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A CATALOG OF BRIGHT *uvby*β STANDARD STARS*

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ABSTRACT

An all-sky catalog of bright standard stars is presented for the *uvby*β photometric systems.

Key words: *uvby*β photometry–photometric standard stars

During the planning stage of a long-term photometric investigation of the spatial distribution of the local interstellar reddening in the Southern Hemisphere, one of us (C.L.P.) composed an all-sky master list of well-observed, bright *uvby*β standard stars for use with small telescopes. The list of stars was compiled from *uvby* and/or β photometric survey papers of bright stars published by various Copenhagen and Tucson observers during the past 25 years. These references are listed in Table I; note that open-cluster papers were excluded. The only criterion for inclusion in the master list was that each star have a minimum of ten *uvby* or β observations in a given reference. The references were then searched for all *uvby* and/or β observations for the stars in the master list. Means of each photometric index were next determined for each star, weighted by the number of observations in each reference; these data became the basis of the present catalog. Half-weights, which are cited in several references, were ignored when counting the number of observations; if the number of observations differed for the three *uvby* indices for a given star, the smallest value of n was chosen as the number of observations for that particular star. The authors of *uvby* reference i observed only the primary component of HR 2590 but the standard observations given in reference b included both components of the visual binary. The same reference noted that the *uvby* indices for HR 7747 deviated significantly from the standard values given in reference b. Both stars were dropped from the master list as neither star had the minimum number of β observations. In addition, the three *uvby* indices for HR 6081 and HR 8982 and the c_1 index for HR 8260 were noted as "var" by the authors of *uvby* reference b. The *uvby* indices for these three stars were omitted from the master list but their β indices were retained. The catalog, presented in Table II, tabulates, in succession, the star identifications, the 2000-year coordinates and the spectral types, all from *The Bright Star Catalogue* (Hoffleit and Jaschek 1982); the visual magnitudes (to be discussed below); and the *uvby* and β indices. The total number of observations and the sources of the data are listed after each type of photometry. The table contains photometric data for 366 stars, including 319, 215, and 168 stars with *uvby*, β, and *uvby*β observations, respectively. The median number of *uvby* and β observations per star is 42 and 46, respectively.

The situation is not so simple for the visual magnitudes. When available, the visual magnitudes for the standard stars were taken from the intermediate-band photometric references; however, no minimum was imposed on the number of observations. These visual magnitudes were derived from observations made with the intermediate-band y filter and transformed to the *UBV* photometric system. The visual magnitudes for the remaining stars were assigned from the wide-band references a, b, g, and h (in that order) listed in Table I; note that references b, g, and h do not list the number of observations. Any adverse effects due to the different half-widths and central wavelengths of the intermediate- and wide-band filter systems are smaller than the errors in the visual magnitudes of the *UBV* standard stars. It should be noted that the visual

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TABLE I

References for the Photometric Data

V Magnitudes

a. Johnson, H. L., Mitchell, R. I., Iriarte, B., and Wisniewski, W. Z., "UBVRIJKL Photometry of the Bright Stars", 1966, Comm. Lunar Planetary Lab., No. 63. (Table 9).

b. Blanco, V. M., Demers, S., Douglass, G. G., and FitzGerald, P. M., "Photoelectric Catalogue of Magnitudes and Colors of Stars in the UBV and U_0BV Systems", 1968, Pub. U. S. Naval Obs., Vol. 21.

c. Crawford, D. L., Barnes, J. V., and Golson, J. C., "Four-Color, Hβ, and UBV Photometry for Bright B-Type Stars in the Northern Hemisphere", 1971, A. J., 76, 1058.

d. Crawford, D. L., Barnes, J. V., Golson, J. C., and Hube, D. P., "Four-Color and Hβ Photometry for the Bright B8 and B9 Types Stars North of Declination -10°", 1973, A. J., 78, 738.

e. Gronbech, B., and Olsen, E. H., "Four-Colour uvby Photometry for Bright O to G0 Type Stars South of Declination +10°", 1976, Astr. Ap. Suppl., 25, 213.

f. Gronbech, B. Olsen, E. H., and Stromgren, B., "Standard Stars for uvby Photoelectric Photometry South of Declination +10°", 1976, Astr. Ap. Suppl., 26, 155. (see Table 13 in Reference i).

g. Nicolet, B., "Catalogue of Homogeneous Data in the UBV Photoelectric Photometric System", 1978, Astr. Ap. Suppl., 34, 1.

h. Hoffleit, D., and Jaschek, C. 1982, in The Bright Star Catalogue (New Haven: Yale University Observatory).

i. Olsen, E. H., "Four-Colour uvby and Hβ Photometry of A5 to G0 stars Brighter than 8.3 mag.", 1983, Astr. Ap. Suppl., 54, 55. (Tables 14, 15, 16, 17, 18 and 19).

uvby Photometry

a. Stromgren, B., and Perry, C. L., "Photoelectric uvby Photometry for 1217 Stars Brighter than V = 6.5 mag., Mostly of Spectral Types A, F and G", 1965, unpublished report (Princeton: Institute for Advanced Study). (Second Version).

b. Crawford, D. L., Barnes, J. V., and Golson, J. C., "Four-Color and Hβ Photometry for Bright Stars in the Southern Hemisphere", 1970, A. J., 75, 624.

c. Crawford, D. L., and Barnes, J. V., "Standard Stars for uvby Photometry", 1970, A. J., 75, 978. (Table 1 + HR 5793 from Table 2 + HR 1006, HR 1010 and HR 5072 from Table 3).

d. Crawford, D. L., Barnes, J. V., and Golson, J. C., "Four-Color and Hβ Photometry for Bright B-Type Stars in the Southern Hemisphere", 1971, A. J., 76, 621.

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f. Crawford, D. L., Barnes, J. V., Gibson, J., Golson, J. C., Perry, C. L., and Crawford, M. L., "Four-Color and Hβ Photometry for the Brighter A0 Type Stars", 1972, Astr. Ap. Suppl., 5, 109.

TABLE I (Continued)

g. Crawford, D. L., Barnes, J. V., Golson, J. C., and Hube, D. P., "Four-Color and Hβ Photometry for the Bright B8 and B9 Type Stars North of Declination -10°", 1973, A. J., 78, 738.

h. Crawford, D. L., "Four-Color and Hβ Photometry of O-Type Stars", 1975, Publ. Astr. Soc. Pacific, 87, 481.

i. Gronbech, B., and Olsen, E. H., "Four-Colour uvby Photometry for Bright O to G0 Type Stars South of Declination +10°", 1976, Astr. Ap. Suppl., 25, 213.

j. Gronbech, B. Olsen, E. H., and Stromgren, B., "Standard Stars for uvby Photoelectric Photometry South of Declination +10°", 1976, Astr. Ap. Suppl., 26, 155. (see Table 13 in Reference k).

k. Olsen, E. H., "Four-Colour uvby and Hβ Photometry of A5 to G0 Stars Brighter than 8.3 mag.", 1983, Astr. Ap. Suppl., 54, 55. (Tables 14, 15, 16, 17, 18, 19).

β Photometry

a. Crawford, D. L., "Early-Type Stars Used as Standards in Photoelectric Hβ Photometry", 1960, Ap. J., 132, 66.

b. Crawford, D. L., "UBV and Hβ Photometry for the Bright B8- and B9-Type Stars", 1963, Ap. J., 137, 530.

c. Crawford, D. L., and Mander, J., "Standard Stars for Photoelectric Hβ Photometry", 1966, A. J., 71, 114.

d. Crawford, D. L., Barnes, J. V., Faure, B. Q., Golson, J. C, and Perry, C. L., "Photoelectric Hβ Photometry for 1217 Stars Brighter than V = 6.5 mag.", 1966, A. J., 71, 709.

e. Crawford, D. L., Barnes, J. V., and Golson, J. C., "Four-Color and Hβ Photometry for Bright Stars in the Southern Hemisphere", 1970, A. J., 75, 624.

f. Crawford, D. L., Barnes, J. V., and Golson, J. C., "Four-Color and Hβ Photometry for Bright B-Type Stars in the Southern Hemisphere", 1971, A. J., 76, 621.

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k. Gronbech, B., and Olsen, E. H., "Photoelectric Hβ Photometry for Bright O to G0 Type Stars South of Declination +10°", 1977, Astr. Ap. Suppl., 27, 443.

l. Olsen, E. H., "Four-Colour uvby and Hβ Photometry of A5 to G0 Stars Brighter than 8.3 mag.", 1983, Astr. Ap. Suppl., 54, 55. (Tables 23 and 24).

m. Olsen, E. H., and Perry, C. L., "A Catalogue of Hβ Photometry of Southern A5 to G0 Stars Brighter than 8.3 mag.", 1984, Astr. Ap. Suppl., 56, 229.

n. Crawford, D. L., "Two-Dimensional Spectral Classification by Narrow-Band Photometry for B Stars in Clusters and Associations", 1958, Ap. J., 128, 185.

TABLE II

A Catalogue of Bright uvbyβ Standard Stars

HR	α (2000) δ	SpT	V	n	s	b-y	m_1	c_1	n	s	β	n	s
15	00 08 23 +29 05 26	B8 IVp	2.060	6	a	-0.046	0.120	0.520	10	a	2.743	11	d
21	00 09 11 +59 08 59	F2 III-IV	2.270	9	a	0.216	0.177	0.785	19	a	.....	..	.....
27	00 10 19 +46 04 20	F2 II	5.040	2	a	0.273	0.123	1.082	26	a,c	2.666	63	c,l
39	00 13 14 +15 11 01	B2 IV	2.840	3	c	.....	.....	.....	..	.....	2.625	105	c,k,l,n
63	00 17 05 +38 40 54	A2 V	4.618	26	i	0.026	0.180	1.049	74	a,c,k	2.880	67	c,l
100	00 26 12 -43 40 48	A7 V	3.946	120	f,i	0.098	0.194	0.918	132	b,j,k	2.846	62	e,k,l
114	00 30 07 +29 45 06	A7 III	5.230	-	g	0.169	0.165	0.869	11	a	.....	..	.....
153	00 36 58 +53 53 49	B2 IV	3.680	3	c	.....	.....	.....	..	.....	2.625	55	a,c,n
184	00 43 28 +47 01 29	A5 V	4.956	28	i	0.086	0.226	0.901	53	a,k	.....	..	.....
193	00 44 44 +48 17 04	B5 IIIe	4.620	3	c	0.007	0.076	0.479	12	c	2.667	18	a,n
233	00 50 44 +64 14 52	B9.5 V + G0 III-IV	5.390	-	g	0.355	0.127	0.696	11	a	.....	..	.....
269	00 56 45 +38 29 58	A5 V	3.870	2	a	0.068	0.194	1.056	90	a,c	2.865	54	c,l
343	01 11 06 +55 09 00	A7 V	4.340	9	a	0.087	0.213	0.997	16	a	.....	..	.....
373	01 16 36 -02 30 01	G5 IIIe	5.411	55	e	0.554	0.285	0.335	68	a,i	.....	..	.....
413	01 26 15 +19 10 20	F2 V:v	5.348	17	i	0.259	0.146	0.481	39	a,k	.....	..	.....
458	01 36 48 +41 24 20	F8 V	4.100	8	a	0.344	0.179	0.409	58	a,c	2.629	51	c,l
493	01 42 30 +20 16 07	K1 V	5.239	72	f,i	0.493	0.364	0.298	107	c,j,k	.....	..	.....
531	01 49 35 -10 41 11	F3 III	4.658	221	f,i	0.209	0.188	0.649	228	b,j,k	2.737	62	e,k,l
617	02 07 10 +23 27 45	K2 IIIab	2.000	9	a	0.696	0.526	0.395	30	c	.....	..	.....
623	02 09 25 +25 56 24	F2 III	4.980	-	g	0.210	0.185	0.874	70	a,c	2.723	125	c,k,l
635	02 11 21 +08 34 12	G0 IV	5.635	78	f,i	0.361	0.180	0.469	91	a,j,k	2.627	25	d,k,l
654	02 16 52 +57 03 19	B1 Iabe	6.470	2	c	.....	.....	.....	..	.....	2.546	10	g
660	02 17 03 +34 13 28	G0 V	4.865	26	i	0.390	0.187	0.259	56	a,k	.....	..	.....
672	02 18 01 +01 45 28	G0.5 IVb	5.603	65	f,i	0.370	0.188	0.405	67	a,j,k	2.619	26	d,k,l
675	02 18 57 +28 38 33	A2 V	5.030	-	b	0.011	0.161	1.145	21	a	.....	..	.....
685	02 22 21 +55 50 45	A2 Ia	5.170	3	a	0.321	-0.038	0.753	16	a	.....	..	.....
717	02 28 10 +29 40 10	F0 III	5.290	-	h	0.178	0.211	0.780	17	a	.....	..	.....
740	02 32 05 -15 14 41	F4 IV	4.744	3	e	.....	.....	.....	..	.....	2.642	130	e,k,l
773	02 38 49 +21 57 41	A7 V	5.300	-	b	0.092	0.182	1.095	24	a	2.829	10	d
784	02 40 12 -09 27 11	F6 V	5.793	16	f,i	0.330	0.168	0.362	18	a,j,k	2.627	13	d,k
801	02 43 27 +27 42 26	B3 V	4.650	5	c	-0.052	0.097	0.333	102	c	2.684	159	a,c,k,n
811	02 44 07 -13 51 32	B7 V	4.250	140	f,i	-0.052	0.105	0.599	147	b,j,k	2.718	39	e,k,l
812	02 44 58 +12 26 45	A7 III-IV	5.180	131	f,i	0.136	0.186	0.842	185	a,c,j,k	2.798	170	c,k,l
813	02 44 56 +10 06 51	F0 IV	4.268	172	f,i	0.189	0.188	0.756	189	a,j,k	2.751	39	d,k,l
870	02 56 14 +08 22 54	F7 IV	5.969	14	f,i	0.306	0.175	0.505	16	a,j,k	2.662	35	d,k,l
913	03 02 09 -06 29 42	G0 IV-V	6.197	15	f,i	0.373	0.205	0.394	17	a,j,k	2.621	13	d,k
937	03 09 04 +49 36 48	G0 V	4.050	8	a	0.376	0.201	0.376	23	a	.....	..	.....
962	03 12 46 -01 11 46	F8 V	5.065	23	f,i	0.363	0.186	0.425	30	a,j,k	.....	..	.....
1006	03 17 46 -62 34 32	G3-5 V	5.515	59	e	0.403	0.204	0.284	63	c,i	.....	..	.....
1010	03 18 13 -62 30 23	G2 V	5.232	59	e	0.381	0.183	0.297	63	c,i	.....	..	.....
1017	03 24 19 +49 51 41	F5 Ib	1.790	9	a	0.302	0.195	1.074	16	a,c	2.677	47	c
1024	03 23 18 -07 47 39	G2 V	6.202	23	f,i	0.449	0.198	0.295	31	a,j,k	.....	..	.....
1030	03 24 49 +09 01 44	G6 III	3.613	87	f,i	0.547	0.333	0.426	169	c,j,k	.....	..	.....
1034	03 28 03 +49 03 46	B5 V	4.970	3	c	.....	.....	.....	..	.....	2.708	39	a,g,n
1089	03 34 49 +06 25 04	G0	6.487	27	f,i	0.408	0.183	0.452	29	a,j,k	2.613	34	d,k,l
1140	03 44 48 +24 17 22	B7 IV	5.461	20	c,i	0.005	0.097	0.650	26	a,e,k	2.750	32	d,g,n
1142	03 44 52 +24 06 48	B6 IIIe	3.700	2	c	.....	.....	.....	..	.....	2.691	26	d,g
1144	03 45 10 +24 50 21	B8 V	5.665	16	i	-0.021	0.107	0.638	125	a,c,k	2.750	163	a,c,k,n
1145	03 45 12 +24 28 02	B6 IV	4.290	2	c	.....	.....	.....	..	.....	2.703	23	d,g,n
1151	03 45 54 +24 33 17	B8 V	5.760	5	a	.....	.....	.....	..	.....	2.793	14	d,n
1152	03 46 03 +24 31 41	A0 Vn	6.430	7	a	.....	.....	.....	..	.....	2.823	10	d
1165	03 47 29 +24 06 18	B7 IIIe	2.870	9	a	.....	.....	.....	..	.....	2.653	33	d,g
1172	03 48 21 +23 25 16	B8 V	5.450	9	a	.....	.....	.....	..	.....	2.737	12	d
1173	03 46 51 -23 14 59	F3 III	4.230	3	a	.....	.....	.....	..	.....	2.666	118	e,k,l
1178	03 49 10 +24 03 12	B8 III	3.620	7	a	-0.019	0.092	0.708	89	a,c	2.696	130	a,c,k,n
1183	03 49 44 +23 42 42	B8 V	6.170	4	a	.....	.....	.....	..	.....	2.794	12	d
1201	03 53 10 +17 19 38	F4 V	5.970	6	a	0.221	0.166	0.610	21	a	2.712	16	d
1213	03 53 43 -24 36 45	B6 V	4.640	2	e	.....	.....	.....	..	.....	2.744	68	e,k,l
1269	04 07 00 +29 00 05	F1 V	5.230	-	g	0.226	0.159	0.588	15	a	.....	..	.....
1292	04 11 20 +05 31 23	F4 V	5.707	166	f,i	0.231	0.164	0.597	188	a,j,k	2.710	37	d,k,l
1303	04 14 54 +48 24 34	G0 Ib	4.150	4	a	0.614	0.268	0.551	10	a	.....	..	.....

TABLE II (Continued)

HR	α (2000) δ	SpT	V	n	s	b-y	m_1	c_1	n	s	β	n	s
1321	04 15 26 +06 11 59	G5 IV	6.944	101	f,i	0.425	0.240	0.297	111	a,j,k	2.580	38	d,k,l
1322	04 15 29 +06 11 12	G0 IV	6.319	102	f,i	0.369	0.185	0.331	112	a,j,k	2.606	38	d,k,l
1327	04 20 40 +65 08 26	G5 IIb	5.262	29	i	0.513	0.286	0.402	54	a,c,k	.....	..	.....
1329	04 17 16 +20 34 43	A3m	4.940	3	a	0.146	0.235	0.745	12	a	.....	..	.....
1331	04 18 23 +21 34 46	F0 V	5.640	10	i	0.171	0.191	0.784	24	a,k	.....	..	.....
1341	04 19 37 +21 46 25	A0p	5.380	-	b	-0.094	0.197	0.536	23	a,c,f	2.768	95	c,k
1346	04 19 48 +15 37 39	K0 IIIab	3.637	43	f,i	0.596	0.422	0.385	86	c.j.k	.....	..	.....
1373	04 22 56 +17 32 33	K0 III	3.759	61	f,i	0.597	0.424	0.405	79	c,j,k	.....	..	.....
1376	04 23 25 +16 46 38	A1m	5.632	69	f,i	0.179	0.244	0.731	79	a,j,k	2.785	16	d,k
1387	04 25 22 +22 17 38	A7 IV-V	4.220	6	a	0.070	0.200	1.054	11	a	2.864	10	d
1388	04 25 25 +22 11 59	A7 V	5.280	4	a	0.149	0.193	0.840	13	a	.....	..	.....
1394	04 26 21 +15 37 06	F0 V	4.485	74	f,i	0.153	0.183	0.933	85	a,j,k	.....	..	.....
1409	04 28 37 +19 10 49	G9.5 III	3.529	42	f,i	0.616	0.449	0.417	53	c,j,k	.....	..	.....
1411	04 28 34 +15 57 44	K0 IIIb	3.849	42	f,i	0.584	0.394	0.393	67	c,j,k	.....	..	.....
1412	04 28 40 +15 52 15	A7 III	3.406	65	f,i	0.101	0.199	1.014	118	a,c,j,k	2.831	176	c,k,l
1414	04 28 50 +13 02 52	A7 V	5.023	95	f,i	0.116	0.225	0.907	106	a,j,k	2.836	34	d,k,l
1428	04 30 39 +15 41 31	A m	5.480	3	a	.....	.....	.....	..	.....	2.809	11	d
1430	04 30 37 +13 43 28	F0 V	5.402	97	f,i	0.154	0.200	0.813	108	a,j,k	.....	..	.....
1444	04 33 51 +14 50 40	A8 V	4.651	95	f,i	0.146	0.199	0.829	103	a,j,k	2.797	17	d,k
1457	04 35 55 +16 30 33	K5 III	0.860	9	c	0.955	0.814	0.373	14	c	.....	..	.....
1543	04 49 50 +06 57 41	F6 V	3.183	131	f,i	0.299	0.162	0.416	163	a,c,j,k	2.652	172	c,k,l
1547	04 51 22 +18 50 23	A7 IV-V	5.110	3	a	.....	.....	.....	..	.....	2.813	10	d
1552	04 51 12 +05 36 18	B2 III + B2 IV	3.682	159	c,f,i	-0.056	0.073	0.135	183	c,j,k	2.606	161	a,c,k,l,n
1577	04 57 00 +33 09 58	K3 II	2.690	5	a	0.937	0.775	0.307	14	c	.....	..	.....
1620	05 03 06 +21 35 24	A7 V	4.631	15	i	0.078	0.203	1.034	43	a,k	2.847	11	d
1641	05 06 31 +41 14 04	B3 V	3.160	5	c	-0.085	0.104	0.318	41	a,c	2.685	79	a,c,n
1656	05 07 27 +18 38 42	G4 V	4.913	85	f,i	0.410	0.201	0.328	100	a,j,k	.....	..	.....
1662	05 07 38 +09 28 19	G1 IV	6.165	29	f,i	0.398	0.185	0.350	31	a,j,k	2.590	41	d,k,l
1672	05 09 20 +09 49 47	A2m	5.424	132	f,i	0.136	0.251	0.835	145	a,j,k	2.828	34	d,k,l
1702	05 12 56 -16 12 20	B9p	3.290	4	a	.....	.....	.....	..	.....	2.737	82	e,k
1729	05 19 08 +40 05 57	G2 IV-V	4.710	5	a	0.389	0.206	0.363	12	a	2.598	10	d
1756	05 19 34 -13 10 37	B0.5 IV	4.290	4	a	.....	.....	.....	..	.....	2.602	82	e,k,l
1861	05 32 41 -01 35 31	B1 IV	5.341	196	c,f,i	-0.074	0.073	0.002	243	c,j,k	2.615	97	c,k
1865	05 32 44 -17 49 20	F0 Ib	2.570	5	a	0.142	0.150	1.496	14	b	.....	..	.....
1905	05 37 04 +17 02 25	F0 V	5.529	5	i	0.132	0.203	0.856	24	a,k	.....	..	.....
1998	05 46 57 -14 49 19	A3 Vn	3.550	9	a	.....	.....	.....	..	.....	2.878	117	d,e,k,l
2034	05 53 20 +27 36 44	A0 V	4.561	6	i	0.001	0.133	1.152	22	a,k	.....	..	.....
2047	05 54 23 +20 16 34	G0 V	4.410	9	a	0.378	0.194	0.307	42	a,c	2.599	170	c,k,l
2056	05 53 07 -33 48 05	B5 V	4.885	96	f	-0.070	0.115	0.413	103	b,j	2.718	21	e,k,l
2106	05 57 32 -35 17 00	B2.5 IV	4.365	95	f	-0.073	0.093	0.362	102	b,j	2.644	23	e,k,l
2143	06 06 35 +38 28 58	A4m	5.350	-	b	0.139	0.222	0.923	15	a	.....	..	.....
2233	06 15 34 -00 30 44	F6 V	5.621	31	f,i	0.325	0.154	0.446	40	a,j,k	2.633	41	d,k,l
2236	06 15 54 +01 10 09	F5 IV:	6.363	13	f,i	0.299	0.148	0.476	16	a,j,k	2.645	14	d,k
2251	06 17 16 +05 06 01	F9 V	5.703	9	f	.....	.....	.....	..	.....	2.603	37	d,k,l
2264	06 21 46 +53 27 08	F5 III	5.334	26	i	0.285	0.170	0.627	42	a,k	.....	..	.....
2294	06 22 42 -17 57 22	B1 II-III	1.970	8	a	.....	.....	.....	..	.....	2.594	78	e,k,l
2313	06 25 16 -00 56 46	F8 V	5.876	13	f,i	0.361	0.170	0.395	15	a,j,k	2.613	32	d,k,l
2421	06 37 43 +16 23 57	A0 IV	1.920	9	a	.....	.....	.....	..	.....	2.869	77	c
2473	06 43 56 +25 07 52	G8 Ib	3.002	3	f	0.868	0.656	0.282	49	c,j	.....	..	.....
2483	06 46 44 +43 34 39	G0 V	5.246	21	i	0.359	0.184	0.376	38	a,k	.....	..	.....
2484	06 45 17 +12 53 44	F5 III	3.360	5	a	0.288	0.167	0.552	18	a	.....	..	.....
2585	06 57 37 +45 05 39	A2 Vn	4.906	18	i	0.014	0.159	1.109	35	a,k	.....	..	.....
2622	07 00 18 -05 22 01	G0 III-IV	6.294	10	f	0.359	0.192	0.402	12	a,j	.....	..	.....
2657	07 03 45 -15 38 00	B8 II	4.115	70	f	-0.046	0.099	0.556	78	b,j	2.689	15	e,n
2707	07 11 24 -00 18 07	A8 Vn-F3 Vn	5.441	68	f	0.185	0.184	0.875	95	a,j	.....	..	.....
2722	07 14 26 +24 42 39	A1p	6.880	4	d	.....	.....	.....	..	.....	2.854	142	e,i
2763	07 18 06 +16 32 25	A3 V	3.580	9	a	0.048	0.198	1.055	22	a	.....	..	.....
2777	07 20 07 +21 58 56	F2 IV	3.530	9	a	0.221	0.156	0.696	16	a	2.712	10	d
2779	07 19 48 +07 08 35	F8 V	5.915	10	f	0.339	0.169	0.469	13	a,j	2.628	38	d,k,l
2798	07 21 17 -08 52 42	F5	6.553	60	f,i	0.343	0.174	0.390	64	a,j,k	.....	..	.....
2807	07 22 18 -02 58 44	F5	6.242	12	f	0.432	0.216	0.588	15	a,j	.....	..	.....

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TABLE II (Continued)

HR	α (2000) δ	SpT	V	n	s	b-y	m_1	c_1	n	s	β	n	s
2845	07 27 09 +08 17 21	B8 Ve	2.890	4	a	-0.038	0.113	0.799	25	a,c	2.731	134	b,c,k,l,n
2852	07 29 07 +31 47 04	F0 V	4.180	9	a	0.214	0.155	0.613	85	a,c	2.713	115	c,l
2857	07 29 20 +28 07 05	A4 V	5.050	-	g	0.062	0.202	1.013	12	a	.....	..	.....
2866	07 29 26 -07 33 04	F8 V	5.865	10	f	0.311	0.155	0.392	13	a,j	.....	..	.....
2880	07 32 06 +01 54 52	F0 III	5.249	221	f,i	0.128	0.173	1.198	238	a,j,k	.....	..	.....
2883	07 32 06 -08 52 52	F5 V	5.928	14	f,i	0.355	0.124	0.335	18	a,j,k	2.595	41	d,k,l,m
2886	07 33 36 +15 49 36	A1 Vn	5.277	11	i	0.037	0.143	1.178	26	a,k	.....	..	.....
2918	07 36 35 +05 51 42	G0 V	5.902	10	f	0.375	0.188	0.387	13	a,j	2.610	37	d,k,l
2927	07 37 17 -04 06 40	F6 III	5.135	183	f,i	0.283	0.180	0.643	190	a,j,k	.....	..	.....
2930	07 39 10 +34 35 04	F3 III	4.886	14	i	0.270	0.173	0.654	25	a,k	.....	..	.....
2948/9	07 38 49 -26 48 07	B6 V + B5 IVn	3.826	87	f	-0.076	0.121	0.400	93	b,j	.....	..	.....
2961	07 39 27 -38 18 30	B2.5 V	4.842	115	f,i	-0.084	0.103	0.303	124	b,j,k	.....	..	.....
2985	07 44 27 +24 23 53	G8 IIIa	3.570	9	a	0.573	0.379	0.398	36	c	.....	..	.....
3003	07 46 07 +18 30 36	K5 III	4.848	14	i	0.895	0.735	0.451	47	c,k	.....	..	.....
3084	07 52 39 -38 51 47	B2.5 V	4.498	83	f	-0.083	0.104	0.244	91	b,j	.....	..	.....
3131	07 59 52 -18 23 58	A2 Vn	4.615	192	f,i	0.048	0.161	1.122	203	b,j,k	2.837	17	e,m
3173	08 08 27 +51 30 24	A2 V	4.809	38	i	0.017	0.151	1.105	60	a,k	.....	..	.....
3198	08 10 59 +14 37 46	A1 V	6.190	-	b	.....	.....	.....	..	.....	2.866	13	h
3249	08 16 31 +09 11 08	K4 III	3.518	90	f,i	0.914	0.758	0.371	124	c,j,k	.....	..	.....
3262	08 20 04 +27 13 03	F6 V	5.140	6	c	0.314	0.146	0.384	12	a	.....	..	.....
3271	08 20 13 -00 54 34	F9 V	6.173	28	f,i	0.385	0.193	0.414	35	a,j,k	2.612	46	d,k,l
3297	08 24 35 -03 45 04	F3 V	5.602	38	f,i	0.311	0.138	0.400	40	a,j,k	2.631	23	d,k,l
3314	08 25 40 -03 54 23	A0 V	3.900	66	f	-0.006	0.156	1.024	77	a,c,j	2.898	117	c,k,l,m
3410	08 37 39 +05 42 13	A1 Vnn	4.146	51	f	0.009	0.152	1.091	105	c,j	2.855	132	a,c,k,l,n
3454	08 43 13 +03 23 55	B3 V	4.298	146	c,f,i	-0.087	0.093	0.241	201	c,j,k	2.653	105	a,c,k,n
3459	08 43 40 -07 14 01	G1 Ib	4.627	33	f,i	0.517	0.294	0.472	45	a,j,k	.....	..	.....
3538	08 54 18 -05 26 04	G3 V	6.008	83	f,i	0.410	0.239	0.325	85	a,j,k	2.597	73	d,k,l,m
3555	08 56 57 +32 54 37	A7 IV	5.447	29	i	0.084	0.205	0.972	56	a,k	.....	..	.....
3619	09 08 52 +51 36 16	A m	4.457	18	i	0.165	0.248	0.762	33	a,k	.....	..	.....
3624	09 10 55 +63 30 49	A m	4.646	12	i	0.214	0.253	0.711	30	a,k	.....	..	.....
3657	09 13 37 +21 17 00	A2 V	6.480	-	h	0.017	0.164	1.094	10	f	.....	..	.....
3662	09 16 11 +54 01 18	A5 V	4.840	7	a	0.113	0.196	0.892	11	a	.....	..	.....
3665	09 14 22 +02 18 51	B9.5 V	3.880	9	a	-0.028	0.145	0.944	11	f	.....	..	.....
3757	09 31 32 +63 03 43	F0 IV	3.670	5	a	0.211	0.180	0.752	11	a	.....	..	.....
3759	09 29 09 -02 46 08	F6 V	4.597	180	f,i	0.295	0.164	0.453	213	a,j,k	.....	..	.....
3775	09 32 51 +51 41 38	F6 IV	3.180	8	a	0.314	0.153	0.463	11	a	.....	..	.....
3800	09 34 13 +36 23 51	G8.5 III	4.552	25	i	0.561	0.349	0.375	59	c,k	.....	..	.....
3815	09 35 40 +35 48 36	G8 IIIv	5.410	9	a	0.473	0.304	0.372	17	c	.....	..	.....
3849	09 40 18 -14 19 56	B5 V	5.072	56	f,i	-0.070	0.110	0.407	69	a,c,j,k	2.704	52	c,k,n
3852	09 41 09 +09 53 32	A5 V + F6 II	3.520	5	a	0.306	0.234	0.615	14	a	.....	..	.....
3856	09 39 21 -61 19 41	B9 IV-V	4.512	142	f,i	-0.034	0.140	0.821	146	j,k	.....	..	.....
3881	09 48 35 +46 01 15	G0.5 Va	5.100	2	a	0.390	0.203	0.382	10	a	.....	..	.....
3893	09 50 30 +04 20 37	F7 Vn	6.236	10	f	0.306	0.161	0.419	15	a,j,k	2.646	38	d,k,l
3901	09 51 22 -06 10 54	F8 V	6.430	64	f,i	0.363	0.185	0.412	66	a,j,k	.....	..	.....
3906	09 52 12 +02 27 15	A0 Vs	6.030	2	e	-0.015	0.136	1.040	16	f,i	.....	..	.....
3928	09 57 41 +41 03 20	F6 Vs	5.140	4	a	0.300	0.165	0.457	10	a	.....	..	.....
3951	10 01 01 +31 55 25	G2 Va	5.350	2	a	0.416	0.234	0.388	21	a,c	2.599	14	d
3974	10 07 26 +35 14 41	A7 V	4.486	31	i	0.106	0.201	0.876	74	a,c,k	2.837	67	c,l
3975	10 07 20 +16 45 45	A0 Ib	3.530	4	a	0.030	0.068	0.966	13	f	.....	..	.....
3982	10 08 22 +11 58 02	B7 V	1.350	9	a	.....	.....	.....	..	.....	2.723	46	b,c
4031	10 16 41 +23 25 02	F0 III	3.440	9	a	0.196	0.169	0.986	16	a,c	2.722	87	c,k,l
4054	10 19 44 +19 28 15	F6 IV	4.789	16	i	0.299	0.166	0.462	35	a,k	.....	..	.....
4057	10 19 58 +19 50 30	K1 IIIb	1.980	6	a	0.689	0.457	0.373	18	c	.....	..	.....
4090	10 25 55 +33 47 46	F0 V	4.732	26	i	0.150	0.196	0.959	51	a,k	.....	..	.....
4101	10 27 39 +09 45 45	A0p	6.040	-	g	-0.036	0.180	0.956	11	f	.....	..	.....
4119	10 30 17 -00 38 13	B6 V	5.081	260	c,f,i	-0.061	0.113	0.479	283	c,j,k	2.730	47	c,k
4133	10 32 49 +09 18 24	B1 Ib	3.857	42	c,f,i	-0.027	0.040	-0.040	64	c,j,k	2.552	77	a,c,k,n
4166	10 38 43 +31 58 34	G2 IIa	4.720	5	a	0.512	0.297	0.477	17	a,c	2.595	57	c,l
4199	10 42 57 -64 23 40	B0 Vp	2.760	3	a	.....	.....	.....	..	.....	2.606	25	e,k,l
4277	10 59 28 +40 25 49	G0 V	5.050	5	a	0.392	0.203	0.337	14	a	.....	..	.....
4288	11 00 50 +39 12 43	F0 Vs	5.075	12	i	0.142	0.198	1.012	25	a,k	.....	..	.....

TABLE II (Continued)

HR	α (2000) δ	SpT	V	n	s	b-y	m_1	c_1	n	s	β	n	s
4293	11 00 09 -42 13 33	A3 IV	4.383	122	f,i	0.059	0.179	1.116	134	b,j,k	.....	..	.....
4300	11 02 20 +20 10 47	A1m	4.420	3	a	0.022	0.194	1.019	10	f	.....	..	.....
4343	11 11 39 -22 49 33	A2 III	4.469	94	f,i	0.011	0.164	1.190	102	b,j,k	2.877	79	e,k,l,m
4378	11 18 21 +11 59 05	A2 V	6.660	-	h	0.024	0.190	1.052	11	f	.....	..	.....
4386	11 21 08 +06 01 46	B9.5 Vs	4.050	5	a	-0.020	0.127	1.014	13	f	.....	..	.....
4392	11 22 50 +43 28 58	G7.5 IIIa:	4.989	11	i	0.610	0.416	0.396	26	c,k	.....	..	.....
4405	11 24 53 -17 41 03	A5 V	4.071	66	f,i	0.118	0.195	0.895	96	c,j,k	2.823	122	c,k,l,m
4456	11 34 42 +16 47 49	B4 V	5.948	62	c,i	-0.066	0.095	0.323	107	c,k	2.687	89	c,k,l
4501	11 41 34 +31 44 45	F4 V	5.744	9	i	0.312	0.118	0.401	15	a,k	.....	..	.....
4515	11 45 17 +08 15 30	A4 V	4.851	129	f,i	0.090	0.196	0.928	141	a,j,k	2.855	39	d,k,l
4527	11 47 59 +20 13 08	A7 V + G5 III-IVe	4.530	8	a	0.352	0.186	0.725	15	a	.....	..	.....
4534	11 49 04 +14 34 19	A3 V	2.140	9	a	0.044	0.210	0.975	21	a,c	2.900	65	c,k
4540	11 50 42 +01 45 53	F9 V	3.600	153	f,i	0.354	0.186	0.415	228	a,c,j,k	2.629	134	c,k,l,m
4550	11 52 59 +37 43 08	G8 Vp	6.429	47	i	0.483	0.225	0.153	79	b,k	.....	..	.....
4554	11 53 50 +53 41 41	A0 Ve	2.440	9	a	0.006	0.153	1.113	15	a,c	2.884	69	a,c,n
4618	12 08 05 -50 39 40	B6 IIIe	4.468	99	f,i	-0.076	0.108	0.254	112	b,j,k	2.682	23	e,k,m
4633	12 10 46 +27 16 53	A4 Vn	6.040	4	a	.....	.....	.....	..	.....	2.851	10	d
4684	12 19 02 +26 00 28	A5-7m IV-V	6.480	3	a	.....	.....	.....	..	.....	2.835	10	d
4689	12 19 54 -00 40 00	A2 IV	3.900	6	a	0.017	0.163	1.130	10	f	.....	..	.....
4695	12 20 21 +03 18 45	K0 IIIb	4.969	110	f,i	0.717	0.485	0.516	149	c,j,k	.....	..	.....
4705	12 22 11 +24 46 25	A0 V	6.200	4	a	-0.002	0.169	1.034	11	f	.....	..	.....
4707	12 22 30 +25 50 46	G0 III-IV + A3 V	4.810	9	a	0.322	0.175	0.779	12	a	2.701	31	d
4717	12 24 18 +26 05 55	A3 V	5.180	3	a	.....	.....	.....	..	.....	2.882	10	d
4733	12 26 24 +27 16 05	F0p	4.950	2	a	.....	.....	.....	..	.....	2.742	10	d
4738	12 26 59 +26 49 32	A4 V	5.000	2	a	.....	.....	.....	..	.....	2.867	24	d
4753	12 29 27 +24 06 32	F5 III	5.482	15	i	0.289	0.170	0.609	30	a,k	.....	..	.....
4775	12 32 04 -16 11 46	F2 III-IV	4.298	118	f,i	0.245	0.167	0.543	132	b,j,k	2.700	65	e,k,l,m
4789	12 34 51 +22 37 45	A0 IV	4.810	7	a	0.008	0.144	1.090	10	f	.....	..	.....
4802	12 37 42 -48 32 28	A2 V	3.862	119	f,i	0.026	0.159	1.086	134	b,j,k	2.870	62	e,k,l,m
4861	12 48 14 +13 33 11	A1 V	6.560	-	g	0.012	0.167	1.052	11	f	.....	..	.....
4865	12 48 54 +14 07 21	A1 V	5.700	3	a	0.020	0.156	1.130	10	f	.....	..	.....
4869	12 49 17 +27 33 08	A2 V	5.780	-	g	0.025	0.169	1.074	10	f	.....	..	.....
4883	12 51 42 +27 32 26	G0 IIIp	4.932	45	i	0.437	0.186	0.416	96	a,c,k	2.592	119	c,k,l
4889	12 53 26 -40 10 44	A7 III	4.263	113	f,i	0.125	0.185	0.971	124	b,j,k	2.816	80	e,k,l,m
4914	12 56 00 +38 18 53	F0 V	5.600	2	a	0.230	0.152	0.578	10	f	.....	..	.....
4931	13 00 44 +56 21 59	F2 V	4.924	15	i	0.244	0.170	0.575	55	a,c,k	2.707	80	c,l
4983	13 11 52 +27 52 41	G0 V	4.260	9	a	0.370	0.191	0.337	65	a,c	2.608	143	c,k,l
5011	13 16 46 +09 25 27	G0 Vs	5.194	229	f,i	0.372	0.191	0.385	249	a,j,k	2.614	29	d,k,l
5017	13 17 32 +40 34 21	F3 III	4.717	42	i	0.174	0.238	0.915	61	a,k	.....	..	.....
5062	13 25 13 +54 59 17	A5 V	4.020	9	a	0.097	0.192	0.928	23	a,c	2.847	79	c,l
5072	13 28 26 +13 46 43	G2.5 Va	4.972	36	e	0.446	0.232	0.350	44	a,c,i	.....	..	.....
5163	13 43 54 -05 29 56	A1 V	6.527	2	e	0.028	0.172	0.980	12	f,i	.....	..	.....
5168	13 45 41 -33 02 37	F3 IV	4.231	114	f,i	0.247	0.164	0.548	130	b,j,k	2.700	102	e,k,l,m
5191	13 47 32 +49 18 48	B3 V	1.840	2	c	.....	.....	.....	..	.....	2.694	59	c
5235	13 54 41 +18 23 52	G0 IV	2.680	9	a	0.376	0.203	0.476	17	a,c	2.627	44	c,k
5270	14 02 32 +09 41 11	F8 IV	6.206	70	f,i	0.638	0.087	0.541	107	a,c,j,k	2.533	52	c,m
5280	14 03 00 +50 58 18	A2 V	6.150	-	g	0.020	0.181	1.016	10	f	.....	..	.....
5285	14 06 03 -41 10 46	B2 V	4.361	82	f,i	-0.094	0.102	0.161	94	b,j,k	2.661	31	e,k,m
5304	14 10 24 +25 05 30	F9 IVw	4.820	29	i	0.347	0.172	0.443	43	a,k	.....	..	.....
5414	14 28 31 +28 17 21	A1 V	7.620	-	g	0.014	0.168	1.018	10	f	.....	..	.....
5415	14 28 33 +28 17 27	A1 V	7.120	-	g	0.008	0.146	1.020	10	f	.....	..	.....
5447	14 34 41 +29 44 42	F2 V	4.472	50	i	0.253	0.135	0.484	95	a,c,k	2.675	109	c,k,l
5511	14 46 15 +01 53 34	A0 V	3.739	172	f,i	0.006	0.137	1.078	242	c,j,k	2.846	183	a,c,k,l,n
5522	14 48 54 -00 50 51	B9 Vp:v	6.157	3	e	-0.007	0.132	0.996	14	f,i	.....	..	.....
5530	14 50 41 -15 59 50	F4 IV	5.159	125	f,i	0.265	0.156	0.494	140	c,j,k	2.681	85	c,k,l,m
5531	14 50 53 -16 02 31	A3 IV	2.750	9	a	0.074	0.192	0.996	42	c	2.860	56	c,k,l,m
5626	15 08 50 -45 16 47	B3 V	4.063	82	f,i	-0.077	0.105	0.265	92	b,j,k	2.687	30	e,k,m
5633	15 07 20 +18 26 30	A3 V	6.020	-	g	0.032	0.190	1.017	10	f	.....	..	.....
5634	15 07 18 +24 52 09	F5 V	4.929	6	i	0.287	0.161	0.448	18	a,k	.....	..	.....
5660	15 14 37 -31 31 09	F1 II	4.917	88	f,i	0.246	0.132	1.367	94	b,j,k	2.741	110	e,k,l,m
5681	15 15 30 +33 18 53	G8 III	3.490	5	a	0.587	0.346	0.410	13	c	.....	..	.....

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TABLE II (Continued)

HR	α (2000) δ	SpT	V	n	s	b-y	m_1	c_1	n	s	β	n	s
5685	15 17 00 -09 22 59	B8 V	2.610	9	a	-0.040	0.100	0.750	32	c	2.706	99	a,c,k,l,m,n
5717	15 22 23 +12 34 02	A0 V	6.280	-	g	0.008	0.136	1.044	10	f	.....	..	.....
5752	15 28 44 +47 12 05	A m	6.150	-	h	0.046	0.194	1.142	10	f	.....	..	.....
5754	15 27 41 +62 16 32	A5 IV	6.400	-	h	0.062	0.210	0.982	10	f	.....	..	.....
5793	15 34 41 +26 42 53	A0 V	2.240	8	a	0.000	0.144	1.060	20	c,f	.....	..	.....
5825	15 41 11 -44 39 40	F5 IV-V	4.644	123	f,i	0.270	0.152	0.458	133	b,j,k	2.678	54	e,k,l,m
5854	15 44 16 +06 25 32	K2 IIIb	2.640	9	a	0.715	0.572	0.445	43	c	.....	..	.....
5868	15 46 26 +07 21 11	G0 V	4.425	150	f,i	0.383	0.193	0.366	164	a,j,k	2.605	38	d,k,l
5885	15 50 59 -25 45 05	B3 V	4.648	61	f,i	0.006	0.070	0.122	69	b,j,k	2.639	30	e,k,m
5933	15 56 27 +15 39 42	F6 V	3.860	9	a	0.319	0.151	0.401	32	a,c	2.632	137	c,k,l
5936	15 55 48 +37 56 49	F0 IV	5.436	53	i	0.230	0.161	0.654	74	a,k	.....	..	.....
5944	15 58 51 -26 06 51	B1 V + B2 V	2.910	3	a	.....	.....	.....	..	.....	2.618	71	a,c,k,l,m,n
5947	15 57 35 +26 52 40	K2 IIIab	4.150	9	a	0.751	0.570	0.414	13	c	.....	..	.....
5953	16 00 20 -22 37 18	B0.3 IV	2.320	4	a	.....	.....	.....	..	.....	2.605	74	a,c,k,l,m,n
5968	16 01 03 +33 18 13	G2 V	5.403	36	i	0.396	0.176	0.331	57	a,k	.....	..	.....
5993	16 06 48 -20 40 09	B1 V	3.942	64	f,i	0.037	0.042	0.009	105	c,j,k	2.617	59	c,k,m
5997	16 07 24 -20 52 07	G3 II-III	4.316	59	f,i	0.522	0.285	0.448	95	c,j,k	2.577	48	c,m
6027	16 12 00 -19 27 38	B3 V	3.994	42	f,i	0.080	0.051	0.137	48	b,j,k	2.663	13	e,k
6070	16 18 18 -28 36 51	A0 V	4.793	2	e	.....	.....	.....	..	.....	2.924	109	e,k,l,m
6081	16 20 38 -24 10 10	A5 II	4.575	2	e	.....	.....	.....	..	.....	2.774	39	e,k,m
6092	16 19 44 +46 18 48	B5 IV	3.880	5	c	-0.056	0.089	0.440	42	c	2.702	86	a,c,n
6141	16 30 12 -25 06 54	B2 V	4.793	109	f,i	-0.047	0.092	0.191	117	c,j,k	2.665	89	a,c,k,n
6175	16 37 09 -10 34 02	09.5 Vn	2.560	9	a	0.088	0.014	-0.069	12	b	2.583	56	e,k,l
6243	16 49 50 -10 46 59	F7 IV	4.641	222	f,i	0.311	0.164	0.532	234	b,j,k	2.647	67	e,k,l,m
6262	16 54 00 -42 21 43	B1 Iape	4.731	2	e	.....	.....	.....	..	.....	2.480	30	e,k
6332	17 01 36 +33 34 06	A3 IV	5.283	52	i	0.001	0.172	1.102	73	a,k	2.885	15	d
6334	17 04 49 -34 07 23	B1 Iae	4.843	2	e	.....	.....	.....	..	.....	2.538	30	e,k
6355	17 05 23 +12 44 27	A4 IV	4.896	78	i	0.064	0.207	0.992	135	a,c,k	2.877	147	c,k,l
6378	17 10 23 -15 43 29	A2 V	2.420	3	a	0.029	0.186	1.076	10	b	2.894	57	e,k,l,m
6458	17 20 40 +32 28 04	G0 V	5.385	48	i	0.405	0.178	0.312	85	a,k	2.588	10	d
6536	17 30 26 +52 18 05	G2 Ib-IIa	2.780	3	a	0.610	0.323	0.423	17	a	2.599	11	d
6581	17 41 25 -12 52 31	A2 V	4.249	56	f,i	0.049	0.168	1.108	69	b,j,k	2.874	47	e,k,l,m
6588	17 39 28 +46 00 23	B3 IV	3.800	5	c	-0.064	0.078	0.294	32	c	2.661	106	a,c,n
6595	17 43 26 -21 41 00	F6 V	4.869	69	f,i	0.304	0.150	0.408	82	b,j,k	2.645	79	e,k,l,m
6603	17 43 28 +04 34 02	K2 III	2.760	31	f,i	0.719	0.553	0.451	92	c,j,k	.....	..	.....
6629	17 47 54 +02 42 26	A0 V	3.751	68	f,i	0.024	0.165	1.055	146	c,j,k	2.905	240	a,c,k,l,m,n
6714	18 00 39 +02 55 53	B5 Ib	3.965	44	c,f,i	0.081	0.020	0.302	77	c,j,k	2.585	133	c,k,n
6723	18 01 45 +01 18 19	A2 Vn	4.444	58	f,i	0.029	0.137	1.087	72	a,j,k	2.842	29	d,k
6743	18 06 38 -50 05 30	B2 Ib	3.665	53	f,i	0.007	0.037	0.006	63	b,j,k	2.582	24	e,k
6775	18 07 01 +30 33 43	F7 V	5.060	11	i	0.356	0.136	0.321	18	a,k	.....	..	.....
6779	18 07 32 +28 45 45	B9.5 V	3.830	3	a	.....	.....	.....	..	.....	2.795	11	h
6930	18 29 12 -14 33 57	A3 Vn	4.693	99	f,i	0.045	0.147	1.208	119	b,j,k	2.846	88	e,k,l,m
7069	18 47 01 +18 10 53	A5 III	4.360	3	a	0.061	0.216	0.942	55	a,c	2.895	167	c,k,l
7119	18 54 43 -15 36 11	B5 II	5.093	3	e	0.175	0.026	0.468	13	d,i	2.626	20	f,k
7152	18 58 43 -31 06 26	F2 V	4.847	40	e	0.253	0.161	0.617	46	b,i	.....	..	.....
7178	18 58 56 +32 41 22	B9 III	3.240	9	a	0.001	0.093	1.219	17	c	2.751	114	a,c,n
7235	19 05 24 +13 51 48	A0 Vn	2.990	9	a	0.012	0.147	1.080	12	c	2.873	171	a,c,k,n
7253	19 06 38 +28 37 43	F0 III	5.532	41	i	0.176	0.189	0.747	62	a,k	2.756	15	d
7254	19 09 28 -37 54 16	A2 V	4.108	94	f,i	0.024	0.181	1.057	102	b,j,k	2.890	37	e,k,m
7328	19 17 06 +53 22 07	G9 III	3.760	3	a	0.579	0.390	0.430	17	c	.....	..	.....
7340	19 21 40 -17 50 50	F0 IV-V	3.932	47	f,i	0.130	0.194	0.950	56	b,j,k	2.809	19	e,k,m
7377	19 25 30 +03 06 53	F3 IV	3.367	76	f,i	0.203	0.170	0.711	132	a,c,j,k	2.733	157	c,k,l,m
7446	19 36 53 -07 01 39	B0.5 III	4.950	134	c,f,i	0.085	-0.024	-0.031	181	c,j,k	2.563	199	a,c,k,l,n
7447	19 36 43 -01 17 11	B5 III	4.357	211	c,f,i	-0.017	0.087	0.574	283	c,j,k	2.704	152	a,c,k,l,n
7462	19 32 22 +69 39 40	K0 V	4.672	32	i	0.472	0.324	0.266	49	c,k	.....	..	.....
7469	19 36 26 +50 13 16	F4 V	4.490	27	i	0.262	0.157	0.502	54	a,k	2.689	10	d
7479	19 40 06 +18 00 50	G1 III	4.386	28	f,i	0.489	0.259	0.471	41	a,j,k	.....	..	.....
7503	19 41 49 +50 31 31	G1.5 V	5.976	10	i	0.410	0.212	0.368	23	a,k	.....	..	.....
7504	19 41 52 +50 31 03	G2.5 V	6.230	10	i	0.417	0.223	0.349	22	a,k	.....	..	.....
7525	19 46 16 +10 36 48	K3 II	2.711	32	f,i	0.936	0.762	0.292	68	c,j,k	.....	..	.....
7534	19 46 26 +33 43 40	F7 V	5.006	27	i	0.312	0.155	0.436	45	a,k	.....	..	.....

TABLE II (Continued)

HR	α (2000)	δ	SpT	V	n	s	b-y	m_1	c_1	n	s	β	n	s
7557	19 50 47	+08 52 06	A7 V	0.760	9	a	0.137	0.178	0.880	10	a	.....	..	.....
7560	19 51 02	+10 24 56	F8 V	5.126	53	i	0.356	0.182	0.415	79	a,k	.....	..	.....
7602	19 55 19	+06 24 24	G8 IV	3.723	86	f,i	0.522	0.303	0.345	161	c,j,k	.....	..	.....
7610	19 56 14	+11 25 25	A1 IV	5.293	29	i	-0.006	0.178	1.021	39	a,k	.....	..	.....
7730	20 13 18	+46 48 57	A5 IIIn	4.830	2	a	.....	.....	.....	..	.....	2.811	10	d
7773	20 20 40	-12 45 33	B9.5 V	4.765	158	f,i	-0.020	0.135	1.011	177	b,j,k	2.853	42	e,k,l
7790	20 25 39	-56 44 07	B2 IV	1.940	3	a	.....	.....	.....	..	.....	2.665	12	e,k
7796	20 22 14	+40 15 24	F8 Ib	2.230	2	a	0.396	0.296	0.885	20	a,c	2.641	49	c
7822	20 28 52	-17 48 49	F2 IV	4.771	2	e	.....	.....	.....	..	.....	2.701	103	e,k,l
7858	20 33 57	+13 01 38	A3 IVs	5.398	188	f,i	0.023	0.207	0.983	198	a,j,k	2.918	11	d
7871	20 35 18	+14 40 27	A3 V	4.690	2	a	.....	.....	.....	..	.....	2.868	11	d
7883	20 37 49	+11 22 40	A2 V	5.440	-	b	.....	.....	.....	..	.....	2.911	10	d
7906	20 39 38	+15 54 43	B9 IV	3.770	9	a	-0.019	0.125	0.893	21	a,c	2.799	196	a,c,k,n
7936	20 46 06	-25 16 16	F4 V	4.137	49	f,i	0.278	0.161	0.465	57	b,j,k	2.673	81	e,k,l,m
7949	20 46 13	+33 58 13	K0 III	2.460	8	a	0.627	0.415	0.425	26	c	.....	..	.....
7977	20 48 56	+46 06 51	B3 Iae	4.860	3	a	0.356	-0.067	0.153	31	c	2.530	98	a,c,n
7984	20 50 05	+44 03 34	A4m	5.040	-	g	0.108	0.209	0.897	12	a	2.844	13	d
8060	21 04 24	-19 51 18	A5 V	4.858	59	f,i	0.090	0.191	0.946	65	b,j,k	2.861	41	e,k,m
8085	21 06 54	+38 44 57	K5 V	5.213	18	i	0.656	0.677	0.136	47	c,k	.....	..	.....
8086	21 06 55	+38 44 30	K7 V	6.044	18	i	0.792	0.673	0.063	28	c,k	.....	..	.....
8143	21 17 25	+39 23 41	B9 Iab	4.230	2	a	0.138	0.027	0.571	15	c	2.583	78	a,c,n
8162	21 18 35	+62 35 08	A7 V	2.450	5	a	0.125	0.190	0.936	10	a	2.808	11	d
8181	21 26 27	-65 21 59	F6 V	4.229	88	f,i	0.333	0.118	0.315	98	b,j,k	2.613	67	e,k,l,m
8260	21 37 05	-19 27 58	B2.5 Vpe	4.589	3	e	.....	.....	.....	..	.....	2.553	15	e,k
8267	21 37 45	+19 19 07	F1 IV	5.465	6	i	0.199	0.172	0.890	17	a,k	2.734	12	d
8279	21 37 55	+62 04 55	B2 Ib	4.730	4	a	0.275	-0.051	0.135	28	c	2.558	34	c,n
8313	21 44 31	+17 21 00	G5 Ib	4.336	29	f,i	0.706	0.479	0.346	41	c,j,k	.....	..	.....
8344	21 50 09	+17 17 08	F2 III-IV	5.290	-	g	0.263	0.156	0.545	11	a	2.688	13	d
8353	21 53 56	-37 21 54	B8 III	3.010	6	a	-0.045	0.106	0.726	10	b	.....	..	.....
8425	22 08 14	-46 57 40	B7 IV	1.740	3	a	-0.058	0.107	0.568	16	b	2.729	14	e
8430	22 07 01	+25 20 42	F5 V	3.760	9	a	.....	.....	.....	..	.....	2.670	10	d
8431	22 08 23	-32 59 19	A2 V	4.503	58	f,i	0.032	0.167	1.070	58	j,k	2.872	61	e,k,l,m
8454	22 09 59	+33 10 42	F5 III	4.290	5	a	0.304	0.177	0.778	10	a	.....	..	.....
8494	22 15 02	+57 02 37	F0 IV	4.190	7	a	0.169	0.192	0.787	49	a,c	2.758	78	c,l
8551	22 27 52	+04 41 44	K0 III	4.790	125	f,i	0.640	0.420	0.418	185	c,j,k	.....	..	.....
8585	22 31 17	+50 16 57	A1 V	3.770	3	a	0.001	0.173	1.030	81	c	2.906	162	a,c,l,n
8613	22 37 22	+51 32 43	A8 IV	4.648	25	i	0.149	0.172	0.935	41	a,k	2.784	18	d
8622	22 39 16	+39 03 01	O9 V	4.889	27	i	-0.066	0.037	-0.117	80	c,k	2.587	115	a,c,n
8630	22 46 03	-81 22 54	A9 IV-V	4.138	78	f,i	0.124	0.191	0.915	85	b,j,k	2.817	18	e,k
8634	22 41 28	+10 49 53	B8 V	3.400	3	a	-0.035	0.114	0.867	24	c	2.768	142	a,c,k,n
8665	22 46 42	+12 10 22	F6 III-IV	4.190	6	a	0.330	0.147	0.407	16	a	.....	..	.....
8675	22 48 33	-51 19 01	A3 V	3.492	61	f,i	0.051	0.161	1.143	67	b,j,k	2.856	46	e,k,l
8709	22 54 39	-15 49 15	A3 V	3.276	106	f,i	0.036	0.167	1.157	117	a,b,j,k	2.890	60	d,e,k,l,m
8728	22 57 39	-29 37 20	A3 V	1.160	7	a	0.039	0.208	0.985	16	a,b	2.906	22	d,e
8729	22 57 28	+20 46 08	G2.5 IVa	5.454	52	f,i	0.415	0.233	0.372	63	a,j,k	.....	..	.....
8781	23 04 46	+15 12 19	B9 V	2.480	9	a	-0.012	0.130	1.128	18	a,c	2.840	142	a,c,k,n
8826	23 11 44	+08 43 12	A5 Vn	5.163	154	f,i	0.076	0.164	1.091	167	a,j,k	2.820	42	d,k,l
8830	23 12 33	+49 24 23	F0 V	4.535	23	i	0.188	0.169	0.713	43	a,k	.....	..	.....
8848	23 17 26	-58 14 08	F1 III	3.993	75	f,i	0.271	0.143	0.564	82	b,j,k	2.665	26	e,k
8880	23 20 38	+23 44 25	A5 V	4.598	9	i	0.105	0.166	1.009	23	a,k	.....	..	.....
8899	23 23 47	+32 31 53	F4 Vw	6.692	10	i	0.321	0.121	0.404	14	a,k	.....	..	.....
8954	23 36 23	+02 06 08	F6 Vbvw	5.690	24	e,i	0.306	0.122	0.386	31	a,i,k	.....	..	.....
8965	23 38 08	+43 16 05	B8 V	4.290	3	a	-0.031	0.100	0.784	36	c	2.728	98	a,c,n
8969	23 39 57	+05 37 35	F7 V	4.131	260	f,i	0.331	0.161	0.398	364	a,c,j,k	2.621	156	c,k,l
8976	23 40 24	+44 20 02	B9 IVn	4.140	4	a	-0.035	0.131	0.831	10	c	2.833	88	a,c,n
8982	23 41 46	-17 48 59	G0 Ib-II	4.822	3	e	.....	.....	.....	..	.....	2.611	15	e,k,m
9072	23 59 19	+06 51 48	F4 IV	4.028	159	f,i	0.271	0.154	0.631	171	a,j,k	2.667	40	d,k,l
9076	23 59 55	-65 34 38	B9 V	4.505	89	f,i	-0.023	0.098	0.881	95	b,j,k	2.722	29	e,k
9088	00 02 10	+27 04 56	G2 V	5.748	35	f,i	0.430	0.187	0.214	128	a,c,j,k	2.558	128	c,k,l
9091	00 02 20	-29 43 15	B4 III	5.039	227	f,i	-0.063	0.106	0.450	235	b,j,k	2.712	27	e,k
9107	00 04 54	+34 39 36	G2 V	6.103	10	i	0.412	0.169	0.312	16	a,k	.....	..	.....

Notes to Table II

```
 15: α CVn variable; ΔV = 0.04 mag
 21: δ Sct variable; ΔV = 0.06 mag
 39: β Cep variable; ΔV = 0.07 mag
114: δ Sct variable; ΔV = 0.04 mag
193: V amplitude = 0.15: mag; shell star
     variable β (beta ref. c)
343: δ Sct variable?
373: SRd variable?; V amplitude = 0.2? mag
     RS CVn variable; AY Cet (EHO)
685: V amplitude = 0.05 mag; shell star
812: δ Sct variable; ΔV = 0.04 mag
813: δ Sct variable?
1303: ΔV = 0.14 mag
1321: RS CVn variable (IBVS No. 2619)
1322: RS CVn variable? (IBVS No. 2619)
1341: ΔV = 0.07 mag
     variable c1 (uvby ref. c)
1346: V amplitude = 0.1 mag
1373: V amplitude = 0.1 mag
1387: δ Sct variable?
1388: δ Sct variable
1412: δ Sct variable?; V amplitude = 0.03 mag
1457: Lb variable; ΔV = 0.20 mag; variable H and K emission
1543: δ Sct variable?; V amplitude = 0.05 mag
1547: δ Sct variable; ΔV = 0.02 mag
1577: Δm = 0.15 mag
1641: β Cep variable?
1662: uncertain β (beta ref. d)
1702: α CVn variable?; ΔV = 0.39 mag
1861: amplitude = 0.10 mag
2056: Ell variable?; V amplitude = 0.11 mag
2143: suspected Δm = 0.01 mag
2294: β Cep variable; ΔV = 0.07 mag
2484: δ Sct variable?
2707: δ Sct variable; ΔV = 0.07 mag
2722: uncertain β (beta ref. i)
2763: δ Sct variable?
2845: Ia variable?; ΔV = 0.14 mag; shell star
3084: β Cep variable?; amplitude = 0.07 mag
     Ell variable?; V amplitude = 0.05 mag (IBVS No. 2242)
3454: V amplitude = 0.015 mag
3662: δ Sct variable?; V amplitude = 0.03 mag
3757: δ Sct variable; B amplitude = 0.07 mag
3856: ΔB = 0.04 mag
3974: δ Sct variable; Δm = 0.05 mag
4054: δ Sct variable?; V amplitude = 0.02 mag
4057: V amplitude = 0.15 mag
4101: α CVn variable; ΔV = 0.18 mag
4133: V amplitude = 0.07 mag
     uncertain β (beta ref. n)
4527: V amplitude = 0.3 mag
4534: δ Sct variable?
4618: variable Hα emission
4684: δ Sct variable; ΔV = 0.08 mag
4689: δ Sct variable?
4717: α CVn variable; ΔV = 0.02 mag
4733: shell star
4775: δ Sct variable?
4931: B component: Δm = 3 mag
5017: δ Sct variable; ΔV = 0.05 mag; variable amplitude?
5062: δ Sct variable
5168: δ Sct variable?; V amplitude = 0.02 mag
5285: amplitude = 0.02 mag
5447: δ Sct variable?
5793: EA variable; ΔB = 0.11 mag; intrinsic variable?
5997: (b-y) amplitude = 0.02 mag
6081: small V amplitude
6092: ΔV = 0.05 mag
6175: shell star; variable Hα emission
6262: V amplitude = 0.09 mag; shell star; possible Hα emission
6458: V amplitude = 0.4 mag
6581: δ Sct variable; ΔV = 0.06 mag
6723: B component: Δm = 2 mag
6779: γ Cas variable; ΔB = 0.09 mag; Hα emission
7152: EW variable; ΔV = 0.26 mag
7340: δ Sct variable; ΔV = 0.03 mag
7377: δ Sct variable?
7602: V amplitude = 0.05 mag
7730: δ Sct variable?
7977: V amplitude = 0.05 mag
8143: variable β (beta ref. c)
8162: δ Sct variable?
8260: γ Cas variable; ΔV = 0.28 mag; shell star
     variable β? (beta ref. e)
8267: δ Sct variable?
8279: V amplitude = 0.06 mag
8344: δ Sct variable?
8454: shell star
8494: δ Sct variable; ΔV = 0.05 mag; variable amplitude
8880: δ Sct variable; ΔV = 0.02 mag
8982: variable β? (beta ref. e)
```

magnitudes given for many of the standard stars in Table II are not firmly established due to the lack of a sufficiently large number of observations per star. Clearly, more data are required, even for naked-eye stars. Crawford (1986) has proposed a solution to this problem.

The notes following Table II are adapted from remarks given in *The Bright Star Catalogue* which relate to light variability and line emission in the standard stars. Additional comments by the authors are also found in these notes. Because of possible light variations, care must be exercised in the selection of standard stars for a given photometric program; some standard stars, which are appropriate for use in the transformation of the *uvby* indices, are not suitable for the visual magnitudes.

The standard stars were checked against the *Index Catalogue of Visual Double Stars* (Jeffers and van den Bos 1963). The visual binaries found in Table II are listed in Table III where all components within 10 arc sec of a given primary are tabulated.

A check was made on the external consistency of the photometric references. References f and i were chosen as the "standard" references for the visual magnitudes determined from the intermediate-band photometry; references a, c, and j for the *uvby* indices; and reference c for the β index. Weighted mean values of the photometric indices were then determined for the stars in each set of "standard" references. Next, the differences were found for all stars common to a given reference and the "standard" references. The correlations for each photometric index are listed in Table IV in which are tabulated, in succession, the photometric reference, the mean differences, their mean errors (one star), the number of stars included in the mean difference, and the number of stars omitted in the comparison. With one exception, the mean differences and their mean errors indicate that no significant deviations exist between the individual references and the "standard" references. The rather large mean differences in the *uvby* indices for reference i are strongly influenced by HR 1006 and HR 1010. Following the suggestion by Olsen (1983), the *uvby* photometry listed in reference b has been corrected by +0.003, +0.002, and −0.008 mag, in $(b-y)$, m_1, and c_1, respectively.

The frequency distributions of the spectral types and luminosity classes assigned to the *uvby* and β standard stars are listed in Table V. Additional O-type standard stars would be desirable.

The distributions of the *uvby* and β standard stars on the plane of the sky are illustrated in Figures 1 and 2. The temperature classes of the stars are denoted by the appropriate symbols. The coverage is somewhat sparse in the Southern Hemisphere. However, Cousins (1986) has recently published a list of 185 secondary standard stars for *uvby* photometry; the stars, within the magnitude interval from 1.8 to 8.4, are found in the southern E regions. In

TABLE III

IDS Numbers

HR	IDS	HR	IDS	HR	IDS
15	00032N2832(A)	2777	07142N2170(AB)	5968	15573N3337(A)
21	00038N5836(A)	2845	07217N0829(?)	6027	16062S1912(AB)
39	00080N1438(A)	2852	07227N3159(AB)	6092	16167N4633(AB)
114	00248N2912(AB)	2883	07273S0840(A)	6169	16309N1715(A)
193	00392N4744(A)	2927	07323S0353(A)	6334	16582S3359(A)
269	00512N3757(A)	2948/9	07347S2634(AB)	6355	17007N1253(A)
343	01050N5438(A)	2985	07384N2438(AB)	6378	17046S1536(AB)
373	01115S0261(A)	3173	08009N5148(A)	6458	17169N3236(A)
458	01310N4054(A)	3249	08111N0930(A)	6536	17282N5223(AB)
493	01371N1947(AC)	3410	08324N0563(A)	6588	17367N4603(A)
531	01447S1071(A)	3459	08388S0652(A)	6714	17556N0256(AB)
623	02037N2528(AC)	3624	09027N6355(A)	6723	17567N0118(AB)
654	02098N5636(AB)	3665	09092N0244(A)	6775	18032N3033(AB)
660	02108N3346(A)	3757	09236N6330(A)	7069	18426N1804(A)
675	02132N2811(A)	3759	09240S0220(A)	7178	18552N3233(A)
685	02154N5523(A)	3775	09262N5168(AB)	7235	19008N1343(A)
937	03018N4914(A)	3815	09297N3576(AB)	7377	19205N0255(AB)
962	03077S0134(AB)	3852	09358N0981(A)	7447	19315S0130(A)
1010	03160S6253(A)	3951	09553N3185(A)	7469	19338N4959(AB)
1017	03171N4930(A)	3975	10019N1675(AB)	7479	19356N1747(A)
1024	03185S0769(AB)	3982	10030N1187(A)	7503	19392N5017(A)
1145	03393N2409(A)	4031	10110N2356(A)	7504	19392N5017(B)
1165	03415N2348(A)	4057	10145N1981(AB)	7525	19415N1022(A)
1178	03432N2345(AB)	4101	10224N0976(A)	7534	19426N3330(A)
1292	04060N0516(A)	4133	10275N0949(AB)	7557	19459N0836(A)
1303	04076N4809(A)	4405	11199S1708(AB)	7560	19462N1010(A)
1321	04102N0556(B)	4456	11295N1681(AB)	7602	19504N0609(A)
1322	04102N0556(A)	4501	11363N3178(A)	7747	20121S1249(A)
1331	04125N2120(A)	4527	11428N2046(A)	7773	20151S1264(A)
1373	04172N1718(AB)	4534	11440N1468(A)	7790	20178S5663(A)
1387	04194N2204(A)	4540	11454N0179(A)	7796	20186N3956(A)
1388	04194N2204(BQ)	4695	12152N0352(A)	7822	20232S1769(AB)
1394	04206N1524(A)	4707	12175N2584(A)	7906	20350N1534(A)
1409	04228N1858(A)	4789	12301N2270(AB)	7949	20422N3336(A)
1411	04228N1545(A)	4869	12450S4122(A)	7977	20455N4545(A)
1412	04228N1545(A)	4914	12514N3851(B)	7984	20466N4341(A)
1428	04249N1529(A)	4931	12564N5654(AB)	8060	20587S1975(AB)
1430	04250N1331(A)	4983	13072N2783(A)	8085	21024N3815(ADE)
1457	04302N1619(A)	5011	13118N0957(A)	8086	21024N3815(B)
1543	04444N0647(A)	5072	13236N1379(A)	8115	21086N2949(AD)
1547	04455N1840(A)	5235	13499N1854(A)	8162	21162N6210(AB)
1656	05015N1831(AB)	5414	14242N2844(B)	8344	21454N1650(AB)
1662	05022N0921(AC)	5415	14242N2844(A)	8425	22019S4687(A)
1672	05038N0942(A)	5447	14304N2971(A)	8430	22023N2452(AB)
1729	05121N4001(A)	5530	14453S1537(B)	8494	22113N5633(A)
1861	05276S0140(AB)	5531	14453S1537(A)	8551	22228N0412(A)
1865	05283S1754(A)	5626	15021S4454(AB)	8585	22272N4946(A)
2106	05540S3518(A)	5633	15028N1850(AB)	8622	22348N3832(A)
2236	06107N0112(AB)	5634	15029N2475(AB)	8634	22365N1019(A)
2251	06120N0508(A)	5681	15115N3341(AB)	8665	22417N1139(A)
2294	06183S1755(A)	5854	15393N0644(A)	8969	23348N0505(A)
2421	06319N1629(A)	5933	15518N1559(AB)	8976	23355N4347(AC)
2473	06378N2514(A)	5936	15521N3774(A)	8982	23366S1782(A)
2483	06395N4341(A)	5944	15528S2550(A)	9088	23569N2633(ABD)
2722	07083N2453(A)	5947	15534N2670(ABC)	9091	23572S2977(AB)
2763	07124N1643(AB)				

addition, β photometry is being obtained for approximately 100 of these stars (Cousins, private communication). One of us (E.H.O.) has been in frequent contact with Dr. Cousins during the reduction phase and we are convinced that Cousins' data are on the standard system. We therefore recommend these standard stars to southern observers.

The distributions of the standard stars in the various *uvby*β diagrams are illustrated in Figures 3–8; these diagrams may be compared with those published by Olsen (1984). Stars which have been classified as luminosity class II–III or brighter are denoted by open symbols, the intrinsically fainter stars by filled symbols. Emission-line stars, metallic-line stars, and stars classified as peculiar are denoted by triangles, inverted triangles, and squares, respectively. The scatter in the diagrams is due primarily to stars of higher intrinsic luminosity. The solid lines trace the standard relations listed in Table VI; these relationships were adapted from those published by Crawford (1978, 1979, 1975) for B, A, and F stars, respectively. The $[m_1]$ and $[c_1]$ values, defined by Strömgren (1966) but modified by Glaspey (1972), have been added

TABLE IV

Correlations Between Photometric Catalogues

Catalogue	Mean Diff.	Mean Error	Stars Included	Stars Omitted
		V		
Ref a - Std	.....	.....	0	0
Ref b - Std	.....	.....	0	0
Ref c - Std	-0.004	±0.009	10	0
Ref d - Std	.....	.....	0	0
Ref e - Std	0.004	.....	1	0
Ref f - Std	-0.000	±0.001	116	0
Ref g - Std	.....	.....	0	0
Ref h - Std	.....	.....	0	0
Ref i - Std	-0.000	±0.002	116	0
		b-y		
Ref a - Std	0.002	±0.003	10	0
Ref b - Std	-0.003	±0.004	41	0
Ref c - Std	-0.000	±10.002	10	0
Ref d - Std	.....	.....	0	0
Ref e - Std	0.005	.....	1	0
Ref f - Std	0.004	.....	1	0
Ref g - Std	.....	.....	0	0
Ref h - Std	.....	.....	0	0
Ref i - Std	-0.009	±0.006	5	0
Ref j - Std	0.001	±0.002	10	0
Ref k - Std	+0.000	±0.003	178	0
		m_1		
Ref a - Std	-0.001	±0.004	10	0
Ref b - Std	-0.002	±0.006	41	0
Ref c - Std	0.002	±0.003	10	0
Ref d - Std	.....	.....	0	0
Ref e - Std	-0.001	.....	1	0
Ref f - Std	-0.005	.....	1	0
Ref g - Std	.....	.....	0	0
Ref h - Std	.....	.....	0	0
Ref i - Std	0.006	±0.012	5	0
Ref j - Std	-0.001	±0.002	10	0
Ref k - Std	-0.001	±0.005	174	4
		c_1		
Ref a - Std	+0.000	±0.006	10	0
Ref b - Std	0.008	±0.007	40	1
Ref c - Std	-0.002	±0.004	10	0
Ref d - Std	.....	.....	0	0
Ref e - Std	0.003	.....	1	0
Ref f - Std	.....	.....	0	1
Ref g - Std	.....	.....	0	0
Ref h - Std	.....	.....	0	0
Ref i - Std	0.010	±0.006	5	0
Ref j - Std	-0.000	±0.002	10	0
Ref k - Std	-0.000	±0.006	173	5
		β		
Ref a - Std	-0.000	±0.006	31	0
Ref b - Std	-0.004	±0.015	2	0
Ref c - Std	.....	.....	..	..
Ref d - Std	.....	.....	0	0
Ref e - Std	.....	.....	0	0
Ref f - Std	.....	.....	0	0
Ref g - Std	.....	.....	0	0
Ref h - Std	.....	.....	0	0
Ref i - Std	.....	.....	0	0
Ref j - Std	.....	.....	0	0
Ref k - Std	-0.002	±0.006	50	0
Ref l - Std	-0.001	±0.006	43	0
Ref m - Std	-0.005	±0.010	14	0
Ref n - Std	0.001	±0.006	35	0

to the table.

In conclusion, a comprehensive catalog of bright standard stars for *uvby*β photometry is now available for observers in both hemispheres using small telescopes. Valuable additions to the catalog would include (a) stars of higher intrinsic luminosity, (b) stars of later spectral types, and (c) stars which exhibit a wider range of m_1 values. These deficiencies are under investigation. For example, Olsen (1983) has selected additional metal-weak standard stars; secondary *uvby* standard stars (mostly dwarfs) for the later spectral types have also been chosen and observed by Olsen.

TABLE V

Spectral-Type Distributions

	O	B	A	F	G	K
			uvby Standard Stars			
Ia	..	1	1	..	..	..
Iab	..	1	..	..	..	..
Ib	..	4	1	3	4	..
Ib-II	..	..	..	..	1	..
II	..	2	..	2	2	2
II-III	..	..	..	..	1	..
III	..	9	5	14	11	14
III-IV	..	..	1	4	2	..
IV	..	9	11	17	8	..
IV-V	..	1	2	2	2	..
V	2	29	63	46	24	4
none	..	..	11	2	1	..
			β Standard Stars			
Ia	..	3	..	..	..	..
Iab	..	2	..	..	..	..
Ib	..	4	..	2	..	..
Ib-II	..	..	..	..	2	..
II	..	2	1	2	1	..
II-III	..	1	..	..	1	..
III	..	10	5	6	1	..
III-IV	..	..	1	2	1	..
IV	..	15	6	14	6	..
IV-V	..	..	4	2	2	..
V	2	33	42	24	9	..
none	..	1	6	1	1	..

The authors wish to thank the many observers whose efforts on long cold nights have contributed to this catalog.

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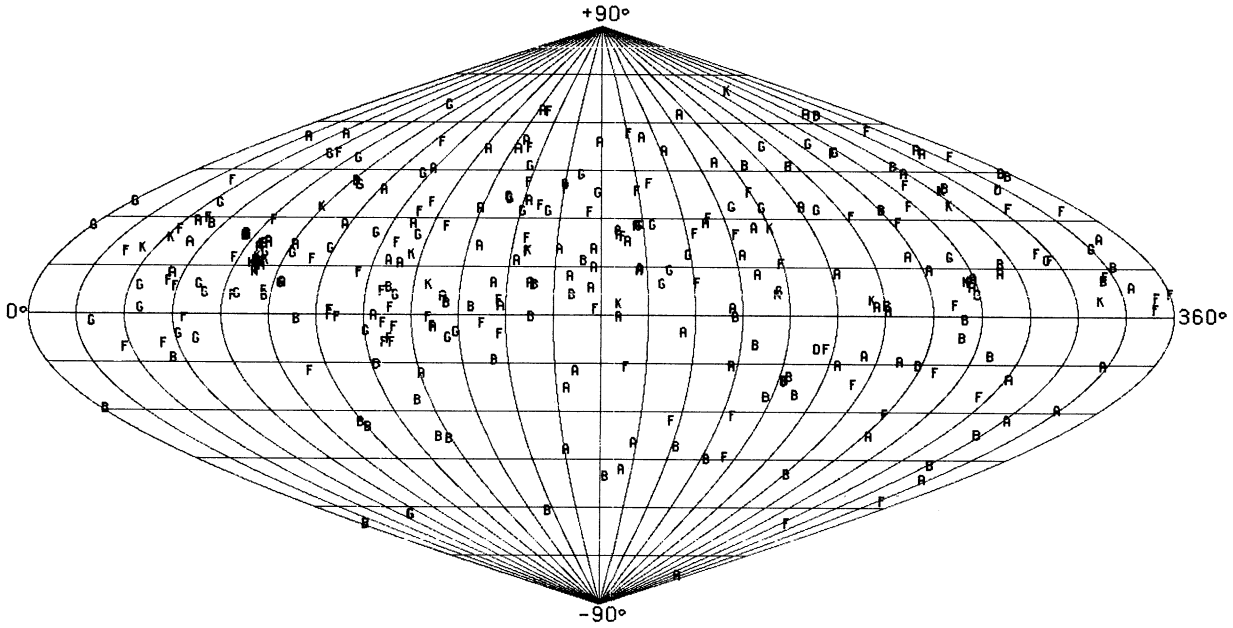

FIG. 1–The distribution of the bright *uvby* standard stars on the plane of the sky. The temperature classes of the stars are denoted by the appropriate symbols.

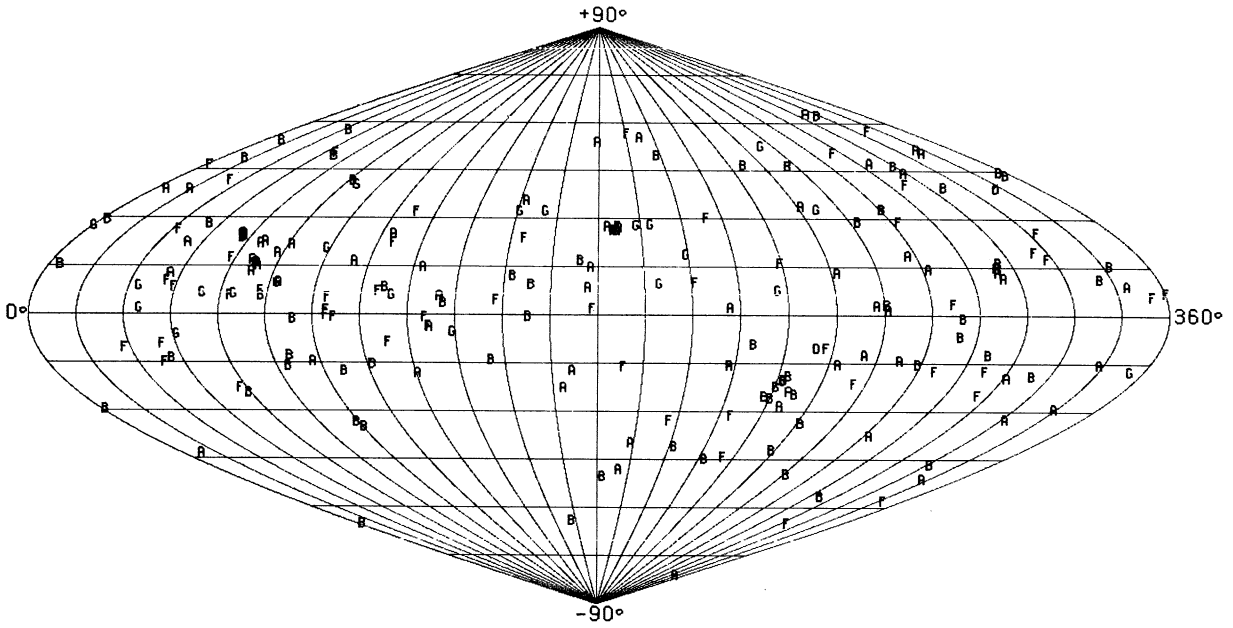

FIG. 2–The distribution of the bright β standard stars on the plane of the sky.

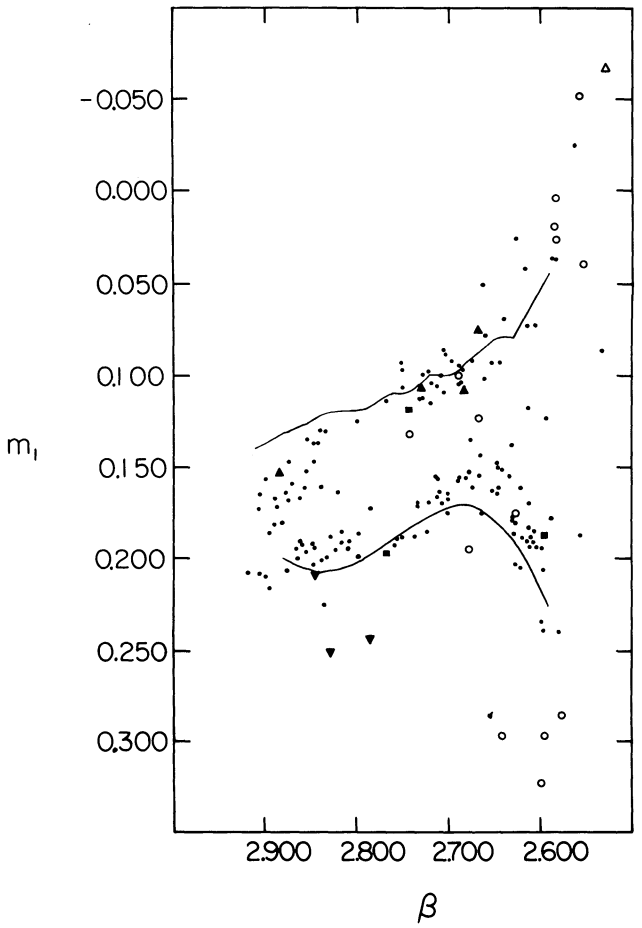

FIG. 3–The β/($b-y$) diagram for the bright *uvby*β standard stars. Stars classified as luminosity II-III or brighter are denoted by open symbols; intrinsically fainter stars by filled symbols. Emission-line, metallic-line, and stars classified as peculiar are denoted by triangles, inverted triangles, and squares, respectively. The solid lines trace the standard relations listed in Table VI.

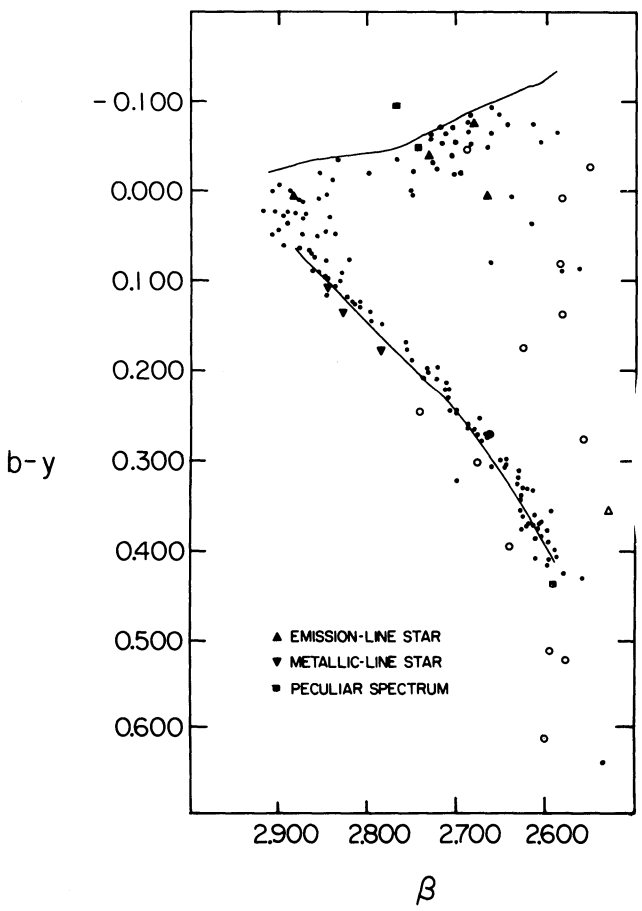

FIG. 4–The β/m_1 diagram for the bright *uvby*β standard stars.

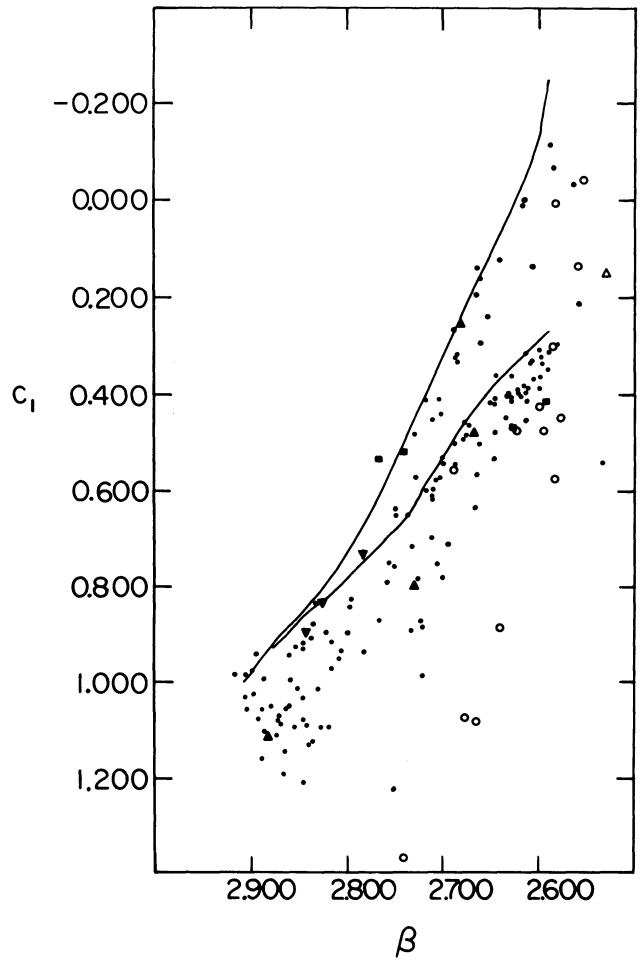

FIG. 5–The β/c_1 diagram for the bright *uvby*β standard stars.

TABLE VI

The uvbyβ Standard Relations

β	b-y	m_1	c_1	M	$[m_1]$	$[c_1]$
			B Stars			
2.560	.....	.....	.....	-6.51	.....	.....
2.570	.....	.....	.....	-5.84	.....	.....
2.580	.....	.....	.....	-5.22	.....	.....
2.590	-0.134	0.045	-0.250	-4.65	0.005	-0.223
2.600	-0.126	0.055	-0.128	-4.12	0.017	-0.103
2.610	-0.120	0.065	-0.075	-3.62	0.029	-0.051
2.620	-0.118	0.075	-0.025	-3.17	0.040	-0.001
2.630	-0.114	0.080	0.022	-2.75	0.046	0.045
2.640	-0.109	0.080	0.065	-2.36	0.047	0.087
2.650	-0.105	0.081	0.108	-2.01	0.049	0.129
2.660	-0.100	0.085	0.150	-1.69	0.055	0.170
2.670	-0.096	0.089	0.192	-1.39	0.060	0.211
2.680	-0.091	0.093	0.235	-1.12	0.066	0.253
2.690	-0.086	0.098	0.278	-0.87	0.072	0.295
2.700	-0.080	0.100	0.321	-0.65	0.076	0.337
2.710	-0.075	0.100	0.362	-0.45	0.078	0.377
2.720	-0.070	0.100	0.404	-0.27	0.079	0.418
2.730	-0.065	0.105	0.448	-0.10	0.085	0.461
2.740	-0.061	0.109	0.491	0.04	0.091	0.503
2.750	-0.055	0.110	0.535	0.18	0.094	0.546
2.760	-0.050	0.110	0.578	0.30	0.095	0.588
2.770	-0.046	0.112	0.619	0.41	0.098	0.628
2.780	-0.044	0.116	0.656	0.51	0.103	0.665
2.790	-0.042	0.119	0.693	0.60	0.106	0.701
2.800	-0.041	0.120	0.724	0.68	0.108	0.732
2.810	-0.040	0.120	0.755	0.76	0.108	0.763
2.820	-0.039	0.120	0.785	0.83	0.108	0.793
2.830	-0.038	0.121	0.811	0.90	0.110	0.819
2.840	-0.037	0.123	0.833	0.97	0.112	0.840
2.850	-0.035	0.126	0.856	1.03	0.116	0.863
2.860	-0.034	0.128	0.878	1.10	0.118	0.885
2.870	-0.032	0.130	0.900	1.17	0.120	0.906
2.880	-0.029	0.132	0.925	1.24	0.123	0.931
2.890	-0.026	0.135	0.950	1.31	0.127	0.955
2.900	-0.023	0.138	0.975	1.39	0.131	0.980
2.910	-0.020	0.140	1.000	1.46	0.134	1.004
			A Stars			
2.880	0.066	0.200	0.930	2.30	0.220	0.917
2.870	0.076	0.202	0.910	2.40	0.225	0.895
2.860	0.086	0.205	0.890	2.50	0.231	0.873
2.850	0.096	0.206	0.870	2.57	0.235	0.851
2.840	0.106	0.208	0.850	2.64	0.240	0.829
2.830	0.116	0.207	0.835	2.67	0.242	0.812
2.820	0.126	0.206	0.820	2.70	0.244	0.795
2.810	0.136	0.204	0.800	2.73	0.245	0.773
2.800	0.146	0.203	0.780	2.76	0.247	0.751
2.790	0.156	0.200	0.760	2.79	0.247	0.729
2.780	0.166	0.196	0.740	2.82	0.246	0.707
2.770	0.176	0.192	0.720	2.85	0.245	0.685
2.760	0.186	0.188	0.700	2.88	0.244	0.663
2.750	0.196	0.185	0.680	2.92	0.244	0.641
2.740	0.206	0.182	0.660	2.96	0.244	0.619
2.730	0.216	0.180	0.630	3.03	0.245	0.587
2.720	0.226	0.177	0.600	3.10	0.245	0.555
			F Stars			
2.720	0.222	0.177	0.580	3.14	0.244	0.536
2.710	0.233	0.174	0.560	3.21	0.244	0.513
2.700	0.245	0.172	0.530	3.29	0.246	0.481
2.690	0.258	0.171	0.495	3.38	0.248	0.443
2.680	0.271	0.170	0.465	3.48	0.251	0.411
2.670	0.284	0.171	0.440	3.60	0.256	0.383
2.660	0.298	0.174	0.415	3.74	0.263	0.355
2.650	0.313	0.178	0.390	3.88	0.272	0.327
2.640	0.328	0.183	0.370	4.04	0.281	0.304
2.630	0.344	0.189	0.350	4.20	0.292	0.281
2.620	0.360	0.196	0.330	4.36	0.304	0.258
2.610	0.377	0.204	0.310	4.52	0.317	0.235
2.600	0.394	0.214	0.290	4.70	0.332	0.211
2.590	0.412	0.226	0.270	4.90	0.350	0.188

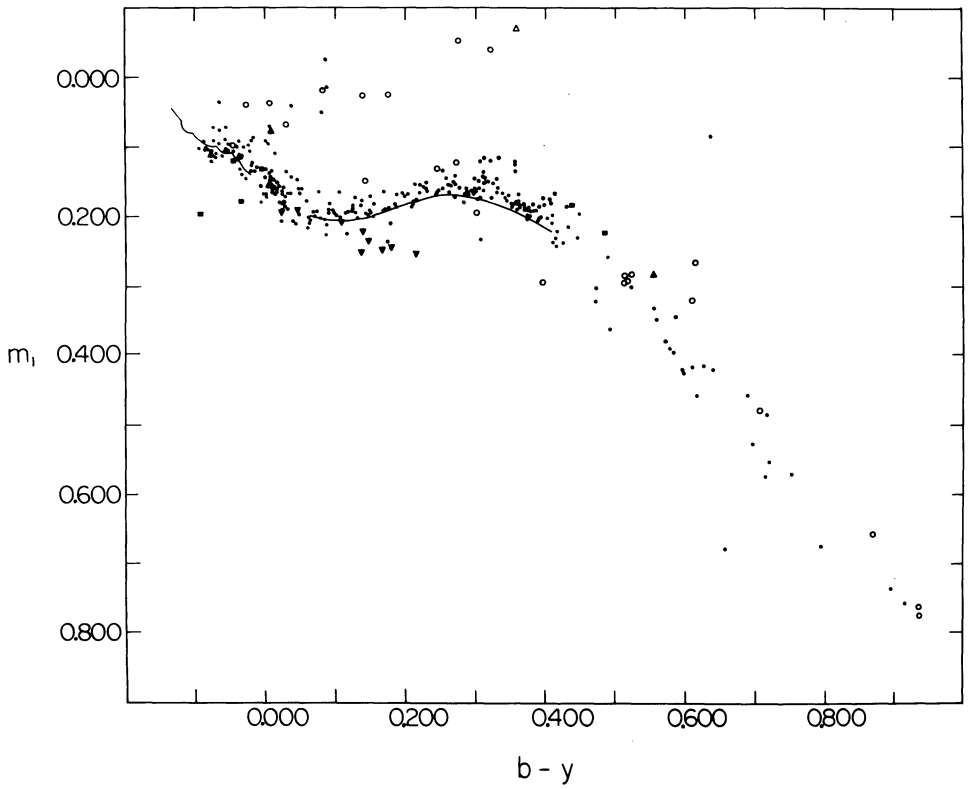

FIG. 6–The $(b-y)/m_1$ diagram for the bright *uvby*β standard stars.

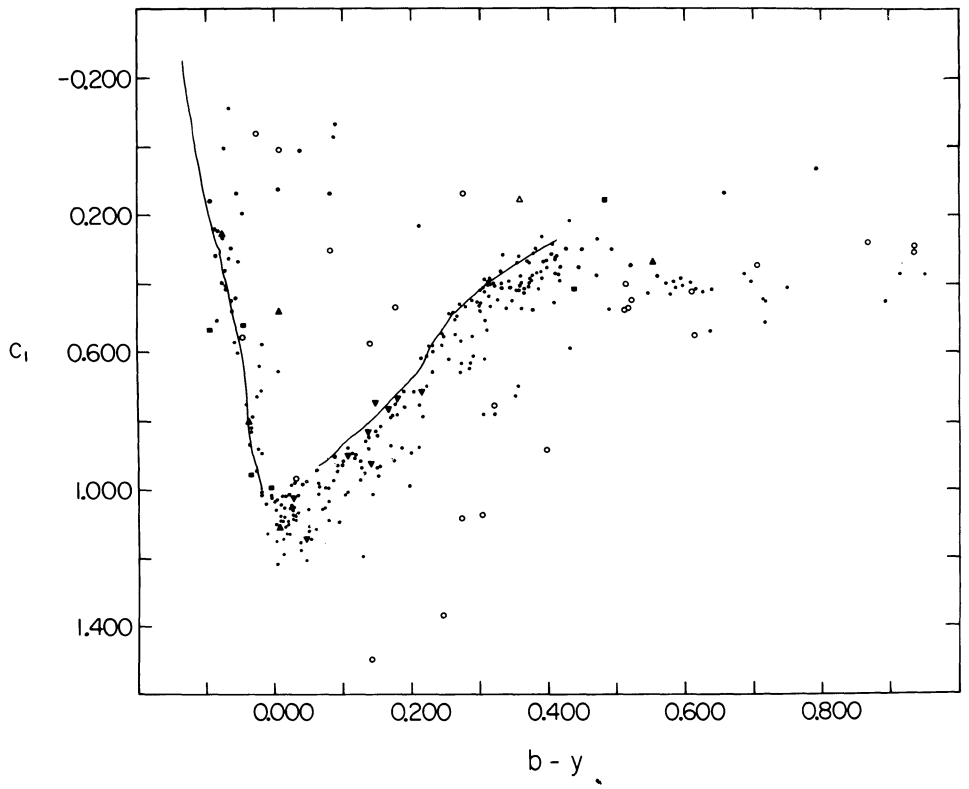

FIG. 7–The $(b-y)/c_1$ diagram for the bright *uvby*β standard stars.

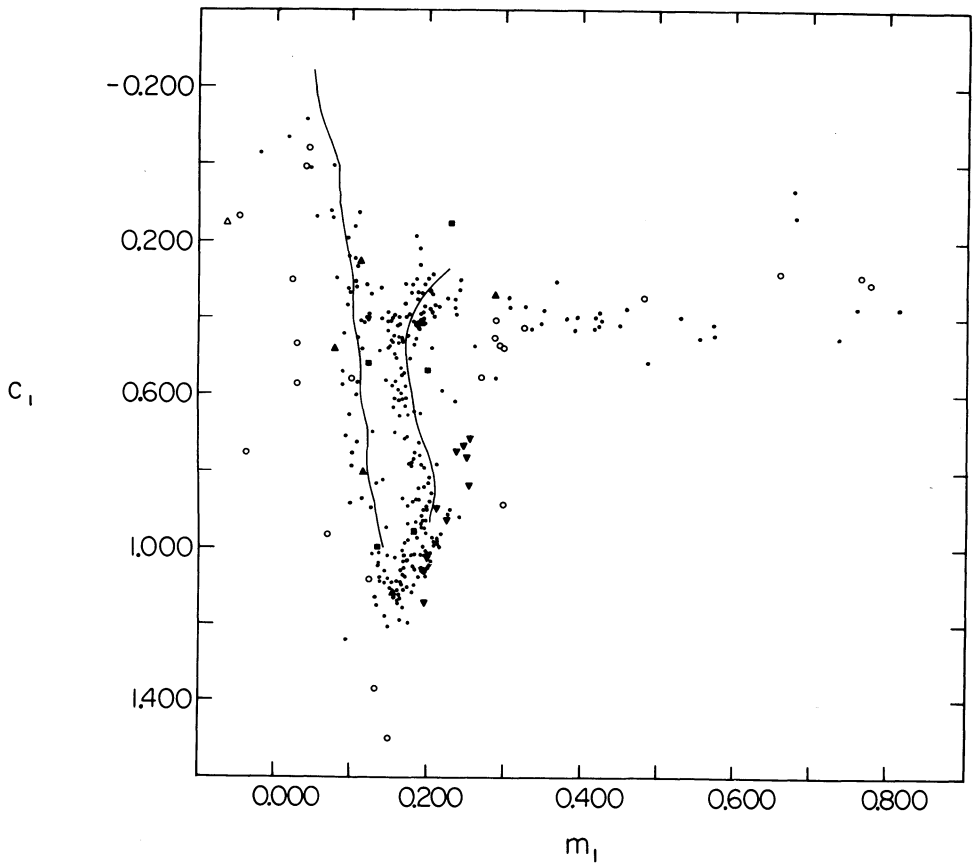

FIG. 8–The m_1/c_1 diagram for the bright *uvby*β standard stars.