+0.17
	+39 1264		5 14.1	+39 13	9.4		136.2	+ 2.7	304.7	0.062	2.8	156	101	
34921	+37 1160	MWC 107	5 15.8	+37 35	7.39	B0	137.7	+ 2.0	304.5	0.079	3.6	147	91	+0.21
E242908	+33 1023		5 16.0	+33 25	8.7	B0	141.2	- 0.3	304.5	0.054	2.5	151	95	
E242926	+33 1024		5 16.1	+33 13	9.5	B0	141.4	- 0.4	304.5	0.042	1.9	146	90	
E242935	+33 1026		5 16.2	+33 19	9.6	B3	141.3	- 0.4	304.4	0.065	3.0	163	107	
35215	+30 873		5 18.1	+30 6	9.11	F5	144.2	- 1.8	304.2	0.022	1.0	122	66	
35347	+29 886	MWC 494	5 19.0	+29 32	8.5	Pec.	144.8	- 2.0	304.0	0.024	1.1	135	79	
	+42 1286		5 19.4	+42 56	9.4		133.6	+ 5.6	303.6	0.079	3.6	143	87	
	+42 1288		5 20.1	+42 12	9.0		134.4	+ 5.3	303.6	0.090	4.1	162	106	
35619	+34 1046		5 21.0	+34 41	9.0	B0	140.7	+ 1.2	303.8	0.048	2.2	170	114	+0.20
35633	+34 1049		5 21.1	+34 27	8.6	B0	140.9	+ 1.1	303.8	0.023	1.1	172	116	+0.21
35653	+33 1049		5 21.2	+33 52	7.50	B1	141.4	+ 0.8	303.8	0.045	2.1	162	106	+0.17
	+34 1058		5 22.0	+34 35	8.8		140.9	+ 1.4	303.6	0.063	2.9	160	104	
35921	+35 1137		5 23.0	+35 18	6.71	O9.5	140.4	+ 1.9	303.5	0.043	2.0	143	87	+0.21
35952	+35 1139		5 23.2	+35 53	8.7	B8	140.0	+ 2.3	303.4	0.033	1.5	133	76	
	+35 1141		5 23.3	+35 7	9.1		140.6	+ 1.9	303.4	0.031	1.4	152	95	
36212	+34 1077		5 25.1	+34 48	8.0	B5	141.1	+ 2.0	303.2	0.044	2.0	163	106	
	+39 1328		5 25.2	+39 59	9.2		136.6	+ 4.9	302.9	0.096	4.4	163	106	
36280	+34 1079		5 25.5	+34 52	9.4	B	141.1	+ 2.1	303.1	0.027	1.2	154	97	+0.07
36389	+18 875	119 Tau	5 26.3	+18 32	4.73	M2 Ib	154.9	- 6.6	302.5	0.021	1.0	8	131	
36483	+36 1177		5 26.9	+36 24	7.7	B1	140.0	+ 3.2	302.9	0.083	3.8	149	92	+0.25
36547	+23 942		5 27.4	+23 16	8.8	B2	151.0	- 3.9	302.8	0.037	1.7	144	87	+0.20
	+35 1169	MWC 500	5 27.6	+35 45	8.4		140.6	+ 3.0	302.9	0.036	1.7	133	76	
36879	+21 899		5 29.7	+21 20	7.8	B2	153.0	- 4.4	302.4	0.045	2.1	152	94	+0.14
E245310	+21 901	MWC 503	5 30.4	+21 8	10.6	B	153.2	- 4.4	302.3	0.085	3.9	146	88	
37032	+34 1118		5 30.5	+34 45	8.1	B5	141.7	+ 2.9	302.5	0.030	1.4	169	111	
E245493	+33 1103	MWC 764	5 31.2	+33 54	8.5	B3	142.5	+ 2.6	302.4	0.024	1.1	165	107	
37614	+38 1250		5 34.7	+38 8	8.0	A	139.3	+ 5.4	301.7	0.044	2.0	170	112	
37737	+36 1233		5 35.7	+36 9	8.0	B3	141.1	+ 4.6	301.7	0.021	1.0	133	75	
37767	+36 1236		5 35.9	+36 6	8.4	B5	141.2	+ 4.6	301.6	0.019	0.9	7	129	
	+37 1292		5 35.9	+37 56	8.7		139.6	+ 5.5	301.5	0.025	1.2	5	127	
	+34 1150		5 36.4	+34 18	9.0		142.8	+ 3.7	301.7	0.016	0.7	41	163	
38017	+30 992		5 37.6	+30 53	8.1	B8	145.8	+ 2.1	301.6	0.047	2.2	13	135	
E246901	+33 1138		5 38.3	+33 29	8.9	B	143.7	+ 3.6	301.5	0.028	1.3	158	100	
38131	+35 1223		5 38.4	+35 8	8.12	B9	142.3	+ 4.5	301.4	0.018	0.8	169	110	
	+34 1162		5 38.6	+34 3	9.0		143.2	+ 4.0	301.4	0.024	1.1	176	117	
38191	+21 958		5 38.9	+21 25	9.5	B	154.0	- 2.6	301.5	0.040	1.8	152	94	+0.14
	+36 1261		5 41.7	+36 12	8.2		141.7	+ 5.6	300.8	0.025	1.2	169	110	
38658	+28 902		5 42.3	+28 17	8.5	B8	148.6	+ 1.6	301.2	0.021	1.0	0	121	
38708	+29 1005		5 42.6	+29 6	8.2	A2	147.9	+ 2.1	301.1	0.025	1.2	167	108	
38909	+31 1115		5 44.0	+31 2	8.0	B5	146.4	+ 3.4	300.9	0.025	1.2	152	93	
E248587	+19 1111		5 46.5	+19 7	8.9	A5	156.9	- 2.2	300.7	0.054	2.5	146	87	
E248753	+25 1019		5 47.3	+25 43	8.4	B0	151.3	+ 1.3	300.6	0.047	2.2	141	82	+0.16
E248893	+22 1090		5 48.0	+22 6	10.0	B	154.5	- 0.4	300.6	0.075	3.4	155	96	
E248894	+20 1158		5 48.0	+20 51	9.2	B	155.6	- 1.1	300.6	0.049	2.2	146	87	
39680	+13 1026	MWC 783	5 49.0	+13 49	7.9	B	161.8	- 4.4	300.2	0.014	0.6	143	83	
39746	+27 914		5 49.4	+27 42	7.7	B2	149.9	+ 2.7	300.4	0.040	1.8	178	118	+0.14
39970	+24 1033	HR 2074	5 50.9	+24 14	6.02	B3	153.0	+ 1.2	300.4	0.035	1.6	161	101	+0.18
40003	+23 1119		5 51.1	+23 25	8.6	F8	153.8	+ 0.9	300.3	0.062	2.8	167	107	
40111	+25 1052	139 Tau	5 51.8	+25 57	4.90	B0.5	151.6	+ 2.3	300.2	0.023	1.1	164	104	+0.06
E249695	+30 1071	MWC 785	5 52.2	+30 12	8.9	B0	148.0	+ 4.5	300.0	0.024	1.1	174	114	
E249845	+32 1146		5 53.0	+32 53	8.3	B5	145.8	+ 6.0	299.6	.....	...	....	....	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	ϕ	δ Mag	δ %	θ	θ'	E_1
E250028	+25 1065	MWC 786	5h 53m8	+25° 6'	8.9	B2	152.6	+ 2.2	300.0	0.093	4.3	164°	104°	
E250163	+19 1166	MWC 517	5 54.4	+19 11	10.2	B0	157.8	- 0.6	300.0	0.036	1.7	136	76	
40589	+27 945	HR 2111	5 54.7	+27 35	6.08	B8p	150.6	+ 3.6	299.8	0.015	0.7	158	98	
E250289	+23 1148		5 55.0	+23 20	9.2	B	154.3	+ 1.6	300.0	0.064	2.9	162	102	
E250290	+23 1149		5 55.0	+23 18	8.6	B	154.3	+ 1.6	300.0	0.073	3.4	163	103	
E251117	+28 1001		5 58.7	+28 46	9.0	B0	150.0	+ 5.0	299.3	0.033	1.5	161	100	
E251311	+23 1183		5 59.4	+23 1	8.8	B0	155.1	+ 2.3	299.6	0.048	2.2	0	120	
41398	+28 1008		5 59.8	+28 56	7.45	B2	149.9	+ 5.3	299.2	0.048	2.2	166	105	+0.20
E251726	+19 1210		6 1.0	+19 2	10.0	F5	158.7	+ 0.7	299.5	0.069	3.2	171	111	
41690	+21 1120		6 1.6	+21 53	8.0	B2	156.3	+ 2.2	299.4	0.058	2.7	177	116	+0.16
41997	+15 1079		6 3.2	+15 44	8.5	B	161.8	- 0.5	299.4	0.070	3.2	159	98	
42087	+23 1226	MWC 520	6 3.7	+23 8	5.76	B2.5	155.4	+ 3.2	299.2	0.043	2.0	172	111	+0.15
42088	+20 1284		6 3.7	+20 31	7.40	O6	157.7	+ 2.0	299.3	0.052	2.4	176	117	+0.10
42379	+21 1143		6 5.3	+21 36	7.8	B2	157.0	+ 2.8	299.1	0.060	2.8	170	109	+0.20
42400	+20 1302		6 5.4	+20 56	6.86	B5	157.6	+ 2.5	299.1	0.047	2.2	169	108	+0.10
E253049	+20 1305		6 5.8	+20 10	9.4	B8	158.3	+ 2.2	299.1	0.040	1.8	176	115	
42475	+21 1146	TV Gem	6 5.8	+21 54	var.	cM	156.8	+ 3.0	299.0	0.065	3.0	172	111	
42543	+22 1220	6 Gem	6 6.2	+22 56	6.30	M1 Ia	155.9	+ 3.6	298.9	0.046	2.1	174	113	
E253214	+20 1309	MWC 135	6 6.4	+20 7	9.4	B0	158.4	+ 2.3	299.1	0.060	2.8	173	112	+0.24
E253247	+18 1123		6 6.5	+18 3	10.0	B2	160.2	+ 1.3	299.1	0.031	1.4	4	123	
E253659	+16 1046	MWC 796	6 8.1	+16 33	9.7	B0	161.7	+ 0.9	299.0	0.050	2.3	0	119	
42896	+20 1322		6 8.2	+20 13	9.0	B5	158.5	+ 2.7	298.9	0.018	0.8	7	126	
43078	+22 1243		6 9.2	+22 20	8.6	B0	156.8	+ 4.0	298.7	0.070	3.2	165	104	+0.25
E254042	+24 1176		6 9.8	+24 6	8.8	B0	155.3	+ 4.9	298.5	0.085	3.9	173	111	
43384	+23 1275	9 Gem	6 10.8	+23 46	6.26	B3 Ib	155.7	+ 5.0	298.5	0.062	2.8	170	108	+0.20
43582	+22 1267		6 11.9	+22 41	9.0	B8	156.8	+ 4.7	298.4	0.028	1.3	8	126	
E254699	+23 1286		6 12.3	+23 36	9.3	B5	156.0	+ 5.2	298.3	0.074	3.4	176	114	
E254755	+22 1273		6 12.5	+22 43	9.0	B0	156.8	+ 4.8	298.4	0.039	1.8	8	126	
43703	+23 1289	MWC 799	6 12.6	+23 3	8.7	B2	156.5	+ 5.0	298.4	0.037	1.7	143	81	+0.24
43753	+23 1297		6 12.9	+23 2	8.1	B1	156.6	+ 5.0	298.3	0.059	2.7	161	99	+0.18
43818	+23 1300		6 13.2	+23 30	7.03	B0.5	156.2	+ 5.3	298.3	0.043	2.0	177	115	+0.22
43836	+23 1301		6 13.3	+23 19	7.03	B9	156.3	+ 5.2	298.3	0.012	0.6	149	87	+0.23
43837	+20 1369		6 13.3	+20 37	8.4	B	158.7	+ 4.0	298.5	0.054	2.5	150	88	
E255055	+23 1304		6 13.6	+23 20	9.1	B0	156.4	+ 5.3	298.2	0.019	0.9	163	101	
43907	+22 1260		6 13.7	+22 9	8.8	B8	157.4	+ 4.8	298.3	0.031	1.4	16	134	
44139	+22 1291		6 15.1	+22 13	8.8	B9	157.5	+ 5.1	298.2	0.046	2.1	2	120	
44597	+20 1399		6 17.5	+20 27	9.0	B	159.3	+ 4.8	298.1	0.047	2.2	170	108	
E256276	+22 1311		6 17.7	+22 27	9.1	B8	157.6	+ 5.7	298.0	0.033	1.5	9	127	
E256413	+19 1331		6 18.1	+19 58	8.9	B3	159.8	+ 4.7	298.1	0.054	2.5	168	106	
44811	+19 1335		6 18.8	+19 45	8.7	B5	160.1	+ 4.7	298.1	0.035	1.6	172	110	
	+50 1309		6 20.6	+50 20			132.1	+18.3	292.1	.....	...	....	....	
45166	+ 8 1332		6 20.8	+ 8 3	9.6	Oe	170.6	- 0.4	298.4	0.018	0.8	162	100	+0.08
E257971	+11 1191		6 23.1	+11 22	8.9	B3	168.0	+ 1.6	298.2	.....	...	....	....	
46056	+ 4 1291	MWC 808	6 26.0	+ 4 54	7.96	O8	174.0	- 0.8	298.2	0.025	1.2	154	92	+0.17
46149	+ 5 1282		6 26.6	+ 5 6	7.66	O8	173.9	- 0.6	298.2	.....	...	....	....	+0.14
46150	+ 5 1283		6 26.6	+ 5 0	6.80	B2	174.0	- 0.6	298.2	0.016	0.7	7	125	+0.19
46223	+ 4 1302		6 27.0	+ 4 53	7.14	B2	174.2	- 0.6	298.2	0.030	1.4	169	107	+0.19
46300	+ 7 1337	13 Mon	6 27.5	+ 7 24	4.50	A0 Ib	172.0	+ 0.7	298.2	.....	...	....	....	-0.03
E259431	+10 1172	MWC 147	6 27.6	+10 24	9.0	B3	169.4	+ 2.2	298.1	0.017	0.8	106	44	+0.09
E259440	+ 5 1291	MWC 148	6 27.6	+ 5 52	9.6	B0	173.4	+ 0.1	298.2	0.088	4.0	164	102	
47240	+ 5 1334	HR 2432	6 32.5	+ 5 3	6.16	B1	174.7	+ 0.7	298.0	0.023	1.1	173	111	
47359	+ 5 1340	MWC 815	6 33.1	+ 4 58	8.81	B	174.8	+ 0.8	298.0	0.022	1.0	8	126	
47761	- 4 1607	MWC 531	6 35.1	- 4 36	8.5	B0	183.5	- 3.2	297.8	0.048	2.2	169	107	+0.16
48279	+ 1 1472		6 37.5	+ 1 49	7.8	O8	178.1	+ 0.3	298.0	0.029	1.3	155	93	+0.21
	+ 0 1576		6 39.7	+ 0 43	9.2		179.3	+ 0.3	298.0	0.050	2.3	146	84	
49340	+69 394	43 Cam	6 42.9	+69 0	5.13	B5	113.6	+26.2	280.1	0.010	0.5	148	68	-0.02
53428	- 8 1729		6 59.9	- 8 42	7.9	B2	190.0	+ 0.3	298.4	0.015	0.7	117	55	+0.24
53649	- 8 1733		7 0.7	- 8 52	9.1	B	190.2	+ 0.4	298.4	0.029	1.3	114	52	
53667	- 8 1734	MWC 835	7 0.8	- 8 34	7.8	Oe5	190.0	+ 0.5	298.4	0.025	1.2	127	65	+0.17
53754	- 8 1737		7 1.1	- 8 39	8.4	B5	190.1	+ 0.6	298.5	0.032	1.5	129	67	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ′	E_1
56847	-15° 1748		7h 13m.6	-15°27′	8.7	B2	197.5	0.0	299.1	0.015	0.7	97°	36°	+0.19
138764	- 8 4010	HR 5780	15 29.0	- 8 51	5.15	B5	324.2	+35.0	46.4	0.008	0.4	75	121	-0.01
147888	-23 12860		16 19.4	-23 14	6.56	B5	321.5	+16.4	48.8	0.065	3.0	53	102	+0.20
147889	-24 12684		16 19.4	-24 14	8.0	B2	320.8	+15.7	48.6	0.069	3.2	179	48	+0.50
149363	- 5 4318		16 29.1	- 5 56	8.0	B0.5	337.7	+25.2	55.2	0.028	1.3	79	134	+0.09
152516	-21 4443		16 48.7	-21 43	8.08	B5	327.2	+12.1	53.0	0.065	3.0	52	105	+0.10
153855	-31 13502		16 56.8	-31 28	6.88	B2	320.4	+ 4.7	52.9	0.023	1.1	25	78	+0.07
153977	-24 13055	MWC 867	16 57.6	-24 41	9.8	B3	326.0	+ 8.7	53.6	0.025	1.2	35	89	+0.09
154040	-39 11086	MWC 868	16 57.9	-39 11	9.5	B2	314.4	- 0.1	52.8	0.055	2.5	58	111	+0.47
154090	-33 11706	MWC 589	16 58.2	-33 59	4.87	B1p	318.6	+ 3.0	53.0	.....	...	....	....	+0.20
154204	-20 4627	HR 6340	16 58.9	-20 21	6.17	B3	329.7	+11.0	54.4	0.037	1.7	58	112	+0.07
154445	- 0 3224	HR 6353	17 0.4	- 0 45	5.62	B2	347.0	+21.4	59.4	0.073	3.4	91	150	+0.08
158661	-17 4834		17 25.4	-17 3	8.2	B0.5	336.0	+ 7.6	57.6	0.012	0.6	58	116	+0.16
158705	-31 14178		17 25.6	-31 28	7.81	B0	323.9	- 0.3	56.8	0.038	1.8	124	1	+0.44
159176	-32 12935	HR 6535	17 28.1	-32 31	5.71	Oe5	323.3	- 1.3	57.2	0.036	1.7	166	48	+0.13
160529	-33 12361	MWC 266	17 35.3	-33 27	6.68	cA4pe	323.4	- 3.1	58.1	0.150	6.9	20	78	+0.46
160704	-23 13515		17 36.3	-23 41	9.5	B2	331.8	+ 1.9	58.2	0.086	4.0	7	65	+0.42
160730	-24 13435		17 36.4	-24 15	10.2	B	331.3	+ 1.6	58.2	0.078	3.6	2	60	+0.40
161103	-27 11872	MWC 268	17 36.5	-27 12	7.9	B0	329.0	+ 0.4	58.4	0.108	5.0	172	50	+0.26
162064	-19 4713		17 44.0	-19 52	8.98	B	336.0	+ 2.4	59.0	0.032	1.5	53	112	+0.35
162168	-32 13411		17 44.5	-32 58	8.0	B0	324.8	- 4.5	59.3	0.050	2.3	161	40	+0.37
162717	-24 13584		17 47.3	-24 15	9.5	B3	332.6	- 0.5	59.3	0.067	3.1	179	58	+0.36
162718	-24 13585	MWC 273	17 47.3	-24 45	9.0	B0	332.2	- 0.8	59.3	0.077	3.6	7	66	+0.42
162978	-24 13615	HR 6672	17 48.7	-24 52	6.13	B2	332.2	- 1.1	59.4	0.027	1.2	179	58	+0.08
163777	-25 12523		17 52.8	-25 10	9.5	B	332.4	- 2.1	59.9	0.019	0.9	163	43	+0.26
164018	-23 13741		17 54.0	-23 7	10.0	B	334.4	- 1.3	59.9	0.029	1.3	132	12	+0.38
164103	-14 4842		17 54.5	-14 47	8.04	B5	341.6	+ 2.8	60.1	0.014	0.6	38	98	+0.24
164359	-22 4500		17 55.6	-22 7	8.2	B0	335.4	- 1.1	60.1	0.014	0.6	5	65	+0.04
164384	-23 13789		17 55.7	-23 10	8.5	B5	334.5	- 1.6	60.1	.....	...	....	....	+0.03
164402	-22 4503	HR 6716	17 55.8	-22 46	5.73	O9.5	334.9	- 1.5	60.1	0.014	0.6	7	67	+0.08
164432	+ 6 3597	HR 6719	17 56.0	+ 6 16	6.18	B3	0.4	+12.6	62.6	0.013	0.6	88	151	+0.05
164438	-19 4800		17 56.0	-19 6	7.28	B3	338.1	+ 0.3	60.1	0.028	1.3	73	133	+0.21
164492	-23 13804		17 56.3	-23 1	6.91	O8	334.7	- 1.7	60.2	.....	...	....	....	+0.26
164536	-24 13783		17 56.5	-24 15	6.87	B3	333.7	- 2.4	60.2	0.009	0.4	29	89	+0.03
164738	-17 5001		17 57.5	-17 36	7.10	B5	339.5	+ 0.8	60.2	0.024	1.1	27	87	+0.13
164852	+20 3649	96 Her	17 58.1	+20 50	5.09	B3	14.3	+18.5	66.3	0.018	0.8	178	64	+0.02
164865	-24 13826		17 58.1	-24 11	8.3	B	333.9	- 2.6	60.4	0.020	0.9	34	94	+0.50
165049	-15 4803		17 59.0	-15 22	8.07	B2	341.7	+ 1.6	60.4	0.015	0.7	49	109	+0.28
165052	-24 13864		17 59.0	-24 24	6.79	Oe5	333.8	- 2.9	60.5	.....	...	....	....	+0.14
165319	-14 4880		18 0.3	-14 12	8.1	B0	342.8	+ 1.9	60.5	0.029	1.3	58	119	+0.33
165763	-21 4864		18 2.5	-21 16	7.82	Oa	336.9	- 2.1	60.7	.....	...	....	....	
166286	-16 4736		18 4.8	-16 46	7.58	B1	341.1	- 0.4	60.7	0.020	0.9	11	72	+0.21
166304	-16 4739		18 4.9	-16 44	9.7	B5	341.2	- 0.4	60.7	0.029	1.3	53	114	+0.18
	+38 3095		18 6.3	+38 29			32.6	+23.3	71.8	.....	...	....	....	
166628	-19 4895		18 6.4	-19 28	7.14	B3	339.0	- 2.0	60.9	0.010	0.5	155	36	+0.36
166734	-10 4625	MWC 286	18 6.9	-10 46	8.3	B0	346.6	+ 2.1	61.0	0.070	3.2	65	125	+0.61
167263	-20 5055	16 Sgr	18 9.3	-20 25	6.02	O9 II	338.4	- 3.0	61.2	.....	...	....	....	+0.07
167264	-20 5054	15 Sgr	18 9.3	-20 46	5.42	B0 Ia	338.2	- 3.2	61.2	.....	...	....	....	+0.09
167330	-12 4954		18 9.6	-12 34	8.1	B0	345.4	+ 0.7	61.0	0.040	1.8	74	135	+0.35
167451	-13 4897		18 10.2	-13 36	7.9	B2	344.5	0.0	61.1	0.021	1.0	37	98	+0.39
167543	-14 4959		18 10.6	-14 40	8.8	B2	343.6	- 0.6	61.1	0.052	2.4	122	3	+0.26
167838	-15 4911		18 11.9	-15 28	6.64	B5 Ia	343.1	- 1.2	61.2	.....	...	....	....	+0.30
167971	-12 4980		18 12.5	-12 17	7.34	O8f	346.0	+ 0.2	61.2	0.028	1.3	150	31	+0.46
168112	-12 4988		18 13.1	-12 8	8.7	B0	346.2	+ 0.1	61.3	0.025	1.2	127	8	+0.41
168206	-11 4593		18 13.5	-11 40	8.87	WC7	346.6	+ 0.3	61.3	0.053	2.4	92	153	
168302	-16 4812		18 13.9	-16 3	9.9	B5	342.8	- 1.9	61.4	0.020	0.9	76	137	+0.41
168571	-17 5151		18 15.3	-17 26	8.3	B2	341.8	- 2.9	61.5	0.023	1.1	92	153	+0.33
168607	-16 4829	MWC 291	18 15.5	-16 25	8.9	B8	342.7	- 2.4	61.5	0.046	2.1	20	81	
168625	-16 4830		18 15.6	-16 25	9.2	B2	342.7	- 2.4	61.5	0.095	4.4	13	75	
169034	-13 4958		18 17.6	-13 39	8.3	B3 Ia	345.4	- 1.6	61.5	0.042	1.9	66	127	+0.67

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ'	E_1
169454	-14° 5039	MWC 294	18h 19m6	-14° 2'	6.84	B1 Ia	345.2	- 2.2	61.6	0.046	2.1	12°	74°	+0.51
169754	-11 4631		18 21.1	-11 25	8.1	B2	347.7	- 1.2	61.7	0.015	0.7	44	106	+0.56
170159	-13 4992		18 22.9	-13 4	8.7	B0	346.5	- 2.4	61.8	0.025	1.2	117	179	+0.33
170938	-15 5004		18 26.9	-15 46	8.7	B1	344.5	- 4.5	69.2	0.078	3.6	119	8	+0.50
172252	-12 5132	MWC 947	18 34.1	-11 58	8.7	B0	348.7	- 4.3	62.3	0.104	4.8	147	29	+0.43
172367	- 7 4650		18 34.7	- 7 20	9.7	B0	352.9	- 2.3	62.0	0.035	1.6	11	73	+0.28
173438	- 4 4575		18 40.2	- 4 42	8.1	B0	355.9	- 2.2	62.1	0.057	2.6	53	115	+0.42
173637	- 8 4702	MWC 607	18 41.2	- 8 2	9.2	B0	353.0	- 4.0	62.3	0.025	1.2	87	149	+0.23
174261	+21 3560		18 44.6	+21 3	6.93	B3	19.3	+ 8.8	63.3	.....	...	....	....	+0.03
174391	+15 3583		18 45.2	+15 49	6.54	B3	14.6	+ 6.2	62.6	.....	...	....	....	+0.02
174571	+ 8 3866	MWC 610	18 46.0	+ 8 35	8.4	B2	8.3	+ 2.7	62.1	0.066	3.0	80	142	+0.28
175514	+ 9 3928		18 50.6	+ 9 13	8.5	B0	9.4	+ 2.0	62.0	0.045	2.1	106	168	+0.30
175544	+ 0 4055		18 50.7	+ 0 8	7.73	B3	1.4	- 2.3	62.0	.....	...	....	....	+0.14
175803	+19 3848		18 52.0	+19 43	7.97	B3	18.9	+ 6.6	62.6	0.015	0.7	26	89	+0.13
177812	+ 3 3893		19 1.1	+ 3 6	8.9	B2	5.2	- 3.2	61.7	0.030	1.4	65	127	+0.34
178129	+ 3 3902		19 2.3	+ 3 17	8.0	B5	5.5	- 3.4	61.7	0.010	0.5	48	110	+0.26
180126	+ 9 4037		19 10.2	+ 9 37	7.9	B3p	12.0	- 2.1	61.2	0.008	0.4	27	88	+0.15
180398	+12 3861	MWC 312	19 11.3	+12 56	7.7	B9	15.1	- 0.7	61.0	.....	...	....	....	+0.12
180968	+22 3648	2 Vul	19 13.5	+22 51	5.40	B0.5	24.0	+ 3.7	61.1	0.015	0.7	18	79	+0.10
183143	+18 4085	MWC 317	19 23.0	+18 5	6.93	B7 Ia	20.9	- 0.6	60.2	0.135	6.2	179	59	+0.50
183561	+26 3566		19 25.1	+26 30	8.0	B8	28.5	+ 3.2	60.1	0.024	1.1	178	58	
184279	+ 3 4065	MWC 319	19 28.6	+ 3 34	6.78	B0.5	8.9	- 9.0	60.9	.....	...	....	....	+0.01
185418	+16 3928		19 33.9	+17 2	7.42	B3	21.6	- 3.4	59.3	0.015	0.7	13	72	+0.09
185780	+40 3824		19 35.7	+40 24	7.47	B2	41.7	+ 8.2	60.0	0.014	0.6	99	159	+0.03
185859	+20 4218	HR 7482	19 36.1	+20 15	6.44	B0.5 Ib	24.4	- 2.2	59.0	0.040	1.8	8	67	+0.26
186746	+23 3760		19 41.2	+23 41	7.01	B8p	27.9	- 1.4	58.4	0.040	1.8	25	83	
186841	+23 3767		19 41.7	+23 50	8.2	G5	28.1	- 1.4	58.4	0.056	2.6	27	85	
186943			19 42.2	+28 1	9.98	WN5	31.7	+ 0.7	58.3	0.021	1.0	18	76	
187282			19 44.1	+17 57		WN5	23.4	- 5.0	58.4	0.026	1.2	4	62	
187459	+33 3602	HR 7551	19 45.0	+33 12	6.35	B0.5 II	36.4	+ 2.9	58.1	0.062	2.8	33	91	+0.16
187983	+24 3914	HR 7573	19 47.8	+24 44	5.67	A2 Ia	29.6	- 2.1	57.8	0.019	0.9	159	37	
189066	+35 3878	HR 7620	19 53.1	+35 59	6.04	B5	39.7	+ 3.0	57.1	0.008	0.4	88	145	+0.01
189779	+29 3844		19 56.6	+29 37	8.2	B9	34.8	- 1.1	56.5	0.018	0.8	63	119	
190066	+21 4027		19 58.1	+21 52	6.55	B0.5	28.5	- 5.7	56.8	0.030	1.4	33	90	+0.16
190467	+36 3841	MWC 1000	20 0.0	+36 8	8.0	B2	40.6	+ 1.9	56.1	0.010	0.5	153	29	+0.16
190603	+31 3925	MWC 326	20 0.7	+31 56	5.69	B1.5	37.2	- 0.6	56.0	0.018	0.8	76	132	+0.35
190864	+35 3949		20 1.9	+35 19	8.2	O6	40.1	+ 1.2	55.8	0.020	0.9	168	44	+0.16
190967	+34 3871		20 2.4	+35 6	7.92	B3	40.0	+ 0.9	55.8	0.022	1.0	104	160	+0.18
191611	+36 3906		20 5.7	+36 12	8.6	B	41.3	+ 1.0	55.3	.....	...	....	....	
191781	+44 3365		20 6.6	+45 6	9.25	B	48.8	+ 5.9	55.6	0.015	0.7	17	73	
192103	+35 4013		20 8.1	+35 54	7.94	WC7	41.3	+ 0.4	54.9	.....	...	....	....	
192281	+39 4082		20 9.0	+39 58	7.47	O5f	44.8	+ 2.6	54.9	0.015	0.7	9	64	+0.30
192422	+38 3956		20 9.7	+38 28	7.10	B0.5	43.6	+ 1.6	54.7	0.034	1.6	11	66	+0.27
192539	+31 4001		20 10.3	+31 41	7.38	B5	38.1	- 2.4	54.7	0.025	1.2	177	52	+0.16
192639	+36 3958		20 10.8	+37 3	7.02	O8f	42.6	+ 0.6	54.6	.....	...	....	....	+0.26
192641	+36 3956		20 10.8	+36 21	7.94	WN	42.0	+ 0.2	54.5	0.025	1.2	168	43	
192660	+39 4096		20 10.9	+40 1	7.72	B3	45.0	+ 2.3	54.6	0.022	1.0	140	16	
192832	+41 3675		20 11.9	+42 6	8.5	B	46.8	+ 3.4	54.5	0.025	1.2	63	117	
193032	+38 3980		20 13.0	+38 35	8.1	B	44.1	+ 1.2	54.2	0.035	1.6	38	92	
193076	+37 3866		20 13.3	+37 22	8.0	B	43.1	+ 0.4	54.2	0.010	0.5	96	150	
193077	+36 3987		20 13.3	+37 7	7.97	WN5.5	42.9	+ 0.3	54.2	0.015	0.7	103	157	
193117	+40 4090		20 13.5	+40 32	9.0	B	45.7	+ 2.2	54.2	0.033	1.5	10	64	
193182	+39 4115	MWC 632	20 13.8	+39 16	6.56	Ape	44.7	+ 1.4	54.1	0.014	0.6	134	8	
E228766	+36 3991	MWC 1010	20 13.8	+37 0	9.8	WN7	42.9	+ 0.1	54.1	0.025	1.2	112	166	
193237	+37 3871	MWC 338	20 14.1	+37 43	4.88	Bp	43.5	+ 0.5	54.1	0.023	1.1	37	91	
E228841	+38 4000		20 14.8	+38 34	8.7	B0	44.3	+ 0.9	54.0	0.028	1.3	174	48	+0.32
193370	+34 3967	35 Cyg	20 14.8	+34 40	5.18	F5p	41.1	- 1.4	54.0	.....	...	....	....	
193514	+38 4006		20 15.5	+38 57	7.29	O8f	44.7	+ 1.0	53.9	0.030	1.4	48	102	+0.33
193576	+38 4010		20 15.8	+38 25	8.04	WN6	44.3	+ 0.6	53.8	0.015	0.7	150	24	
E228943	+38 4016		20 16.1	+38 17	10.0	B	44.2	+ 0.5	53.8	0.025	1.2	14	68	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ'	E_1
193928	+36° 4028		20h 17m8	+36°36'	9.43	WN6	43.0	- 0.8	58.5	0.028	1.3	68°	121°	
E229153	+37 3910		20 19.0	+37 39	10.1	B	44.0	- 0.3	58.3	0.022	1.0	169	42	
E229159	+38 4050		20 19.2	+38 53	9.4	B	45.0	+ 0.4	58.3	0.035	1.6	79	132	
E229171	+37 3913		20 19.4	+38 8	9.9	B	44.5	- 0.1	58.3	0.017	0.8	20	73	
194279	+40 4150	MWC 634	20 19.7	+40 26	7.05	B2	46.3	+ 1.2	58.3	0.061	2.8	177	50	+0.54
	+36 4048		20 19.8	+36 59	9.4		43.6	- 0.9	58.2	0.063	2.9	54	107	
E229221	+38 4062	MWC 344	20 20.1	+38 11	10.0	B	44.6	- 0.3	58.1	0.034	1.6	66	119	+0.50
E229227	+38 4065		20 20.2	+38 8	10.1	B	44.6	- 0.3	58.1	0.019	0.9	63	116	
E229232	+38 4070		20 20.3	+38 47	10.3	B	45.1	+ 0.1	58.1	0.091	4.2	67	120	
E229234	+38 4069		20 20.3	+38 12	9.3	B	44.6	- 0.2	58.1	0.027	1.2	93	146	
E229238	+38 4071		20 20.4	+38 13	9.5	B	44.6	- 0.2	58.1	0.030	1.4	86	139	
E229239	+38 4072	MWC 1016	20 20.4	+38 11	9.6	B	44.6	- 0.2	58.1	0.041	1.9	99	152	
194779	+40 4164		20 22.4	+41 1	7.66	B	47.1	+ 1.2	58.8	0.010	0.5	57	110	+0.19
	+39 4189		20 22.7	+39 20	9.3		45.8	+ 0.1	58.7	0.060	2.8	14	67	
194839	+40 4165	MWC 1017	20 22.8	+41 3	7.45	BO Ia	47.2	+ 1.1	58.7	0.026	1.2	171	44	+0.54
	+38 4098		20 23.8	+38 26	9.1		45.2	- 0.6	58.6	0.048	2.2	68	121	
	+37 3945		20 24.5	+38 2	9.4		45.0	- 1.0	58.4	0.067	3.1	64	116	
	+40 4185		20 24.5	+40 18	9.4		46.8	+ 0.4	58.4	0.015	0.7	158	30	
195407	+36 4095	MWC 346	20 26.0	+36 39	7.72	B5	44.1	- 2.0	58.3	0.035	1.6	48	100	+0.19
195592	+43 3630	MWC 347	20 27.2	+43 59	7.15	09 I	50.0	+ 2.3	58.1	0.027	1.2	117	169	+0.52
195593	+36 4105	44 Cyg	20 27.2	+36 36	6.30	F5 Ia	44.2	- 2.3	58.1	0.048	2.2	65	117	
195965	+47 3136		20 29.3	+47 53	6.82	B2	53.3	+ 4.4	51.9	0.020	0.9	35	87	+0.05
	+37 3976		20 30.0	+37 56	9.4		45.6	- 1.9	51.6	0.051	2.4	167	39	
	+36 4145		20 32.5	+37 4	8.5		45.2	- 2.8	51.2	0.038	1.8	38	89	
196604	+44 3519		20 33.4	+44 34	8.3	A3	51.2	+ 1.8	51.0	.....	...	....	....	
197406	+52 2777		20 38.4	+52 14	10.3	Ma	57.6	+ 6.0	50.5	0.020	0.9	101	151	
	+42 3835		20 38.5	+42 49	8.9		50.4	- 0.1	50.1	0.029	1.3	16	66	
197460	+35 4229		20 38.8	+36 2	8.6	WN	45.2	- 4.4	50.3	0.032	1.5	3	53	+0.21
197770	+56 2477	HR 7940	20 40.7	+56 46	6.36	B2	61.4	+ 8.6	50.5	0.088	4.0	130	1	+0.23
	+35 4258		20 42.2	+35 11	9.1		45.0	- 5.5	49.8	0.011	0.5	7	57	
E235350	+50 3189		20 42.3	+50 49	9.0	BO	56.9	+ 4.6	49.7	.....	...	....	....	
198478	+45 3291	MWC 353	20 45.5	+45 45	4.89	B3 Ia	53.4	+ 0.9	48.9	0.061	2.8	5	54	+0.25
198479	+45 3290		20 45.5	+45 16	8.52	B5	53.1	+ 0.6	48.9	0.057	2.6	15	64	
198512	+53 2495	MWC 354	20 45.7	+53 32	7.95	Pec.	59.4	+ 6.0	49.2	0.041	1.9	128	177	+0.16
	+44 3594	MWC 1031	20 45.7	+45 3	9.4		52.9	+ 0.4	48.9	0.044	2.0	12	61	
198781	+63 1663	HR 7993	20 47.6	+63 40	6.38	BO	67.3	+12.3	50.1	0.030	1.4	157	27	+0.07
198895	+54 2429	MWC 355	20 48.4	+55 7	6.26	B3	60.8	+ 6.7	48.9	0.119	5.5	149	18	+0.34
198931	+43 3747	MWC 1032	20 48.6	+44 3	9.0	B8	52.5	- 0.6	48.4	0.096	4.4	146	14	
	+37 4092		20 49.8	+37 48	9.2		48.0	- 5.0	48.4	0.028	1.3	172	40	
199216	+48 3242		20 50.7	+49 9	7.13	B1	56.6	+ 2.5	48.1	0.040	1.8	135	3	+0.32
199308	+55 2486		20 51.3	+55 58	7.61	B3	61.7	+ 7.0	48.4	0.042	1.9	162	30	+0.12
199356	+39 4368	MWC 357	20 51.6	+39 55	7.02	BOp	49.8	- 3.8	48.0	0.058	2.7	151	19	+0.16
199478	+46 3111	MWC 358	20 52.4	+47 2	5.76	B8	55.2	+ 0.8	47.7	0.040	1.8	11	59	+0.22
	+42 3914		20 52.7	+42 44	8.3		52.0	- 2.1	47.7	0.100	4.6	150	18	
199579	+44 3639	HR 8023	20 53.1	+44 33	6.01	O6	53.4	- 0.9	47.6	0.020	0.9	55	103	+0.11
	+45 3341		20 53.6	+46 9	9.0		54.7	+ 0.1	47.5	0.068	3.1	50	98	
	+44 3655		20 54.8	+44 45	9.3		53.8	- 1.0	47.3	0.048	2.2	42	89	
	+45 3360		20 57.0	+45 51	9.5		54.8	- 0.5	46.9	0.030	1.4	25	72	
200776	+45 3384		21 0.4	+45 56	8.1	B8	55.3	- 0.9	46.3	0.010	0.5	31	77	
200857	+54 2470		21 1.0	+54 51	7.16	B3	61.8	+ 5.2	46.4	0.036	1.7	155	21	+0.36
202124	+43 3842		21 8.8	+44 7	7.83	B	55.0	- 3.2	44.8	0.011	0.5	90	135	+0.14
202214	+59 2334	HR 3119	21 9.3	+59 35	5.65	B1	66.0	+ 7.7	45.1	0.017	0.8	143	8	+0.15
202253	+43 3850		21 9.5	+43 28	7.70	B3	54.7	- 3.8	44.7	0.015	0.7	50	95	+0.13
	+41 4064		21 12.3	+42 7	8.6		54.1	- 5.1	44.2	0.052	2.4	53	97	
203025	+57 2309	MWC 365	21 14.6	+58 10	6.41	B3	65.5	+ 6.2	43.9	.....	...	....	....	+0.17
203938	+46 3294		21 20.2	+46 44	7.10	B1	58.3	- 2.7	42.6	0.030	1.4	160	23	+0.33
	+43 3913	MWC 640	21 21.3	+44 1	8.4		56.6	- 4.9	42.5	0.050	2.3	42	84	
204710	+44 3832		21 25.4	+44 29	6.90	B8	57.5	- 5.0	41.7	0.050	2.3	36	78	
204722	+43 3941	MWC 370	21 25.5	+43 54	7.52	B2	57.1	- 5.4	41.7	0.025	1.2	10	52	+0.09
204827	+58 2272		21 26.1	+58 18	7.8	BO	66.7	+ 5.3	41.6	0.122	5.6	59	101	+0.34

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ'	E_1
205196	+56° 2589		21h 28m.6	+57° 4'	7.36	B0 Ib	66.2	+ 4.1	41.0	0.062	2.8	79°	120°	+0.37
	+47 3487	MWC 374	21 32.1	+47 28	9.1		60.3	- 3.5	40.3	.....	...	....	....	
	+37 4368		21 32.6	+37 49	9.5		54.0	-10.9	41.0	.....	...	....	....	
	+48 3437		21 32.6	+48 54	8.5		61.3	- 2.5	40.2	0.026	1.3	179	38	
206183	+56 2614		21 35.3	+56 32	8.1	O9	66.5	+ 3.1	39.6	0.015	0.7	46	86	+0.11
206259	+51 3112		21 35.8	+51 54	7.48	A0	63.3	- 0.5	39.5	0.017	0.8	29	69	
	+49 3591		21 36.7	+50 3	9.5		62.6	- 2.0	39.3	.....	...	....	....	
206773	+57 2374	MWC 376	21 39.3	+57 17	6.98	BOp	67.4	+ 3.4	38.8	0.039	1.8	170	29	+0.17
206936	+58 2316	μ Cep	21 40.4	+58 19	var.	M2 Ia	68.2	+ 4.1	38.7	0.035	1.6	38	77	
E239758	+58 2320		21 41.8	+58 36	9.0	B0	68.5	+ 4.2	38.4	0.046	2.1	51	89	
	+49 3615	MWC 1050	21 42.2	+49 50	8.8		63.1	- 2.7	38.2	0.082	3.8	9	47	
207260	+60 2288	υ Cep	21 42.6	+60 40	4.46	A2 Ia	69.9	+ 5.7	38.3	0.037	1.7	46	84	+0.20
207329	+51 3144	MWC 378	21 43.1	+51 39	7.45	B2	64.4	- 1.4	38.0	0.038	1.8	1	39	+0.23
207538	+59 2420		21 44.6	+59 14	7.03	B0	69.2	+ 4.4	37.8	0.046	2.1	61	99	+0.26
207673	+40 4648	HR 8345	21 45.6	+40 40	6.49	A2 Ib	57.9	-10.3	38.2	.....	...	....	....	+0.23
207798	+52 3043		21 46.5	+52 14	6.56	B2	65.1	- 1.2	37.3	0.017	0.8	6	43	+0.26
	+47 3588		21 48.9	+47 33	8.8		62.6	- 5.2	37.0	.....	...	....	....	
208501	+55 2644	13 Cep	21 51.5	+56 8	6.01	B8 Ib	68.0	+ 1.4	36.3	0.035	1.6	43	79	+0.39
208816	+62 2007	VV Cep	21 53.8	+63 9	var.	cMep	72.4	+ 6.9	36.2	0.032	1.5	39	75	
E235673	+52 3071		21 54.1	+52 19	9.0	B0	66.1	- 1.9	35.8	0.052	2.4	28	64	
208905	+60 2320		21 54.3	+60 49	6.90	B3	71.1	+ 5.0	35.9	0.018	0.8	39	75	+0.13
E235679	+53 2749	MWC 647	21 55.0	+53 59	8.8	B2	67.2	- 0.6	35.6	0.038	1.8	51	87	
209145	+59 2443		21 56.1	+59 50	7.96	B8	70.7	+ 4.1	35.5	.....	...	....	....	
209296	+56 2676	MWC 383	21 57.2	+56 14	8.1	A0	68.8	+ 1.0	35.2	0.020	0.9	24	59	+0.17
209678	+52 3088		22 0.1	+52 43	8.4	B	67.1	- 2.1	34.6	0.066	3.0	33	68	
	+51 3239		22 0.3	+51 37	9.2		66.5	- 3.0	34.6	0.045	2.1	30	65	
209900	+52 3095		22 1.6	+53 1	8.9	A	67.4	- 2.0	34.3	0.048	2.2	39	73	
209975	+61 2246	19 Cep	22 2.1	+61 48	5.17	O9.5 Ib	72.4	+ 5.3	34.3	0.023	1.1	68	102	+0.11
	+49 3735		22 2.2	+49 25	9.0		65.5	- 5.0	34.3	0.036	1.7	35	69	
210072	+54 2683		22 2.7	+54 46	8.0	B8	68.6	- 0.6	34.0	0.015	0.7	47	81	
210221	+52 3114	HR 8443	22 3.8	+52 49	6.50	A3 Ib	67.6	- 2.3	33.8	0.041	1.9	45	79	
210334	+45 3813	AR Lac	22 4.6	+45 15	var.	G5	63.5	- 8.7	34.1	.....	...	....	....	
	+52 3122		22 5.0	+52 28	9.2		67.6	- 2.7	33.6	0.037	1.7	49	83	
E235789	+50 3561	Y Lac	22 5.2	+50 33	var.	F8	66.5	- 4.3	33.6	0.026	1.2	40	74	
210478	+60 2348		22 5.6	+60 30	7.26	B8	72.1	+ 4.0	33.5	0.018	0.8	49	83	
		CX Cep	22 6.1	+57 13	var.	WN5	70.3	+ 1.2	33.3	0.144	6.6	45	78	
210628	+55 2695		22 6.6	+55 36	6.87	B3	69.5	- 0.2	33.2	0.027	1.2	59	92	+0.13
210809	+51 3281		22 7.9	+51 56	7.7	O9.5	67.7	- 3.4	33.0	0.033	1.5	49	82	+0.17
210839	+58 2402	λ Cep	22 8.1	+58 56	5.19	O6f	71.5	+ 2.5	32.9	0.024	1.1	59	92	+0.19
	+52 3135		22 8.4	+53 12	9.1		68.4	- 2.4	32.9	0.043	2.0	40	73	
E239886	+56 2733		22 8.9	+56 46	8.6	B0	70.4	+ 0.6	32.7	0.110	5.1	49	82	
E239895	+56 2735		22 9.8	+57 10	8.7	B2	70.7	+ 0.8	32.6	0.066	3.0	51	84	
	+53 2833		22 12.4	+53 40	9.5		69.1	- 2.3	32.0	0.053	2.4	50	82	
	+54 2726		22 13.0	+54 59	9.1		69.9	- 1.2	31.9	0.085	3.9	54	86	
E235781	+52 3167		22 13.2	+53 13	8.4	B1	69.0	- 2.8	31.9	0.042	1.9	29	61	
211604	+55 2713		22 13.2	+55 39	8.5	A5	70.3	- 0.7	31.8	.....	...	....	....	
	+53 2837		22 13.3	+53 42	9.4		69.3	- 2.4	31.9	0.040	1.8	45	77	
E235783	+53 2838		22 13.4	+53 59	8.8	B3	69.4	- 2.1	31.8	0.047	2.2	55	87	
211773	+55 2718		22 14.4	+55 38	8.8	G0	70.4	- 0.8	31.6	.....	...	....	....	
211820	+55 2720		22 14.8	+55 41	8.6	F2 Ib	70.5	- 0.8	31.5	0.068	3.1	55	87	
	+53 2843		22 14.9	+53 46	9.3		69.5	- 2.4	31.5	0.058	2.7	51	83	
211853	+55 2721		22 15.0	+55 37	9.0	WN5.5	70.5	- 0.8	31.5	0.089	4.1	44	76	
211880	+62 2061		22 15.2	+62 43	8.5	B8	74.2	+ 5.2	31.6	0.010	0.5	52	84	
E235795	+51 3330	MWC 1057	22 15.2	+51 37	8.6	B2	68.4	- 4.3	31.5	0.019	0.9	40	72	
211903	+55 2723		22 15.4	+55 47	8.9	A0	70.6	- 0.7	31.4	0.045	2.1	44	75	
211971	+59 2506		22 15.9	+59 38	7.16	B8	72.7	+ 2.5	31.3	0.014	0.6	87	118	
212043	+56 2755		22 16.4	+56 25	6.54	B8	71.1	- 0.3	31.2	.....	...	....	....	
212044	+51 3341	MWC 386	22 16.4	+51 21	7.08	B2p	68.4	- 4.6	31.3	0.028	1.3	49	80	+0.04
212183	+55 2729		22 17.3	+55 30	7.89	B9 III-IV	70.7	- 1.1	31.0	.....	...	....	....	
212312	+54 2750		22 18.3	+55 6	8.41	F2 Ib	70.6	- 1.5	30.8	0.064	2.9	48	79	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	φ	δ Mag	δ %	θ	θ'	E_1
E235813	+54° 2751		22h 18m5	+54°18'	8.7		70.2	- 2.2	30.8	0.058	2.7	43°	74°	
212455	+54 2756		22 19.3	+54 44	8.4	B6	70.6	- 1.9	30.6	0.058	2.7	49	80	+0.28
212466	+55 2737	RW Cep	22 19.4	+55 28	var.	G8 Ia	41.0	- 1.3	30.6	0.057	2.6	48	79	
E235825	+54 2758		22 19.6	+54 44	9.1	B2	70.6	- 1.9	30.5	0.071	3.3	54	85	
	+54 2764		22 20.1	+54 53	9.4		70.7	- 1.8	30.4	0.065	3.0	46	76	
212827	+53 2877		22 22.0	+53 16	8.1	A2	70.2	- 3.4	30.1	0.041	1.9	44	74	
	+54 2775		22 22.2	+54 57	9.3		71.0	- 1.9	30.0	0.062	2.8	53	83	
	+52 3210		22 23.0	+53 8	9.4		70.2	- 3.6	29.9	0.040	1.8	54	84	
	+53 2885		22 23.2	+53 40	9.5		70.5	- 3.1	29.8	0.026	1.2	53	83	
213087	+64 1664	26 Cep	22 23.9	+64 37	5.66	B0	76.0	+ 6.4	29.8	0.017	0.8	33	63	+0.22
213225	+56 2785		22 24.8	+56 25	8.0	K0	72.1	- 0.8	29.4	.....	...	....	....	
E239967	+55 2756		22 25.1	+56 5	9.1	B2	72.0	- 1.1	29.4	0.067	3.1	47	76	
213306	+57 2548	δ Cep	22 25.4	+57 54	var.	G0	72.9	+ 0.4	29.3	0.012	0.6	49	78	
213405	+64 1672		22 26.0	+64 36	8.4	B0	76.2	+ 6.2	29.4	0.013	0.6	9	38	+0.18
	+54 2790		22 26.2	+54 17	9.3		71.2	- 2.8	29.2	0.052	2.4	55	84	
	+56 2793	ST Cep	22 26.4	+56 29	var.		72.3	- 0.9	29.1	0.033	1.5	44	73	
213470	+56 2794		22 26.5	+56 43	6.73	A3 Ia	72.4	- 0.7	29.1	0.067	3.1	56	85	
		TW Lac	22 26.5	+54 7	var.		71.2	- 3.0	29.1	0.008	0.4	43	72	
213482	+56 2795		22 26.6	+56 20	8.6	F8 Ib	72.2	- 1.0	29,0	0.034	1.6	43	73	
E235870	+54 2794		22 27.7	+54 44	8.8	G8 II	71.6	- 2.5	28.8	0.027	1.2	57	86	
E235874	+50 3748		22 28.9	+50 42	9.0	B0	69.8	- 6.1	28.7	0.029	1.3	42	73	
E239994	+56 2806		22 29.8	+56 49	9.0	F8 Ib	72.9	- 0.8	28.4	0.053	2.4	56	84	
214369	+57 2568	W Cep	22 32.6	+57 54	var.	cMe	73.7	0.0	27.8	0.058	2.7	66	94	
214419	+56 2818	CQ Cep	22 32.9	+56 23	var.	WN6	73.0	- 1.4	27.7	0.113	5.2	65	93	
		NO. 19	22 34.0	+54 47			72.4	- 2.9	27.5	0.043	2.0	52	80	
E240010	+55 2783	MWC 655	22 34.6	+55 19	9.3	B	72.8	- 2.5	27.4	0.079	3.6	76	103	
214975	+56 2829	Z Lac	22 36.9	+56 19	var.	F5	73.5	- 1.8	26.9	0.050	2.3	61	88	
E240024	+55 2789	RR Lac	22 37.5	+55 55	var.	G5	73.4	- 2.1	26.8	0.057	2.6	59	86	
		No. 20	22 38.5	+56 12			73.6	- 1.9	26.5	0.050	2.3	51	78	
	+55 2795		22 38.7	+55 50	9.4		73.5	- 2.3	26.5	0.050	2.3	49	75	
	+53 2964	MWC 1067	22 39.2	+53 33	9.4		72.6	- 4.3	26.4	0.025	1.2	61	87	
	+54 2847		22 40.3	+55 23	9.5		73.5	- 2.8	26.2	0.073	3.4	51	77	
215605	+57 2597	MWC 658	22 41.3	+57 20	9.5	B	74.5	- 1.1	25.9	0.031	1.4	40	66	
E240047	+56 2852		22 41.4	+56 55	9.2	B	74.3	- 1.5	25.9	0.048	2.2	62	88	
	+55 2808		22 42.3	+55 48	9.5		74.0	- 2.5	25.7	0.060	2.8	51	77	
215806	+57 2606		22 42.7	+57 46	9.4	B	74.9	- 0.8	25.6	0.040	1.8	71	97	
215835	+57 2607		22 42.9	+57 33	8.6	B	74.8	- 1.0	25.6	0.060	2.8	63	89	
215836	+55 2809		22 42.9	+55 54	9.2	B	74.1	- 2.5	25.6	0.073	3.4	56	82	
216014	+64 1717	AH Cep	22 44.2	+64 32	var.	B0	77.9	+ 5.3	25.4	0.035	1.6	58	83	+0.27
E240073	+55 2815	V Lac	22 44.5	+55 47	var.	G5	74.2	- 2.7	25.3	0.053	2.4	55	80	
216044	+54 2865		22 44.5	+54 36	8.6	B2	73.7	- 3.7	25.3	0.023	1.1	64	89	+0.12
216105	+55 2817	X Lac	22 45.0	+55 54	var.	G5	74.3	- 2.6	25.2	0.048	2.2	64	89	
216206	+49 3954	HR 8692	22 45.9	+50 9	6.43	G4 Ib	72.0	- 7.9	25.2	0.025	1.2	62	87	
216248	+57 2625		22 46.3	+58 8	9.9	B	75.4	- 0.6	24.8	0.031	1.4	54	79	+0.19
216411	+58 2492	MWC 1074	22 47.6	+58 28	7.16	B1 Ia	75.7	- 0.4	24.6	0.059	2.7	46	71	+0.37
216438	+52 3315		22 47.8	+53 11	8.4	B2	73.6	- 5.2	24.6	0.031	1.4	56	81	+0.07
216532	+61 2356		22 48.6	+61 54	8.0	B3	77.3	+ 2.6	24.4	0.044	2.0	71	95	+0.13
216629	+61 2361	MWC 1075	22 49.4	+61 36	9.2	B	77.2	+ 2.4	24.2	0.111	5.1	105	129	+0.44
216658	+61 2363		22 49.6	+61 36	8.6	B	77.3	+ 2.3	24.2	0.091	4.2	101	125	+0.38
216711	+61 2364		22 50.0	+62 4	9.4	B	77.5	+ 2.7	24.1	0.047	2.2	86	110	+0.35
	+55 2840		22 50.9	+55 51	9.4		75.1	- 3.0	23.9	0.064	2.9	46	70	
	+56 2903		22 51.6	+57 4	9.4		75.7	- 1.9	23.7	0.063	2.9	59	83	
216898	+61 2370		22 51.8	+61 46	8.0	O8	77.6	+ 2.4	23.7	0.085	3.9	85	109	+0.29
216927	+58 2511		22 52.0	+58 22	8.0	B9	76.2	- 0.7	23.6	0.040	1.8	39	63	+0.45
	+63 1907		22 52.4	+63 56	9.0		78.5	+ 4.3	23.6	0.080	3.7	40	64	
217035	+62 2136		22 52.6	+62 19	7.76	B5	77.9	+ 2.8	23.5	0.037	1.7	91	115	+0.22
217061	+61 2372		22 52.8	+62 5	8.4	B	77.8	+ 2.6	23.5	0.030	1.4	87	111	+0.38
217086	+61 2373		22 53.0	+62 12	7.70	B0	77.9	+ 2.8	23.4	0.024	1.1	93	116	
217312	+62 2147		22 54.8	+62 32	7.7	B8	78.2	+ 3.0	23.1	0.028	1.3	80	103	
		No. 21	22 55.1	+57 11			76.1	- 2.0	23.0	0.058	2.7	58	81	

TABLE 2 (Cont'd)

HD	BD	Other Designation	α 1900	δ 1900	Mag	Sp	l	b	ϕ	Mag	%	θ	θ'	E_1
217463	+62° 2152		22h 55m8	+62°14'	8.9	B2	78.2	+ 2.6	22.8	0.016	0.7	93°	116°	+0.31
217476	+56 2923	HR 8752	22 55.9	+56 24	5.48	G0 Ia	75.9	- 2.8	22.8	0.064	2.9	70	93	
217490	+58 2521		22 56.0	+59 5	8.6	B	77.0	- 0.3	22.8	0.074	3.4	51	74	
E240160	+56 2928		22 57.4	+56 27	9.3	B	76.2	- 2.8	22.5	0.058	2.7	75	97	
	+56 2929		22 57.5	+56 30	9.4		76.2	- 2.8	22.5	0.049	2.2	63	85	
	+56 2930		22 57.8	+57 0	9.3		76.4	- 2.3	22.4	0.080	3.7	76	98	
E240165	+56 2931		22 58.0	+56 39	9.5	B	76.3	- 2.6	22.4	0.061	2.8	78	100	
E240168	+55 2878		22 58.2	+56 4	8.9	B0	76.1	- 3.2	22.3	0.037	1.7	37	59	
E240171	+56 2934		22 58.5	+56 36	9.1	B	76.3	- 2.7	22.3	0.045	2.1	66	88	
217919	+62 2161		22 59.0	+63 10	7.8	B	78.9	+ 3.3	22.2	0.015	0.7	64	86	
218066	+62 2163		23 0.0	+62 51	7.8	B5	78.9	+ 3.0	21.9	0.015	0.7	37	59	
218195	+57 2689		23 1.0	+57 43	8.1	B3	77.1	- 1.8	21.7	0.055	2.5	70	92	
218323	+63 1928		23 2.0	+63 46	7.8	B	79.4	+ 3.8	21.5	0.041	1.9	68	90	
218342	+62 2170		23 2.1	+62 41	7.46	B0	79.0	+ 2.8	21.5	0.041	1.9	58	79	+0.30
218376	+58 2545	1 Cas	23 2.4	+58 53	4.93	B1	77.7	- 0.8	21.4	0.019	0.9	71	92	+0.03
	+55 2899		23 2.7	+55 28	9.4		76.5	- 4.0	21.4	0.027	1.2	63	84	
E236044	+53 3076		23 2.7	+54 13	9.0	B0	76.0	- 5.1	21.4	0.035	1.6	64	85	
		SW Cas	23 2.9	+58 1	var.		77.4	- 1.6	21.3	0.055	2.5	68	89	
218915	+52 3383		23 6.7	+52 31	7.06	O9 I	76.0	- 6.9	20.6	0.025	1.2	53	74	+0.13
218997	+58 2560	V Cas	23 7.4	+59 8	var.	Md	78.4	- 0.8	20.3	0.034	1.6	83	103	
219287	+58 2565		23 9.6	+58 51	8.5	B	78.5	- 1.1	19.8	0.023	1.1	61	81	
219460	+59 2683		23 10.8	+59 55	9.2	WN5	79.0	- 0.2	19.6	0.055	2.5	74	94	
E236083	+54 2943		23 12.7	+54 57	9.2	A5	77.6	- 5.0	19.2	0.010	0.5	87	106	
	+63 1962		23 12.8	+63 15	8.3		80.4	+ 2.9	19.2	0.053	2.4	63	82	
	+63 1964		23 13.1	+63 35	8.3		80.5	+ 3.2	19.1	0.089	4.1	63	82	
E240250	+59 2695		23 13.6	+59 19	8.6	B0	79.2	- 0.9	19.0	0.067	3.1	90	109	
	+62 2210		23 14.3	+62 56	8.5		80.4	+ 2.5	18.8	0.144	6.6	74	93	
220116	+57 2724	MWC 399	23 16.1	+57 43	8.8	B	78.9	- 2.5	18.4	0.090	4.1	81	99	
	+60 2522		23 16.2	+60 38	8.0		79.9	+ 0.3	18.4	0.033	1.5	63	81	
	+60 2525		23 17.3	+60 18	9.3		79.9	- 0.1	18.2	0.029	1.3	62	80	
220770	+60 2539		23 21.4	+60 53	8.2	F5	80.6	+ 0.3	17.3	0.048	2.2	69	86	
	+60 2542		23 22.6	+60 50	8.9		80.7	+ 0.2	17.0	0.039	1.8	67	84	
	+60 2582		23 30.0	+61 5	8.3		81.6	+ 0.2	15.4	0.068	3.1	73	88	
		RS Cas	23 32.6	+61 53	var.		82.2	+ 0.9	14.8	0.109	5.0	75	90	
	+61 2509		23 39.0	+61 36	8.5		82.8	+ 0.4	13.4	0.048	2.2	77	90	
	+60 2615		23 39.9	+61 7	8.9		82.8	0.0	13.2	0.030	1.4	70	83	
	+62 2296		23 42.4	+62 40	8.0		83.4	+ 1.4	12.7	0.057	2.6	115	128	
	+61 2526		23 42.8	+61 29	8.5		83.2	+ 0.2	12.6	0.024	1.1	90	103	
	+62 2299		23 43.1	+62 50	9.2		83.6	+ 1.5	12.5	0.023	1.1	174	7	
	+61 2529		23 43.6	+61 26	8.6		83.2	+ 0.2	12.4	0.034	1.6	88	100	
223385	+61 2533	MWC 663	23 44.0	+61 40	5.61	A2	83.4	+ 0.4	12.3	0.026	1.2	57	69	+0.29
223387	+56 3094	MWC 401	23 44.0	+56 40	9.2	B	82.3	- 4.5	12.4	0.051	2.4	68	80	+0.13
	+60 2629	UU Cas	23 45.7	+60 21	var.		83.3	- 1.0	12.0	0.072	3.3	76	88	
	+62 2313		23 46.9	+62 45	8.5		84.0	+ 1.4	11.7	0.035	1.6	79	91	
		RY Cas	23 47.1	+58 11	var.		83.1	- 3.1	11.7	0.036	1.7	81	93	
	+61 2550		23 47.3	+61 34	9.2		83.8	+ 0.2	11.6	0.029	1.3	62	74	
		TZ Cas	23 47.9	+60 27	var.		83.6	- 0.9	11.5	0.079	3.6	89	101	
223924	+56 3106		23 48.6	+56 16	8.0	B2	82.9	- 5.0	11.4	0.035	1.6	64	75	+0.05
	+61 2559		23 48.6	+61 52	9.2		84.0	+ 0.5	11.3	0.043	2.0	65	76	
223960	+60 2636	MWC 403	23 48.9	+60 18	6.98	B9	83.7	- 1.1	11.3	0.067	3.1	80	91	+0.31
223987	+60 2637		23 49.2	+61 3	7.56	B1	83.9	- 0.4	11.2	0.055	2.5	70	81	+0.30
224014	+56 3111	ρ Cas	23 49.4	+56 57	4.85	F8p	83.1	- 4.4	11.2	0.030	1.4	51	62	
224055	+61 2562	MWC 404	23 49.7	+61 17	7.16	B3	84.0	- 0.1	11.1	0.088	4.0	67	78	+0.39
224151	+56 3115	HR 9052	23 50.5	+56 53	6.05	B0.5	83.3	- 4.5	10.9	0.020	0.9	87	98	+0.15
224257	+55 3051		23 51.3	+55 26	8.5	B	83.1	- 5.9	10.8	0.033	1.5	66	77	
	+66 1661		23 52.4	+67 0	8.7		85.4	+ 5.4	10.5	0.087	4.0	89	99	
224424	+58 2676	MWC 405	23 52.7	+59 9	7.8	B1	84.0	- 2.3	10.4	0.044	2.0	48	58	+0.43
224436	+56 3122		23 52.8	+56 32	8.6	B0	83.5	- 4.9	10.4	.....	...	....	....	
E240464	+59 2799		23 53.7	+59 43	9.2	F5	84.2	- 1.8	10.2	0.032	1.5	73	83	
224599	+59 2801		23 54.1	+59 29	10.2	B	84.2	- 2.0	10.1	0.030	1.4	21	31	+0.15

TABLE 2 (Concluded)

HD	BD	Other Designation	α_{1900}	δ_{1900}	Mag	Sp	l	b	ϕ	δ Mag	δ %	θ	θ'	E_1
224855	+59° 2810	WZ Cas	$23^h\ 56^m.2$	+59°48'	var.	C9	84.5	- 1.7	9.7	0.010	0.5	49°	59°	
224905	+59 2813	NWC 666	23 56.6	+59 54	9.2	B	84.6	- 1.6	9.6	0.024	1.1	101	111	+0.11
	+66 1675		23 57.1	+66 51	9.0		85.8	+ 5.2	9.5	0.113	5.2	106	115	
225094	+62 2356	NWC 408	23 58.3	+63 5	6.26	B3	85.3	+ 1.4	9.2	0.050	2.3	75	84	+0.22
225146	+60 2663		23 58.8	+60 33	8.6	B0	85.0	- 1.1	9.1	0.068	3.1	72	81	+0.20
225160	+61 2585	NWC 410	23 58.9	+61 40	8.6	O8	85.1	0.0	9.1	0.053	2.4	92	101	+0.19

Draper Catalogue. A few classifications were obtained from the list of supergiants by Morgan and Roman[4] and some from the *Bergedorfer Spectral-Durchmusterung*. W. W. Morgan and W. P. Bidelman kindly supplied some classifications.

The galactic co-ordinates l and b in the eighth and ninth columns were taken from the Lund[5] tables. They refer to the galactic pole with a 1900 position of $\alpha = 12^h40^m$ and $\delta = +28°$.

The tenth column gives the galactic parallactic angle, which is the angle between the galactic latitude circle and the declination circle. This angle was also computed from the Lund tables and is given here to the nearest tenth of a degree.

The eleventh and twelfth columns give the observed polarization in magnitude and per cent, respectively.

The observed position angles of the plane of vibration, θ, are recorded in the thirteenth column, and this same plane of vibration, referred to the galactic co-ordinate system, is recorded in the fourteenth column. It will be noted that these angles differ by 90° from those published by the U.S. Naval Observatory, where the older terminology, "plane of polarization," is employed.[6]

The color excess E_1 in the fifteenth column was taken from the colors of 1332 stars by Stebbins, Huffer, and Whitford.[7] No correction to the color excess was made where the spectral type in the seventh column is different from that originally used to compute the color excess.

In general, only one observation was made of each star, since a second observation would not have added significantly to the data. Care was exercised in the identification. A chart for use at the telescope was made from the *Bonner Durchmusterung* charts if the star appeared in this catalogue. In all cases an appropriate chart was used in the identification of all stars.

There are 228 stars in the present list in common with the 551 stars published by the U.S. Naval Observatory.[3] In order to determine any systematic difference between the two lists of observations, the stars in common are plotted in Figure 3. Although the scatter may be somewhat larger than we should anticipate for two photoelectric systems, there does not appear to be any systematic difference between the two systems. However, this is not the case for the position angles, where, from Figure 4, we see that there is a systematic mean difference between the McDonald position angles and those of the U.S. Naval Observatory of approximately 3°.3, with the McDonald position angles the smaller. Although a search has been made as to the origin of this systematic difference, no explanation has been found.

All the stars in Table 2 whose galactic latitudes lie between −6° and +6° are plotted in Figures 5–12. An inspection of these figures amply confirms the conclusions reached earlier:[8] "Stars of low galactic latitude have a tendency to show polarization in which the electric vector maximum [plane of vibration] is approximately parallel to the galactic plane. This relationship, however, may not hold for all galactic longitudes, for a few scattered observations in Scutum [$l = 345°$–$355°$] and Cygnus [$l = 35°$–$65°$] indicate that this relationship does not hold at these longitudes." This general trend of the plane of vibration to be parallel to the galactic plane may be a reflection of the galactic rotation. For if the polarization is a consequence of the alignment of elongated interstellar particles by magnetic fields and if these magnetic fields of the order of 10^{-6} gauss have their origin in the stretching of the magnetic lines of force[9] by motion of the material, then it

[4] *Ap. J.*, **112**, 363, 1950.

[5] John Ohlsson, *Ann. Obs. Lund*, No. 3, 1932.

[6] F. A. Jenkins and H. E. White, *Fundamentals of Optics* (New York: McGraw-Hill Book Co., Inc., 1950).

[7] *Ap. J.*, **91**, 20, 1940.

[8] W. A. Hiltner, *Ap. J.*, **109**, 478, 1949.

[9] See, e.g., G. K. Batchelor, *Proc. R. Soc. London, A*, **201**, 405, 1950.

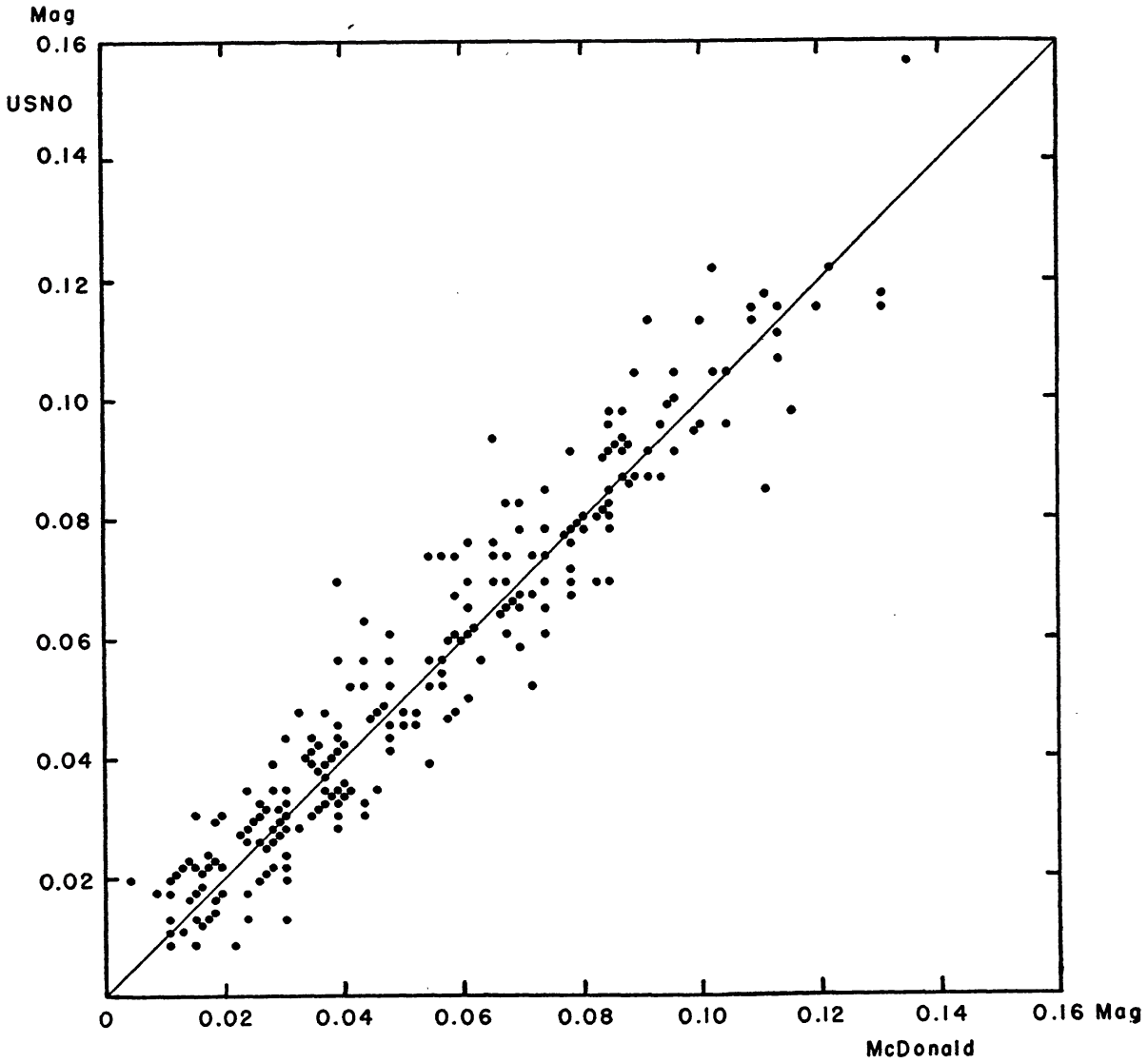

FIG. 3.—Comparison of polarization observations made at McDonald Observatory with those made at the U.S. Naval Observatory.

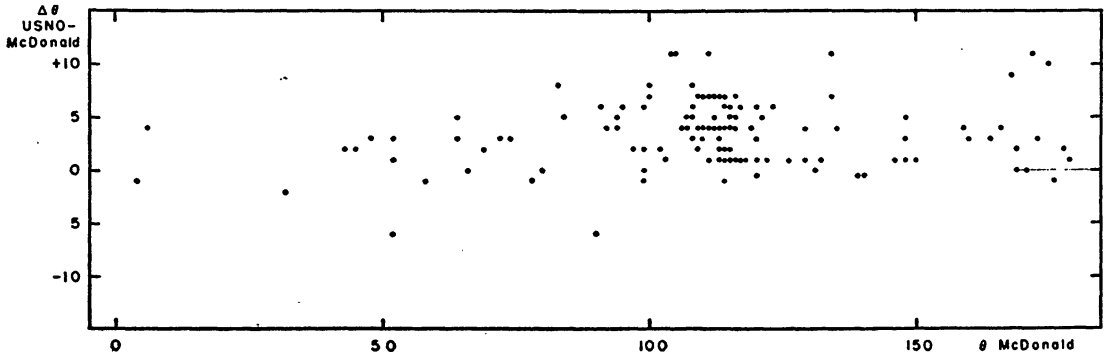

FIG. 4.—Comparison of position-angle observations made at McDonald Observatory with those made at the U.S. Naval Observatory.

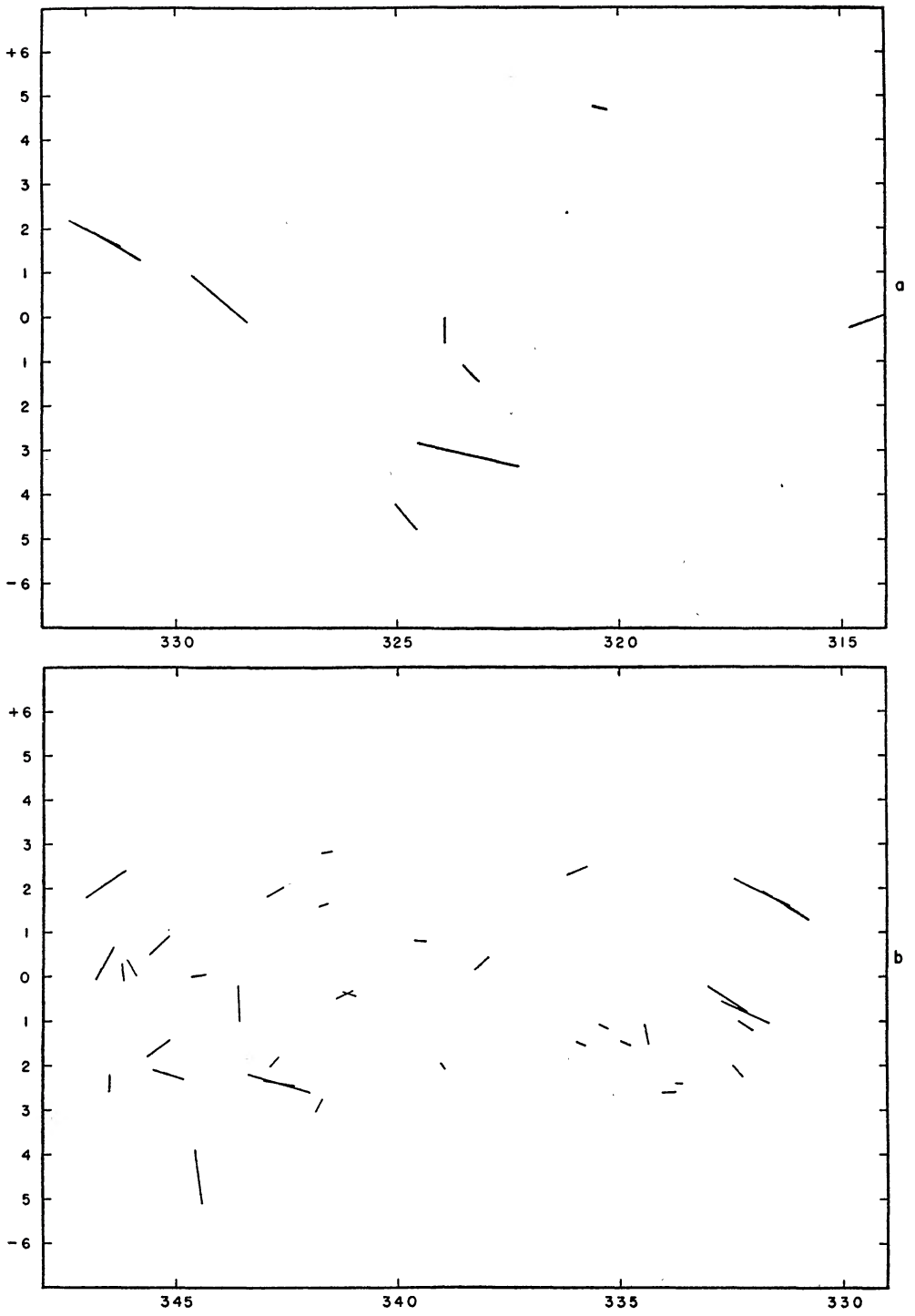

FIG. 5.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

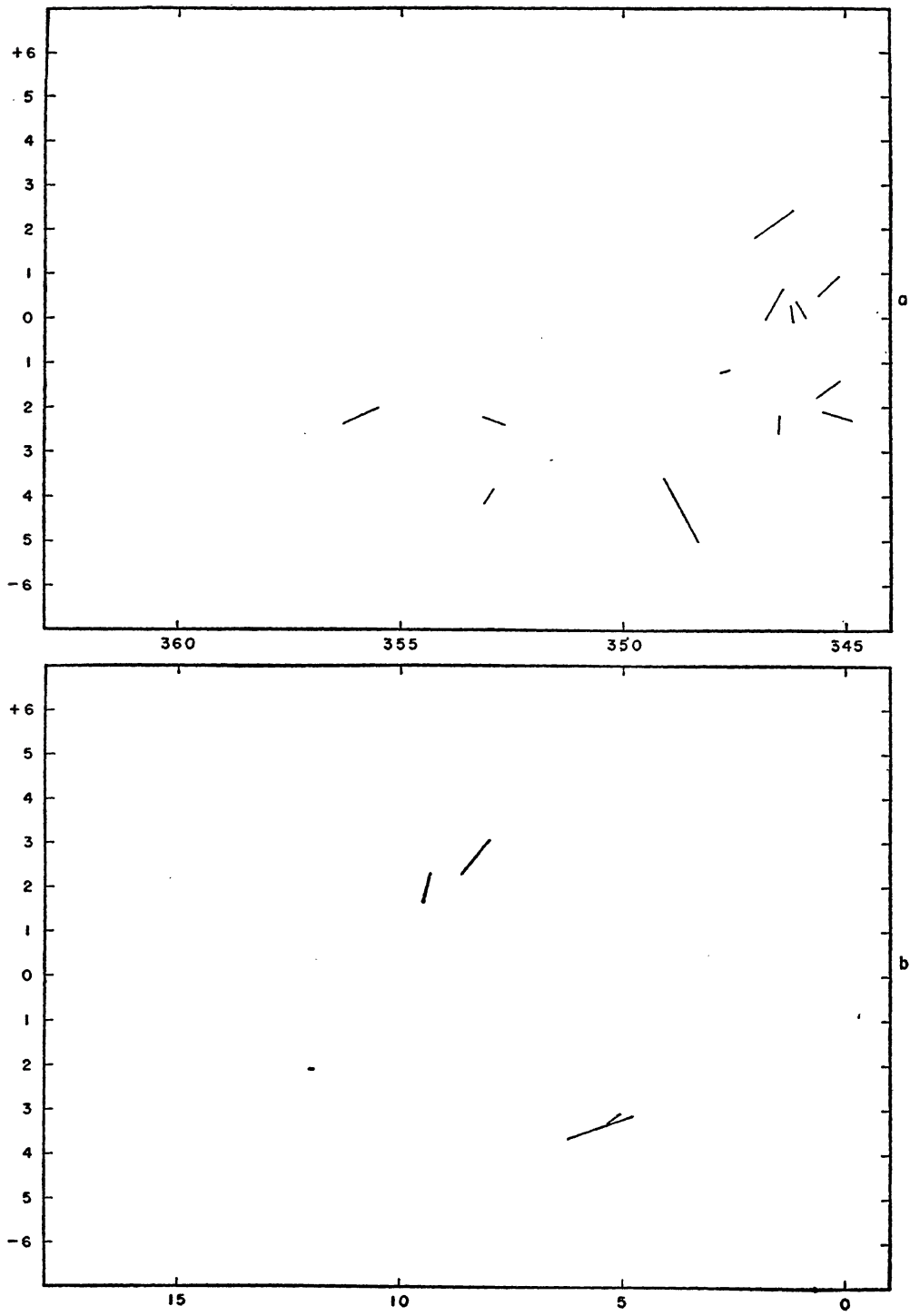

FIG. 6.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

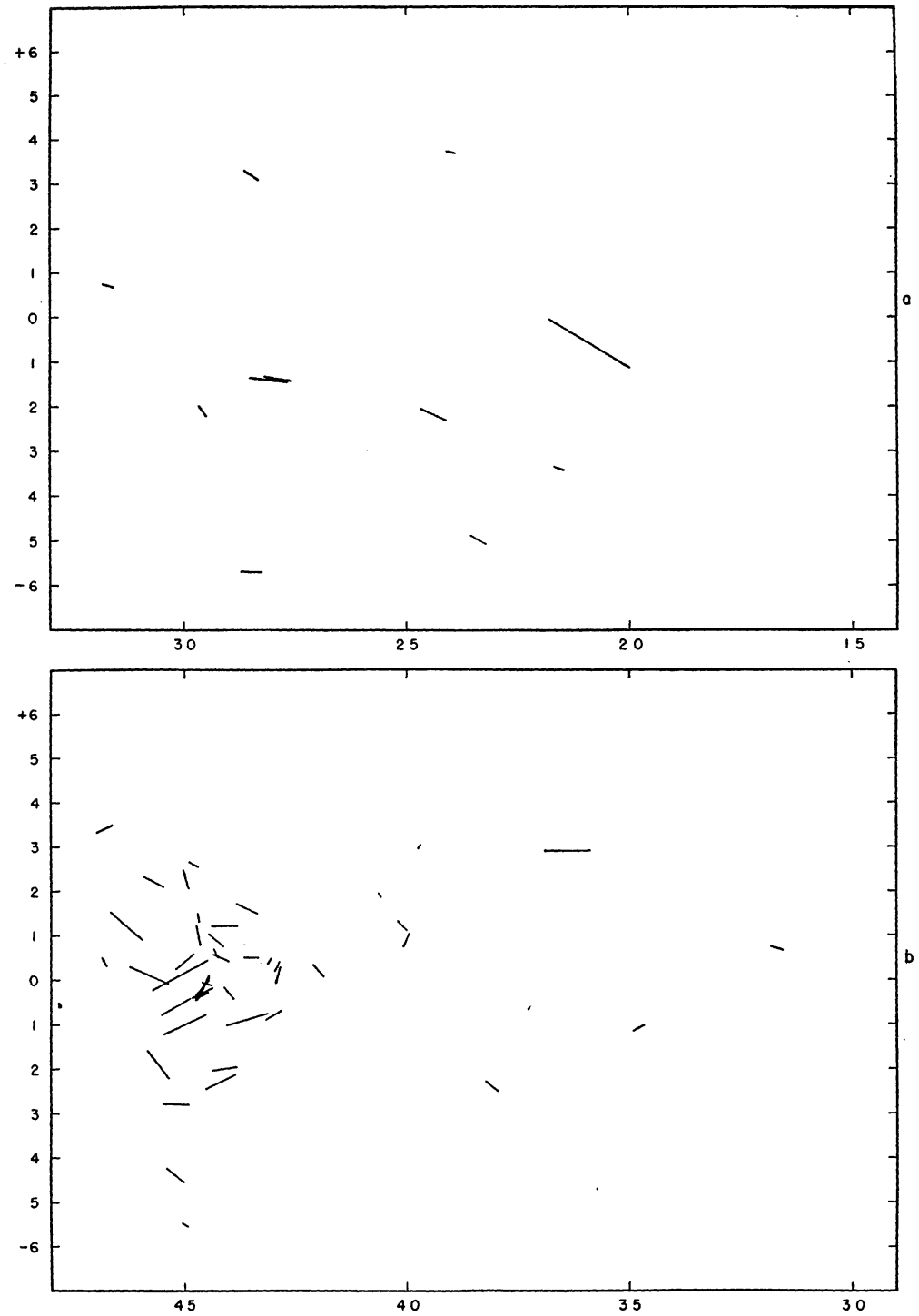

FIG. 7.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

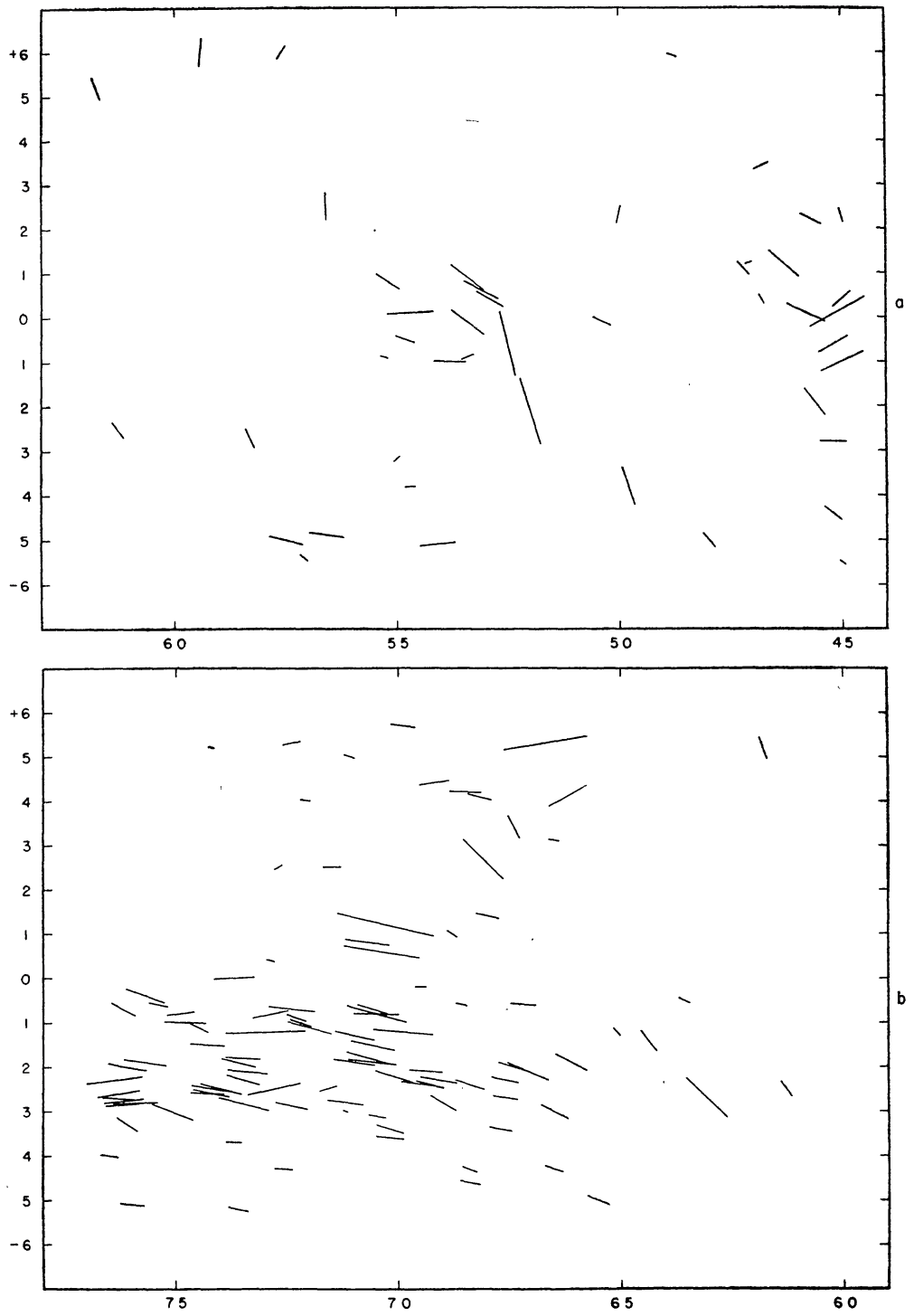

FIG. 8.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

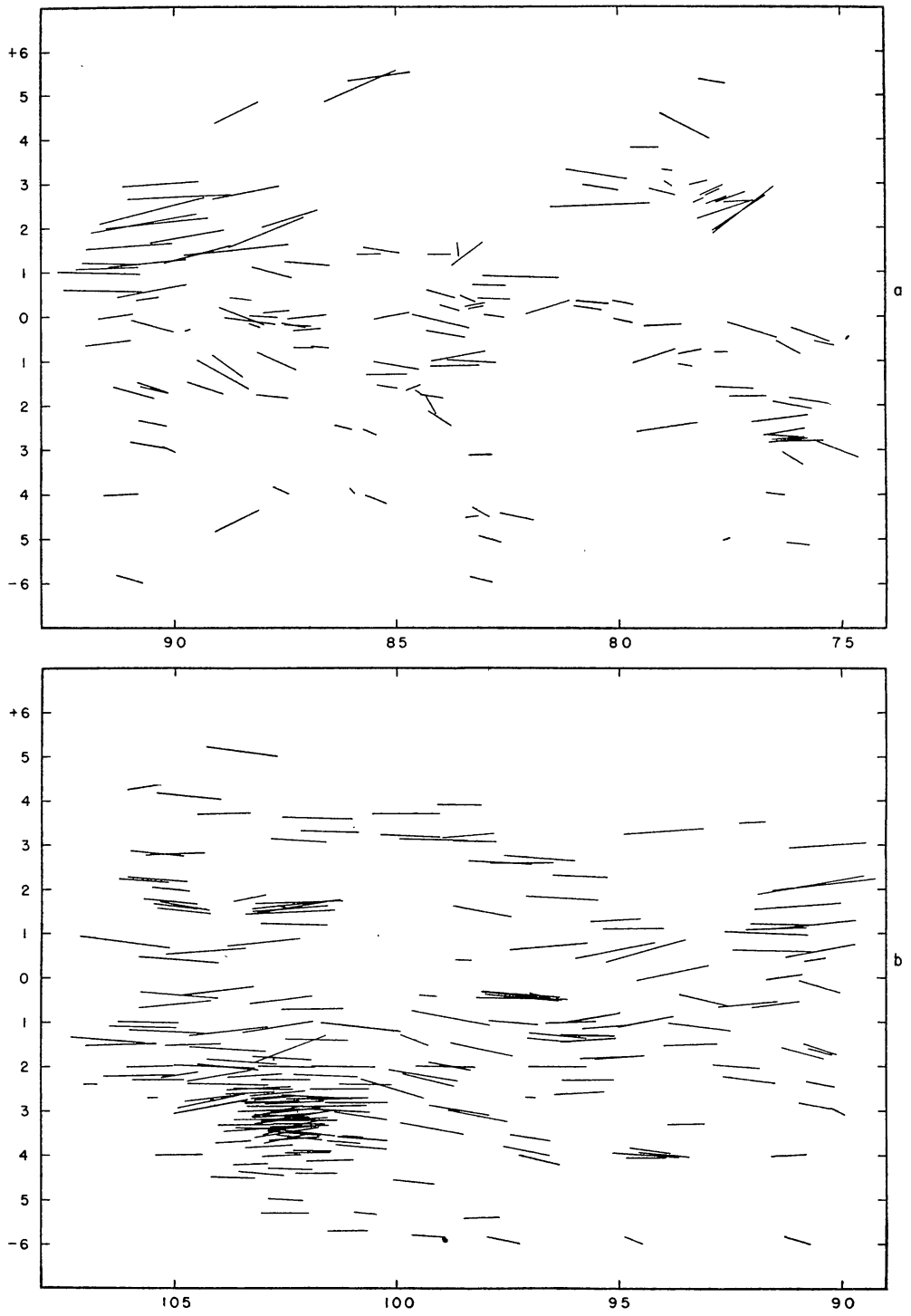

FIG. 9.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

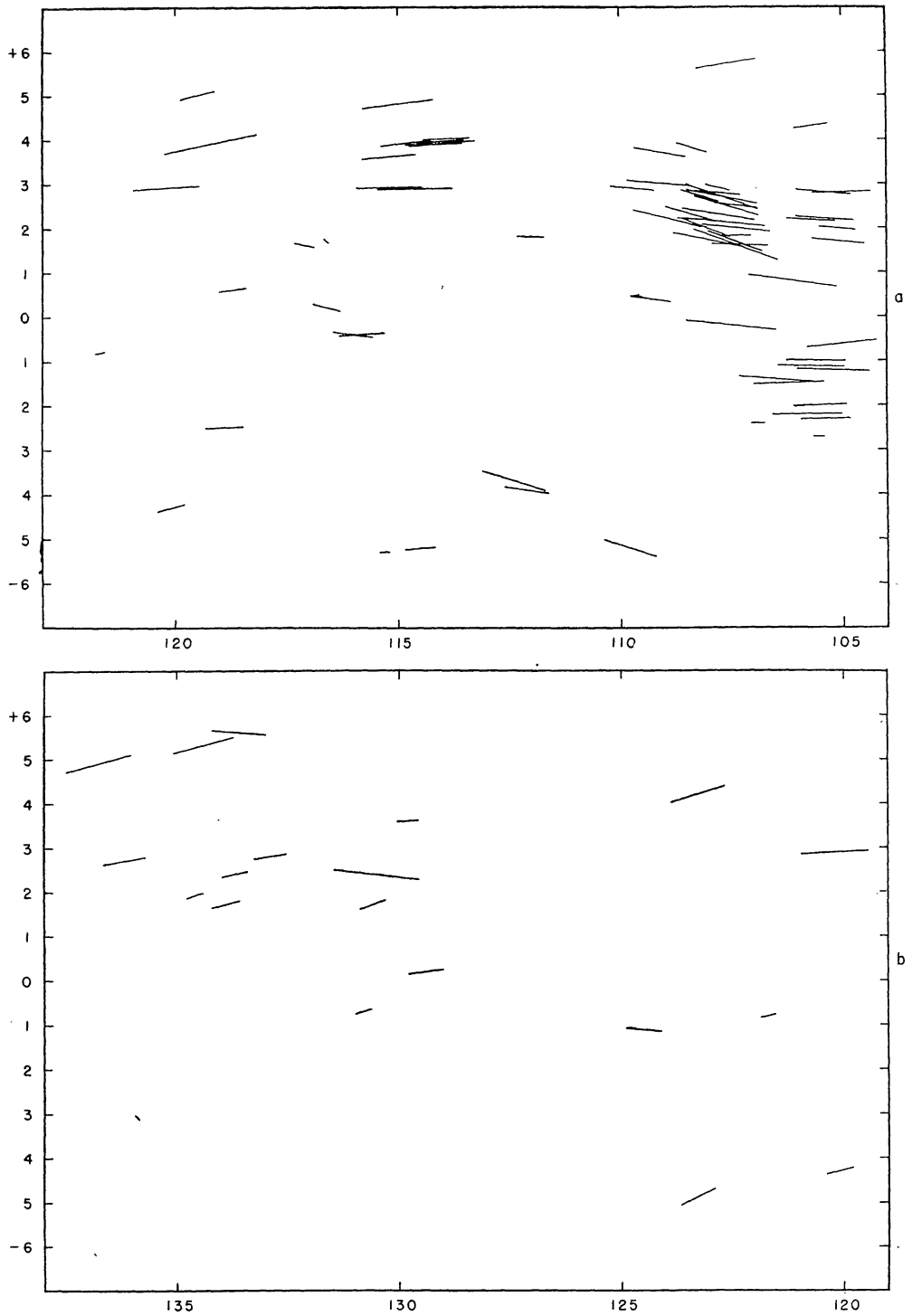

FIG. 10.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

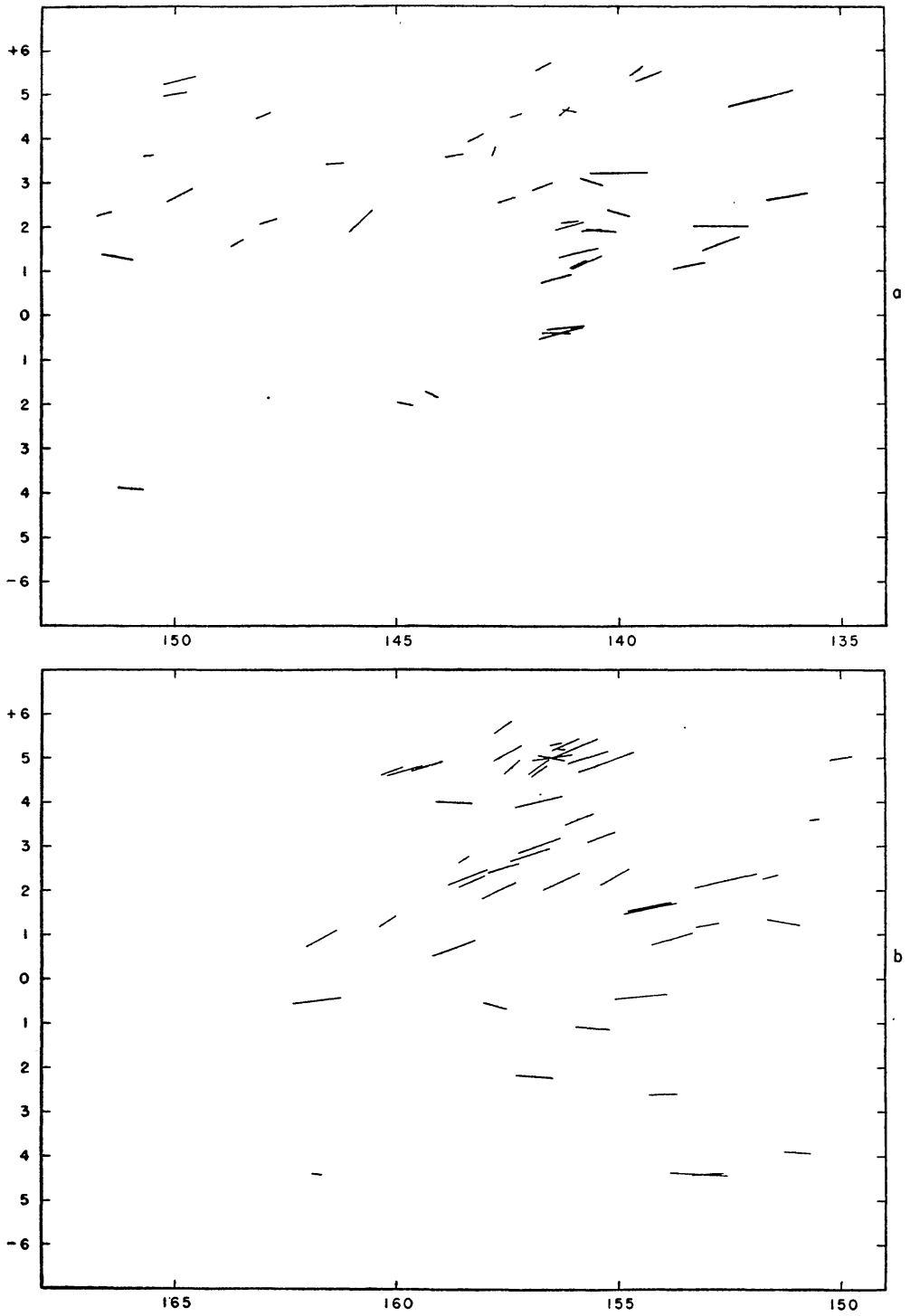

FIG. 11.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

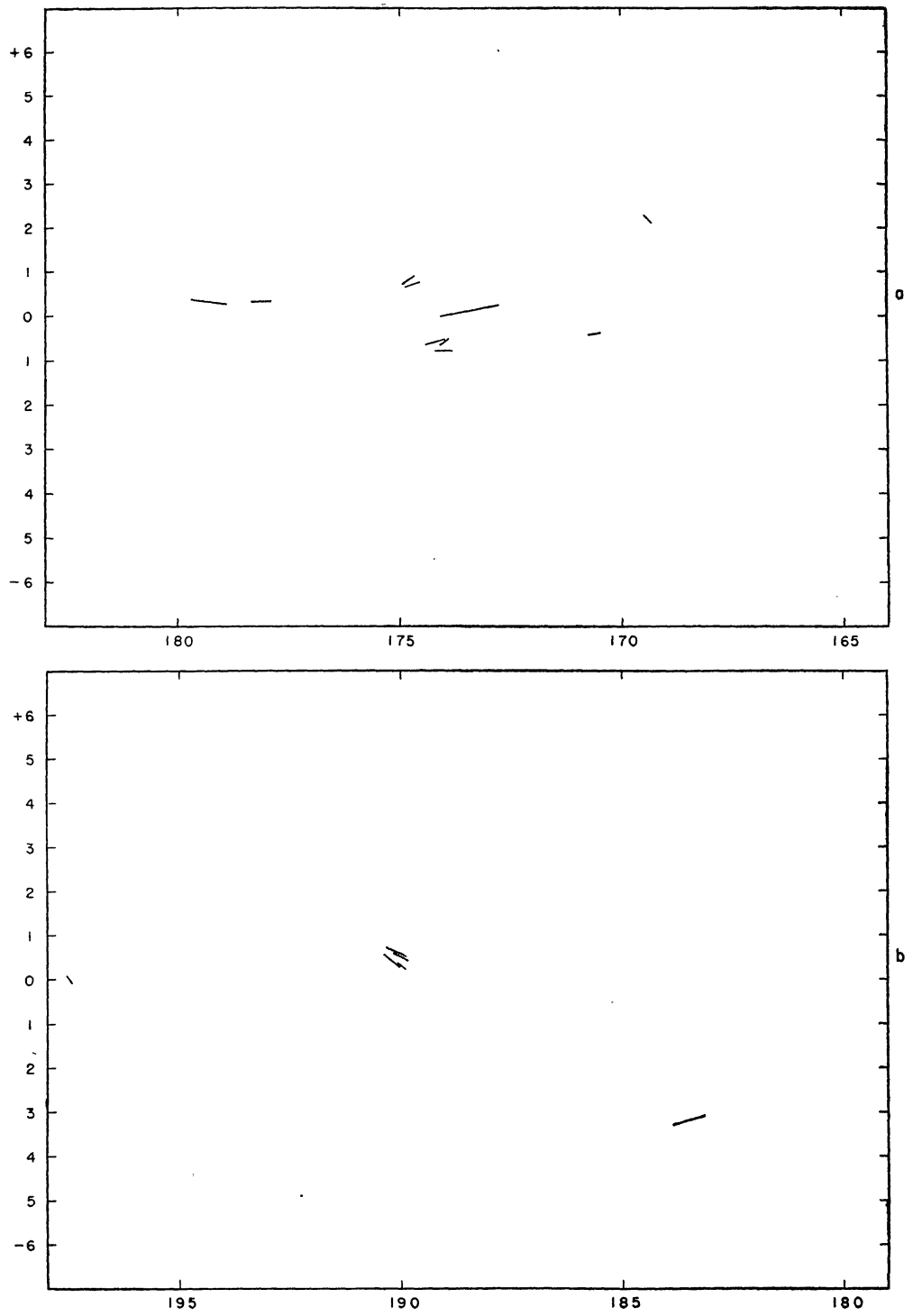

FIG. 12.—Polarization of stars of low galactic latitude. The length and position angle of each line indicate the relative amount of polarization and the plane of vibration, respectively.

is not unreasonable to conclude that we should have these magnetic lines of force falling more frequently in the galactic plane because of general galactic rotation. The physical extent of these fields must be very large, for at some longitudes the plane of vibration remains effectively unchanged over distances of the order of 1 kiloparsec. If the alignment process is similar to that suggested by Davis and Greenstein,[10] then the alignment is in the proper direction; that is, the long axes of the particles are perpendicular to the galactic plane.

If interstellar polarization is produced by clouds of interstellar particles, then we should, of course, anticipate a correlation between this polarization and color excess.

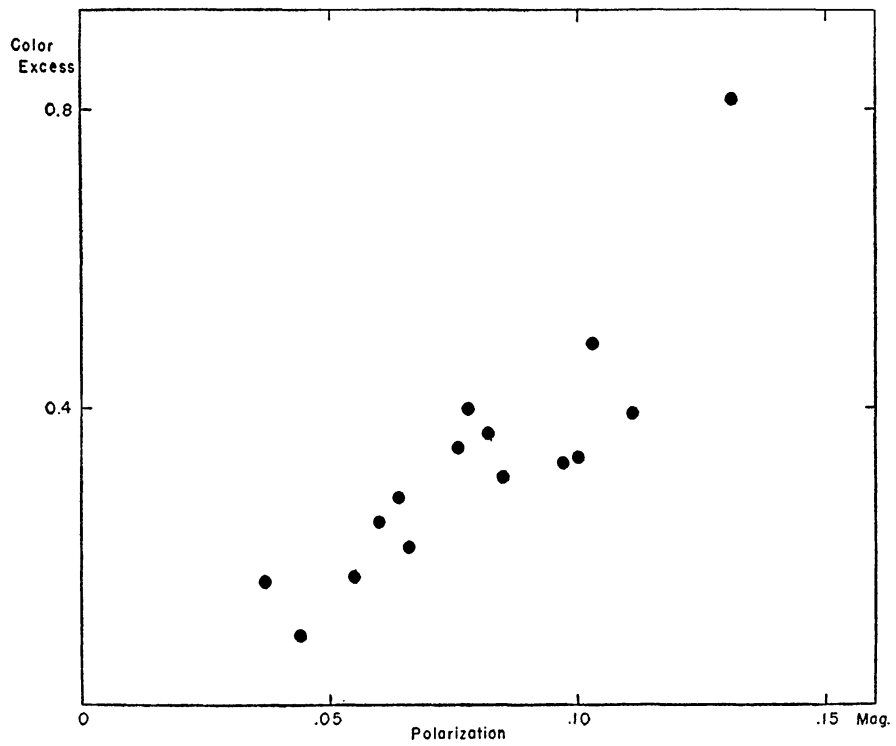

FIG. 13.—Relationship between polarization and color excess for stars along a line of sight

However, in order to obtain a one-to-one correlation, several conditions must be met. First, the magnetic field must be uniform in direction as well as in strength. Second, the types of particle in all clouds must be identical in structure, in composition as well as physical dimensions. Third, the physical parameters of the clouds must be similar, in order to permit similar alignment, other conditions being equal. Obviously, from Figures 5–12, the first condition is not fulfilled, and we cannot assume that the other two conditions are, either. Hence, if we attempt to correlate polarization with color excess without consideration for the above, at best only a poor correlation should result. In order to reduce the effect of a nonuniform field to a minimum, a group of early-type stars centered at $l = 107°.8$ and $b = +2.3$ was observed for color excess as well as polarization. The spectral types accepted for the fainter stars were those in the *Bergedorfer Spectral-Durchmusterung*. The stars under consideration can be identified in Table 2, for the *Bergedorfer Spectral-Durchmusterung* (abbreviated "BSD") numbers are given under "Other Designation" and the color excesses are in parentheses. Figure 13 is a plot of these stars. Some of the scatter is due to observational errors, both in color excess and in

[10] *A.J.*, 55, 71, 1950.

polarization. The correlation between color excess and polarization is reasonably good, but a linear relationship does not exist. This is entirely reasonable, for if there is a depolarization effect by a nonuniform field or a variation in particle structure or in physical conditions of the cloud, then the curve relating polarization and color excess should show a positive second derivative. Attention is called to the two stars HDE 237090 and HDE 237091. The two stars are separated by only 0.'7. The position angles of the plane of vibration for the two stars are significantly different (8°), and the one with the larger color excess has less polarization. This suggests that the radiation from the more distant star has been partially depolarized because the particles in the cloud or clouds between the two stars have an alignment different from the general particle alignment between the observer and the nearer star. Further discussion of the material in this paper must be postponed until the spectroscopic parallaxes become available.

It is a pleasure to thank Barbara Perkins for assistance throughout the preparation of this catalogue.