The Astronomical Journal, 146:131 (41pp), 2013 November doi:10.1088/0004-6256/146/5/131

U BV RI PHOTOMETRIC STANDARD STARS AROUND THE SKY AT +50 deg DECLINATION

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Received 2013 June 25; accepted 2013 August 26; published 2013 October 16

ABSTRACT

U BV RI photoelectric observations have been made of 335 stars around the sky, and centered approximately at +50 deg declination. The majority of the stars fall in the magnitude range $9 < V < 16$, and in the color range $-0.3 < (B - V) < +1.8$. Those 243 stars best suited as new broadband photometric standard stars average 12.5 measures each from data taken on 98 different nights over a period of 17 years at the Kitt Peak National and Lowell Observatories.

Key words: catalogs – standards – stars: fundamental parameters – techniques: photometric

1. INTRODUCTION

The past 40 years have seen participation by the author in publishing several photometric standard star papers (Clem & Landolt 2013; Landolt 1973, 1983, 1992a, 1992b, 2007a, 2009; Landolt & Uomoto 2007a, 2007b) wherein the *UBV* magnitudes and color indices have been based on the defining paper of Johnson (1963), and the *RI* photometry has been based on the work of Cousins (1976). A summary of the author's observing and analysis procedures may be found in Landolt (2007b, 2012).

The present paper is an extension of the broadband *U BV RI* photometric system to a zone around the sky, centered approximately at +50 deg declination. There then will exist *U BV RI* photoelectric photomultiplier-based photometric sequences in declination bands around the sky centered at −50, 0, and +50 deg declination in the very rough magnitude range of $9 < V < 15$. CCD-based efforts are in press (Clem & Landolt 2013), and data-taking continues at the telescope.

The body of this paper describes the observations and reductions in Section 2, a discussion of the characteristics of the photometry in Section 3, and comments on individual stars in Section 4.

2. THE OBSERVATIONAL PROGRAM

The candidate standard stars studied in this paper came from a variety of sources. The Kapteyn plan of selected areas (SAs), described by Blaauw & Elvius (1965), includes star lists that provide magnitude estimates (Pickering & Kapteyn 1918) as well as charts for each SA (Brun & Vehrenberg 1965). The GD stars were blue stars of small motion originally identified by Giclas in his proper motion surveys completed at the Lowell Observatory. A summary listing of the GD stars was published by Giclas et al. (1971). The Palomar-Green (PG) star list was the result of a search for ultraviolet excess stellar objects (Green et al. 1986). The KUV stars also were the product of a search for ultraviolet excess objects (Noguchi et al. 1980; Kondo et al. 1982, 1984). Each of these sources provided candidate standard stars in a band of the celestial sphere around the sky and centered approximately at +50 deg declination.

The data in this paper were obtained at the Kitt Peak National Observatory (KPNO) and at the Lowell Observatory (LO). These data came from three telescope setups, the KPNO 1.3 m, the KPNO 0.9 m, and the LO Perkins 1.8 m telescopes. A common factor between the three telescopes was the use of the same filter set, except as noted below (Section 2.2). On the other hand, as noted below, different detectors were employed by necessity.

Over time, the author always has attempted to adhere to the dictum (Landolt 2007b) that potential standard star data only should be obtained with one instrumental setup. In this instance, such a possibility was not to be. Photoelectric photometers were phased out at KPNO and the 1.3 m telescope was closed to the community in an early phase of this program. Next, the photometric acquisition system, called CCDPHOT, designed to operate in a fashion similar to the photoelectric photometer, was discontinued. At that point in time, the author's northern declination sequences remained far from completion, and data acquisition came to a halt for several years. Since an objective was to make the sequences around the sky all based on one kind of detector, to help ensure similar photometric systematics and characteristics of the resulting photometry, time passed before the opportunity arose to obtain photoelectric data at Lowell Observatory. The following paragraphs describe the equipment setups used at each location.

2.1. The KPNO 1.3 m Data

The KPNO 1.3 m telescope was scheduled for this program for 78 nights in the interval 1991 October to 1995 April. Of those scheduled nights, 36, or 42.6%, provided usable photometric data.[3]

The broadband *U BV RI* photometric observations all were obtained with the same RCA 31034A-02 (KPNO serial # H 18862) photomultiplier used in a pulse-counting mode. This photomultiplier always resided in cold box 51, and was operated at −1600V. A complete data set for a star consisted of a series of measures: *IRV BUU BV RI*. Throughout the process, the sky was sampled once per second via the telescope's chopping mode. This chopping ability, first on the star, then on the sky, then back on the star, etc., was the beauty of the 1.3 m telescope. A 17″.7 diaphragm was used because that was the most reasonable

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[3] Informative images of the equipment are located online at http://www.noao.edu/image_gallery/html/im0451.html and at http://airandspace.si.edu/collections/artifact.cfm?id=A20000791000 and http://airandspace.si.edu/collections/artifact.cfm?id=A20000791001.

size diaphragm available given the instrumental setup. Counting intervals, the time spent on each star ranged from no less than 10 s for the brightest stars to 60 s for the faintest stars. The pointing of the 1.3 m telescope proved to be very stable, fortunate since there was no automatic guider. The KPNO J *UBVRI* filter set was used in conjunction with the photometer. The KPNO filter identification numbers are $B = 1111$, $V = 1112$, $R = 1113$, $I = 1114$, and $U = 234$+$CuSO_4$. The filter specifications may be found in Table 1 in Landolt & Uomoto (2007a).

The author's observational procedures for these data taken at the KPNO 1.3 m followed closely the description in Landolt & Uomoto (2007a). The stability of the 1.3 m telescope allowed integration times as long as 60 s in a given filter for the faintest stars. Measurements were made and extinction coefficients were extracted every photometric night. Each night's data were reduced using the primary extinction coefficients derived from that night, whenever possible. Average secondary extinction coefficients for a given run were used. Some examples of these extinction coefficients may be found in Table 2 of Landolt (2007b).

2.2. The KPNO 0.9 m Data

The KPNO 0.9 m data resulted from two different detectors. The first was known as the Automated Filter Photometer2 (AFP2), a pulse-counting aperture photometer setup. It consisted of a standard KPNO photometer head to which was attached the same cold box and photomultiplier combination as used at the 1.3 m telescope. The J *UBVRI* filter set also was used at the 0.9 m telescope. The chosen diaphragm size was 13.″7, the most practical for this photometer telescope combination, using the 0.9 m telescope's f/13.5 secondary mirror.

The 0.9 m telescope with the AFP2 photometer was scheduled for 19 nights in the interval 1991 October to 1993 July. Of these scheduled nights, 7, or 36.8%, resulted in useful data.

The second detector arrangement utilized an instrumental setup including a CCD and a software package called CCDPHOT (Tody & Davis 1992; Kinman 1998). Its use followed in part due to the closing out of photoelectric photometry capabilities. In essence, the setup allowed the astronomer to observe one star at a time, the operation behaving like a single channel photometer, but using a CCD as a detector. It proved to be a quite useful approach! A 512 × 512 Tektronix chip, with the KPNO name T5HA, was used as the detector. This chip's pixel size was 27 × 27 microns. The scale was 0.″77 pixel^{-1} at the 0.9 m telescope. The diaphragm size could be set via the software. The filters used with the CCDPHOT data acquisition system were a parfocal Harris set, whose KPNO filter names were U = LU3 (liquid $CuSO_4$ + UG2), B = KP1499, V = KP1500, R = KP1501, and I = KP1531.

The 0.9 m telescope with CCDPHOT was scheduled for 44 nights in the interval 1992 March to 1994 September. Of these scheduled nights, 13, or 29.5%, provided useful data.

2.3. The Lowell Data

The closing of photoelectric photometry possibilities at KPNO eventually led to opportunities at Lowell Observatory, where a similar climate and a sufficiently-sized telescope, the Lowell Perkins 1.8 m, permitted the completion of the photoelectric aspect of the author's standard star program.

Observations began at the Lowell 1.8 m Perkins telescope in 2004 June. The J *UBVRI* filter set on loan from the KPNO allowed continuity in that the same filter set was used together with the different photomultipliers at the two observatories.

Data acquisition at the Lowell 1.8 m telescope was accomplished in two time frames, separated by equipment renovations. The first interval of data taking included 2005 April to 2006 November. The second interval of data taking included 2007 August through 2008 November.

The LO Kron Photoelectric Photometer was used throughout the LO observational program. The intent was to use the KPNO cold box 51 with the photomultiplier used by the author for the KPNO observations described above, again to provide another commonality to his standard star sequences. When that cold box arrived from CTIO, where it had been used for the author's southern hemisphere observations (Landolt 2009), the photomultiplier proved unresponsive. A new Burle Industries C31034A-02 photomultiplier was provided by the LO Director, and was used for the remainder of the program. A diaphragm of 15.″7 diameter was the aperture most suited to the telescope–photometer combination.

A total of 171 nights was made available for this standard star program. Of those nights, 47 were photometric. Actually, more than one third of the assigned time would have been photometric had it not been for prescribed forest burns that seemed to perversely occur only during photometric conditions.

3. DISCUSSION

Broadband *UBVRI* photoelectric observations on the Johnson–Kron–Cousins photometric system have been made of 349 stars around the sky, and 335 of these are centered roughly at +50 deg declination. The magnitudes and color indices for 259 of these stars are sufficiently robust to be used as photometric standard stars.

The photometric data acquired for the photometry in this paper initially were reduced using standard star values taken from Landolt (1983, 1992a), resulting in magnitudes and color indices for each of the five telescope and photometer combinations cited above in Section 2. Each of these sets of photometry, via the standard stars used to transform them, was compared to the same standard star magnitudes and color indices in Landolt (2009), the most recent update of the author's *UBVRI* photometric sequences. The comparisons, the delta quantities, were in the sense of data from this program minus the corresponding magnitudes and color indices from Landolt (2009). The plots of these quantities as a function of the Landolt (2009) standard stars' magnitudes and color indices are not illustrated in this paper for the sake of space, and since overall the general appearance of the plots is the same as in the author's previous papers (for example, see Figures 1–6 in Landolt 2007a).

Perusal of each plot, the delta quantities on the ordinate, and the color indices on the abscissas, shows the presence of nonlinearities in the transformation process. Inspection of each plot allowed the nonlinear "break points" to be identified. The break points are indicated in Table 1 in the last column along with the appropriate nonlinear transformation relations, derived by a least-squares fitting from the plots of the delta quantities as a function of the Landolt (2009) standard stars' magnitudes and color indices.

The term "nonlinear" has been used by the author in the past (see, e.g., Landolt 1983, 1992a, 2007a, 2009; Landolt & Uomoto 2007a) in describing the last step of the transformation process. Instead of using a polynomial relation, three linear relations with fixed break points have been utilized as an approximation to a polynomial relation.

The nonlinear transformation had the form in which a subscript "c" indicates "catalog" and subscript "obs" indicates

Table 1
Nonlinear Coefficients

Instrument	Index	Zero	Error Zero	Slope	Error Slope	Color Range
ST4513M	$(B-V)_c$	+0.00647	±0.00281	+1.05111	±0.01552	$(B-V)<+0.1$
	$(B-V)_c$	+0.00664	±0.00134	+0.98743	±0.00249	$+0.1<(B-V)<+1.0$
	$(B-V)_c$	−0.01072	±0.00416	+1.00787	±0.00318	$(B-V)>+1.0$
	$(U-B)_c$	−0.01194	±0.00576	+0.97555	±0.00705	$(U-B)<-0.2$
	$(U-B)_c$	+0.00023	±0.00370	+0.98196	±0.02014	$-0.2<(U-B)<+0.5$
	$(U-B)_c$	−0.00649	±0.00691	+1.00531	±0.00521	$(U-B)>+0.5$
	V_c	−0.00382	±0.00275	−0.03890	±0.01519	$(B-V)<+0.1$
	V_c	−0.00257	±0.00135	−0.00008	±0.00252	$+0.1<(B-V)<+1.0$
	V_c	−0.01361	±0.00564	+0.01094	±0.00442	$(B-V)>+1.0$
	$(V-R)_c$	+0.00170	±0.00106	+0.97548	±0.01140	$(V-R)<+0.1$
	$(V-R)_c$	−0.00408	±0.00137	+1.00129	±0.00440	$+0.1<(V-R)<+0.5$
	$(V-R)_c$	−0.00694	±0.00213	+1.01285	±0.00298	$(V-R)>+0.5$
	$(R-I)_c$	−0.00104	±0.00123	+1.00159	±0.00138	$(R-I)<+0.1$
	$(R-I)_c$	−0.00218	±0.00125	+1.00629	±0.00393	$+0.1<(R-I)<+0.5$
	$(R-I)_c$	+0.00504	±0.00173	+0.99234	±0.00254	$(R-I)>+0.5$
	$(V-I)_c$	−0.00037	±0.00363	+0.98531	±0.01760	$(V-I)<+0.1$
	$(V-I)_c$	−0.00256	±0.00170	+0.99834	±0.00293	$+0.1<(V-I)<+1.0$
	$(V-I)_c$	−0.00063	±0.00232	+1.00179	±0.00167	$(V-I)>+1.0$
STD4509M	$(B-V)_c$	+0.00474	±0.00549	+1.04528	±0.04496	$(B-V)<+0.1$
	$(B-V)_c$	+0.00829	±0.00190	+0.98614	±0.00368	$+0.1<(B-V)<+1.0$
	$(B-V)_c$	−0.01560	±0.00826	+1.01046	±0.00597	$(B-V)>+1.0$
	$(U-B)_c$	+0.00584	±0.01138	+1.00643	±0.01674	$(U-B)<-0.2$
	$(U-B)_c$	−0.00374	±0.00578	+1.00848	±0.03616	$-0.2<(U-B)<+0.5$
	$(U-B)_c$	+0.00939	±0.02353	+0.99412	±0.01586	$(U-B)>+0.5$
	V_c	−0.00519	±0.00699	−0.06010	±0.05727	$(B-V)<+0.1$
	V_c	−0.00478	±0.00355	+0.00446	±0.00687	$+0.1<(B-V)<+1.0$
	V_c	−0.01346	±0.01079	+0.01152	±0.00790	$(B-V)>+1.0$
	$(V-R)_c$	+0.00131	±0.00349	+1.02449	±0.04651	$(V-R)<+0.1$
	$(V-R)_c$	−0.00325	±0.00324	+1.00191	±0.01089	$+0.1<(V-R)<+0.5$
	$(V-R)_c$	−0.00258	±0.00503	+1.00736	±0.00679	$(V-R)>+0.5$
	$(R-I)_c$	−0.00450	±0.00300	+0.93318	±0.03624	$(R-I)<+0.1$
	$(R-I)_c$	+0.00043	±0.00352	+0.99963	±0.01218	$+0.1<(R-I)<+0.5$
	$(R-I)_c$	+0.00795	±0.00399	+0.98998	±0.00583	$(R-I)>+0.5$
	$(V-I)_c$	+0.00067	±0.00685	+0.99533	±0.04482	$(V-I)<+0.1$
	$(V-I)_c$	−0.00506	±0.00302	+1.00388	±0.00539	$+0.1<(V-I)<+1.0$
	$(V-I)_c$	+0.00611	±0.00588	+0.99831	±0.00412	$(V-I)>+1.0$
ST4509SC	$(B-V)_c$	+0.00268	±0.00301	+1.01871	±0.01593	$(B-V)<+0.1$
	$(B-V)_c$	−0.00080	±0.00201	+1.00056	±0.00412	$+0.1<(B-V)<+0.9$
	$(B-V)_c$	−0.01687	±0.00826	+1.01389	±0.00597	$(B-V)>+0.9$
	$(U-B)_c$	+0.00000	±0.00000	+1.00000	±0.00000	$(U-B)<-0.2$
	$(U-B)_c$	+0.00000	±0.00000	+1.00000	±0.00000	$-0.2<(U-B)<+0.5$
	$(U-B)_c$	+0.00000	±0.00000	+1.00000	±0.00000	$(U-B)>+0.5$
	V_c	−0.00338	±0.00313	−0.03199	±0.01656	$(B-V)<+0.1$
	V_c	+0.00326	±0.00216	−0.00936	±0.00440	$+0.1<(B-V)<+0.9$
	V_c	−0.01266	±0.00828	+0.00971	±0.00621	$(B-V)>+0.9$
	$(V-R)_c$	+0.00113	±0.00101	+0.99208	±0.01074	$(V-R)<+0.1$
	$(V-R)_c$	−0.00014	±0.00214	+0.99641	±0.00702	$+0.1<(V-R)<+0.5$
	$(V-R)_c$	−0.00404	±0.00339	+1.00656	±0.00448	$(V-R)>+0.5$
	$(R-I)_c$	−0.00399	±0.00202	+0.98660	±0.01803	$(R-I)<+0.1$
	$(R-I)_c$	−0.00187	±0.00260	+1.01481	±0.00852	$+0.1<(R-I)<+0.5$
	$(R-I)_c$	+0.00959	±0.00305	+0.98392	±0.00405	$(R-I)>+0.5$
	$(V-I)_c$	−0.00510	±0.00473	+0.97493	±0.02229	$(V-I)<+0.1$
	$(V-I)_c$	−0.00791	±0.00290	+1.01465	±0.00513	$+0.1<(V-I)<+1.0$
	$(V-I)_c$	+0.00564	±0.00657	+0.99664	±0.00465	$(V-I)>+1.0$
LOWELL	$(B-V)_c$	+0.00711	±0.00322	+1.05235	±0.02001	$(B-V)<+0.1$
	$(B-V)_c$	+0.00866	±0.00317	+0.98212	±0.00678	$+0.1<(B-V)<+0.8$
	$(B-V)_c$	−0.00148	±0.01031	+1.00208	±0.00820	$(B-V)>+0.8$
	$(U-B)_c$	+0.00768	±0.00756	+1.01516	±0.00927	$(U-B)<-0.2$
	$(U-B)_c$	+0.01351	±0.00676	+0.92565	±0.04049	$-0.2<(U-B)<+0.5$
	$(U-B)_c$	+0.00346	±0.00639	+0.99673	±0.00539	$(U-B)>+0.5$
	V_c	−0.00060	±0.00510	−0.03592	±0.03172	$(B-V)<+0.1$
	V_c	+0.00708	±0.00443	−0.01415	±0.00947	$+0.1<(B-V)<+0.8$
	V_c	+0.01062	±0.01091	−0.01184	±0.00867	$(B-V)>+0.8$
	$(V-R)_c$	+0.00255	±0.00114	+0.97118	±0.01371	$(V-R)<+0.1$
	$(V-R)_c$	−0.00565	±0.00251	+1.00632	±0.00814	$+0.1<(V-R)<+0.5$

Table 1
(Continued)

Instrument	Index	Zero	Error Zero	Slope	Error Slope	Color Range
	$(V-R)_c$	−0.01467	±0.00592	+1.02474	±0.00831	$(V-R) > +0.5$
	$(R-I)_c$	−0.00132	±0.00139	+1.00061	±0.01474	$(R-I) < +0.1$
	$(R-I)_c$	−0.00118	±0.00174	+1.00389	±0.00559	$+0.1 < (R-I) < +0.5$
	$(R-I)_c$	−0.00272	±0.00461	+1.00467	±0.00694	$(R-I) > +0.5$
	$(V-I)_c$	−0.00085	±0.00317	+0.98170	±0.01739	$(V-I) < +0.1$
	$(V-I)_c$	−0.00239	±0.00216	+0.99913	±0.00372	$+0.1 < (V-I) < +1.0$
	$(V-I)_c$	−0.01828	±0.00515	+1.01492	±0.00376	$(V-I) > +1.0$
LOWELL1	$(B-V)_c$	+0.01100	±0.00347	+1.08756	±0.02433	$(B-V) < +0.1$
	$(B-V)_c$	+0.00095	±0.00519	+0.99568	±0.01000	$+0.1 < (B-V) < +0.8$
	$(B-V)_c$	−0.01650	±0.01149	+1.01493	±0.00951	$(B-V) > +0.8$
	$(U-B)_c$	−0.00453	±0.00469	+0.98727	±0.00594	$(U-B) < -0.2$
	$(U-B)_c$	+0.00333	±0.00504	+0.96090	±0.02602	$-0.2 < (U-B) < +0.5$
	$(U-B)_c$	−0.00205	±0.01402	+1.00376	±0.01157	$(U-B) > +0.5$
	V_c	−0.00253	±0.00384	−0.05157	±0.02892	$(B-V) < +0.1$
	V_c	+0.00138	±0.00702	−0.00027	±0.01352	$+0.1 < (B-V) < +0.8$
	V_c	−0.01444	±0.01460	+0.01174	±0.01215	$(B-V) > +0.8$
	$(V-R)_c$	+0.00082	±0.00252	+0.92244	±0.03639	$(V-R) < +0.1$
	$(V-R)_c$	−0.00703	±0.00302	+1.01393	±0.00927	$+0.1 < (V-R) < +0.5$
	$(V-R)_c$	+0.00916	±0.00894	+0.98865	±0.01262	$(V-R) > +0.5$
	$(R-I)_c$	−0.00133	±0.00332	+1.02686	±0.04013	$(R-I) < +0.1$
	$(R-I)_c$	+0.00647	±0.00418	+0.98856	±0.01240	$+0.1 < (R-I) < +0.5$
	$(R-I)_c$	+0.01001	±0.00295	+0.98482	±0.00415	$(R-I) > +0.5$
	$(V-I)_c$	−0.00085	±0.00390	+0.98951	±0.02541	$(V-I) < +0.1$
	$(V-I)_c$	−0.00610	±0.00429	+1.00940	±0.00664	$+0.1 < (V-I) < +1.0$
	$(V-I)_c$	+0.01275	±0.00694	+0.99066	±0.00495	$(V-I) > +1.0$

"observed." As an example, the first line in Table 1 has the form:

$$(B-V)_c = +0.00647 + 1.05111(B-V)_{\rm obs} \pm 0.00281 \pm 0.01552, \quad (1)$$

i.e., each color index is corrected as a function of itself, for the case where $(B-V) < +0.1$. Note that the correction to the V magnitude has to be made after the $(B-V)$ nonlinear transformation has been done:

$$V_c = -0.00382 - 0.03890(B-V)_{\rm corr} + V_{\rm obs} \pm 0.00275 \pm 0.01519, \quad (2)$$

again for $(B-V) < +0.1$.

The first column in Table 1 identifies the data set with which the nonlinear relations correspond. ST4513M applies to the KPNO 1.3 m telescope data. STD4509M and ST4509SC correspond to KPNO 0.9 m photoelectric and CCDPHOT data, respectively. LOWELL and LOWELL1 relate to the first and second parts of the LO data, respectively.

The nonlinear transformation relations in Table 1 were applied to the recovered magnitudes and color indices of the standard stars used in this program. This process was done separately for data collected with each telescope detector combination. The standard star magnitudes and color indices, now corrected for nonlinear transformations, were compared once again to the published photometric values in the sense of corrected values minus published magnitudes and color indices. The fact that the nonlinear effects were corrected successfully could be illustrated with several dozen additional plots, not shown, again since their appearance is as in previous papers (for example, see Figures 7–12 in Landolt 2007a). Therefore, the data in this paper obtained with each telescope detector combination have been transformed to the broadband *UBVRI* photometric system defined in Landolt (2009).

The five data sets as enumerated in the first column of Table 1, corrected by the nonlinear transformation relations presented in Table 1, were combined to produce Table 2, the final table of magnitudes and color indices for the program stars. During the combination process, the data for each star were weighted by the number of observations and inversely as the square of the mean error of a single observation via the relations (Barford 1967),

$$\text{weighted result} = \left(\frac{\omega_1 X_1/s_1^2 + \omega_2 X_2/s_2^2}{\omega_1/s_1^2 + \omega_2/s_2^2} \right), \quad (3)$$

$$\text{weighted error} = \left(\frac{\omega_1 + \omega_2}{\omega_1/s_1^2 + \omega_2/s_2^2} \right)^{1/2}, \quad (4)$$

where ω_i is the number of nights, X_i is the magnitude or color index, and s_i is the mean error of a single observation. Note, however, that since the ultraviolet sensitivity of the T5HA chip combined with the KPNO LU3 ultraviolet filter led to poor $(U-B)$ color index values, the $(U-B)$ data from CCDPHOT were not included in the final combination of $(U-B)$ color indices.

UBVRI photometry of new standard stars in a band around the sky, and centered roughly at +50 deg declination, is given in Table 2. The star name, either from the literature or from the author, is given in Column 1. Accurate coordinates, based on the UCAC4 catalog (Zacharias et al. 2013), are listed in Columns 2 and 3. Columns 4–9 give the final magnitude and color indices in the *UBVRI* photometric system as defined by Landolt (2009). Column 10 indicates the number of times n that each star was observed. Column 11 gives the number of nights m during which a star was observed. The numbers in Columns 4–9 are mean magnitudes and color indices. Hence, the errors tabulated in Columns 12–17 are mean errors of the mean magnitude and color indices (see Landolt 1983, p. 450).

Table 2
UBVRI Photometry of Standard Stars at Northern Declinations

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
GD 2B	00 07 25.484	+33 19 00.17	13.279	+0.588	−0.001	+0.350	+0.349	+0.697	19	10	0.0010	0.0018	0.0019	0.0011	0.0010	0.0014
GD 2A	00 07 26.174	+33 18 19.18	14.853	+0.912	+0.684	+0.530	+0.462	+1.002	17	8	0.0024	0.0021	0.0091	0.0016	0.0020	0.0022
GD 2	00 07 32.261	+33 17 27.62	13.802	−0.295	−1.192	−0.142	−0.171	−0.313	26	13	0.0015	0.0016	0.0015	0.0009	0.0018	0.0022
GD 2C	00 07 32.355	+33 20 14.69	13.314	+0.619	+0.081	+0.360	+0.357	+0.718	17	8	0.0013	0.0013	0.0017	0.0008	0.0015	0.0013
GD 2E	00 07 36.675	+33 17 41.73	15.188	+0.575	+0.076	+0.339	+0.323	+0.652	7	4	0.0024	0.0038	0.0070	0.0024	0.0085	0.0087
GD 2D	00 07 41.634	+33 17 57.33	14.255	+0.605	+0.007	+0.355	+0.370	+0.729	9	5	0.0049	0.0024	0.0024	0.0042	0.0065	0.0047
GD 410	00 35 24.704	+60 58 11.27	12.845	+0.725	+0.086	+0.441	+0.438	+0.879	1	1	...	...	...	...	...	...
GD 8C	00 39 37.145	+31 37 03.40	13.299	+0.636	+0.140	+0.371	+0.358	+0.724	14	7	0.0016	0.0019	0.0019	0.0009	0.0015	0.0021
GD 8A	00 39 40.965	+31 32 44.53	14.593	+0.695	+0.199	+0.400	+0.378	+0.780	17	9	0.0011	0.0012	0.0042	0.0012	0.0030	0.0024
GD 8B	00 39 44.863	+31 36 36.48	13.653	+0.803	+0.454	+0.446	+0.395	+0.837	17	8	0.0006	0.0006	0.0032	0.0005	0.0013	0.0011
GD 8	00 39 52.163	+31 32 29.19	14.699	−0.275	−1.169	−0.145	−0.197	−0.348	17	9	0.0012	0.0007	0.0027	0.0007	0.0022	0.0024
SA 20-245	00 44 21.182	+45 55 12.77	8.951	+0.866	+0.575	+0.476	+0.421	+0.894	9	4	0.0017	0.0006	0.0017	0.0010	0.0010	0.0011
SA 20-130	00 44 44.437	+45 49 50.97	11.032	+1.052	+0.845	+0.553	+0.514	+1.069	11	6	0.0005	0.0012	0.0021	0.0009	0.0005	0.0009
SA 20-133	00 44 49.522	+45 44 57.85	10.824	+0.457	+0.138	+0.268	+0.260	+0.528	10	6	0.0007	0.0014	0.0018	0.0010	0.0010	0.0006
SA 20-139	00 45 13.834	+45 47 48.08	11.272	+1.076	+0.893	+0.567	+0.522	+1.091	10	5	0.0006	0.0006	0.0037	0.0006	0.0009	0.0005
SA 20-39	00 45 34.099	+45 36 48.21	9.353	+0.472	+0.092	+0.277	+0.280	+0.555	10	5	0.0013	0.0016	0.0013	0.0010	0.0007	0.0016
SA 20-291	00 45 37.914	+45 56 54.86	10.454	+0.794	+0.429	+0.425	+0.388	+0.812	8	5	0.0009	0.0004	0.0011	0.0004	0.0012	0.0014
SA 20-43	00 45 42.450	+45 35 15.39	10.412	+0.764	+0.301	+0.430	+0.409	+0.838	6	3	0.0006	0.0022	0.0031	0.0012	0.0023	0.0031
SA 20-297	00 45 51.821	+45 53 44.79	8.907	−0.054	−0.417	−0.015	−0.020	−0.032	6	3	0.0007	0.0006	0.0017	0.0017	0.0017	0.0012
SA 20-420	00 45 56.621	+46 04 33.36	9.520	+1.007	+0.733	+0.534	+0.500	+1.028	14	8	0.0006	0.0006	0.0006	0.0007	0.0004	0.0009
SA 20-163	00 45 59.779	+45 48 13.11	10.458	+1.029	+0.872	+0.554	+0.498	+1.042	11	6	0.0004	0.0011	0.0022	0.0009	0.0016	0.0005
SA 20-431	00 46 21.507	+46 06 30.24	9.951	+1.091	+0.974	+0.571	+0.521	+1.088	12	7	0.0016	0.0005	0.0010	0.0006	0.0006	0.0006
SA 20-435	00 46 25.267	+46 02 50.54	11.307	+0.664	+0.199	+0.377	+0.354	+0.732	12	7	0.0007	0.0006	0.0006	0.0011	0.0009	0.0006
SA 20-182	00 46 31.259	+45 50 25.68	12.732	+1.023	+0.763	+0.548	+0.517	+1.066	11	6	0.0027	0.0016	0.0030	0.0011	0.0021	0.0023
SA 20-186	00 46 34.507	+45 50 50.56	11.109	+0.418	+0.115	+0.259	+0.275	+0.531	14	8	0.0005	0.0006	0.0006	0.0006	0.0006	0.0009
SA 20-446	00 46 48.808	+46 10 50.01	10.005	+0.246	+0.161	+0.127	+0.129	+0.259	14	7	0.0004	0.0008	0.0017	0.0009	0.0005	0.0010
SA 20-338	00 47 08.418	+45 54 16.58	12.475	+0.515	+0.023	+0.303	+0.301	+0.608	10	5	0.0022	0.0016	0.0031	0.0005	0.0018	0.0018
SA 20-208	00 47 10.514	+45 52 33.54	12.628	+0.606	+0.010	+0.359	+0.361	+0.722	9	4	0.0009	0.0010	0.0035	0.0013	0.0022	0.0014
SA 20-340	00 47 11.482	+45 53 22.77	10.127	+0.968	+0.637	+0.514	+0.480	+0.995	10	5	0.0014	0.0004	0.0030	0.0010	0.0004	0.0008
SA 20-456	00 47 12.443	+46 10 57.01	9.543	+0.090	+0.067	+0.040	+0.041	+0.080	14	7	0.0006	0.0010	0.0019	0.0006	0.0006	0.0010
SA 20-342	00 47 15.064	+45 54 09.59	14.650	+0.923	+0.556	+0.516	+0.460	+0.976	15	7	0.0007	0.0029	0.0058	0.0007	0.0007	0.0014
SA 20-343	00 47 15.351	+45 55 13.18	14.124	+0.730	+0.289	+0.412	+0.384	+0.803	12	6	0.0017	0.0023	0.0023	0.0026	0.0007	0.0034
SA 20-345	00 47 19.094	+45 53 29.19	14.406	+0.755	+0.286	+0.412	+0.382	+0.797	17	8	0.0026	0.0043	0.0055	0.0024	0.0027	0.0028
SA 20-346	00 47 21.152	+45 53 42.01	14.875	+0.530	−0.036	+0.340	+0.317	+0.648	21	9	0.0013	0.0027	0.0047	0.0020	0.0043	0.0043
GD 273	01 06 20.426	+56 04 56.53	15.694	+0.084	−0.665	−0.069	−0.084	−0.152	2	1	0.0071	0.0028	0.0177	0.0481	0.0269	0.0233
GD 10	01 06 53.995	+39 30 56.92	15.456	+0.198	−0.621	+0.054	+0.127	+0.155	10	4	0.0007	0.0032	0.0029	0.0028	0.0110	0.0120
GD 10A	01 06 58.606	+39 30 53.12	13.694	+0.824	+0.453	+0.461	+0.422	+0.880	7	4	0.0006	0.0007	0.0017	0.0013	0.0005	0.0007
GD 10B	01 07 00.369	+39 31 35.07	14.194	+0.572	+0.013	+0.332	+0.334	+0.668	8	4	0.0018	0.0019	0.0022	0.0016	0.0040	0.0048
GD 10C	01 07 05.379	+39 31 28.37	14.388	+0.522	−0.037	+0.307	+0.328	+0.632	6	3	0.0019	0.0037	0.0022	0.0039	0.0060	0.0065
GD 11	01 09 23.224	+37 32 45.78	15.235	−0.223	−1.058	−0.075	−0.164	−0.238	1	1	...	...	...	...	...	...
GD 275	01 18 54.162	+52 27 13.59	15.683	+0.144	−0.526	+0.029	−0.058	−0.027	1	1	...	...	...	...	...	...
GD 275A	01 18 54.297	+52 27 49.99	15.019	+1.483	+1.363	+0.821	+0.776	+1.596	1	1	...	...	...	...	...	...
GD 418	01 23 24.123	+64 54 17.02	14.951	+0.785	+0.080	+0.510	+0.503	+1.013	1	1	...	...	...	...	...	...
GD 276	01 23 50.663	+47 47 14.62	16.501	+0.170	−0.633	+0.070	+0.044	+0.113	2	1	0.0049	0.0127	0.0064	0.0014	0.0481	0.0488

Table 2
(Continued)

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
GD 277	01 29 23.992	+51 08 46.99	13.536	−0.105	−0.906	−0.104	−0.107	−0.213	14	6	0.0009	0.0013	0.0026	0.0007	0.0026	0.0034
GD 277A	01 29 28.971	+51 09 19.49	13.811	+1.258	+0.980	+0.707	+0.671	+1.383	13	6	0.0017	0.0005	0.0061	0.0009	0.0010	0.0024
GD 277B	01 29 29.917	+51 08 02.46	14.524	+0.659	+0.276	+0.427	+0.427	+0.857	14	6	0.0019	0.0009	0.0039	0.0029	0.0010	0.0035
GD 13A	01 29 40.762	+42 27 54.91	15.001	+0.751	+0.308	+0.439	+0.386	+0.826	1	1	...	...	...	...	...	...
GD 13	01 29 42.654	+42 28 18.01	14.885	−0.089	−0.914	−0.001	+0.247	+0.236	1	1	...	...	...	...	...	...
GD 278	01 30 58.075	+53 21 39.40	14.899	+0.186	−0.240	+0.072	+0.035	+0.099	4	3	0.0087	0.0037	0.0028	0.0050	0.0094	0.0096
GD 278A	01 30 58.464	+53 22 17.91	14.851	+1.447	+1.724	+0.807	+0.753	+1.561	5	3	0.0020	0.0041	0.0087	0.0037	0.0045	0.0067
GD 278B	01 31 06.659	+53 20 17.12	14.205	+0.693	+0.190	+0.449	+0.467	+0.920	4	2	0.0010	0.0025	0.0055	0.0040	0.0065	0.0100
GD 421A	01 50 28.859	+67 44 10.59	14.579	+2.597	+2.140	+1.544	+1.391	+2.930	2	1	0.0021	0.0318	0.1202	0.0021	0.0014	0.0028
GD 421C	01 50 34.378	+67 41 53.09	12.158	+2.375	+2.636	+1.349	+1.232	+2.576	2	1	0.0007	0.0028	0.1259	0.0007	0.0007	0.0014
GD 421B	01 50 35.942	+67 43 57.79	14.407	+1.197	+0.812	+0.654	+0.603	+1.256	2	1	0.0021	0.0057	0.0431	0.0071	0.0028	0.0021
GD 421	01 51 10.260	+67 39 32.25	14.414	−0.213	−1.068	−0.095	−0.062	−0.158	4	2	0.0055	0.0040	0.0045	0.0060	0.0095	0.0130
GD 421D	01 51 31.415	+67 42 39.05	12.455	+1.128	+0.712	+0.678	+0.669	+1.345	2	1	0.0028	0.0007	0.0057	0.0007	0.0071	0.0071
GD 279F	01 51 55.046	+46 58 52.28	13.946	+0.568	+0.095	+0.343	+0.338	+0.679	6	3	0.0050	0.0029	0.0020	0.0025	0.0029	0.0048
GD 279H	01 51 55.520	+47 01 37.32	10.389	+1.118	+0.958	+0.605	+0.547	+1.148	8	4	0.0010	0.0020	0.0016	0.0004	0.0004	0.0010
GD 279D	01 51 59.862	+47 03 02.63	13.241	+0.558	+0.027	+0.334	+0.332	+0.662	8	4	0.0005	0.0009	0.0011	0.0005	0.0022	0.0011
GD 279C	01 52 00.142	+47 01 40.56	13.913	+1.068	+0.780	+0.571	+0.520	+1.102	10	5	0.0011	0.0011	0.0051	0.0007	0.0014	0.0007
GD 279B	01 52 02.409	+47 01 41.48	11.714	+0.267	+0.138	+0.146	+0.165	+0.313	8	4	0.0009	0.0008	0.0013	0.0009	0.0004	0.0010
GD 279	01 52 02.960	+47 00 06.64	12.457	+0.087	−0.613	−0.079	−0.056	−0.132	12	7	0.0010	0.0006	0.0020	0.0005	0.0022	0.0015
GD 279A	01 52 02.968	+47 00 34.16	13.050	+0.996	+0.686	+0.554	+0.519	+1.073	13	6	0.0005	0.0012	0.0040	0.0013	0.0009	0.0008
GD 279E	01 52 03.399	+47 03 18.06	14.011	+0.736	+0.281	+0.415	+0.395	+0.813	8	4	0.0007	0.0008	0.0026	0.0027	0.0043	0.0014
GD 279G	01 52 05.094	+46 58 51.38	14.156	+0.535	+0.029	+0.325	+0.342	+0.671	8	4	0.0033	0.0029	0.0038	0.0039	0.0027	0.0046
GD 279I	01 52 09.789	+47 00 03.75	14.443	+0.979	+0.582	+0.545	+0.535	+1.079	8	4	0.0028	0.0035	0.0166	0.0032	0.0078	0.0099
GD 281	02 03 12.919	+54 48 28.68	13.955	+0.587	−0.047	+0.386	+0.368	+0.754	1	1	...	...	...	...	...	...
GD 283	02 35 30.708	+57 15 24.50	13.736	+0.145	−0.533	−0.029	−0.008	−0.039	1	1	...	...	...	...	...	...
GD 38	03 02 30.970	+38 01 00.10	15.740	−0.214	−1.102	−0.164	−0.184	−0.346	1	1	...	...	...	...	...	...
SA 23-195	03 43 51.964	+45 10 02.52	12.125	+0.688	+0.275	+0.421	+0.429	+0.855	20	10	0.0008	0.0009	0.0019	0.0008	0.0008	0.0009
SA 23-198	03 43 56.438	+45 09 41.46	11.559	+0.192	−0.389	+0.133	+0.144	+0.274	18	10	0.0009	0.0009	0.0012	0.0007	0.0007	0.0004
SA 23-15	03 44 05.128	+45 06 03.00	10.658	+0.375	+0.167	+0.202	+0.213	+0.415	12	7	0.0006	0.0005	0.0013	0.0005	0.0009	0.0005
SA 23-402	03 44 23.010	+45 23 37.73	9.835	+0.172	−0.455	+0.110	+0.114	+0.226	17	9	0.0008	0.0010	0.0016	0.0004	0.0006	0.0007
SA 23-241	03 44 36.960	+45 17 59.22	12.312	+0.768	+0.249	+0.458	+0.448	+0.904	13	7	0.0013	0.0016	0.0028	0.0007	0.0008	0.0009
SA 23-45	03 44 42.135	+45 04 43.53	9.972	+1.249	+1.160	+0.663	+0.594	+1.250	13	7	0.0013	0.0007	0.0007	0.0004	0.0007	0.0005
SA 23-246	03 44 43.903	+45 18 01.25	11.700	+0.278	+0.124	+0.154	+0.165	+0.318	11	6	0.0010	0.0005	0.0022	0.0005	0.0005	0.0010
SA 23-561	03 44 53.412	+45 30 25.87	10.546	+0.515	+0.391	+0.287	+0.301	+0.589	9	5	0.0005	0.0010	0.0011	0.0009	0.0007	0.0006
SA 23-418	03 44 56.347	+45 18 59.93	11.716	+0.700	+0.154	+0.407	+0.385	+0.798	10	5	0.0005	0.0008	0.0013	0.0012	0.0006	0.0006
SA 23-57	03 44 59.361	+45 03 47.90	10.368	+1.879	+2.213	+1.169	+1.265	+2.443	16	8	0.0007	0.0013	0.0041	0.0009	0.0009	0.0008
SA 23-264	03 45 04.420	+45 17 48.41	10.335	+1.098	+0.993	+0.591	+0.521	+1.109	9	5	0.0012	0.0012	0.0013	0.0005	0.0006	0.0012
SA 23-433	03 45 27.133	+45 28 46.63	14.526	+0.658	+0.380	+0.386	+0.386	+0.775	6	3	0.0013	0.0018	0.0014	0.0030	0.0013	0.0050
SA 23-435	03 45 31.545	+45 27 19.89	13.474	+0.755	+0.220	+0.469	+0.476	+0.945	15	7	0.0012	0.0005	0.0032	0.0013	0.0008	0.0006
SA 23-436	03 45 33.388	+45 27 12.92	13.876	+1.645	+1.671	+0.915	+0.840	+1.762	20	8	0.0016	0.0025	0.0034	0.0010	0.0005	0.0010
SA 23-438	03 45 35.825	+45 24 31.45	13.327	+0.886	+0.362	+0.511	+0.514	+1.024	2	1	0.0007	0.0035	0.0113	0.0014	0.0049	0.0028
SA 23-439	03 45 38.594	+45 25 15.33	14.999	+0.869	+0.340	+0.512	+0.537	+1.049	2	1	0.0057	0.0042	0.0141	0.0014	0.0198	0.0177
SA 23-440	03 45 39.288	+45 28 12.70	12.030	+0.861	+0.423	+0.493	+0.464	+0.964	3	2	0.0035	0.0006	0.0046	0.0029	0.0012	0.0023
SA 23-441	03 45 39.328	+45 25 37.28	14.512	+1.004	+0.511	+0.573	+0.556	+1.132	7	3	0.0098	0.0038	0.0125	0.0042	0.0045	0.0030

Table 2
(Continued)

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
SA 23-443	03 45 45.754	+45 25 33.98	10.691	+0.604	+0.195	+0.368	+0.369	+0.740	2	1	0.0014	0.0014	0.0035	0.0007	0.0007	0.0014
SA 23-444	03 45 48.007	+45 27 17.36	15.433	+0.932	+0.470	+0.550	+0.514	+1.071	4	2	0.0030	0.0125	0.0455	0.0065	0.0105	0.0035
SA 23-300	03 45 56.378	+45 14 43.91	9.437	+0.474	−0.005	+0.293	+0.287	+0.579	9	5	0.0007	0.0007	0.0013	0.0007	0.0014	0.0007
GD 61C	04 38 27.184	+41 10 07.68	13.731	+0.548	+0.320	+0.344	+0.357	+0.697	14	7	0.0009	0.0007	0.0013	0.0006	0.0010	0.0013
GD 61B	04 38 29.122	+41 11 00.48	14.129	+0.317	+0.139	+0.191	+0.232	+0.431	14	7	0.0006	0.0011	0.0006	0.0018	0.0021	0.0012
GD 61	04 38 39.369	+41 09 32.37	14.879	−0.112	−0.966	−0.053	−0.043	−0.091	16	7	0.0008	0.0011	0.0025	0.0027	0.0088	0.0108
GD 61A	04 38 41.533	+41 10 51.24	14.420	+0.415	+0.227	+0.261	+0.327	+0.595	14	7	0.0005	0.0015	0.0010	0.0007	0.0022	0.0038
GD 64D	04 57 08.313	+41 55 12.86	12.799	+0.595	+0.190	+0.370	+0.368	+0.739	2	1	0.0014	0.0007	0.0071	0.0071	0.0007	0.0007
GD 64B	04 57 18.332	+41 55 28.12	13.923	+0.700	+0.151	+0.443	+0.432	+0.880	2	1	0.0014	0.0035	0.0156	0.0014	0.0007	0.0007
GD 64C	04 57 21.370	+41 54 23.70	12.915	+0.625	+0.075	+0.406	+0.406	+0.815	2	1	0.0071	0.0071	0.0085	0.0014	0.0021	0.0071
GD 64	04 57 22.540	+41 55 56.45	13.976	+0.063	−0.559	−0.074	−0.069	−0.146	3	2	0.0021	0.0080	0.0075	0.0058	0.0014	0.0007
GD 64A	04 57 25.311	+41 55 30.57	14.438	+0.658	+0.114	+0.414	+0.416	+0.834	3	2	0.0058	0.0054	0.0088	0.0007	0.0027	0.0014
GD 64E	04 57 26.257	+41 55 52.18	11.531	+0.239	+0.071	+0.144	+0.171	+0.313	2	1	0.0007	0.0014	0.0014	0.0007	0.0021	0.0035
GD 64F	04 57 28.704	+41 55 50.45	12.195	+1.819	+2.177	+1.082	+1.036	+2.123	2	1	0.0014	0.0007	0.0021	0.0014	0.0035	0.0014
SA 26-219	06 42 23.097	+44 47 54.40	10.632	+0.509	+0.004	+0.323	+0.326	+0.651	15	7	0.0011	0.0005	0.0006	0.0004	0.0004	0.0007
SA 26-27	06 42 39.409	+44 31 47.34	10.860	+0.611	+0.113	+0.375	+0.355	+0.732	10	5	0.0009	0.0008	0.0017	0.0006	0.0010	0.0016
SA 26-231	06 42 51.320	+44 51 18.46	10.732	+1.117	+0.920	+0.599	+0.549	+1.144	14	7	0.0011	0.0005	0.0008	0.0006	0.0004	0.0003
SA 26-135	06 42 58.715	+44 38 52.53	9.117	+1.110	+0.918	+0.583	+0.530	+1.113	7	4	0.0019	0.0006	0.0011	0.0005	0.0012	0.0013
SA 26-234	06 43 07.334	+44 50 32.75	9.371	+0.583	+0.150	+0.339	+0.317	+0.655	12	6	0.0011	0.0005	0.0008	0.0004	0.0004	0.0004
SA 26-139	06 43 09.275	+44 40 03.79	11.335	+0.838	+0.542	+0.468	+0.404	+0.875	13	7	0.0019	0.0008	0.0022	0.0006	0.0003	0.0004
SA 26-150	06 43 37.042	+44 43 20.73	9.506	+1.010	+0.747	+0.539	+0.494	+1.040	10	5	0.0006	0.0005	0.0014	0.0004	0.0011	0.0013
SA 26-58	06 43 38.231	+44 25 11.15	8.507	+0.535	+0.047	+0.315	+0.297	+0.612	4	2	0.0035	0.0005	0.0020	0.0015	0.0015	0.0005
SA 26-60	06 43 41.731	+44 30 45.40	9.542	+0.125	+0.175	+0.088	+0.069	+0.157	8	4	0.0030	0.0009	0.0009	0.0009	0.0019	0.0010
SA 26-262	06 44 05.750	+44 47 22.64	13.100	+0.741	+0.253	+0.430	+0.412	+0.842	6	3	0.0045	0.0015	0.0032	0.0010	0.0011	0.0021
SA 26-264	06 44 14.139	+44 46 42.13	15.092	+0.631	+0.097	+0.376	+0.347	+0.715	12	6	0.0018	0.0028	0.0062	0.0027	0.0054	0.0078
SA 26-265	06 44 14.929	+44 47 41.53	14.459	+0.602	−0.066	+0.384	+0.401	+0.792	25	12	0.0027	0.0027	0.0026	0.0011	0.0030	0.0027
SA 26-268	06 44 19.474	+44 47 35.10	15.366	+1.029	+0.819	+0.615	+0.533	+1.138	10	5	0.0073	0.0032	0.0241	0.0070	0.0100	0.0168
SA 26-269	06 44 21.694	+44 47 43.74	14.855	+0.535	+0.062	+0.303	+0.371	+0.672	3	2	0.0044	0.0007	0.0027	0.0014	0.0094	0.0093
SA 26-272	06 44 24.818	+44 46 17.78	14.399	+0.919	+0.582	+0.510	+0.465	+1.000	3	2	0.0054	0.0058	0.0091	0.0014	0.0085	0.0085
SA 26-273	06 44 25.825	+44 48 21.60	15.338	+0.722	+0.204	+0.442	+0.356	+0.776	3	2	0.0083	0.0095	0.0085	0.0077	0.0099	0.0099
SA 26-172	06 44 31.718	+44 34 05.88	9.580	+0.264	+0.123	+0.144	+0.147	+0.289	12	6	0.0010	0.0006	0.0013	0.0009	0.0014	0.0006
SA 26-278	06 44 32.844	+44 47 18.28	15.360	+0.765	+0.167	+0.517	+0.437	+0.950	1	1	...	...	...	...	...	...
SA 26-279	06 44 38.232	+44 46 44.95	14.634	+0.661	+0.080	+0.401	+0.362	+0.764	1	1	...	...	...	...	...	...
SA 26-280	06 44 39.784	+44 48 25.64	11.089	+1.082	+0.844	+0.579	+0.537	+1.125	15	8	0.0011	0.0010	0.0011	0.0006	0.0012	0.0006
SA 26-93	06 45 13.215	+44 30 56.56	11.071	+1.700	+1.772	+1.378	+1.629	+3.001	20	11	0.0040	0.0008	0.0030	0.0025	0.0006	0.0007
SA 26-95	06 45 16.159	+44 32 04.67	11.988	+0.546	+0.016	+0.326	+0.321	+0.644	24	12	0.0024	0.0017	0.0050	0.0011	0.0012	0.0015
SA 26-96	06 45 17.185	+44 27 43.18	10.750	+0.548	+0.010	+0.332	+0.331	+0.664	2	1	0.0014	0.0014	0.0085	0.0021	0.0014	0.0035
GD 91	08 30 09.451	+45 20 30.39	15.069	+0.182	−0.520	+0.037	+0.060	+0.094	5	3	0.0045	0.0080	0.0031	0.0094	0.0157	0.0103
GD 91B	08 30 10.294	+45 19 10.14	13.626	+0.969	+0.838	+0.543	+0.454	+0.993	5	3	0.0040	0.0022	0.0157	0.0022	0.0045	0.0022
GD 91A	08 30 16.361	+45 19 50.28	12.437	+1.018	+0.767	+0.532	+0.504	+1.037	5	3	0.0013	0.0022	0.0076	0.0009	0.0027	0.0022
PG0837+401B	08 40 58.400	+39 56 27.82	13.702	+0.710	+0.163	+0.424	+0.402	+0.820	7	4	0.0127	0.0066	0.0028	0.0040	0.0021	0.0021
PG0837+401C	08 41 00.157	+39 55 54.49	12.181	+0.556	+0.021	+0.338	+0.346	+0.685	7	4	0.0015	0.0019	0.0016	0.0018	0.0018	0.0032
PG0837+401	08 41 01.307	+39 56 18.13	15.506	−0.245	−0.986	−0.136	−0.262	−0.396	11	5	0.0049	0.0015	0.0030	0.0074	0.0120	0.0116
PG0837+401A	08 41 04.495	+39 57 05.65	14.752	+0.922	+0.747	+0.536	+0.472	+1.016	11	5	0.0025	0.0010	0.0035	0.0010	0.0071	0.0069

Table 2
(Continued)

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
KUV 345-30A	08 43 09.810	+39 46 15.09	14.619	+0.627	+0.072	+0.365	+0.366	+0.730	5	2	0.0018	0.0031	0.0098	0.0022	0.0022	0.0009
KUV 345-30	08 43 12.709	+39 44 49.73	14.324	−0.279	−1.127	−0.121	−0.141	−0.263	4	2	0.0025	0.0020	0.0055	0.0025	0.0095	0.0090
PG0846+558B	08 49 41.020	+55 36 08.52	14.799	+0.745	+0.142	+0.424	+0.416	+0.842	1	1	...	...	...	...	...	...
PG0846+558A	08 49 42.276	+55 34 45.17	14.691	+0.842	+0.396	+0.467	+0.455	+0.923	1	1	...	...	...	...	...	...
PG0846+558	08 49 51.084	+55 35 14.94	16.435	−0.207	−1.043	−0.073	+0.051	−0.026	1	1	...	...	...	...	...	...
GD 98B	08 57 09.788	+40 18 35.13	14.001	+0.630	+0.115	+0.359	+0.346	+0.708	16	8	0.0006	0.0006	0.0006	0.0015	0.0019	0.0015
GD 98A	08 57 17.818	+40 17 53.92	13.461	+0.920	+0.619	+0.508	+0.472	+0.979	24	12	0.0010	0.0005	0.0023	0.0004	0.0011	0.0014
GD 98	08 57 30.443	+40 16 12.62	14.823	−0.126	−0.931	−0.112	−0.116	−0.233	26	12	0.0005	0.0009	0.0020	0.0031	0.0053	0.0052
GD 299	09 38 20.351	+55 05 50.08	12.093	−0.269	−1.158	−0.085	−0.078	−0.168	12	6	0.0028	0.0010	0.0020	0.0015	0.0017	0.0018
SA 29-153	09 41 34.127	+44 12 25.37	8.790	+1.111	+1.089	+0.570	+0.505	+1.071	10	5	0.0022	0.0008	0.0005	0.0012	0.0005	0.0004
SA 29-157	09 42 01.262	+44 11 46.38	11.291	+0.812	+0.450	+0.449	+0.427	+0.874	18	9	0.0014	0.0006	0.0021	0.0007	0.0005	0.0008
SA 29-350	09 42 08.386	+44 32 57.10	10.295	+0.478	−0.006	+0.285	+0.275	+0.563	19	9	0.0007	0.0006	0.0004	0.0004	0.0006	0.0007
SA 29-22	09 42 49.281	+43 49 35.75	10.474	+0.565	+0.108	+0.324	+0.299	+0.630	16	8	0.0006	0.0004	0.0009	0.0004	0.0005	0.0005
SA 29-24	09 42 58.482	+43 50 04.87	9.590	+0.549	+0.015	+0.323	+0.318	+0.645	14	7	0.0010	0.0004	0.0006	0.0011	0.0006	0.0007
SA 29-303	09 44 53.037	+44 25 07.54	8.292	+0.602	+0.174	+0.344	+0.329	+0.674	4	4	0.0040	0.0005	0.0010	0.0010	0.0015	0.0010
SA 29-322	09 46 31.722	+44 22 32.87	9.766	+0.488	+0.030	+0.285	+0.262	+0.560	14	7	0.0004	0.0004	0.0006	0.0005	0.0006	0.0010
SA 29-324	09 46 53.607	+44 25 05.72	11.304	+1.117	+1.075	+0.582	+0.516	+1.097	21	11	0.0005	0.0009	0.0024	0.0005	0.0006	0.0009
PG0943+521A	09 47 03.487	+51 55 09.32	14.497	+0.916	+0.624	+0.573	+0.512	+1.089	1	1	...	...	...	...	...	...
SA 29-327	09 47 04.537	+44 22 31.17	12.133	+0.803	+0.384	+0.458	+0.428	+0.893	23	12	0.0007	0.0009	0.0020	0.0007	0.0011	0.0006
SA 29-399	09 47 05.253	+44 41 02.64	13.111	+0.638	+0.125	+0.357	+0.351	+0.705	17	9	0.0017	0.0015	0.0020	0.0013	0.0010	0.0016
SA 29-400	09 47 08.212	+44 40 07.66	14.019	+0.900	+0.510	+0.503	+0.489	+0.987	6	3	0.0015	0.0026	0.0115	0.0024	0.0006	0.0014
PG0943+521	09 47 11.942	+51 54 08.91	15.123	+0.211	−0.983	+0.214	+0.277	+0.494	1	1	...	...	...	...	...	...
SA 29-402	09 47 16.900	+44 38 20.30	13.875	+0.863	+0.610	+0.468	+0.403	+0.875	5	3	0.0019	0.0018	0.0007	0.0007	0.0005	0.0017
SA 29-404	09 47 19.809	+44 40 26.74	13.075	+0.800	+0.501	+0.433	+0.373	+0.811	1	1	...	...	...	...	...	...
SA 29-331	09 47 19.945	+44 24 28.55	10.001	+0.943	+0.634	+0.504	+0.475	+0.976	21	10	0.0006	0.0005	0.0008	0.0006	0.0004	0.0003
SA 29-405	09 47 20.158	+44 41 08.31	15.431	+0.791	+0.412	+0.478	+0.462	+0.942	1	1	...	...	...	...	...	...
SA 29-251	09 47 21.715	+44 14 13.96	9.445	+0.349	−0.001	+0.219	+0.220	+0.443	15	7	0.0004	0.0006	0.0011	0.0004	0.0005	0.0007
SA 29-406	09 47 24.345	+44 39 43.93	14.127	+1.239	+1.235	+0.765	+0.689	+1.447	5	3	0.0007	0.0030	0.0114	0.0036	0.0007	0.0040
SA 29-407	09 47 24.351	+44 37 56.67	14.531	+0.524	−0.034	+0.325	+0.345	+0.654	5	3	0.0084	0.0029	0.0024	0.0048	0.0088	0.0092
SA 29-408	09 47 25.926	+44 41 34.07	13.113	+0.484	−0.056	+0.304	+0.319	+0.624	3	2	0.0021	0.0027	0.0027	0.0014	0.0033	0.0027
SA 29-409	09 47 30.510	+44 40 00.42	13.684	+0.510	+0.025	+0.306	+0.309	+0.616	3	2	0.0090	0.0058	0.0007	0.0033	0.0058	0.0033
GD 300B	09 55 01.207	+51 39 58.80	12.773	+0.662	+0.158	+0.375	+0.367	+0.749	17	8	0.0010	0.0008	0.0019	0.0003	0.0007	0.0008
GD 300	09 55 19.466	+51 36 59.03	12.662	−0.321	−1.231	−0.139	−0.175	−0.315	25	13	0.0022	0.0014	0.0020	0.0014	0.0027	0.0018
GD 300A	09 55 34.484	+51 36 41.97	12.985	+0.681	+0.181	+0.392	+0.371	+0.763	19	9	0.0019	0.0009	0.0010	0.0008	0.0013	0.0021
KUV 348-07	09 56 52.394	+41 15 22.10	15.546	+0.065	−0.901	+0.252	+0.560	+0.826	5	2	0.0007	0.0026	0.0051	0.0035	0.0040	0.0011
KUV 348-07A	09 56 57.179	+41 16 49.89	13.992	+0.482	−0.163	+0.322	+0.327	+0.653	4	2	0.0012	0.0026	0.0047	0.0020	0.0042	0.0012
KUV 348-07B	09 56 58.396	+41 13 03.63	14.545	+0.794	+0.346	+0.459	+0.433	+0.900	4	2	0.0007	0.0027	0.0076	0.0014	0.0038	0.0012
KUV 348-13B	10 03 53.506	+40 32 01.93	14.697	+0.699	+0.118	+0.408	+0.441	+0.848	2	1	0.0028	0.0127	0.0156	0.0057	0.0071	0.0049
KUV 348-13	10 03 54.276	+40 34 18.10	13.318	−0.330	−1.069	−0.147	−0.178	−0.313	4	2	0.0013	0.0024	0.0020	0.0013	0.0007	0.0031
KUV 348-13A	10 04 06.316	+40 35 25.49	12.497	+0.646	+0.159	+0.364	+0.356	+0.720	2	1	0.0049	0.0021	0.0071	0.0042	0.0064	0.0014
KUV 348-14A	10 05 06.918	+38 47 14.14	13.651	+0.515	−0.045	+0.306	+0.309	+0.615	3	1	0.0006	0.0017	0.0012	0.0046	0.0023	0.0052
KUV 348-14	10 05 09.884	+38 46 15.14	14.336	−0.046	−0.223	−0.024	−0.032	−0.050	5	2	0.0028	0.0012	0.0013	0.0042	0.0022	0.0013
KUV 348-14B	10 05 17.296	+38 47 35.05	14.425	+0.621	+0.075	+0.355	+0.366	+0.721	2	1	0.0071	0.0021	0.0042	0.0035	0.0078	0.0113
KUV 348-14C	10 05 18.521	+38 48 11.44	15.141	+0.658	+0.118	+0.346	+0.367	+0.712	2	1	0.0071	0.0078	0.0057	0.0021	0.0120	0.0134

Table 2
(Continued)

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
GD 111A	10 05 45.210	+42 46 49.44	14.291	+0.723	+0.241	+0.409	+0.381	+0.792	1	1	...	...	...	...	...	...
GD 111	10 05 48.965	+42 48 03.14	16.155	−0.099	−0.864	−0.029	−0.220	−0.241	2	1	0.0078	0.0311	0.0247	0.0049	0.0049	0.0099
GD 111B	10 06 02.757	+42 45 43.10	13.149	+0.761	+0.289	+0.420	+0.417	+0.838	1	1	...	...	...	...	...	...
GD 310	11 29 10.923	+38 08 51.64	15.009	−0.178	−1.002	−0.116	−0.139	−0.250	16	8	0.0010	0.0009	0.0009	0.0024	0.0090	0.0106
PG1126+469B	11 29 14.264	+46 34 22.59	12.727	+0.584	+0.048	+0.328	+0.336	+0.668	1	1	...	...	...	...	...	...
GD 310C	11 29 25.990	+38 06 12.01	13.911	+0.892	+0.668	+0.496	+0.426	+0.924	15	8	0.0017	0.0013	0.0033	0.0011	0.0022	0.0028
PG1126+469	11 29 28.671	+46 35 31.75	14.574	−0.136	−0.686	−0.073	−0.081	−0.147	1	1	...	...	...	...	...	...
GD 310A	11 29 29.898	+38 09 14,09	14.057	+0.540	−0.073	+0.341	+0.356	+0.698	15	8	0.0012	0.0015	0.0018	0.0016	0.0021	0.0025
GD 310B	11 29 35.454	+38 08 12.60	14.200	+0.978	+0.832	+0.595	+0.541	+1.137	16	8	0.0013	0.0014	0.0052	0.0016	0.0027	0.0029
PG1126+469A	11 29 36.579	+46 35 44.99	12.770	+0.639	+0.149	+0.365	+0.350	+0.720	1	1	...	...	...	...	...	...
KUV 352-09	11 36 24.386	+39 29 33.88	12.967	−0.146	−0.646	−0.065	−0.075	−0.154	7	3	0.0014	0.0038	0.0037	0.0026	0.0066	0.0014
GD 314E	12 03 47.219	+60 32 08.59	15.014	+0.803	+0.406	+0.477	+0.436	+0.918	7	3	0.0014	0.0054	0.0021	0.0035	0.0028	0.0014
GD 314C	12 04 01.598	+60 37 48.53	13.707	+0.529	−0.028	+0.328	+0.334	+0.659	8	4	0.0023	0.0029	0.0021	0.0017	0.0069	0.0064
GD 314D	12 04 02.198	+60 34 57.98	14.538	+1.339	+1.202	+0.822	+0.740	+1.575	7	3	0.0014	0.0047	0.0035	0.0007	0.0007	0.0063
GD 314	12 04 38.536	+60 32 08.08	13.568	−0.344	−1.250	−0.149	−0.179	−0.328	14	7	0.0009	0.0010	0.0011	0.0020	0.0025	0.0028
GD 314A	12 05 04.878	+60 35 11.92	12.435	+0.854	+0.441	+0.479	+0.462	+0.942	13	7	0.0009	0.0015	0.0017	0.0010	0.0005	0.0005
GD 314B	12 05 18.007	+60 36 47.89	10.831	+0.927	+0.659	+0.510	+0.468	+0.980	13	7	0.0006	0.0008	0.0009	0.0006	0.0005	0.0006
PG1210+533B	12 13 18.722	+53 02 53.73	11.500	+0.648	+0.144	+0.372	+0.349	+0.723	3	2	0.0023	0.0023	0.0040	0.0017	0.0012	0.0012
PG1210+533A	12 13 24.431	+53 02 27.15	14.461	+0.614	+0.051	+0.356	+0.359	+0.717	3	2	0.0035	0.0006	0.0023	0.0075	0.0081	0.0040
PG1210+533	12 13 24.643	+53 03 57.27	14.135	−0.311	−1.205	−0.146	−0.196	−0.337	5	2	0.0031	0.0040	0.0031	0.0058	0.0072	0.0045
SA 32-270	12 55 07.557	+44 23 14.09	12.516	+0.717	+0.234	+0.403	+0.395	+0.797	6	3	0.0030	0.0034	0.0044	0.0022	0.0022	0.0009
SA 32-271	12 55 08.586	+44 23 13.45	11.209	+0.639	+0.121	+0.370	+0.353	+0.722	12	6	0.0006	0.0004	0.0027	0.0010	0.0014	0.0011
SA 32-272	12 55 10.338	+44 17 28.83	8.961	+0.488	−0.106	+0.304	+0.308	+0.613	11	6	0.0020	0.0008	0.0033	0.0011	0.0016	0.0019
SA 32-330	12 55 26.396	+44 33 35.57	10.068	+0.665	+0.190	+0.378	+0.342	+0.721	11	6	0.0013	0.0008	0.0019	0.0005	0.0007	0.0017
SA 32-377	12 55 45.397	+44 40 38.60	10.630	+0.641	+0.101	+0.372	+0.358	+0.735	11	6	0.0006	0.0006	0.0007	0.0011	0.0008	0.0009
SA 32-379	12 55 50.119	+44 42 22.67	11.174	+1.039	+0.874	+0.547	+0.495	+1.041	17	9	0.0008	0.0011	0.0018	0.0005	0.0006	0.0006
SA 32-282	12 56 02.614	+44 26 49.25	10.152	+0.480	+0.030	+0.283	+0.280	+0.571	11	6	0.0006	0.0005	0.0007	0.0012	0.0016	0.0005
SA 32-212	12 56 03.313	+44 15 28.14	9.317	+1.159	+1.131	+0.609	+0.546	+1.156	15	8	0.0010	0.0012	0.0025	0.0008	0.0005	0.0011
SA 32-166	12 56 08.942	+44 00 55.03	16.316	+0.522	−0.165	+0.409	+0.337	+0.895	5	3	0.0175	0.0190	0.0242	0.0233	0.0111	0.0250
SA 32-167	12 56 11.417	+44 00 32.42	13.510	+0.398	−0.032	+0.241	+0.241	+0.477	10	5	0.0006	0.0019	0.0007	0.0008	0.0027	0.0034
SA 32-105	12 56 29.185	+43 54 07.17	13.372	+0.632	+0.138	+0.364	+0.341	+0.706	13	6	0.0016	0.0015	0.0051	0.0017	0.0013	0.0021
SA 32-106	12 56 32.000	+43 56 45.10	13.266	+0.685	+0.135	+0.399	+0.394	+0.795	13	6	0.0021	0.0024	0.0057	0.0019	0.0012	0.0025
SA 32-107	12 56 34.300	+43 54 33.99	13.673	+0.747	+0.312	+0.421	+0.399	+0.821	13	6	0.0024	0.0022	0.0040	0.0012	0.0013	0.0019
SA 32-220	12 56 34.353	+44 15 02.31	13.094	+0.646	+0.098	+0.380	+0.363	+0.744	7	4	0.0005	0.0017	0.0035	0.0013	0.0009	0.0016
SA 32-172	12 56 35.217	+44 02 25.52	14.469	+0.642	+0.063	+0.368	+0.371	+0.737	4	2	0.0015	0.0025	0.0090	0.0020	0.0065	0.0080
SA 32-221	12 56 36.794	+44 14 59.60	11.429	+0.682	+0.235	+0.378	+0.345	+0.728	16	9	0.0005	0.0023	0.0032	0.0014	0.0005	0.0015
SA 32-109	12 56 40.337	+43 56 33.74	11.891	+0.536	−0.043	+0.325	+0.329	+0.650	22	11	0.0011	0.0008	0.0011	0.0004	0.0009	0.0010
SA 32-174	12 56 55.284	+44 05 00.64	12.433	+0.721	+0.169	+0.431	+0.415	+0.843	10	5	0.0007	0.0008	0.0006	0.0009	0.0006	0.0009
SA 32-175	12 57 00.485	+44 05 02.78	13.544	+1.063	+0.977	+0.652	+0.546	+1.197	12	6	0.0013	0.0018	0.0077	0.0009	0.0019	0.0019
GD 153	12 57 02.325	+22 01 52.66	13.349	−0.289	−1.177	−0.139	−0.180	−0.320	4	2	0.0040	0.0035	0.0050	0.0065	0.0085	0.0025
SA 32-176	12 57 03.215	+44 00 33.80	10.212	+1.071	+0.984	+0.561	+0.501	+1.071	24	13	0.0013	0.0006	0.0012	0.0009	0.0004	0.0008
SA 32-177	12 57 17.140	+44 01 00.49	11.377	+0.601	+0.015	+0.358	+0.346	+0.706	25	13	0.0007	0.0007	0.0016	0.0004	0.0009	0.0009
SA 32-178	12 57 25.633	+44 02 02.82	11.313	+0.805	+0.463	+0.457	+0.421	+0.874	25	13	0.0007	0.0008	0.0010	0.0007	0.0006	0.0005
SA 32-113	12 57 25.835	+43 56 32.95	10.834	+0.906	+0.639	+0.531	+0.461	+0.998	20	11	0.0022	0.0010	0.0018	0.0011	0.0004	0.0012

Table 2
(Continued)

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
SA 32-62	12 58 30.288	+43 43 19.21	9.788	+1.086	+0.938	+0.550	+0.514	+1.068	1	1	...	...	...	...	...	...
SA 32-64	12 58 36.649	+43 43 35.26	11.831	+0.603	+0.017	+0.334	+0.344	+0.680	3	1	0.0012	0.0017	0.0035	0.0029	0.0006	0.0035
PG1314+442A	13 16 31.974	+43 58 14.74	15.383	+0.707	+0.162	+0.410	+0.409	+0.818	5	3	0.0040	0.0058	0.0192	0.0067	0.0076	0.0094
PG1314+442	13 16 33.109	+43 59 05.46	15.243	−0.135	−0.993	+0.021	+0.034	+0.053	5	3	0.0027	0.0107	0.0045	0.0018	0.0040	0.0040
GD 325	13 36 01.794	+48 28 46.15	13.968	+0.032	−0.953	+0.234	+0.776	+1.005	9	4	0.0012	0.0040	0.0012	0.0031	0.0014	0.0013
GD 325A	13 36 08.189	+48 28 57.62	14.094	+0.858	+0.510	+0.502	+0.467	+0.965	9	4	0.0028	0.0007	0.0021	0.0025	0.0028	0.0036
GD 325B	13 36 27.776	+48 29 30.70	11.972	+0.675	+0.164	+0.404	+0.385	+0.784	8	4	0.0008	0.0022	0.0007	0.0011	0.0011	0.0012
GD 325C	13 36 31.813	+48 30 17.74	12.977	+0.469	−0.012	+0.299	+0.297	+0.587	8	4	0.0012	0.0007	0.0013	0.0007	0.0013	0.0021
PG1343+578	13 45 01.414	+57 30 12.84	13.809	+0.014	−0.590	+0.065	+0.059	+0.123	1	1	...	...	...	...	...	...
PG1343+578A	13 45 04.743	+57 32 11.27	13.878	+0.591	+0.081	+0.356	+0.339	+0.696	1	1	...	...	...	...	...	...
GD 336B	14 31 46.324	+37 07 46.67	12.985	+0.646	+0.155	+0.368	+0.348	+0.716	15	8	0.0016	0.0012	0.0023	0.0010	0.0014	0.0013
GD 336A	14 31 50.878	+37 05 17.40	13.424	+0.359	−0.054	+0.217	+0.218	+0.436	15	8	0.0028	0.0018	0.0024	0.0014	0.0023	0.0029
GD 336	14 31 56.628	+37 06 30.07	15.283	−0.270	−1.149	−0.147	−0.215	−0.366	15	7	0.0031	0.0024	0.0024	0.0030	0.0102	0.0088
GD 336C	14 32 03.469	+37 04 19.95	13.627	+0.562	+0.006	+0.328	+0.325	+0.655	15	8	0.0016	0.0019	0.0035	0.0013	0.0031	0.0029
PG1430+427C	14 32 20.592	+42 30 24.07	11.421	+0.454	−0.109	+0.281	+0.281	+0.561	9	5	0.0013	0.0021	0.0007	0.0011	0.0017	0.0006
PG1430+427	14 32 33.889	+42 30 19.07	14.218	−0.148	−0.669	−0.058	−0.067	−0.130	12	6	0.0012	0.0012	0.0018	0.0024	0.0014	0.0014
PG1430+427A	14 32 39.438	+42 30 40.02	11.907	+0.759	+0.402	+0.419	+0.378	+0.794	9	5	0.0007	0.0025	0.0019	0.0012	0.0014	0.0013
PG1430+427B	14 32 46.756	+42 32 19.21	12.039	+0.900	+0.664	+0.483	+0.428	+0.910	7	4	0.0034	0.0015	0.0042	0.0023	0.0008	0.0026
SA 35-316	15 49 41.176	+44 35 23.77	9.953	+0.462	+0.061	+0.282	+0.279	+0.559	16	8	0.0012	0.0006	0.0006	0.0010	0.0009	0.0007
SA 35-243	15 49 49.168	+44 27 53.56	12.011	+0.542	−0.016	+0.319	+0.319	+0.648	8	4	0.0005	0.0022	0.0006	0.0007	0.0011	0.0014
SA 35-245	15 49 49.958	+44 31 19.49	7.686	+0.111	+0.101	+0.055	+0.046	+0.097	2	1	0.0021	0.0035	0.0014	0.0035	0.0014	0.0014
SA 35-318	15 50 01.814	+44 33 04.74	11.807	+0.180	+0.124	+0.129	+0.159	+0.286	19	10	0.0012	0.0010	0.0006	0.0009	0.0004	0.0010
SA 35-491	15 50 33.186	+44 58 06.22	11.539	+0.915	+0.663	+0.509	+0.457	+0.964	13	7	0.0010	0.0009	0.0039	0.0014	0.0009	0.0015
SA 35-492	15 50 38.980	+45 00 37.36	9.829	+0.556	+0.013	+0.332	+0.329	+0.658	10	5	0.0008	0.0009	0.0011	0.0013	0.0020	0.0006
SA 35-338	15 51 50.503	+44 41 51.75	9.605	+0.371	−0.015	+0.221	+0.225	+0.456	12	6	0.0012	0.0004	0.0011	0.0011	0.0017	0.0004
SA 35-339	15 51 54.385	+44 32 29.14	12.775	+0.554	+0.028	+0.336	+0.329	+0.662	4	2	0.0020	0.0030	0.0044	0.0032	0.0007	0.0027
SA 35-341	15 51 56.722	+44 33 24.64	12.565	+0.559	+0.007	+0.337	+0.330	+0.670	18	9	0.0022	0.0011	0.0021	0.0013	0.0009	0.0018
SA 35-343	15 51 57.200	+44 35 26.22	10.870	+0.433	−0.063	+0.271	+0.254	+0.529	11	6	0.0007	0.0012	0.0013	0.0018	0.0005	0.0010
SA 35-261	15 52 04.173	+44 24 58.31	12.126	+1.508	+1.898	+0.860	+0.884	+1.740	25	11	0.0009	0.0006	0.0031	0.0007	0.0006	0.0004
SA 35-262	15 52 05.049	+44 26 00.66	12.835	+0.499	−0.032	+0.299	+0.307	+0.609	19	10	0.0006	0.0008	0.0006	0.0009	0.0014	0.0012
SA 35-263	15 52 05.068	+44 30 01.39	13.552	+0.833	+0.503	+0.464	+0.423	+0.894	8	4	0.0018	0.0007	0.0037	0.0019	0.0007	0.0022
SA 35-264	15 52 12.896	+44 28 30.81	13.775	+0.828	+0.499	+0.457	+0.401	+0.857	6	3	0.0045	0.0029	0.0086	0.0020	0.0029	0.0045
SA 35-265	15 52 13.784	+44 28 55.85	16.039	+0.517	−0.091	+0.363	+0.341	+0.677	8	4	0.0046	0.0063	0.0041	0.0007	0.0091	0.0116
SA 35-266	15 52 23.534	+44 30 23.32	12.913	+1.056	+0.979	+0.569	+0.506	+1.075	10	5	0.0007	0.0014	0.0007	0.0010	0.0017	0.0017
SA 35-267	15 52 24.277	+44 26 00.06	16.093	+0.596	−0.008	+0.354	+0.345	+0.698	8	4	0.0021	0.0021	0.0076	0.0038	0.0117	0.0097
SA 35-518	15 53 28.862	+44 57 30.75	9.258	+0.156	+0.107	+0.062	+0.086	+0.157	5	3	0.0013	0.0011	0.0011	0.0007	0.0019	0.0016
SA 35-526	15 54 19.828	+44 55 06.78	9.024	+1.055	+1.002	+0.541	+0.496	+1.035	6	3	0.0011	0.0029	0.0050	0.0019	0.0008	0.0023
SA 35-535	15 55 00.665	+44 59 20.41	9.120	+1.251	+1.413	+0.660	+0.581	+1.241	4	3	0.0025	0.0011	0.0038	0.0011	0.0006	0.0011
SA 35-539	15 55 13.789	+44 58 15.44	12.920	+0.778	+0.420	+0.450	+0.407	+0.858	12	6	0.0010	0.0018	0.0013	0.0007	0.0012	0.0015
KUV 433-03	16 38 26.317	+35 00 11.86	14.902	−0.255	−1.062	−0.111	−0.148	−0.255	7	3	0.0007	0.0007	0.0007	0.0018	0.0007	0.0027
KUV 433-03A	16 38 27.812	+34 59 46.59	15.578	+1.223	+1.274	+0.741	+0.613	+1.356	5	2	0.0010	0.0073	0.0063	0.0018	0.0014	0.0006
GD 358	16 47 18.358	+32 28 32.93	13.653	−0.123	−1.019	−0.099	−0.097	−0.199	13	6	0.0095	0.0036	0.0041	0.0040	0.0029	0.0060
GD 358A	16 47 22.314	+32 25 31.30	13.496	+0.943	+0.747	+0.569	+0.485	+1.056	12	6	0.0022	0.0025	0.0022	0.0018	0.0011	0.0023
GD 358B	16 47 23.224	+32 23 37.16	12.570	+0.677	+0.215	+0.378	+0.361	+0.735	11	6	0.0020	0.0010	0.0013	0.0016	0.0028	0.0025

Table 2
(Continued)

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
PG1648+536E	16 49 48.175	+53 31 30.23	15.152	+0.668	+0.172	+0.407	+0.326	+0.736	2	1	0.0007	0.0113	0.0071	0.0120	0.0184	0.0304
PG1648+536A	16 49 57.450	+53 30 18.56	14.329	+0.744	+0.299	+0.415	+0.387	+0.799	13	6	0.0051	0.0025	0.0057	0.0032	0.0037	0.0054
PG1648+536	16 49 59.853	+53 31 31.75	14.050	−0.215	−1.024	−0.090	−0.126	−0.214	13	6	0.0026	0.0014	0.0028	0.0025	0.0042	0.0034
PG1648+536B	16 50 01.154	+53 29 14.64	14.047	+0.611	+0.052	+0.377	+0.372	+0.751	10	5	0.0007	0.0067	0.0042	0.0039	0.0026	0.0041
PG1648+536C	16 50 07.599	+53 28 49.30	13.520	+0.957	+0.722	+0.549	+0.483	+1.031	10	5	0.0024	0.0007	0.0060	0.0007	0.0017	0.0013
PG1648+536D	16 50 11.586	+53 26 59.73	12.246	+0.637	+0.103	+0.372	+0.361	+0.733	7	4	0.0026	0.0038	0.0064	0.0015	0.0019	0.0026
GD 363C	17 38 26.523	+41 53 20.52	15.504	+0.590	+0.009	+0.346	+0.294	+0.641	14	7	0.0041	0.0028	0.0072	0.0055	0.0193	0.0241
GD 363B	17 38 33.790	+41 53 30.66	15.058	+1.163	+1.075	+0.730	+0.635	+1.371	23	13	0.0022	0.0034	0.0218	0.0021	0.0034	0.0033
GD 363A	17 38 35.039	+41 53 58.16	12.900	+1.013	+0.834	+0.542	+0.497	+1.040	21	12	0.0006	0.0011	0.0015	0.0010	0.0010	0.0021
GD 363	17 38 35.667	+41 52 31.69	15.286	−0.108	−0.894	−0.126	−0.153	−0.272	21	12	0.0017	0.0017	0.0025	0.0022	0.0150	0.0122
GD 363D	17 38 47.885	+41 54 09.16	13.804	+0.586	−0.011	+0.350	+0.357	+0.705	11	6	0.0014	0.0011	0.0031	0.0021	0.0042	0.0052
GD 378A	18 23 30.902	+41 04 10.27	13.475	+0.617	+0.140	+0.348	+0.330	+0.682	16	8	0.0018	0.0017	0.0011	0.0010	0.0011	0.0011
GD 378	18 23 37.012	+41 04 02.55	14.288	−0.080	−0.962	−0.036	−0.043	−0.091	17	8	0.0005	0.0009	0.0020	0.0017	0.0037	0.0032
GD 378B	18 23 45.477	+41 05 47.88	13.393	+0.690	+0.156	+0.409	+0.402	+0.809	14	5	0.0562	0.0035	0.0068	0.0019	0.0022	0.0034
GD 378C	18 23 50.120	+41 06 43.94	11.771	+0.612	+0.137	+0.355	+0.339	+0.697	10	4	0.0008	0.0006	0.0009	0.0004	0.0014	0.0014
SA 38-177	18 47 34.575	+45 10 53.55	10.850	+0.442	+0.015	+0.270	+0.262	+0.533	12	7	0.0005	0.0005	0.0025	0.0010	0.0010	0.0012
SA 38-178	18 47 35.701	+45 10 34.03	12.405	+0.724	+0.175	+0.430	+0.416	+0.845	12	6	0.0009	0.0009	0.0028	0.0010	0.0007	0.0006
SA 38-326	18 47 40.515	+45 24 39.37	9.947	+0.287	+0.071	+0.171	+0.193	+0.349	8	4	0.0007	0.0016	0.0013	0.0018	0.0007	0.0006
SA 38-358	18 48 23.004	+45 23 22.35	9.854	+1.132	+1.186	+0.583	+0.509	+1.095	9	4	0.0006	0.0015	0.0025	0.0018	0.0008	0.0012
SA 38-365	18 48 32.505	+45 25 10.85	11.625	+1.205	+1.309	+0.616	+0.546	+1.160	8	4	0.0006	0.0014	0.0006	0.0005	0.0006	0.0010
SA 38-375	18 48 47.091	+45 24 19.78	11.556	+0.584	+0.086	+0.326	+0.312	+0.643	4	2	0.0013	0.0014	0.0007	0.0013	0.0012	0.0007
SA 38-377	18 48 47.755	+45 20 23.44	10.451	+0.967	+0.778	+0.521	+0.458	+0.976	4	2	0.0006	0.0007	0.0031	0.0025	0.0018	0.0018
SA 38-382	18 48 53.856	+45 25 29.95	11.351	+0.586	+0.141	+0.329	+0.313	+0.645	4	2	0.0025	0.0006	0.0029	0.0006	0.0025	0.0018
SA 38-253	18 49 04.397	+45 14 13.70	10.774	+0.357	+0.025	+0.223	+0.204	+0.428	9	4	0.0006	0.0005	0.0005	0.0005	0.0012	0.0006
SA 38-391	18 49 07.115	+45 19 16.77	8.575	+1.266	+1.441	+0.658	+0.577	+1.235	2	1	0.0014	0.0021	0.0057	0.0035	0.0035	0.0007
SA 38-269	18 49 37.723	+45 14 24.01	11.270	+1.157	+1.200	+0.620	+0.548	+1.168	9	4	0.0011	0.0012	0.0007	0.0007	0.0005	0.0007
SA 38-270	18 49 40.787	+45 09 07.01	10.927	+0.289	+0.085	+0.164	+0.173	+0.320	10	5	0.0016	0.0012	0.0025	0.0007	0.0007	0.0005
SA 38-273	18 49 46.591	+45 13 32.23	10.871	+1.269	+1.285	+0.675	+0.617	+1.298	9	4	0.0006	0.0006	0.0015	0.0010	0.0005	0.0007
SA 38-137	18 50 24.265	+45 06 09.47	13.517	+0.736	+0.317	+0.411	+0.370	+0.785	7	4	0.0013	0.0014	0.0014	0.0035	0.0040	0.0007
SA 38-138	18 50 25.534	+45 06 06.38	14.319	+0.714	+0.270	+0.388	+0.369	+0.762	9	5	0.0016	0.0018	0.0065	0.0014	0.0014	0.0027
SA 38-297	18 50 27.011	+45 07 55.90	14.395	+0.610	+0.137	+0.346	+0.350	+0.696	2	1	0.0021	0.0007	0.0226	0.0042	0.0014	0.0035
SA 38-298	18 50 31.101	+45 09 37.03	15.221	+0.594	+0.116	+0.386	+0.361	+0.749	1	1	...	...	...	...	...	...
SA 38-302	18 50 33.197	+45 10 43.05	15.461	+0.932	+0.530	+0.528	+0.430	+0.955	1	1	...	...	...	...	...	...
SA 38-303	18 50 34.221	+45 07 26.48	15.062	+0.618	+0.093	+0.334	+0.413	+0.746	1	1	...	...	...	...	...	...
SA 38-304	18 50 36.293	+45 09 06.83	14.514	+0.595	+0.068	+0.294	+0.364	+0.657	1	1	...	...	...	...	...	...
SA 38-149	18 50 41.729	+45 06 37.02	15.186	+0.639	+0.110	+0.339	+0.317	+0.657	1	1	...	...	...	...	...	...
SA 38-309	18 50 45.291	+45 07 42.19	12.798	+0.682	+0.195	+0.383	+0.372	+0.753	7	4	0.0038	0.0023	0.0083	0.0023	0.0038	0.0023
SA 38-156	18 50 46.158	+45 05 52.97	15.358	+0.579	−0.069	+0.356	+0.368	+0.712	12	7	0.0007	0.0031	0.0027	0.0036	0.0039	0.0087
SA 38-157	18 50 46.519	+45 06 11.51	15.213	+1.036	+0.831	+0.570	+0.523	+1.094	9	5	0.0012	0.0019	0.0086	0.0007	0.0037	0.0033
SA 38-310	18 50 48.873	+45 08 43.50	10.489	+1.259	+1.407	+0.651	+0.555	+1.212	11	6	0.0005	0.0005	0.0005	0.0006	0.0005	0.0006
SA 38-312	18 50 50.491	+45 09 36.42	12.171	+1.290	+1.187	+0.706	+0.666	+1.374	9	5	0.0007	0.0023	0.0022	0.0007	0.0009	0.0007
GD 391F	20 29 37.183	+39 17 17.58	12.500	+0.544	+0.048	+0.329	+0.331	+0.660	10	5	0.0011	0.0023	0.0026	0.0012	0.0007	0.0014
GD 391E	20 29 43.642	+39 17 17.98	12.409	+0.560	+0.043	+0.326	+0.314	+0.642	14	7	0.0007	0.0008	0.0020	0.0008	0.0012	0.0010
GD 391H	20 29 45.496	+39 18 14.26	14.365	+0.723	+0.183	+0.417	+0.396	+0.814	8	4	0.0007	0.0006	0.0042	0.0016	0.0069	0.0068
GD 391G	20 29 45.987	+39 16 34.95	13.675	+0.800	+0.314	+0.451	+0.440	+0.893	8	4	0.0016	0.0023	0.0134	0.0016	0.0020	0.0008

Table 2
(Continued)

											Mean Error of the Mean					
Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
GD 391B	20 29 51.196	+39 14 20.33	12.710	+0.580	+0.200	+0.344	+0.352	+0.696	16	9	0.0004	0.0015	0.0028	0.0007	0.0015	0.0012
GD 391D	20 29 54.035	+39 13 43.44	15.012	+0.994	+0.481	+0.570	+0.549	+1.125	14	7	0.0045	0.0025	0.0097	0.0033	0.0057	0.0066
GD 391A	20 29 55.304	+39 14 13.08	12.315	+0.410	+0.205	+0.236	+0.261	+0.494	15	9	0.0017	0.0015	0.0020	0.0009	0.0009	0.0011
GD 391	20 29 56.177	+39 13 32.19	13.378	−0.151	−0.972	−0.120	−0.136	−0.256	27	13	0.0005	0.0011	0.0017	0.0009	0.0018	0.0018
GD 391C	20 30 02.922	+39 15 03.75	11.463	+0.760	+0.608	+0.448	+0.497	+0.937	12	6	0.0012	0.0009	0.0037	0.0010	0.0008	0.0007
SA 41-620	21 53 11.306	+45 36 21.13	14.176	+0.770	+0.305	+0.468	+0.475	+0.940	2	1	0.0071	0.0049	0.0099	0.0085	0.0057	0.0028
SA 41-626	21 53 17.263	+45 37 24.48	14.058	+0.911	+0.687	+0.509	+0.451	+0.954	2	1	0.0057	0.0035	0.0460	0.0078	0.0035	0.0035
SA 41-625	21 53 17.295	+45 35 14.74	14.205	+0.876	+0.373	+0.496	+0.509	+1.006	2	1	0.0071	0.0156	0.0212	0.0071	0.0064	0.0014
SA 41-630	21 53 23.508	+45 38 17.36	14.986	+1.039	+0.787	+0.593	+0.513	+1.105	2	1	0.0163	0.0297	0.0035	0.0141	0.0007	0.0141
SA 41-631	21 53 24.561	+45 35 45.09	13.390	+0.246	−0.106	+0.167	+0.196	+0.374	27	12	0.0014	0.0010	0.0018	0.0009	0.0011	0.0013
SA 41-634	21 53 27.209	+45 35 40.95	13.164	+0.738	+0.217	+0.448	+0.455	+0.902	14	7	0.0006	0.0015	0.0019	0.0010	0.0026	0.0025
SA 41-637	21 53 30.416	+45 36 11.04	14.426	+1.199	+0.800	+0.690	+0.673	+1.360	20	10	0.0013	0.0012	0.0103	0.0015	0.0025	0.0034
SA 41-638	21 53 32.591	+45 37 00.50	14.045	+0.736	+0.131	+0.436	+0.461	+0.894	2	1	0.0021	0.0049	0.0304	0.0064	0.0177	0.0113
SA 41-639	21 53 33.743	+45 34 20.95	14.130	+1.320	+1.045	+0.754	+0.716	+1.472	17	8	0.0006	0.0015	0.0118	0.0027	0.0017	0.0032
SA 41-654	21 53 52.663	+45 33 07.25	10.038	+0.619	+0.207	+0.344	+0.312	+0.658	13	6	0.0003	0.0008	0.0023	0.0004	0.0007	0.0008
SA 41-660	21 53 56.878	+45 32 23.66	12.804	+0.225	+0.081	+0.147	+0.169	+0.319	25	11	0.0015	0.0014	0.0015	0.0005	0.0012	0.0015
SA 41-171	21 54 04.972	+45 13 13.57	11.144	+0.315	+0.185	+0.181	+0.206	+0.388	14	7	0.0018	0.0017	0.0006	0.0013	0.0010	0.0011
SA 41-673	21 54 07.165	+45 32 38.06	14.098	+0.235	−0.198	+0.155	+0.180	+0.334	33	15	0.0014	0.0018	0.0023	0.0019	0.0031	0.0019
SA 41-674	21 54 07.517	+45 32 07.05	14.560	+1.051	+0.831	+0.664	+0.595	+1.260	9	4	0.0030	0.0033	0.0101	0.0052	0.0011	0.0065
SA 41-179	21 54 10.448	+45 16 31.11	11.868	+0.498	+0.177	+0.291	+0.296	+0.586	9	4	0.0017	0.0014	0.0029	0.0011	0.0019	0.0004
SA 41-182	21 54 12.587	+45 14 36.50	9.969	+0.307	+0.159	+0.182	+0.197	+0.381	15	8	0.0009	0.0011	0.0007	0.0006	0.0010	0.0012
SA 41-190	21 54 18.195	+45 15 22.57	10.367	+0.289	+0.074	+0.165	+0.166	+0.332	17	8	0.0012	0.0008	0.0009	0.0004	0.0004	0.0010
SA 41-204	21 54 31.607	+45 13 51.39	10.973	+1.743	+2.064	+1.075	+1.163	+2.242	17	8	0.0033	0.0016	0.0075	0.0012	0.0011	0.0020
GD 405	23 16 43.875	+47 27 15.57	16.751	−0.166	−0.811	−0.517	...	...	2	1	0.0071	0.0057	0.0170	0.0071	...	...
GD 405A	23 16 44.966	+47 26 59.90	15.615	+1.063	+1.326	+0.663	+0.579	+1.243	1	1	...	...	...	...	...	...
GD 251	23 34 20.865	+29 18 36.99	15.745	−0.182	−1.003	−0.068	−0.171	−0.236	2	1	0.0198	0.0205	0.0071	0.0085	0.0424	0.0325

Table 3
UBVRI Photometry of Standard Stars at the Celestial Equator

Star	α (J2000.0)	δ (J2000.0)	V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$	n	m	Mean Error of the Mean					
											V	$B-V$	$U-B$	$V-R$	$R-I$	$V-I$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
SA 103-518	11 56 30.866	−00 32 37.58	11.190	+0.645	+0.045	+0.378	+0.371	+0.748	4	2	0.0050	0.0030	0.0030	0.0010	0.0010	0.0010
SA 103-626	11 56 46.156	−00 23 14.70	11.820	+0.414	−0.057	+0.263	+0.274	+0.537	4	2	0.0030	0.0010	0.0045	0.0010	0.0005	0.0015
SA 103-528	11 57 00.826	−00 26 01.45	11.776	+0.583	+0.014	+0.339	+0.336	+0.674	4	2	0.0040	0.0025	0.0045	0.0010	0.0025	0.0025
SA 103-529	11 57 01.882	−00 26 58.96	12.227	+0.985	+0.807	+0.531	+0.473	+1.004	4	2	0.0045	0.0015	0.0055	0.0020	0.0015	0.0015
SA 103-646	11 57 20.329	−00 21 00.92	12.444	+0.717	+0.219	+0.394	+0.373	+0.766	4	2	0.0020	0.0010	0.0020	0.0025	0.0015	0.0030
SA 107-970	15 37 25.829	+00 18 33.85	10.926	+1.605	+1.799	+1.181	+1.458	+2.638	7	7	0.0053	0.0013	0.0055	0.0019	0.0021	0.0017
SA 107-991	15 38 06.902	+00 16 19.31	12.094	+1.083	+0.813	+0.603	+0.563	+1.166	4	2	0.0020	0.0020	0.0040	0.0020	0.0030	0.0020
SA 107-847	15 38 19.398	+00 08 04.90	10.245	+1.074	+0.830	+0.575	+0.526	+1.102	4	2	0.0005	0.0015	0.0010	0.0010	0.0020	0.0015
SA 107-862	15 38 55.944	+00 09 48.13	11.212	+0.549	+0.060	+0.325	+0.315	+0.641	4	2	0.0005	0.0005	0.0020	0.0010	0.0005	0.0010
SA 107-1014	15 38 59.016	+00 15 30.98	12.117	+0.545	+0.014	+0.334	+0.337	+0.671	4	2	0.0020	0.0030	0.0035	0.0030	0.0040	0.0035
SA 107-871	15 39 16.189	+00 08 54.53	12.467	+0.656	+0.120	+0.383	+0.371	+0.755	4	2	0.0025	0.0025	0.0045	0.0025	0.0015	0.0020
SA 108-870	16 37 45.814	−00 28 23.75	11.856	+1.218	+1.168	+0.679	+0.608	+1.288	4	2	0.0015	0.0015	0.0060	0.0005	0.0015	0.0005
SA 108-872	16 37 49.759	−00 22 18.99	11.925	+0.840	+0.357	+0.479	+0.445	+0.923	4	4	0.0015	0.0020	0.0050	0.0010	0.0020	0.0015
SA 108-570	16 38 04.824	−00 35 06.86	12.122	+0.531	+0.087	+0.321	+0.319	+0.640	4	2	0.0010	0.0020	0.0025	0.0015	0.0025	0.0015

Table 4
Error Analysis for the Standard Stars

	Mean Errors of a Single Observation	Mean Errors of the Mean
V	0.0069 ± 0.0079	0.0021 ± 0.0024
$B-V$	0.0079 ± 0.0128	0.0024 ± 0.0039
$U-B$	0.0173 ± 0.0376	0.0053 ± 0.0115
$V-R$	0.0072 ± 0.0118	0.0022 ± 0.0036
$R-I$	0.0108 ± 0.0168	0.0033 ± 0.0051
$V-I$	0.0111 ± 0.0167	0.0034 ± 0.0051

Table 3 contains 14 stars in three equatorial SAs, which were observed in early stages of this program. The two tables contain 243 stars each with five or more measures. These 243 stars, on average measured 12.5 times each, are the most robust new standard stars resulting from this project. An additional 30 stars in the two tables were measured four times each. Perusal of their individual errors indicates that the majority of these 30 stars may be used as standards when the observer is pressed for additional standard stars. There remain 76 stars in Table 2 that were measured three times or less, for a variety of reasons. They remain in the table simply because their photometry has been tied into the *UBVRI* system, many for the first time. Perhaps they will be of use to someone, someday, but not immediately as standard stars. It is recommended that observers should choose as standard stars, those stars with many individual observations, as well as small errors.

An error analysis for the stars in Tables 2 and 3 is presented in Table 4. Column 2 gives the average mean error for a single observation of a V magnitude or a color index for the new standard stars. Column 3 indicates the average mean error of a mean observed magnitude or color index.

A few variable stars have made their way into Table 2. Acknowledgment of variability is indicated in Section 4, below. Note that in Table 3, the star SA 107-970 is a known variable (Landolt 1983), confirmed by the large mean error of a single observation via Landolt (1992a), Table 2. The color indices of the star SA 103-626 in Table 3 are in excellent agreement with the color indices in Landolt (1992a), Table 2. However, its V magnitude differs by a bit over one percent between the present and the Landolt (1992a) papers.

On occasion the very best coordinates and proper motion information as well as cross identifications are needed for standard stars. Hence, Table 5 provides for the stars in Tables 2 and 3 the most recent coordinates and proper motions, all for the epoch J2000.0. The UCAC4 information (Zacharias et al. 2013) came from the online VizieR catalog I/322. The J2000 coordinates and the UCAC4 identification numbers appear in Columns 2–4; the proper motions and their errors are given in Columns 6–9 in Table 5. The 2MASS (Skrutskie et al. 2006) identifications were taken from the online catalog (VizieR, II/246) by Cutri et al. (2003), and appear in Table 5 in Column 5.

Although accurate coordinates are necessary for individual stars in many circumstances, modern area detectors need knowledge of the coordinate center of a photometric sequence. Table 6 provides accurate coordinates for different combinations of the new standard stars. In particular, the stars in the SAs have been subdivided into smaller fields. The name of the star field, or sequence, in Column 1 usually is derived from the most prominent star in the field, e.g., the Giclas (GD) star or the PG star. In the case of the SAs, first the central coordinates for the entire SA are given. Then these large fields are subdivided into smaller subfields, SA20 SF1, for example. The nomenclature SF means SubField.

Columns 2 and 3 in Table 6 give the coordinates for the center of a sequence field or subfield. Column 4 shows the field size, the field of view (FOV), in arcminutes. The number of stars in each field is indicated in Column 5. The range in the V magnitude or the $(B-V)$ or $(U-B)$ color indices within a field is given in Columns 6–8. The last column advises which stars within a field are recommended as standard stars.

Star charts for the sequences designated in Table 6 are provided in Figures 1–90. All charts are 15′ on a side, except for several isolated stars. These latter objects, mostly Giclas (GD) stars, have charts 10′ on a side. The star charts were based on images from the Digitized Sky Survey.

The magnitude distribution of the stars in Table 2 with five or more observations each is plotted in Figure 91 in 0.25 V magnitude bins. Figure 92 shows the range in the $(B-V)$ color index in 0.1 magnitude bins for these same stars.

Figures 93–99 have been plotted using data for the stars in Table 2 with five or more observations each. These figures show the mean error of a mean magnitude or color index, plotted as a function of magnitude or color index. The most discrepant points in Figures 93 and 94 belong to the star GD 378B (NSVS 5387131 = GSC 03108-00057), an eclipsing binary.

Table 5
Accurate Coordinates and Proper Motions for the Standard Stars

Star Name	α (J2000.0)	δ (J2000.0)	UCAC4	2MASS-PSC	μ_α (mas yr^{-1})	σ_{μ_α} (mas yr^{-1})	μ_δ (mas yr^{-1})	σ_{μ_δ} (mas yr^{-1})
GD 2B	00 07 25.484	+33 19 00.17	617-000374	J00072547+3319002	−9.6	2.5	−21.6	0.7
GD 2A	00 07 26.174	+33 18 19.18	617-000376	J00072616+3318191	−17.3	3.5	−9.7	3.7
GD 2	00 07 32.261	+33 17 27.62	617-000381	J00073225+3317275	−78.1	1.8	−66.7	2.1
GD 2C	00 07 32.355	+33 20 14.69	617-000382	J00073235+3320147	−4.5	2.2	1.8	2.3
GD 2E	00 07 36.675	+33 17 41.73	617-000386	J00073667+3317418	6.1	2.3	−0.2	2.5
GD 2D	00 07 41.634	+33 17 57.33	617-000392	J00074163+3317573	−7.5	1.7	−5.9	1.9
GD 410	00 35 24.704	+60 58 11.27	755-006666	J00352470+6058113	109.1	1.4	42.1	1.0
GD 8C	00 39 37.145	+31 37 03.40	609-001876	J00393714+3137034	−5.9	1.7	−11.5	3.7
GD 8A	00 39 40.965	+31 32 44.53	608-001920	J00394096+3132445	−3.6	4.2	−10.7	4.5
GD 8B	00 39 44.863	+31 36 36.48	609-001882	J00394486+3136364	8.2	2.2	−13.3	2.7
GD 8	00 39 52.163	+31 32 29.19	608-001929	J00395215+3132292	70.6	2.6	−56.6	3.0
SA 20-245	00 44 21.182	+45 55 12.77	680-004291	J00442119+4555126	−44.8	0.6	28.4	0.5
SA 20-130	00 44 44.437	+45 49 50.97	680-004329	J00444443+4549509	1.9	0.6	−5.1	0.6
SA 20-133	00 44 49.522	+45 44 57.85	679-004203	J00444952+4544577	8.1	0.7	−6.4	0.7
SA 20-139	00 45 13.834	+45 47 48.08	679-004228	J00451382+4547481	7.8	1.5	−9.7	0.6
SA 20-39	00 45 34.099	+45 36 48.21	679-004251	J00453410+4536482	−11.8	0.6	−6.3	0.6
SA 20-291	00 45 37.914	+45 56 54.86	680-004398	J00453791+4556548	66.6	0.9	8.4	0.5
SA 20-43	00 45 42.450	+45 35 15.39	678-004237	J00454244+4535153	8.5	0.9	−7.4	0.7
SA 20-297	00 45 51.821	+45 53 44.79	680-004410	J00455182+4553447	−2.1	0.7	−4.6	0.6
SA 20-420	00 45 56.621	+46 04 33.36	681-004543	J00455661+4604332	4.4	0.8	1.7	0.6
SA 20-163	00 45 59.779	+45 48 13.11	680-004419	J00455976+4548130	72.6	1.0	12.8	0.7
SA 20-431	00 46 21.507	+46 06 30.24	681-004570	J00462151+4606302	−2.9	1.0	−5.1	0.6
SA 20-435	00 46 25.267	+46 02 50.54	681-004577	J00462527+4602505	−1.1	0.9	−16.4	0.6
SA 20-182	00 46 31.259	+45 50 25.68	680-004467	J00463125+4550256	−5.4	2.5	−1.1	1.9
SA 20-186	00 46 34.507	+45 50 50.56	680-004474	J00463450+4550505	8.2	0.6	2.0	0.8
SA 20-446	00 46 48.808	+46 10 50.01	681-004611	J00464880+4610499	−0.5	1.0	−7.1	0.7
SA 20-338	00 47 08.418	+45 54 16.58	680-004524	J00470842+4554165	7.0	1.4	−1.4	1.2
SA 20-208	00 47 10.514	+45 52 33.54	680-004530	J00471051+4552335	−11.6	0.7	14.5	0.6
SA 20-340	00 47 11.482	+45 53 22.77	680-004532	J00471146+4553226	8.7	0.6	−12.0	0.5
SA 20-456	00 47 12.443	+46 10 57.01	681-004648	J00471244+4610570	−6.6	0.6	−4.9	0.8
SA 20-342	00 47 15.064	+45 54 09.59	680-004540	J00471506+4554095	−1.5	5.5	−6.1	5.4
SA 20-343	00 47 15.351	+45 55 13.18	680-004541	J00471535+4555131	−8.8	2.7	−5.0	3.1
SA 20-345	00 47 19.094	+45 53 29.19	680-004544	J00471909+4553292	7.2	2.9	−14.2	3.3
SA 20-346	00 47 21.152	+45 53 42.01	680-004546	J00472114+4553421	−1.9	5.5	−6.4	5.5
GD 273	01 06 20.426	+56 04 56.53	731-010368	J01062040+5604563	108.3	13.7	−37.8	10.2
GD 10	01 06 53.995	+39 30 56.92	648-004226	J01065396+3930568	171.0	8.0	16.0	8.0
GD 10A	01 06 58.606	+39 30 53.12	648-004232	J01065860+3930531	18.9	1.9	−8.3	2.2
GD 10B	01 07 00.369	+39 31 35.07	648-004235	J01070037+3931350	−6.0	2.1	−2.1	2.5
GD 10C	01 07 05.379	+39 31 28.37	648-004238	J01070537+3931283	2.2	5.4	−6.5	5.9
GD 11	01 09 23.224	+37 32 45.78	638-004050	J01092318+3732458	157.0	8.0	−39.0	8.0
GD 275	01 18 54.162	+52 27 13.59	713-010330	J01185423+5227137	−162.0	8.0	−30.0	8.0
GD 275A	01 18 54.297	+52 27 49.99	713-010332	J01185430+5227499	4.5	3.1	3.7	3.0
GD 418	01 23 24.123	+64 54 17.02	775-006965	J01232403+6454172	128.0	2.0	−60.0	3.0
GD 276	01 23 50.663	+47 47 14.62	...	J01235066+4747146	78.0	3.0	22.0	1.0
GD 277	01 29 23.992	+51 08 46.99	706-010971	J01292398+5108471	33.9	1.5	−102.8	3.3
GD 277A	01 29 28.971	+51 09 19.49	706-010981	J01292897+5109194	−2.7	2.5	−2.1	2.9
GD 277B	01 29 29.917	+51 08 02.46	706-010983	J01292992+5108025	−6.4	2.6	−5.4	2.8
GD 13A	01 29 40.762	+42 27 54.91	663-006350	J01294076+4227548	4.1	2.7	−5.1	2.8
GD 13	01 29 42.654	+42 28 18.01	663-006352	J01294264+4228180	92.4	2.6	0.9	2.6
GD 278	01 30 58.075	+53 21 39.40	717-012427	J01305806+5321397	66.0	3.0	−84.0	4.0
GD 278A	01 30 58.464	+53 22 17.91	717-012428	J01305806+5321397	2.7	4.2	4.0	4.0
GD 278B	01 31 06.659	+53 20 17.12	717-012445	J01310666+5320170	4.0	5.6	−11.1	5.0
GD 421A	01 50 28.859	+67 44 10.59	789-005531	J01502885+6744105	−3.8	2.9	−0.8	3.1
GD 421C	01 50 34.378	+67 41 53.09	789-005538	J01503435+6741530	−1.3	1.6	−8.9	1.7
GD 421B	01 50 35.942	+67 43 57.79	789-005539	J01503591+6743577	−7.5	2.5	−30.6	2.8
GD 421	01 51 10.260	+67 39 32.25	789-005554	J01511028+6739312	146.0	8.0	−2.0	8.0
GD 421D	01 51 31.415	+67 42 39.05	789-005569	J01513141+6742389	11.4	4.2	−13.6	4.1
GD 279F	01 51 55.046	+46 58 52.28	685-010802	J01515504+4658522	−1.9	2.6	−5.8	1.7
GD 279H	01 51 55.520	+47 01 37.32	686-010968	J01515551+4701373	−9.1	1.1	−13.5	0.5
GD 279D	01 51 59.862	+47 03 02.63	686-010978	J01515985+4703025	−1.1	1.3	−7.5	1.1
GD 279C	01 52 00.142	+47 01 40.56	686-010980	J01520013+4701405	−25.9	23.6	0.2	2.3
GD 279B	01 52 02.409	+47 01 41.48	686-010985	J01520240+4701414	−6.8	1.1	−1.3	0.8
GD 279	01 52 02.960	+47 00 06.64	686-010987	J01520295+4700066	2.2	0.8	121.1	0.5
GD 279A	01 52 02.968	+47 00 34.16	686-010988	J01520296+4700340	−1.1	9.1	−14.8	2.0
GD 279E	01 52 03.399	+47 03 18.06	686-010989	J01520339+4703180	−2.3	2.8	−11.4	2.1

Table 5
(Continued)

Star Name	α (J2000.0)	δ (J2000.0)	UCAC4	2MASS-PSC	μ_α (mas yr^{-1})	σ_{μ_α} (mas yr^{-1})	μ_δ (mas yr^{-1})	σ_{μ_δ} (mas yr^{-1})
GD 279G	01 52 05.094	+46 58 51.38	685-010821	J01520509+4658513	−13.1	1.9	−6.0	2.0
GD 279I	01 52 09.789	+47 00 03.75	686-010999	J01520878+4700037	6.9	14.6	5.9	5.8
GD 281	02 03 12.919	+54 48 28.68	725-018576	J02031292+5448286	121.2	1.6	−31.8	1.6
GD 283	02 35 30.708	+57 15 24.50	737-027439	J02353067+5715247	193.5	2.7	−30.4	3.3
GD 38	03 02 30.970	+38 01 00.10	641-012175	J03023094+3800595	99.0	8.0	−39.0	8.0
SA 23-195	03 43 51.964	+45 10 02.52	676-021990	J03435196+4510025	−2.0	1.3	−6.0	1.8
SA 23-198	03 43 56.438	+45 09 41.46	676-021999	J03435643+4509414	−2.6	0.9	−1.9	0.4
SA 23-15	03 44 05.128	+45 06 03.00	676-022021	J03440513+4506029	−5.2	0.9	−5.8	0.7
SA 23-402	03 44 23.010	+45 23 37.73	677-021756	J03442300+4523377	−1.4	0.6	−1.1	0.6
SA 23-241	03 44 36.960	+45 17 59.22	677-021797	J03443695+4517592	8.7	0.5	−0.8	1.0
SA 23-45	03 44 42.135	+45 04 43.53	676-022112	J03444209+4504436	−4.6	1.5	1.5	0.9
SA 23-246	03 44 43.903	+45 18 01.25	677-021818	J03444389+4518012	−0.7	1.4	−2.4	2.2
SA 23-561	03 44 53.412	+45 30 25.87	678-022969	J03445340+4530258	−2.7	1.2	−2.1	0.8
SA 23-418	03 44 56.347	+45 18 59.93	677-021848	J03445634+4518599	−28.2	1.2	−27.6	0.6
SA 23-57	03 44 59.361	+45 03 47.90	676-022167	J03445933+4503479	−3.4	1.6	0.4	1.9
SA 23-264	03 45 04.420	+45 17 48.41	677-021868	J03450441+4517485	−6.2	1.7	−33.3	0.9
SA 23-433	03 45 27.133	+45 28 46.63	678-023058	J03452713+4528466	−6.7	3.2	−3.6	3.7
SA 23-435	03 45 31.545	+45 27 19.89	678-023063	J03453154+4527199	−11.5	2.3	−1.6	3.0
SA 23-436	03 45 33.388	+45 27 12.92	678-023069	J03453338+4527129	−10.7	5.5	2.7	5.9
SA 23-438	03 45 35.825	+45 24 31.45	678-023079	J03453582+4524314	34.0	2.4	−34.8	2.9
SA 23-439	03 45 38.594	+45 25 15.33	678-023084	J03453859+4525154	−3.9	4.0	0.0	4.0
SA 23-440	03 45 39.288	+45 28 12.70	678-023088	J03453928+4528127	−16.6	0.9	−8.8	1.4
SA 23-441	03 45 39.328	+45 25 37.28	678-023089	J03453931+4525373	18.5	6.4	−3.9	6.4
SA 23-443	03 45 45.754	+45 25 33.98	678-023108	J03454575+4525340	8.3	0.7	−1.7	0.7
SA 23-444	03 45 48.007	+45 27 17.36	678-023115	J03454800+4527174	0.6	4.0	−7.4	4.0
SA 23-300	03 45 56.378	+45 14 43.91	677-021997	J03455639+4514438	−31.4	1.1	−1.2	0.8
GD 61C	04 38 27.184	+41 10 07.68	656-023484	J04382718+4110077	−1.2	1.9	−3.4	3.5
GD 61B	04 38 29.122	+41 11 00.48	656-023493	J04382911+4111005	0.0	2.4	2.1	2.3
GD 61	04 38 39.369	+41 09 32.37	656-023527	J04383938+4109325	0.5	3.1	−106.6	3.4
GD 61A	04 38 41.533	+41 10 51.24	656-023535	J04384153+4110512	2.2	1.8	8.1	2.4
GD 64D	04 57 08.313	+41 55 12.86	660-028861	J04570831+4155129	2.7	3.0	−6.5	1.2
GD 64B	04 57 18.332	+41 55 28.12	660-028892	J04571833+4155281	−4.1	1.6	−2.0	3.4
GD 64C	04 57 21.370	+41 54 23.70	660-028906	J04572137+4154236	−5.6	3.1	−1.9	3.9
GD 64	04 57 22.540	+41 55 56.45	660-028908	J04572254+4155567	13.2	3.4	−212.3	2.3
GD 64A	04 57 25.311	+41 55 30.57	660-028922	J04572531+4155305	1.6	4.8	−3.9	2.4
GD 64E	04 57 26.257	+41 55 52.18	660-028928	J04572625+4155521	0.6	1.1	−2.4	0.9
GD 64F	04 57 28.704	+41 55 50.45	660-028940	J04572868+4155505	−0.3	2.9	−3.3	2.0
SA 26-219	06 42 23.097	+44 47 54.40	674-046916	J06422308+4447544	−3.3	0.6	5.3	0.7
SA 26-27	06 42 39.409	+44 31 47.34	673-048633	J06423940+4431474	−2.3	0.8	−5.6	0.8
SA 26-231	06 42 51.320	+44 51 18.46	675-047782	J06425131+4451184	−8.5	0.8	−4.8	1.1
SA 26-135	06 42 58.715	+44 38 52.53	674-046954	J06425871+4438525	−2.8	0.6	−2.9	0.8
SA 26-234	06 43 07.334	+44 50 32.75	675-047797	J06430733+4450326	3.8	1.0	−16.9	0.7
SA 26-139	06 43 09.275	+44 40 03.79	674-046964	J06430927+4440038	−14.2	1.6	−0.6	0.9
SA 26-150	06 43 37.042	+44 43 20.73	674-046994	J06433704+4443208	0.9	1.0	−4.9	0.6
SA 26-58	06 43 38.231	+44 25 11.15	673-048696	J06433822+4425111	55.5	0.7	−55.9	0.6
SA 26-60	06 43 41.731	+44 30 45.40	673-048701	J06434172+4430454	1.7	0.7	−4.3	0.6
SA 26-262	06 44 05.750	+44 47 22.64	674-047021	J06440575+4447226	3.5	1.7	−22.5	1.9
SA 26-264	06 44 14.139	+44 46 42.13	674-047037	J06441414+4446421	−21.7	3.9	−4.8	3.7
SA 26-265	06 44 14.929	+44 47 41.53	674-047038	J06441493+4447416	38.1	2.9	−58.7	5.7
SA 26-268	06 44 19.474	+44 47 35.10	674-047043	J06441948+4447351	0.0	2.9	−11.7	3.2
SA 26-269	06 44 21.694	+44 47 43.74	674-047047	J06442170+4447438	−2.1	4.0	−5.6	4.0
SA 26-272	06 44 24.818	+44 46 17.78	674-047049	J06442481+4446179	4.3	3.6	−30.6	3.5
SA 26-273	06 44 25.825	+44 48 21.60	675-047912	J06442582+4448216	−11.9	4.2	8.1	2.2
SA 26-172	06 44 31.718	+44 34 05.88	673-048751	J06443171+4434059	−1.2	0.7	−20.4	1.1
SA 26-278	06 44 32.844	+44 47 18.28	674-047059	J06443284+4447184	−8.6	3.7	−0.1	3.8
SA 26-279	06 44 38.232	+44 46 44.95	674-047066	J06443823+4446450	1.2	3.5	−3.1	2.7
SA 26-280	06 44 39.784	+44 48 25.64	675-047930	J06443977+4448257	1.4	1.5	−9.0	1.1
SA 26-93	06 45 13.215	+44 30 56.56	673-048804	J06451322+4430562	−4.5	1.5	−0.8	1.5
SA 26-95	06 45 16.159	+44 32 04.67	673-048807	J06451616+4432045	−5.3	1.3	0.6	1.0
SA 26-96	06 45 17.185	+44 27 43.18	673-048808	J06451718+4427431	−13.0	12.9	1.3	2.9
GD 91	08 30 09.451	+45 20 30.39	677-049880	J08300946+4520303	−95.2	4.1	−103.3	4.6

Table 5
(Continued)

Star Name	α (J2000.0)	δ (J2000.0)	UCAC4	2MASS-PSC	μ_α (mas yr^{-1})	σ_{μ_α} (mas yr^{-1})	μ_δ (mas yr^{-1})	σ_{μ_δ} (mas yr^{-1})
GD 91B	08 30 10.294	+45 19 10.14	677-049881	J08301031+4519099	−21.4	2.2	−12.2	2.5
GD 91A	08 30 16.361	+45 19 50.28	677-049885	J08301637+4519501	−1.0	1.7	−3.6	2.0
PG0837+401B	08 40 58.400	+39 56 27.82	650-048270	J08405839+3956278	5.0	1.7	−8.1	2.0
PG0837+401C	08 41 00.157	+39 55 54.49	650-048271	J08410015+3955545	3.2	1.3	−14.5	0.9
PG0837+401	08 41 01.307	+39 56 18.13	650-048272	J08410129+3956181	9.0	4.7	−2.1	4.4
PG0837+401A	08 41 04.495	+39 57 05.65	650-048273	J08410449+3957056	−20.0	2.8	−25.7	3.1
KUV 345-30A	08 43 09.810	+39 46 15.09	649-046824	J08430981+3946151	8.3	2.9	−11.0	3.2
KUV 345-30	08 43 12.709	+39 44 49.73	649-046825	J08431271+3944498	−3.5	1.9	−10.7	2.2
PG0846+558B	08 49 41.020	+55 36 08.52	729-046561	J08494100+5536085	−14.0	3.4	−14.5	2.7
PG0846+558A	08 49 42.276	+55 34 45.17	728-047552	J08494226+5534452	−16.5	2.7	−30.7	3.0
PG0846+558	08 49 51.084	+55 35 14.94	...	...	12.0	1.0	−16.0	5.0
GD 98B	08 57 09.788	+40 18 35.13	652-048948	J08570978+4018351	13.0	2.2	−11.1	2.6
GD 98A	08 57 17.818	+40 17 53.92	652-048951	J08571781+4017539	−2.3	2.1	−7.9	2.5
GD 98	08 57 30.443	+40 16 12.62	652-048956	J08573043+4016130	23.0	8.0	−198.0	8.0
GD 299	09 38 20.351	+55 05 50.08	726-046051	J09382033+5505500	2.0	0.8	−69.7	0.9
SA 29-153	09 41 34.127	+44 12 25.37	672-053393	J09413413+4412253	−19.4	0.5	−27.9	0.7
SA 29-157	09 42 01.262	+44 11 46.38	671-054330	J09420127+4411464	1.2	0.9	−15.6	0.9
SA 29-350	09 42 08.386	+44 32 57.10	673-055236	J09420840+4432570	−37.5	0.6	−9.4	0.8
SA 29-22	09 42 49.281	+43 49 35.75	670-055010	J09424930+4349356	−9.8	3.2	−18.0	1.7
SA 29-24	09 42 58.482	+43 50 04.87	670-055012	J09425847+4350050	−1.5	0.7	−40.1	0.5
SA 29-303	09 44 53.037	+44 25 07.54	673-055285	J09445303+4425076	7.5	0.7	−8.3	0.6
SA 29-322	09 46 31.722	+44 22 32.87	672-053468	J09463173+4422328	−33.0	0.6	−45.4	0.7
SA 29-324	09 46 53.607	+44 25 05.72	673-055325	J09465360+4425057	−2.8	0.9	−2.6	1.4
PG0943+521A	09 47 03.487	+51 55 09.32	710-050402	J09470348+5155093	−77.5	2.4	−52.5	2.6
SA 29-327	09 47 04.537	+44 22 31.17	672-053478	J09470453+4422312	−25.1	0.5	−21.3	0.9
SA 29-399	09 47 05.253	+44 41 02.64	674-053607	J09470524+4441025	−11.0	1.8	−5.6	2.3
SA 29-400	09 47 08.212	+44 40 07.66	674-053609	J09470820+4440075	−4.7	3.0	−13.7	3.7
PG0943+521	09 47 11.942	+51 54 08.91	710-050406	J09471193+5154089	32.6	1.6	−5.9	1.7
SA 29-402	09 47 16.900	+44 38 20.30	674-053612	J09471689+4438201	2.8	2.9	−12.2	3.6
SA 29-404	09 47 19.809	+44 40 26.74	674-053613	J09471979+4440266	−7.5	2.0	−23.8	2.4
SA 29-331	09 47 19.945	+44 24 28.55	673-055339	J09471994+4424286	−4.7	0.8	0.3	0.6
SA 29-405	09 47 20.158	+44 41 08.31	674-053614	J09472015+4441082	−0.4	2.7	−31.6	3.4
SA 29-251	09 47 21.715	+44 14 13.96	672-053484	J09472171+4414139	−35.7	0.6	−16.4	0.7
SA 29-406	09 47 24.345	+44 39 43.93	674-053616	J09472433+4439438	−16.2	2.9	−10.4	3.7
SA 29-407	09 47 24.351	+44 37 56.67	674-053617	J09472434+4437565	0.3	2.9	−4.2	3.7
SA 29-408	09 47 25.926	+44 41 34.07	674-053618	J09472591+4441340	3.3	1.8	−2.8	2.2
SA 29-409	09 47 30.510	+44 40 00.42	674-053620	J09473049+4440003	−0.2	2.1	−4.0	2.4
GD 300B	09 55 01.207	+51 39 58.80	709-049230	J09550120+5139587	−5.6	2.2	2.7	1.4
GD 300	09 55 19.466	+51 36 59.03	709-049232	J09551945+5136590	−76.9	0.7	−95.7	0.6
GD 300A	09 55 34.484	+51 36 41.97	709-049234	J09553447+5136419	−15.1	1.0	−8.2	1.2
KUV 348-07	09 56 52.394	+41 15 22.10	657-052453	J09565240+4115221	−20.1	12.4	24.3	9.9
KUV 348-07A	09 56 57.179	+41 16 49.89	657-052454	J09565719+4116499	−14.2	2.5	10.8	3.0
KUV 348-07B	09 56 58.396	+41 13 03.63	657-052455	J09565839+4113037	13.7	4.2	−7.3	4.6
KUV 348-13B	10 03 53.506	+40 32 01.93	653-052684	J10035351+4032020	−25.2	3.1	−14.7	3.6
KUV 348-13	10 03 54.276	+40 34 18.10	653-052686	J10035428+4034182	−1.7	1.9	−15.9	1.6
KUV 348-13A	10 04 06.316	+40 35 25.49	653-052693	J10040632+4035254	−3.1	1.7	3.9	2.3
KUV 348-14A	10 05 06.918	+38 47 14.14	644-047205	J10050693+3847143	−3.1	2.3	−4.8	2.9
KUV 348-14	10 05 09.884	+38 46 15.14	644-047206	J10050988+3846151	−5.2	2.2	−5.4	2.9
KUV 348-14B	10 05 17.296	+38 47 35.05	644-047208	J10051730+3847352	−14.7	2.9	−19.0	3.3
KUV 348-14C	10 05 18.521	+38 48 11.44	645-048159	J10051852+3848115	−1.5	4.3	−13.3	4.5
GD 111A	10 05 45.210	+42 46 49.44	664-055399	J10054520+4246494	−20.4	2.5	7.9	2.8
GD 111	10 05 48.965	+42 48 03.14	665-055803	J10054904+4248036	−142.0	3.0	−56.0	3.0
GD 111B	10 06 02.757	+42 45 43.10	664-055402	J10060274+4245430	34.0	1.8	−1.9	2.3
GD 310	11 29 10.923	+38 08 51.64	641-047816/4	J11291092+3808515	−98.1	6.6	−6.8	2.8
PG1126+469B	11 29 14.264	+46 34 22.59	683-054611	J11291427+4634226	−25.0	0.9	−52.9	0.6
GD 310C	11 29 25.990	+38 06 12.01	641-047820	J11292598+3806120	18.7	2.3	−5.5	6.5
PG1126+469	11 29 28.671	+46 35 31.75	683-054614	J11292866+4635317	−11.0	1.4	2.7	1.9
GD 310A	11 29 29.898	+38 09 14,09	641-047822	J11292989+3809141	−9.8	1.8	−14.5	2.0
GD 310B	11 29 35.454	+38 08 12.60	641-047825	J11293545+3808126	−5.3	2.7	−6.7	2.9
PG1126+469A	11 29 36.579	+46 35 44.99	683-054617	J11293657+4635448	5.6	0.9	−19.3	1.2
KUV 352-09	11 36 24.386	+39 29 33.88	648-050654	J11362438+3929338	−3.1	0.6	−6.2	0.9

Table 5
(Continued)

Star Name	α (J2000.0)	δ (J2000.0)	UCAC4	2MASS-PSC	μ_α (mas yr^{-1})	σ_{μ_α} (mas yr^{-1})	μ_δ (mas yr^{-1})	σ_{μ_δ} (mas yr^{-1})
SA 103-518	11 56 30.866	−00 32 37.58	448-053720	J11563087-0032375	−39.0	1.8	−40.3	1.4
SA 103-626	11 56 46.156	−00 23 14.70	449-052212	J11564615-0023146	18.1	1.2	−10.2	1.7
SA 103-528	11 57 00.826	−00 26 01.45	448-053734	J11570082-0026014	−11.9	1.0	−13.9	1.0
SA 103-529	11 57 01.882	−00 26 58.96	448-053735	J11570188-0026589	6.7	1.4	−4.0	1.7
SA 103-646	11 57 20.329	−00 21 00.92	449-052235	J11572032-0021010	−1.7	1.4	0.3	1.6
GD 314E	12 03 47.219	+60 32 08.59	753-048653	J12034723+6032087	−1.6	3.4	4.9	3.9
GD 314C	12 04 01.598	+60 37 48.53	754-046742	J12040160+6037486	2.4	1.8	0.3	2.4
GD 314D	12 04 02.198	+60 34 57.98	753-048655	J12040220+6034580	−10.7	3.4	5.2	4.0
GD 314	12 04 38.536	+60 32 08.08	753-048661	J12043856+6032082	−53.6	1.5	−28.3	2.1
GD 314A	12 05 04.878	+60 35 11.92	753-048666	J12050489+6035119	−9.3	1.0	−13.9	0.5
GD 314B	12 05 18.007	+60 36 47.89	754-046757	J12051802+6036479	−35.7	0.6	6.8	0.6
PG1210+533B	12 13 18.722	+53 02 53.73	716-051192	J12131872+5302538	−22.9	0.7	−8.1	1.7
PG1210+533A	12 13 24.431	+53 02 27.15	716-051194	J12132443+5302272	−7.1	3.8	2.8	4.0
PG1210+533	12 13 24.643	+53 03 57.27	716-051195	J12132464+5303573	7.9	2.0	−41.5	2.5
SA 32-270	12 55 07.557	+44 23 14.09	672-055958	J12550753+4423141	−12.5	1.7	6.0	1.8
SA 32-271	12 55 08.586	+44 23 13.45	672-055959	J12550857+4423134	−97.9	0.6	1.9	0.6
SA 32-272	12 55 10.338	+44 17 28.83	672-055960	J12551032+4417289	64.4	0.6	−70.9	0.7
SA 32-330	12 55 26.396	+44 33 35.57	673-057919	J12552638+4433353	−38.0	0.5	1.2	0.7
SA 32-377	12 55 45.397	+44 40 38.60	674-056036	J12554539+4440386	−19.1	0.6	6.7	0.9
SA 32-379	12 55 50.119	+44 42 22.67	674-056039	J12555011+4442226	−0.6	0.9	−2.0	0.9
SA 32-282	12 56 02.614	+44 26 49.25	673-057927	J12560261+4426493	−12.6	0.6	−22.4	0.6
SA 32-212	12 56 03.313	+44 15 28.14	672-055973	J12560329+4415280	−3.3	0.6	−9.8	0.7
SA 32-166	12 56 08.942	+44 00 55.03	671-056966	J12560892+4400547	−8.6	4.2	2.1	4.6
SA 32-167	12 56 11.417	+44 00 32.42	671-056967	J12561139+4400323	−9.8	1.9	0.8	2.6
SA 32-105	12 56 29.185	+43 54 07.17	670-057695	J12562918+4354071	−16.3	1.9	10.7	2.6
SA 32-106	12 56 32.000	+43 56 45.10	670-057697	J12563200+4356450	−45.4	1.9	−1.3	2.6
SA 32-107	12 56 34.300	+43 54 33.99	670-057698	J12563429+4354339	7.0	2.4	−5.0	3.1
SA 32-220	12 56 34.353	+44 15 02.31	672-055984	J12563434+4415024	0.4	1.8	15.2	2.5
SA 32-172	12 56 35.217	+44 02 25.52	671-056976	J12563522+4402254	−20.5	3.9	11.2	4.0
SA 32-221	12 56 36.794	+44 14 59.60	672-055985	J12563679+4414597	−47.6	1.5	−16.2	0.7
SA 32-109	12 56 40.337	+43 56 33.74	670-057699	J12564033+4356336	−15.4	0.9	23.2	0.6
SA 32-174	12 56 55.284	+44 05 00.64	671-056978	J12565530+4405006	−86.4	1.3	−31.9	1.6
SA 32-175	12 57 00.485	+44 05 02.78	671-056981	J12570049+4405029	25.6	1.8	−83.5	2.1
GD 153	12 57 02.325	+22 01 52.66	561-053035	J12570233+2201526	−28.0	1.0	−194.0	5.0
SA 32-176	12 57 03.215	+44 00 33.80	671-056983	J12570321+4400338	3.0	0.5	11.4	0.6
SA 32-177	12 57 17.140	+44 01 00.49	671-056988	J12571716+4401004	−39.2	0.5	2.1	0.6
SA 32-178	12 57 25.633	+44 02 02.82	671-056989	J12572563+4402028	59.4	0.8	−39.0	0.7
SA 32-113	12 57 25.835	+43 56 32.95	670-057703	J12572585+4356330	−69.3	0.7	52.4	0.6
SA 32-62	12 58 30.288	+43 43 19.21	669-056966	J12583028+4343192	−13.3	1.0	−15.0	1.3
SA 32-64	12 58 36.649	+43 43 35.26	669-056967	J12583664+4343352	−41.5	0.8	16.4	0.9
PG1314+442A	13 16 31.974	+43 58 14.74	670-057946	J13163196+4358147	−13.7	3.4	−18.1	4.0
PG1314+442	13 16 33.109	+43 59 05.46	670-057947	J13163310+4359054	−7.5	3.2	−2.5	3.7
GD 325	13 36 01.794	+48 28 46.15	693-053980	J13360209+4828472	−114.0	23.0	−38.0	6.0
GD 325A	13 36 08.189	+48 28 57.62	693-053983	J13360817+4828577	−3.2	2.7	−4.4	3.0
GD 325B	13 36 27.776	+48 29 30.70	693-053988	J13362777+4829307	20.8	1.2	−17.0	1.2
GD 325C	13 36 31.813	+48 30 17.74	693-053989	J13363181+4830177	−14.0	1.6	−6.6	2.2
PG1343+578	13 45 01.414	+57 30 12.84	738-053330	J13450142+5730128	−0.9	1.3	−8.0	1.4
PG1343+578A	13 45 04.743	+57 32 11.27	738-053331	J13450474+5732112	−4.6	1.4	0.1	1.7
GD 336B	14 31 46.324	+37 07 46.67	636-050218	J14314632+3707467	13.4	1.2	11.2	1.6
GD 336A	14 31 50.878	+37 05 17.40	636-050220	J14315088+3705175	−0.8	1.3	6.2	1.7
GD 336	14 31 56.628	+37 06 30.07	636-050221	J14315666+3706299	−105.3	2.6	24.4	2.8
GD 336C	14 32 03.469	+37 04 19.95	636-050222	J14320347+3704199	−0.2	1.5	−0.7	1.8
PG1430+427C	14 32 20.592	+42 30 24.07	663-059774	J14322059+4230240	−32.1	0.8	32.7	0.8
PG1430+427	14 32 33.889	+42 30 19.07	663-059778	J14323389+4230192	−3.1	2.1	−15.7	2.5
PG1430+427A	14 32 39.438	+42 30 40.02	663-059780	J14323944+4230401	−11.6	0.7	1.4	2.5
PG1430+427B	14 32 46.756	+42 32 19.21	663-059784	J14324676+4232193	−16.6	1.0	13.3	0.9
SA 107-970	15 37 25.829	+00 18 33.85	452-057069	J15372582+0018339	−2.2	1.4	−1.9	2.5
SA 107-991	15 38 06.902	+00 16 19.31	452-057104	J15380690+0016193	−11.2	2.5	−5.7	2.3
SA 107-847	15 38 19.398	+00 08 04.90	451-059190	J15381938+0008049	−13.3	1.2	−6.0	0.6
SA 107-862	15 38 55.944	+00 09 48.13	451-059213	J15385594+0009480	5.8	1.0	−0.5	1.0
SA 107-1014	15 38 59.016	+00 15 30.98	452-057147	J15385901+0015310	−10.2	1.2	−11.8	1.6

Table 5
(Continued)

Star Name	α (J2000.0)	δ (J2000.0)	UCAC4	2MASS-PSC	μ_α (mas yr^{-1})	σ_{μ_α} (mas yr^{-1})	μ_δ (mas yr^{-1})	σ_{μ_δ} (mas yr^{-1})
SA 107-871	15 39 16.189	+00 08 54.53	451-059228	J15391619+0008545	−14.3	2.0	11.5	1.8
SA 35-316	15 49 41.176	+44 35 23.77	673-060708	J15494119+4435238	4.7	0.5	−10.3	0.6
SA 35-243	15 49 49.168	+44 27 53.56	673-060710	J15494913+4427535	−8.1	2.8	16.8	0.6
SA 35-245	15 49 49.958	+44 31 19.49	673-060711	J15494996+4431197	−13.9	1.5	2.3	1.5
SA 35-318	15 50 01.814	+44 33 04.74	673-060715	J15500181+4433048	−2.9	1.1	−39.1	0.5
SA 35-491	15 50 33.186	+44 58 06.22	675-059496	J15503319+4458062	−11.8	0.8	−11.1	0.8
SA 35-492	15 50 38.980	+45 00 37.36	676-057613	J15503898+4500374	−21.7	1.1	47.2	0.5
SA 35-338	15 51 50.503	+44 41 51.75	674-058799	J15515050+4441517	−10.5	0.8	2.3	0.6
SA 35-339	15 51 54.385	+44 32 29.14	673-060759	J15515438+4432292	15.1	0.8	−26.9	1.1
SA 35-341	15 51 56.722	+44 33 24.64	673-060761	J15515672+4433247	14.2	0.6	−28.2	1.5
SA 35-343	15 51 57.200	+44 35 26.22	673-060762	J15515720+4435263	−2.9	0.6	6.5	0.6
SA 35-261	15 52 04.173	+44 24 58.31	673-060765	J15520416+4424585	−5.2	1.0	−1.2	1.3
SA 35-262	15 52 05.049	+44 26 00.66	673-060766	J15520505+4426009	11.7	2.5	10.1	0.8
SA 35-263	15 52 05.068	+44 30 01.39	673-060767	J15520506+4430016	9.6	1.3	10.6	1.6
SA 35-264	15 52 12.896	+44 28 30.81	673-060768	J15521288+4428308	−6.4	1.6	4.9	2.0
SA 35-265	15 52 13.784	+44 28 55.85	673-060769	J15521379+4428558	5.3	2.2	−10.7	2.5
SA 35-266	15 52 23.534	+44 30 23.32	673-060771	J15522352+4430233	1.4	1.1	−6.3	1.4
SA 35-267	15 52 24.277	+44 26 00.06	673-060772	J15522426+4425599	1.5	2.6	−14.8	3.1
SA 35-518	15 53 28.862	+44 57 30.75	675-059556	J15532885+4457308	−2.2	0.6	6.1	0.5
SA 35-526	15 54 19.828	+44 55 06.78	675-059575	J15541982+4455066	−7.8	0.9	−24.0	0.5
SA 35-535	15 55 00.665	+44 59 20.41	675-059595	J15550065+4459205	1.8	0.5	−11.4	0.6
SA 35-539	15 55 13.789	+44 58 15.44	675-059600	J15551379+4458153	−2.7	1.1	−57.2	1.3
SA 108-870	16 37 45.814	−00 28 23.75	448-064178	J15391619+0008545	−13.4	2.1	2.3	2.6
SA 108-872	16 37 49.759	−00 22 18.99	449-062476	J16374581-0028236	−8.1	1.8	−0.3	1.5
SA 108-570	16 38 04.824	−00 35 06.86	448-064201	J16374976-0022189	−11.0	2.2	−22.8	1.3
KUV 433-03	16 38 26.317	+35 00 11.86	626-053431	J16380482-0035067	−33.9	3.9	10.2	4.5
KUV 433-03A	16 38 27.812	+34 59 46.59	625-052116	J16382781+3459467	9.5	3.8	−8.2	4.5
GD 358	16 47 18.358	+32 28 32.93	613-056335	J16471839+3228328	−158.0	8.0	20.0	8.0
GD 358A	16 47 22.314	+32 25 31.30	613-056337	J16472231+3225312	3.6	1.2	−26.5	1.4
GD 358B	16 47 23.224	+32 23 37.16	612-053329	J16472322+3223371	−4.7	1.3	−18.2	1.2
PG1648+536E	16 49 48.175	+53 31 30.23	718-057266	J16494817+5331303	0.0	2.7	−1.3	3.3
PG1648+536A	16 49 57.450	+53 30 18.56	718-057269	J16495744+5330187	−4.7	2.0	−3.2	2.3
PG1648+536	16 49 59.853	+53 31 31.75	718-057272	J16495985+5331318	0.9	1.3	−15.4	2.1
PG1648+536B	16 50 01.154	+53 29 14.64	718-057274	J16500115+5329148	1.8	1.5	−14.1	2.6
PG1648+536C	16 50 07.599	+53 28 49.30	718-057277	J16500759+5328494	−13.4	1.5	−11.3	1.4
PG1648+536D	16 50 11.586	+53 26 59.73	718-057278	J16501157+5326597	−3.2	4.1	18.8	4.1
GD 363C	17 38 26.523	+41 53 20.52	660-062324	J17382653+4153204	2.6	3.3	−3.5	3.8
GD 363B	17 38 33.790	+41 53 30.66	660-062339	J17383380+4153306	11.5	3.2	17.8	3.6
GD 363A	17 38 35.039	+41 53 58.16	660-062340	J17383504+4153580	2.5	1.6	4.1	1.9
GD 363	17 38 35.667	+41 52 31.69	660-062341	J17383567+4152310	−32.0	8.0	178.0	8.0
GD 363D	17 38 47.885	+41 54 09.16	660-062349	J17384789+4154090	−8.2	2.2	7.5	4.7
GD 378A	18 23 30.902	+41 04 10.27	656-064727	J18233090+4104103	−10.3	2.5	4.1	2.9
GD 378	18 23 37.012	+41 04 02.55	656-064738	J18233701+4104018	−2.0	2.0	138.0	4.0
GD 378B	18 23 45.477	+41 05 47.88	656-064752	J18234547+4105479	5.3	2.3	3.7	2.7
GD 378C	18 23 50.120	+41 06 43.94	656-064767	J18235012+4106440	−0.3	1.3	−26.2	1.1
SA 38-177	18 47 34.575	+45 10 53.55	676-065649	J18473457+4510535	−2.4	0.6	−5.3	0.9
SA 38-178	18 47 35.701	+45 10 34.03	676-065650	J18473570+4510339	19.5	4.3	6.3	2.3
SA 38-326	18 47 40.515	+45 24 39.37	678-066502	J18474051+4524393	6.9	0.6	−0.7	0.8
SA 38-358	18 48 23.004	+45 23 22.35	677-064253	J18482300+4523223	−0.4	0.5	6.1	0.7
SA 38-365	18 48 32.505	+45 25 10.85	678-066598	J18483249+4525109	−2.7	1.2	−7.2	2.1
SA 38-375	18 48 47.091	+45 24 19.78	678-066622	J18484708+4524198	−8.5	0.6	−32.7	1.2
SA 38-377	18 48 47.755	+45 20 23.44	677-064309	J18484774+4520235	18.0	0.7	−25.3	1.0
SA 38-382	18 48 53.856	+45 25 29.95	678-066636	J18485385+4525299	−6.3	0.9	−11.9	1.0
SA 38-253	18 49 04.397	+45 14 13.70	677-064334	J18490439+4514136	1.4	0.8	0.3	0.6
SA 38-391	18 49 07.115	+45 19 16.77	677-064337	J18490711+4519168	4.8	0.5	−17.6	0.8
SA 38-269	18 49 37.723	+45 14 24.01	677-064385	J18493772+4514239	3.5	1.4	11.1	1.1
SA 38-270	18 49 40.787	+45 09 07.01	676-065892	J18494078+4509069	4.6	0.9	10.0	0.8
SA 38-273	18 49 46.591	+45 13 32.23	677-064402	J18494658+4513321	−3.6	0.5	−6.9	1.2
SA 38-137	18 50 24.265	+45 06 09.47	676-065972	J18502426+4506094	−3.1	2.1	14.3	2.5
SA 38-138	18 50 25.534	+45 06 06.38	676-065975	J18502554+4506064	4.0	3.1	−5.7	3.6
SA 38-297	18 50 27.011	+45 07 55.90	676-065978	J18502701+4507559	−4.8	3.1	−4.2	3.4

Table 5
(Continued)

Star Name	α (J2000.0)	δ (J2000.0)	UCAC4	2MASS-PSC	μ_α (mas yr^{-1})	σ_{μ_α} (mas yr^{-1})	μ_δ (mas yr^{-1})	σ_{μ_δ} (mas yr^{-1})
SA 38-298	18 50 31.101	+45 09 37.03	676-065984	J18503111+4509370	−7.9	5.2	−10.7	5.0
SA 38-302	18 50 33.197	+45 10 43.05	676-065986	J18503321+4510431	4.4	4.8	7.2	4.5
SA 38-303	18 50 34.221	+45 07 26.48	676-065988	J18503422+4507265	10.8	5.5	7.0	5.2
SA 38-304	18 50 36.293	+45 09 06.83	676-065991	J18503629+4509068	−0.6	3.2	−9.2	3.5
SA 38-149	18 50 41.729	+45 06 37.02	676-066001	J18504174+4506370	−7.8	5.3	−6.9	5.1
SA 38-309	18 50 45.291	+45 07 42.19	676-066009	J18504529+4507421	−0.6	2.0	−4.6	2.3
SA 38-156	18 50 46.158	+45 05 52.97	676-066011	J18504615+4505529	−5.7	5.4	−7.2	5.2
SA 38-157	18 50 46.519	+45 06 11.51	676-066013	J18504652+4506115	2.0	5.1	3.6	4.7
SA 38-310	18 50 48.873	+45 08 43.50	676-066019	J18504886+4508433	10.1	0.9	5.7	0.9
SA 38-312	18 50 50.491	+45 09 36.42	676-066020	J18505049+4509363	−6.9	2.0	3.2	2.2
GD 391F	20 29 37.183	+39 17 17.58	647-088832	J20293718+3917176	−8.5	2.9	−15.4	1.7
GD 391E	20 29 43.642	+39 17 17.98	647-088839	J20294363+3917180	5.1	2.2	−7.8	1.7
GD 391H	20 29 45.496	+39 18 14.26	647-088844	J20294549+3918143	7.0	2.6	−11.8	3.2
GD 391G	20 29 45.987	+39 16 34.95	647-088846	J20294598+3916349	−6.1	2.0	0.0	2.4
GD 391B	20 29 51.196	+39 14 20.33	647-088850	J20295119+3914203	−6.2	1.8	−7.6	2.4
GD 391D	20 29 54.035	+39 13 43.44	647-088853	J20295403+3913434	7.4	6.1	−6.8	5.9
GD 391A	20 29 55.304	+39 14 13.08	647-088854	J20295529+3914130	3.5	2.2	−0.9	1.4
GD 391	20 29 56.177	+39 13 32.19	647-088856	J20295616+3913320	149.0	2.5	93.3	2.6
GD 391C	20 30 02.922	+39 15 03.75	647-088869	J20300292+3915037	1.9	1.2	−10.3	1.9
SA 41-620	21 53 11.306	+45 36 21.13	679-113303	J21531130+4536210	−7.6	2.4	−6.2	2.1
SA 41-626	21 53 17.263	+45 37 24.48	679-113325	J21531726+4537245	−8.3	2.7	−5.9	1.7
SA 41-625	21 53 17.295	+45 35 14.74	678-116201	J21531730+4535148	−2.9	2.1	−1.0	2.4
SA 41-630	21 53 23.508	+45 38 17.36	679-113351	J21532350+4538173	10.3	5.7	3.1	5.2
SA 41-631	21 53 24.561	+45 35 45.09	678-116226	J21532456+4535451	−4.7	1.2	−2.0	1.5
SA 41-634	21 53 27.209	+45 35 40.95	678-116240	J21532721+4535410	−1.7	1.3	−3.1	0.4
SA 41-637	21 53 30.416	+45 36 11.04	679-113376	J21533041+4536110	−1.5	3.2	−0.3	3.3
SA 41-638	21 53 32.591	+45 37 00.50	679-113384	J21533258+4537005	5.6	2.4	−4.4	3.1
SA 41-639	21 53 33.743	+45 34 20.95	678-116261	J21533374+4534209	−0.8	1.9	0.2	2.6
SA 41-654	21 53 52.663	+45 33 07.25	678-116321	J21535265+4533072	17.8	0.8	5.0	0.5
SA 41-660	21 53 56.878	+45 32 23.66	678-116341	J21535687+4532235	−7.0	1.4	−4.2	1.0
SA 41-171	21 54 04.972	+45 13 13.57	677-110732	J21540496+4513136	5.0	0.6	−2.6	1.1
SA 41-673	21 54 07.165	+45 32 38.06	678-116395	J21540716+4532380	2.8	4.2	−2.6	1.9
SA 41-674	21 54 07.517	+45 32 07.05	678-116397	J21540751+4532070	23.1	2.3	−15.0	3.0
SA 41-179	21 54 10.448	+45 16 31.11	677-110756	J21541044+4516310	−1.5	0.7	−8.2	0.8
SA 41-182	21 54 12.587	+45 14 36.50	677-110769	J21541258+4514364	7.2	0.6	−3.4	0.6
SA 41-190	21 54 18.195	+45 15 22.57	677-110799	J21541819+4515225	8.0	0.6	12.2	0.6
SA 41-204	21 54 31.607	+45 13 51.39	677-110869	J21543159+4513512	5.3	1.1	−7.0	1.1
GD 405	23 16 43.875	+47 27 15.57	688-127404	J23164386+4727155	113.9	5.7	47.3	5.3
GD 405A	23 16 44.966	+47 26 59.90	688-127407	J23164495+4726599	−5.1	4.4	−3.6	4.5
GD 251	23 34 20.865	+29 18 36.99	597-139245	J23342086+2918366	−68.0	1.0	−122.0	2.0

Table 6
Field Centers for the Standard Star Sequences

Field Name	α (J2000.0)	δ (J2000.0)	FOV	No. Stars	Range in V	Range in $B-V$	Range in $U-B$	Comments
GD 2	00 07 33.56	+33 18 51.2	15 × 15	6	13.28 ↔ 15.19	−0.30 ↔ +0.91	−1.19 ↔ +0.68	All stars
GD 8	00 39 44.65	+31 34 46.3	15 × 15	4	13.30 ↔ 14.70	−0.28 ↔ +0.80	−1.17 ↔ +0.45	All stars
SA20	00 45 51.17	+45 53 06.2	40 × 40	23	8.91 ↔ 14.88	−0.05 ↔ +1.09	−0.42 ↔ +0.97	All stars
SA20 SF1	00 44 47.51	+45 50 05.3	15 × 15	4	8.95 ↔ 11.27	+0.46 ↔ +1.08	+0.14 ↔ +0.89	SA20 245, 130, 133, 139
SA20 SF2	00 45 24.64	+45 41 44.2	15 × 15	5	9.35 ↔ 11.27	+0.46 ↔ +1.08	+0.09 ↔ +0.89	SA20 133, 139, 39, 43, 163
SA20 SF3	00 45 36.80	+45 52 21.4	15 × 15	4	8.91 ↔ 11.27	−0.05 ↔ +1.08	−0.42 ↔ +0.89	SA20 139, 291, 297, 163
SA20 SF4	00 46 34.53	+46 06 53.6	15 × 15	5	9.52 ↔ 11.31	+0.09 ↔ +1.09	+0.04 ↔ +0.97	SA20 420, 431, 435, 446, 456
SA20 SF5	00 46 56.20	+45 52 49.4	15 × 15	9	10.13 ↔ 14.88	+0.42 ↔ +1.02	−0.04 ↔ +0.76	SA20 182, 186, 338, 208, 340, 342, 343, 345, 346
GD 10	01 06 59.69	+39 31 14.1	15 × 15	4	13.69 ↔ 15.46	+0.20 ↔ +0.82	−0.62 ↔ +0.45	All stars
GD 275	01 18 54.23	+52 27 31.8	15 × 15	2	15.02 ↔ 15.68	+0.14 ↔ +1.48	−0.53 ↔ +1.36	Too few measures
GD 277	01 29 26.95	+51 08 41.0	15 × 15	3	13.54 ↔ 14.52	−0.10 ↔ +1.26	−0.91 ↔ +0.98	All stars
GD 13	01 29 41.71	+42 28 06.5	15 × 15	2	14.88 ↔ 15.00	−0.09 ↔ +0.75	−0.91 ↔ +0.31	Too few measures
GD 278	01 31 02.37	+53 21 17.5	15 × 15	3	14.20 ↔ 14.90	+0.19 ↔ +1.45	−0.24 ↔ +1.72	All stars
GD 421	01 51 00.14	+67 41 51.4	15 × 15	5	12.16 ↔ 14.58	−0.21 ↔ +2.60	−1.07 ↔ +2.64	Too few measures
GD 279	01 52 02.42	+47 01 04.7	15 × 15	10	10.39 ↔ 14.44	+0.09 ↔ +1.12	−0.61 ↔ +0.96	All stars
SA23	03 44 54.17	+45 17 06.9	30 × 30	16	9.44 ↔ 14.53	+0.17 ↔ +1.88	−0.46 ↔ +2.21	All star with 5 or more measures
SA23 SF1	03 44 25.66	+45 06 55.1	15 × 15	5	9.97 ↔ 12.12	+0.19 ↔ +1.88	−0.39 ↔ +2.21	SA23 195, 198, 15, 45, 57
SA23 SF2	03 44 43.72	+45 20 43.1	15 × 15	5	9.84 ↔ 12.31	+0.17 ↔ +1.10	−0.46 ↔ +0.99	SA23 402, 241, 246, 418, 264
SA23 SF3	03 45 20.70	+45 27 28.4	15 × 15	5	10.55 ↔ 14.53	+0.51 ↔ +1.64	+0.22 ↔ +1.67	SA23 561, 433, 435, 436, 441
SA23 SF4	03 45 26.36	+45 16 52.0	15 × 15	3	9.44 ↔ 11.72	+0.47 ↔ +1.10	−0.01 ↔ +0.99	SA23 418, 264, 300
GD 61	04 38 34.36	+41 10 16.4	15 × 15	4	13.73 ↔ 14.88	−0.11 ↔ +0.55	−0.97 ↔ +0.32	All stars
GD 64	04 57 18.51	+41 55 10.1	15 × 15	7	11.53 ↔ 14.44	+0.06 ↔ +1.82	−0.56 ↔ +2.18	Too few measures
SA26	06 43 50.14	+44 38 14.8	35 × 30	16	9.12 ↔ 15.37	+0.12 ↔ +1.70	−0.07 ↔ +0.92	All star with 5 or more measures
SA26 SF1	06 43 00.06	+44 45 05.4	15 × 15	6	9.12 ↔ 11.34	+0.51 ↔ +1.12	+0.00 ↔ +0.92	SA26 219, 231, 135, 234, 139, 150
SA26 SF2	06 43 10.56	+44 28 29.3	15 × 15	2	9.54 ↔ 10.86	+0.12 ↔ +0.61	+0.11 ↔ +0.18	SA26 27, 60
SA26 SF3	06 44 22.77	+44 47 21.5	15 × 15	5	11.09 ↔ 15.37	+0.60 ↔ +1.08	−0.07 ↔ +0.84	SA26 262, 264, 265, 268, 280
SA26 SF4	06 44 54.45	+44 30 54.4	15 × 15	3	9.58 ↔ 11.99	+0.26 ↔ +1.70	+0.02 ↔ +1.77	SA26 172, 93, 95
GD 91	08 30 12.91	+45 19 50.3	15 × 15	3	12.44 ↔ 15.07	+0.18 ↔ +1.02	−0.52 ↔ +0.84	All stars
PG0837+401	08 41 01.45	+39 56 30.1	15 × 15	4	12.18 ↔ 15.51	−0.24 ↔ +0.92	−0.99 ↔ +0.75	All stars
KUV 345-30	08 43 11.26	+39 45 32.4	15 × 15	2	14.32 ↔ 14.62	−0.28 ↔ +0.63	−1.13 ↔ +0.07	All stars
PG0846+558	08 49 45.81	+55 35 26.8	15 × 15	3	14.69 ↔ 16.44	−0.21 ↔ +0.84	−1.04 ↔ +0.40	Too few measures
GD 98	08 57 20.12	+40 17 23.9	15 × 15	3	13.46 ↔ 14.82	−0.13 ↔ +2.43	−0.93 ↔ +0.62	All stars
GD 299	09 38 20.35	+55 05 50.1	10 × 10	1	12.09	−0.27	−1.16	White dwarf
SA29	09 44 32.32	+44 15 34.9	70 × 60	15	8.79 ↔ 14.53	+0.35 ↔ +1.24	−0.03 ↔ +1.24	All star with 5 or more measures
SA29 SF1	09 41 47.69	+44 12 05.8	15 × 15	2	8.79 ↔ 11.29	+0.81 ↔ +1.11	+0.45 ↔ +1.09	SA29 153, 157
SA29 SF2	09 42 08.39	+44 32 57.1	15 × 15	1	10.30	+0.48	−0.01	SA29 350
SA29 SF3	09 42 53.88	+43 49 50.2	15 × 15	2	9.59 ↔ 10.47	+0.55 ↔ +0.56	+0.02 ↔ +0.11	SA29 22, 24
SA29 SF4	09 44 53.04	+44 25 07.5	15 × 15	1	8.29	+0.60	+0.17	SA29 303; only 4 measures
SA29 SF5	09 46 56.72	+44 19 39.7	15 × 15	5	9.44 ↔ 12.13	+0.35 ↔ +1.12	+0.00 ↔ +1.08	SA29 322, 324, 327, 331, 251
SA29 SF6	09 47 17.88	+44 39 45.4	15 × 15	5	13.08 ↔ 15.43	+0.48 ↔ +1.24	−0.06 ↔ +1.24	SA29 399, 400, 402, 406, 407
PG0943+521	09 47 07.71	+51 54 39.1	15 × 15	2	14.50 ↔ 15.12	+0.21 ↔ +0.92	−0.98 ↔ +0.62	Too few measures
GD 300	09 55 17.85	+51 38 20.4	15 × 15	3	12.66 ↔ 12.98	−0.32 ↔ +0.68	−1.23 ↔ +0.18	All stars
KUV 348-07	09 56 55.40	+41 14 56.8	15 × 15	3	13.99 ↔ 15.55	+0.07 ↔ +0.79	−0.90 ↔ +0.35	All stars
KUV 348-13	10 03 59.91	+40 33 43.7	15 × 15	3	12.50 ↔ 14.70	−0.33 ↔ +0.70	−1.07 ↔ +0.16	Two few measures
KUV 348-14	10 05 12.72	+38 47 13.3	15 × 15	4	13.65 ↔ 15.14	−0.05 ↔ +0.66	−0.22 ↔ +0.12	Marginal
GD 111	10 05 53.98	+42 46 53.1	15 × 15	3	13.15 ↔ 16.16	−0.10 ↔ +0.76	−0.86 ↔ +0.29	Too few measures

Table 6
(Continued)

Field Name	α (J2000.0)	δ (J2000.0)	FOV	No. Stars	Range in V	Range in $B-V$	Range in $U-B$	Comments
GD 310	11 29 23.19	+38 07 43.1	15 × 15	4	13.91 ↔ 15.01	−0.18 ↔ +0.98	−1.00 ↔ +0.83	All stars
PG1126+469	11 29 25.42	+46 35 03.8	15 × 15	3	12.73 ↔ 14.57	−0.14 ↔ +0.64	−0.69 ↔ +0.15	Too few measures
KUV 352-09	11 36 24.39	+39 29 33.9	10 × 10	1	12.97	−0.15	−0.65	metal poor star
SA103	11 56 55.60	−00 26 49.2	15 × 15	5	11.19 ↔ 12.44	+0.41 ↔ +0.98	−0.06 ↔ +0.81	SA103 518, 626, 528, 529, 646
GD 314	12 04 32.61	+60 34 58.3	15 × 15	6	10.83 ↔ 15.01	−0.34 ↔ +1.34	−1.25 ↔ +1.20	All stars
PG1210+533	12 13 21.68	+53 03 12.2	15 × 15	3	11.50 ↔ 14.46	−0.31 ↔ +0.65	−1.20 ↔ +0.14	Useful with care
SA32	12 56 52.10	+44 12 50.9	40 × 60	22	8.96 ↔ 16.32	+0.40 ↔ +1.16	−0.16 ↔ +1.13	All star with 5 or more measures
SA32 SF1	12 55 35.43	+44 21 08.6	15 × 15	5	8.96 ↔ 12.52	+0.48 ↔ +1.16	−0.11 ↔ +1.13	SA32 270, 271, 272, 282, 212
SA32 SF2	12 55 38.25	+44 37 59.2	15 × 15	3	10.07 ↔ 11.17	+0.64 ↔ +1.04	+0.10 ↔ +0.87	SA32 330, 377, 379
SA32 SF3	12 56 20.05	+44 15 13.7	15 × 15	3	9.32 ↔ 13.09	+0.65 ↔ +1.16	+0.10 ↔ +1.13	SA32 212, 220, 221
SA32 SF4	12 56 47.38	+43 59 34.8	15 × 15	12	10.21 ↔ 16.32	+0.40 ↔ +1.07	−0.16 ↔ +0.98	SA32 166, 167, 105, 106, 107, 109, 174, 175, 176,177, 178, 113
SA32 SF5	12 58 33.46	+43 43 27.1	15 × 15	2	9.79 ↔ 11.83	+0.60 ↔ +1.09	+0.02 ↔ +0.94	Too few measures
PG1314+442	13 16 32.54	+43 58 40.1	15 × 15	2	15.24 ↔ 15.38	−0.14 ↔ +0.71	−0.99 ↔ +0.16	All stars
GD 325	13 36 16.80	+48 29 31.9	15 × 15	4	11.97 ↔ 14.09	+0.03 ↔ +0.86	−0.95 ↔ +0.51	All stars
PG1343+578	13 45 03.08	+57 31 12.1	15 × 15	2	13.81 ↔ 13.88	+0.01 ↔ +0.59	−0.59 ↔ +0.08	Too few measures
GD 336	14 31 54.90	+37 06 03.3	15 × 15	4	12.98 ↔ 15.28	−0.27 ↔ +0.65	−1.15 ↔ +0.16	All stars
PG1430+427	14 32 33.67	+42 31 19.1	15 × 15	4	11.42 ↔ 14.22	−0.15 ↔ +0.90	−0.67 ↔ +0.66	All stars
SA107	15 38 21.01	+00 13 19.4	15 × 15	6	10.24 ↔ 12.47	+0.54 ↔ +1.60	+0.01 ↔ +1.80	SA107 970, 991, 847, 862, 1014, 871
SA35	15 52 27.48	+44 42 47.8	60 × 40	18	9.02 ↔ 16.09	+0.16 ↔ +1.51	−0.09 ↔ +1.90	All star with 5 or more measures
SA35 SF1	15 49 51.49	+44 31 38.6	15 × 15	3	9.95 ↔ 12.01	+0.18 ↔ +0.54	−0.02 ↔ +0.12	SA35 316, 243, 318
SA35 SF2	15 50 36.08	+44 59 21.8	15 × 15	2	9.83 ↔ 11.54	+0.56 ↔ +0.92	+0.01 ↔ +0.66	SA35 491, 492
SA35 SF3	15 51 53.85	+44 37 10.6	15 × 15	4	9.60 ↔ 12.78	+0.43 ↔ +0.56	−0.06 ↔ +0.03	SA35 338, 339, 341, 343
SA35 SF4	15 52 09.32	+44 30 12.2	15 × 15	10	10.87 ↔ 16.09	+0.43 ↔ +1.51	−0.09 ↔ +1.90	SA35 339, 341, 343, 261, 262, 263, 264, 265, 266, 267
SA35 SF5	15 53 54.34	+44 56 18.6	15 × 15	2	9.02 ↔ 9.26	+0.16 ↔ +1.06	+0.11 ↔ +1.00	SA35 518, 526
SA35 SF6	15 54 46.80	+44 57 13.7	15 × 15	3	9.02 ↔ 12.92	+0.78 ↔ +1.25	+0.42 ↔ +1.41	SA35 526, 535, 539
SA108	16 37 55.32	−00 28 42.9	15 × 15	3	11.86 ↔ 12.12	+0.53 ↔ +1.22	+0.09 ↔ +1.17	SA108 870, 872, 570
KUV 433-03	16 38 27.06	+34 59 59.2	15 × 15	2	14.90 ↔ 15.58	−0.26 ↔ +1.22	−1.06 ↔ +1.27	All stars
GD 358	16 47 20.79	+32 26 05.0	15 × 15	3	12.57 ↔ 13.65	−0.12 ↔ +0.94	−1.02 ↔ +0.75	All stars
PG1648+536	16 49 59.88	+53 29 15.7	15 × 15	5	12.25 ↔ 14.33	−0.22 ↔ +0.96	−1.02 ↔ +0.72	All stars, except star E
GD 363	17 38 37.20	+41 53 20.4	15 × 15	5	12.90 ↔ 15.29	−0.11 ↔ +1.16	−0.89 ↔ +1.08	All stars
GD 378	18 23 40.51	+41 05 23.2	15 × 15	4	11.77 ↔ 14.29	−0.08 ↔ +0.69	−0.96 ↔ +0.16	All stars
SA38	18 49 12.53	+45 15 41.5	40 × 20	16	9.85 ↔ 15.36	+0.29 ↔ +1.29	−0.07 ↔ +1.42	All star with 5 or more measures
SA38 SF1	18 47 35.13	+45 10 43.7	15 × 15	2	10.85 ↔ 12.40	+0.44 ↔ +0.72	+0.02 ↔ +0.18	SA38 177, 178
SA38 SF2	18 48 17.18	+45 22 56.6	15 × 15	3	9.85 ↔ 12.96	+0.29 ↔ +1.20	+0.07 ↔ +1.31	SA38 326, 358, 365
SA38 SF3	18 49 25.49	+45 14 11.8	15 × 15	4	10.77 ↔ 11.27	+0.29 ↔ +1.27	+0.02 ↔ +1.28	SA38 253, 269, 270, 273
SA38 SF4	18 50 37.38	+45 08 17.9	15 × 15	7	10.49 ↔ 15.46	+0.58 ↔ +1.29	−0.07 ↔ +1.41	SA38 137, 138, 309, 156, 157, 310, 312
GD 391	20 29 50.05	+39 15 53.2	15 × 15	9	11.46 ↔ 15.01	−0.15 ↔ +0.99	−0.97 ↔ +0.61	All stars
SA41	21 53 51.46	+45 25 45.5	20 × 30	13	9.97 ↔ 14.56	+0.22 ↔ +1.74	−0.20 ↔ +2.06	All star with 5 or more measures
SA41 SF1	21 53 39.41	+45 35 12.1	15 × 15	8	10.04 ↔ 14.56	+0.22 ↔ +1.32	−0.20 ↔ +1.04	SA41 631, 634, 637, 639, 654, 660, 171, 673, 674
SA41 SF2	21 54 18.29	+45 14 52.4	15 × 15	5	9.97 ↔ 11.87	+0.29 ↔ +1.74	+0.07 ↔ +2.06	SA41 171, 179, 182, 190, 204
GD 405	23 16 44.42	+47 27 07.7	15 × 15	2	15.62 ↔ 16.75	−0.17 ↔ +1.06	−0.81 ↔ +1.33	Too few measures

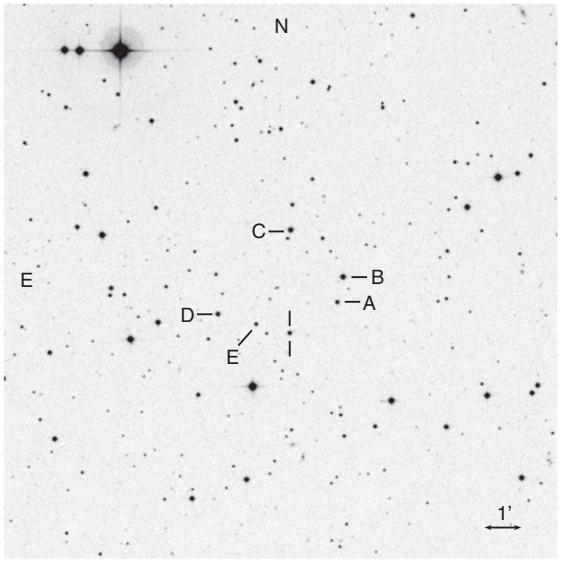

Figure 1. Field, 15′ on a side, of the sequence in the vicinity of the star GD 2.

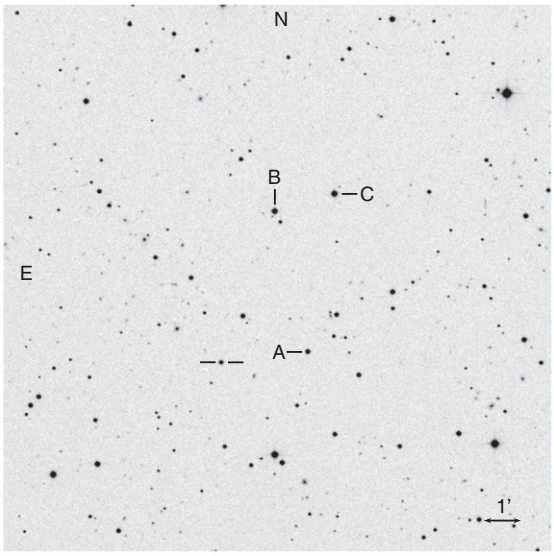

Figure 2. Field, 15′ on a side, of the sequence in the vicinity of the star GD 8.

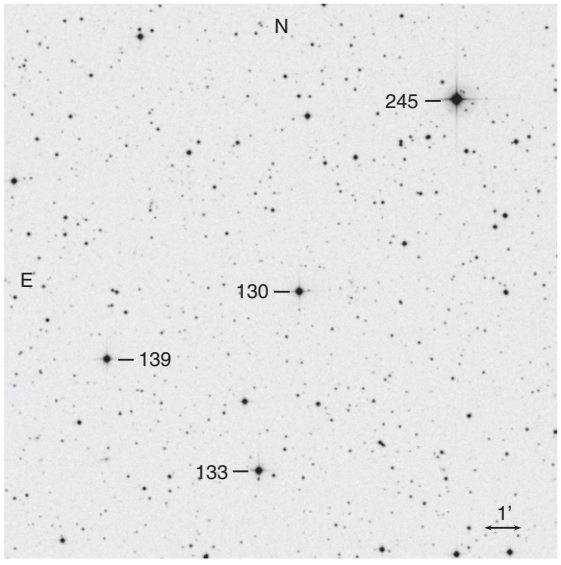

Figure 3. Field, 15′ on a side, of SA 20 SF1.

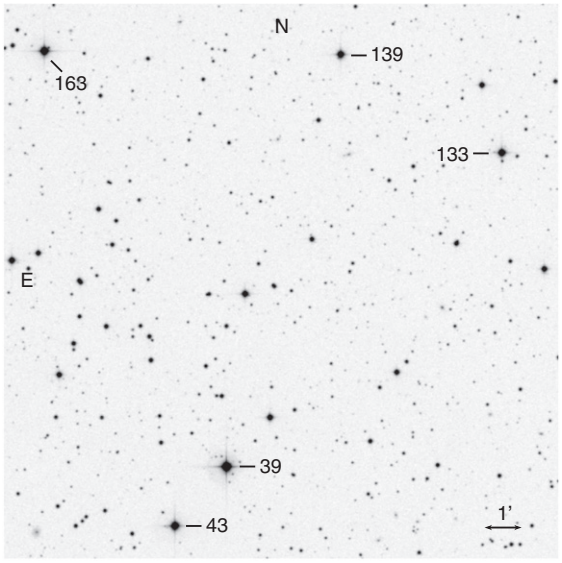

Figure 4. Field, 15′ on a side, of SA 20 SF2.

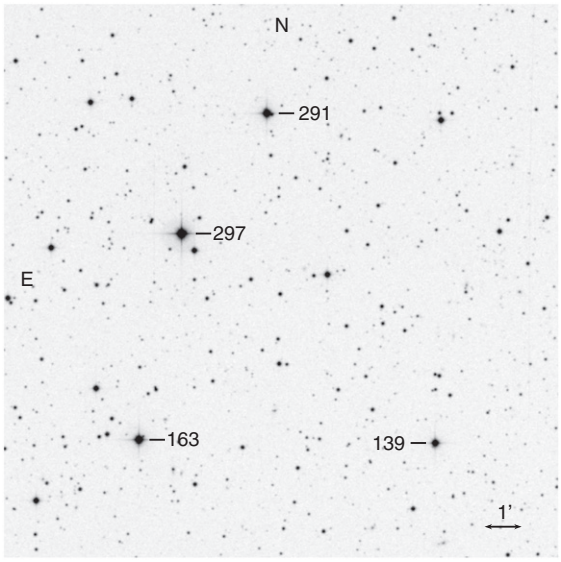

Figure 5. Field, 15′ on a side, of SA 20 SF3.

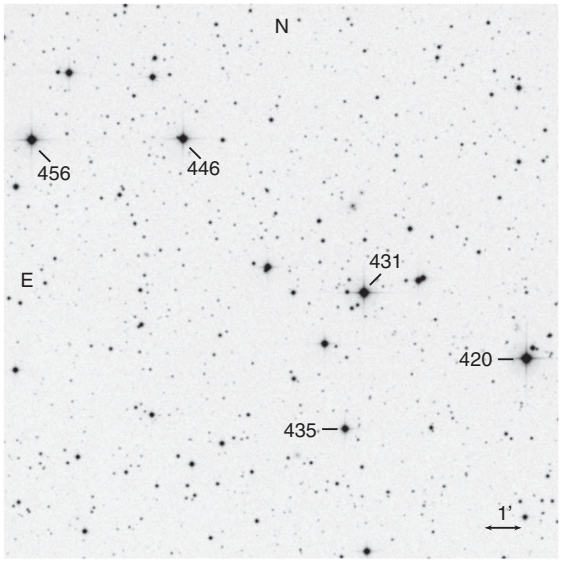

Figure 6. Field, 15′ on a side, of SA 20 SF4.

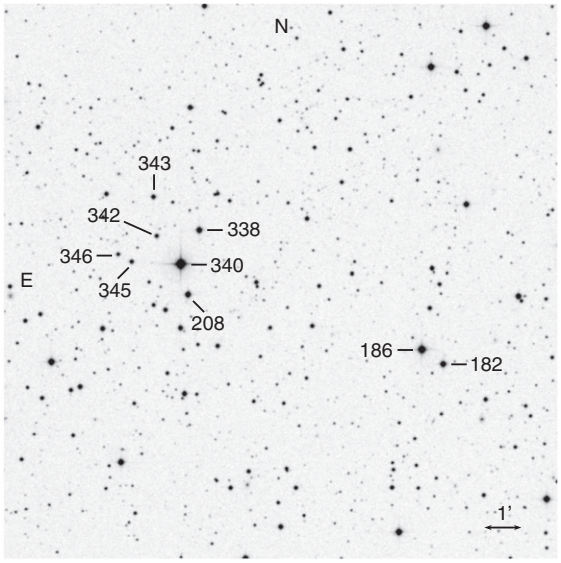

Figure 7. Field, 15′ on a side, of SA 20 SF5.

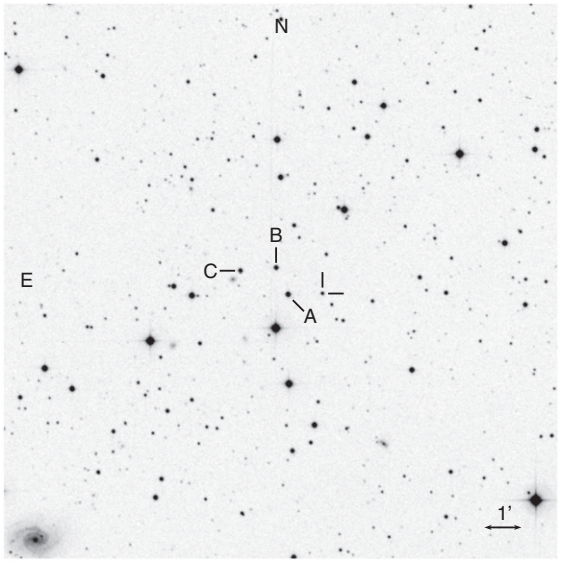

Figure 8. Field, 15′ on a side, of the sequence in the vicinity of the star GD 10.

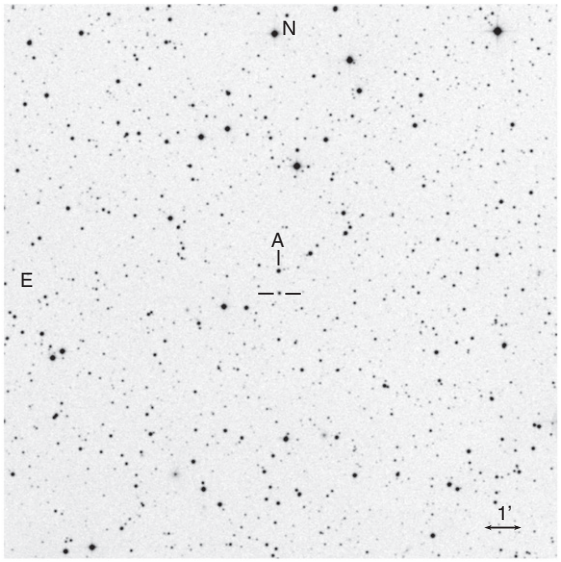

Figure 9. Field, 15′ on a side, of the sequence in the vicinity of the star GD 275.

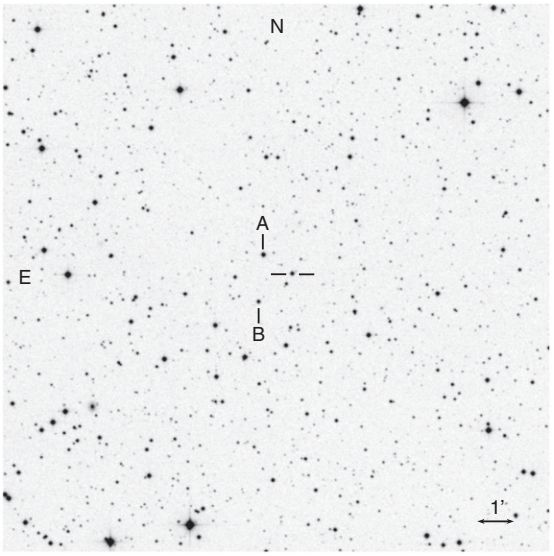

Figure 10. Field, 15′ on a side, of the sequence in the vicinity of the star GD 277.

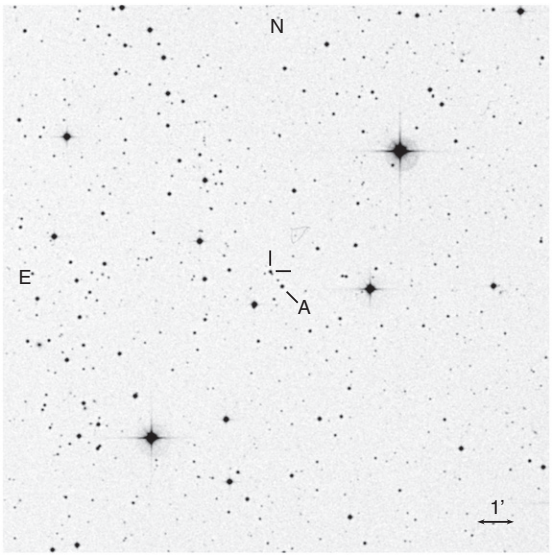

Figure 11. Field, 15′ on a side, of the sequence in the vicinity of the star GD 13.

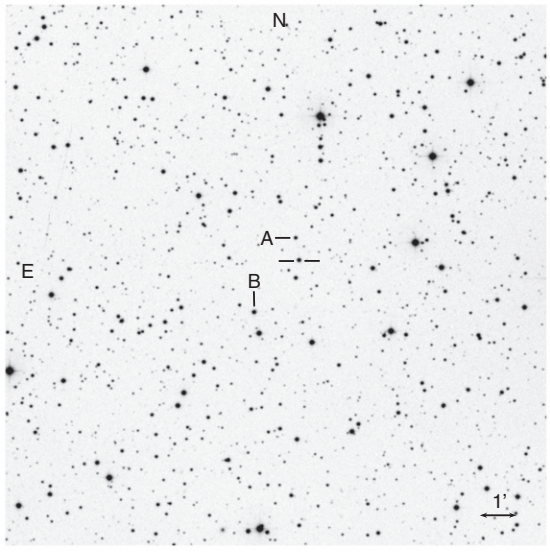

Figure 12. Field, 15′ on a side, of the sequence in the vicinity of the star GD 278.

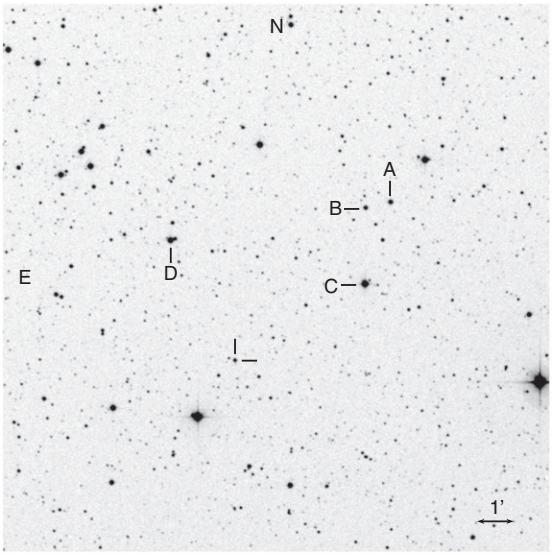

Figure 13. Field, 15′ on a side, of the sequence in the vicinity of the star GD 421.

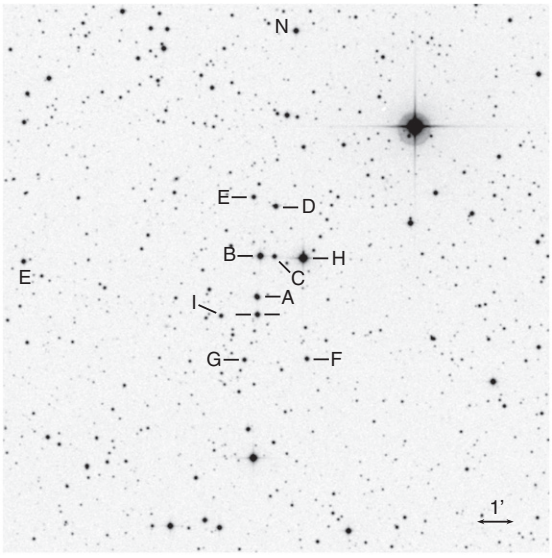

Figure 14. Field, 15′ on a side, of the sequence in the vicinity of the star GD 279.

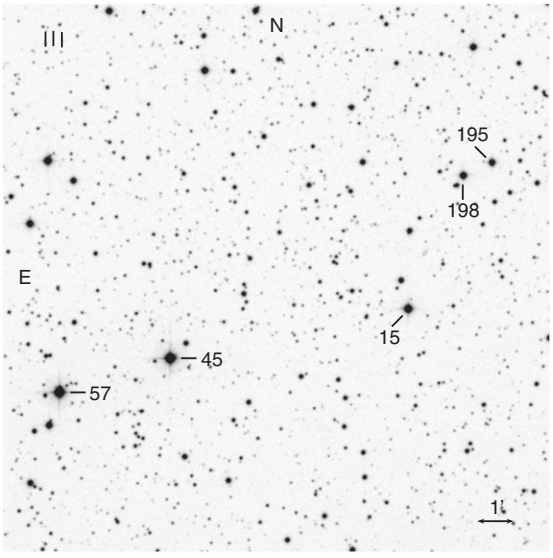

Figure 15. Field, 15′ on a side, of SA 23 SF1.

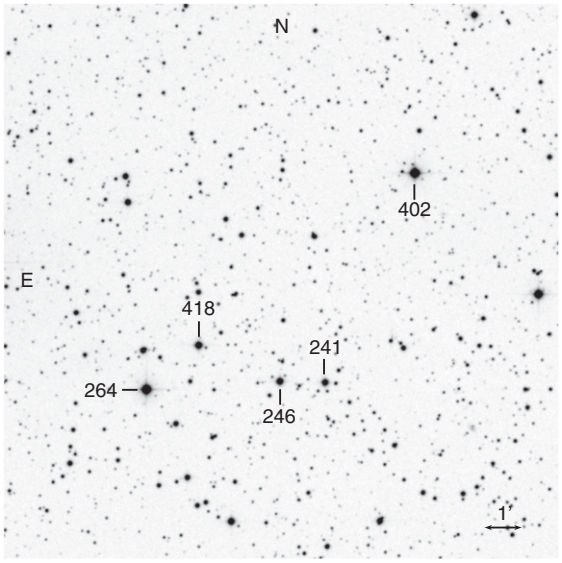

Figure 16. Field, 15′ on a side, of SA 23 SF2.

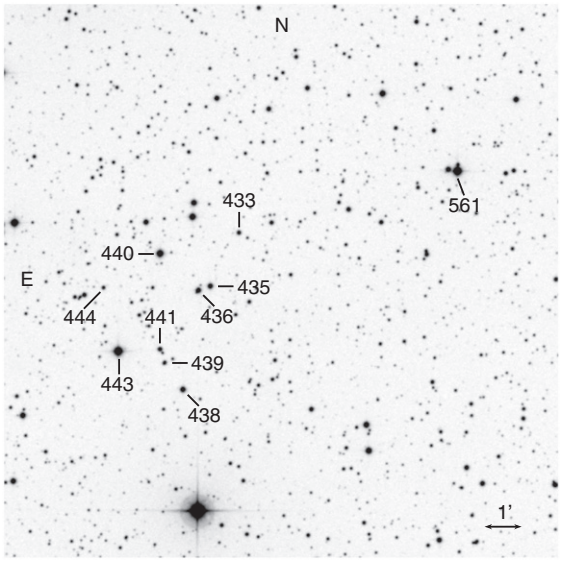

Figure 17. Field, 15′ on a side, of SA 23 SF3.

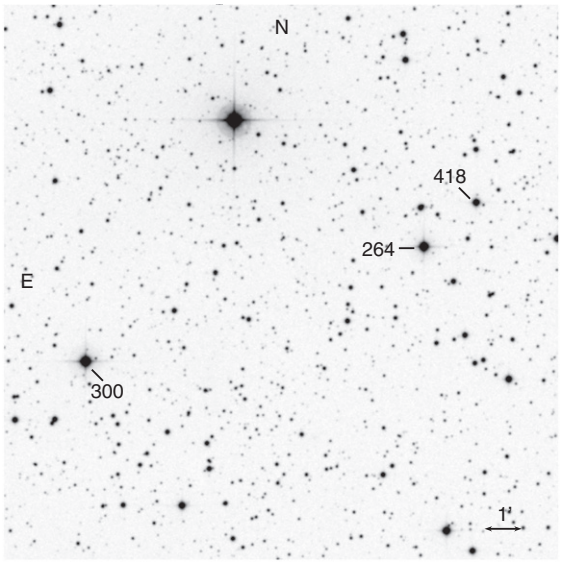

Figure 18. Field, 15′ on a side, of SA 23 SF4.

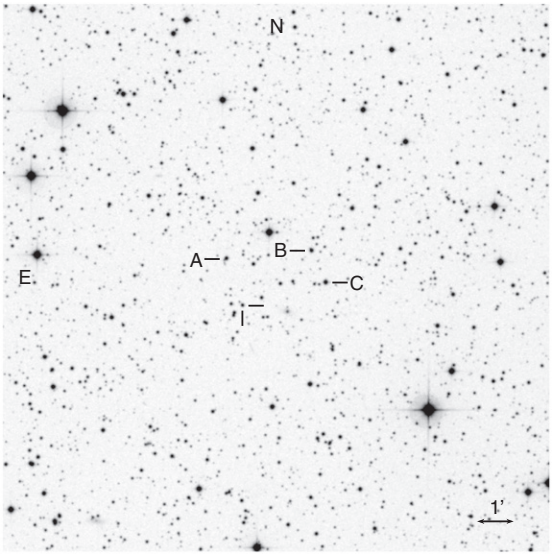

Figure 19. Field, 15′ on a side, of the sequence in the vicinity of the star GD 61.

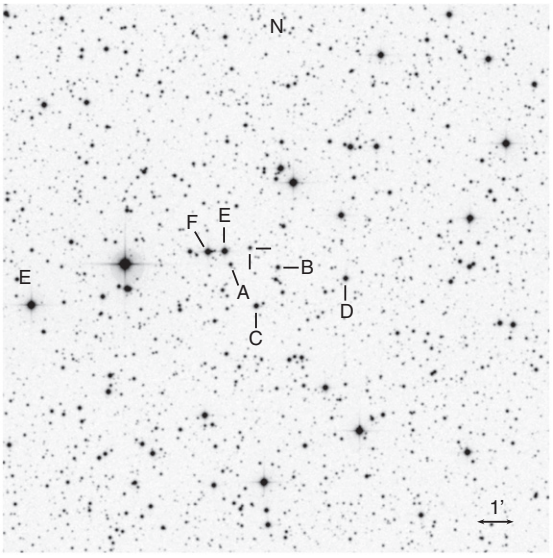

Figure 20. Field, 15′ on a side, of the sequence in the vicinity of the star GD 64.

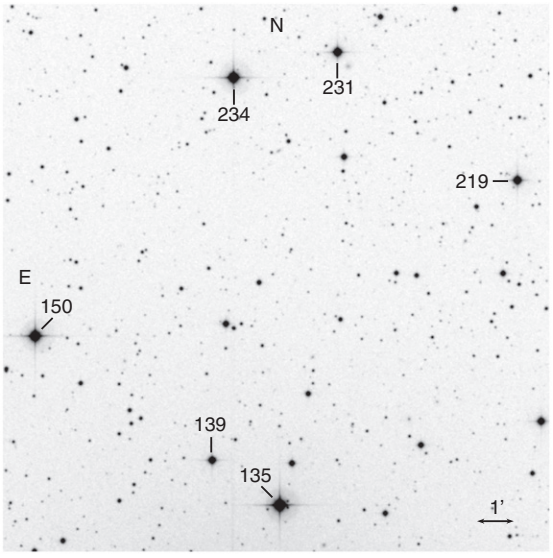

Figure 21. Field, 15′ on a side, of SA 26 SF1.

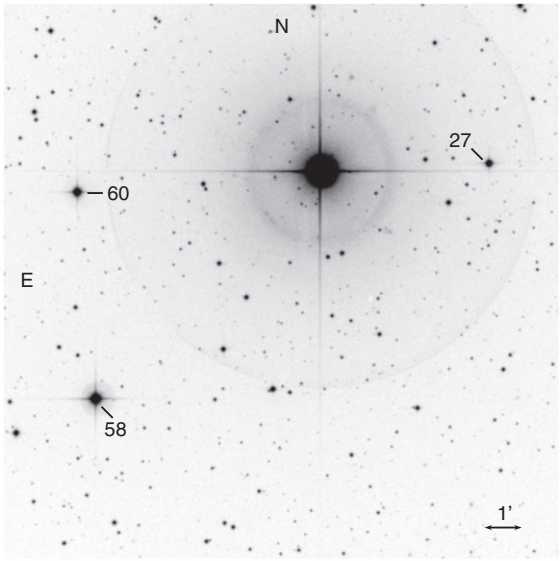

Figure 22. Field, 15′ on a side, of SA 26 SF2.

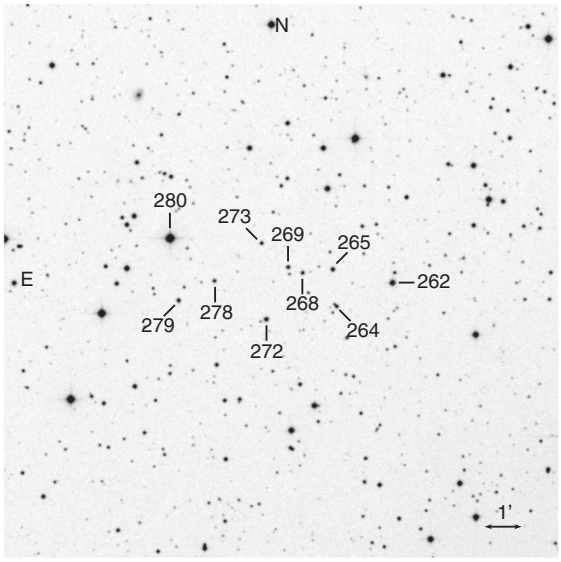

Figure 23. Field, 15′ on a side, of SA 26 SF3.

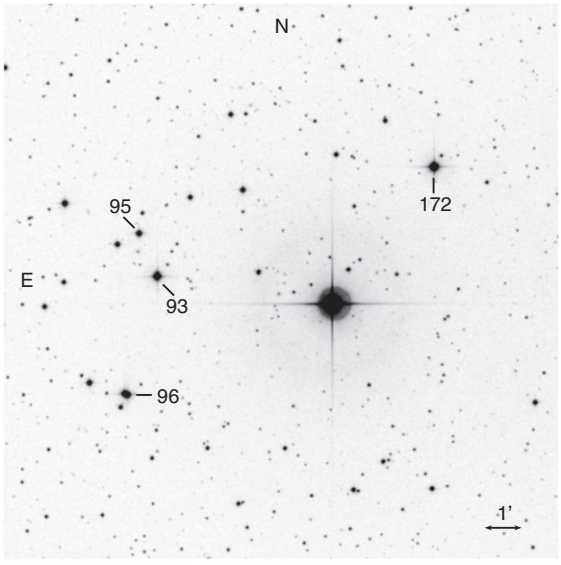

Figure 24. Field, 15′ on a side, of SA 26 SF4.

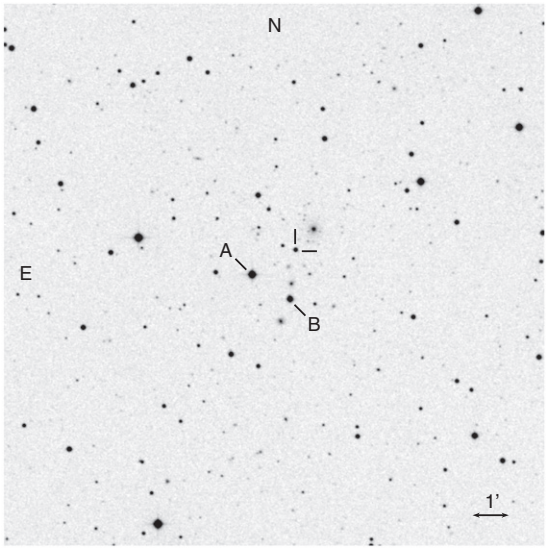

Figure 25. Field, 15′ on a side, of the sequence in the vicinity of the star GD 91.

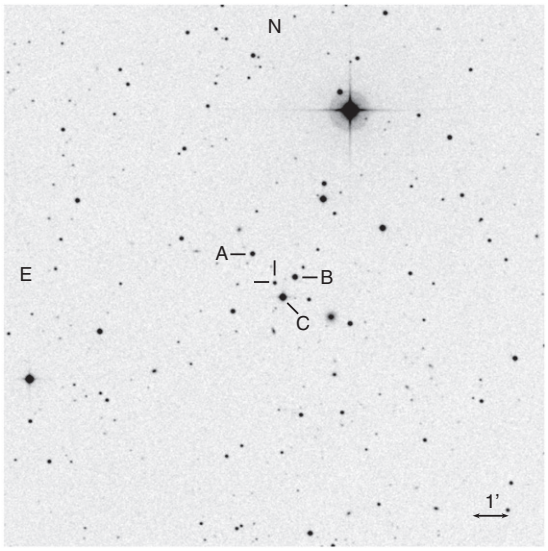

Figure 26. Field, 15′ on a side, of the sequence in the vicinity of the star PG 0837+401.

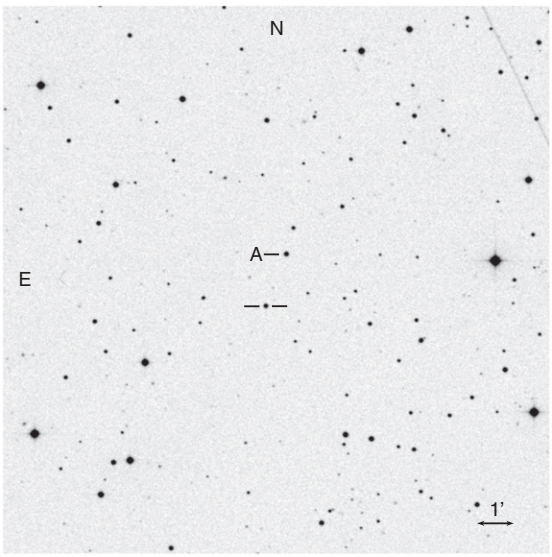

Figure 27. Field, 15′ on a side, of the sequence in the vicinity of the star KUV 345-30.

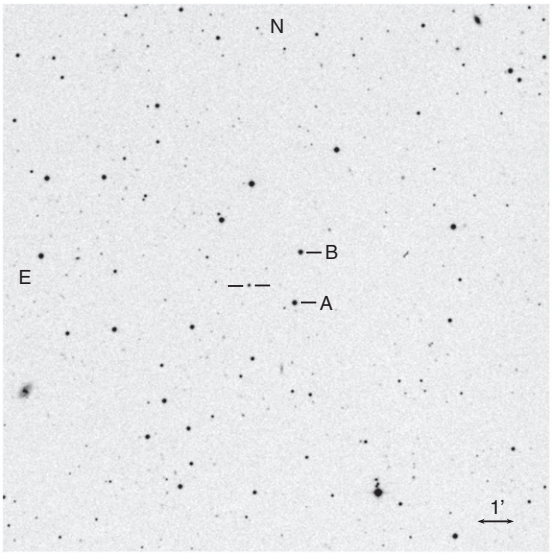

Figure 28. Field, 15′ on a side, of the sequence in the vicinity of the star PG 0846+558.

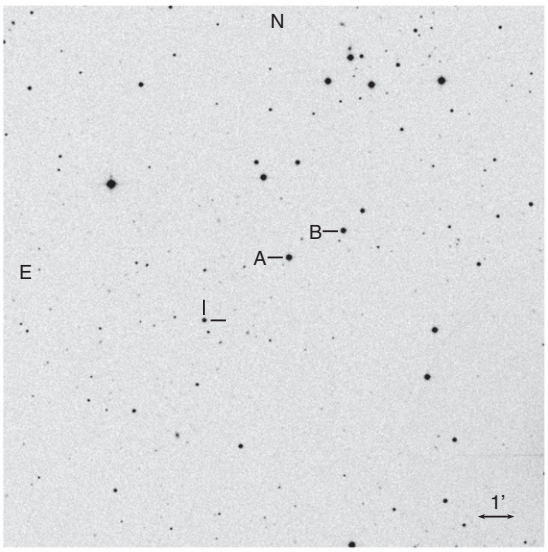

Figure 29. Field, 15′ on a side, of the sequence in the vicinity of the star GD 98.

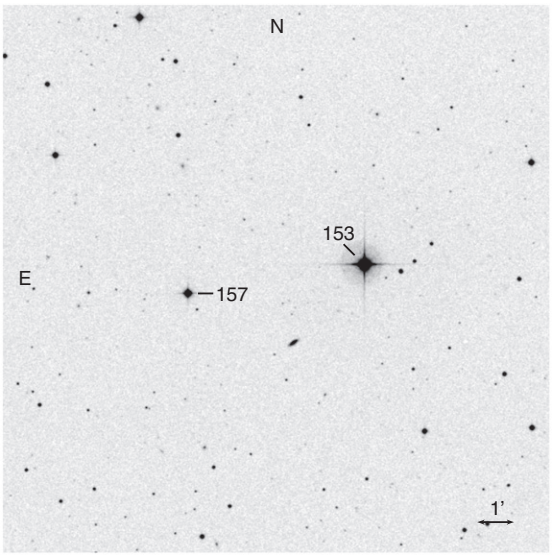

Figure 30. Field, 15′ on a side, of SA 29 SF1.

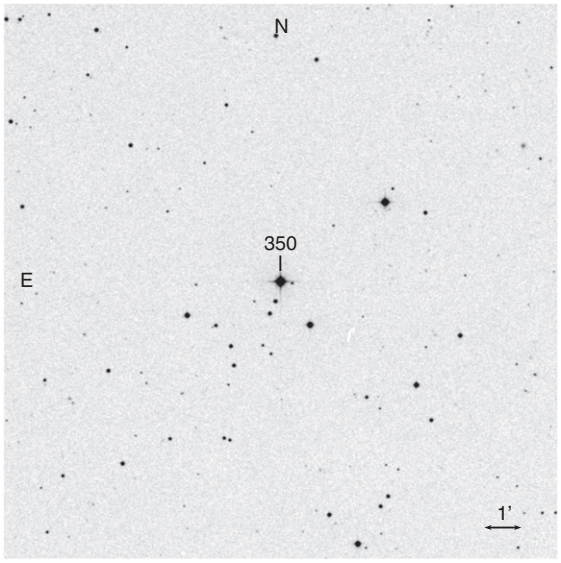

Figure 31. Field, 15′ on a side, of SA 29 SF2.

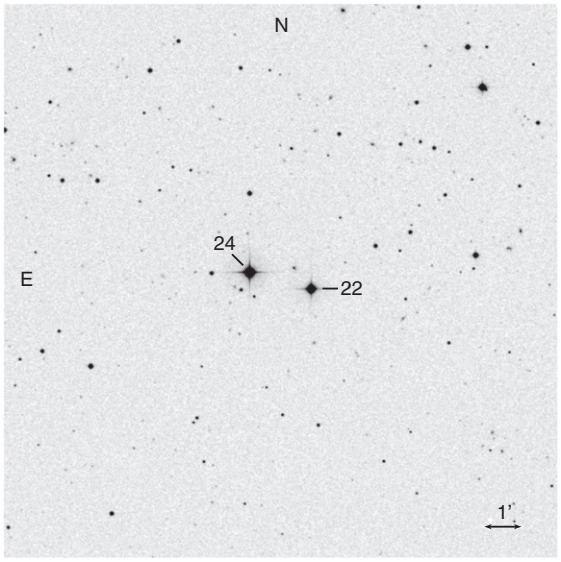

Figure 32. Field, 15′ on a side, of SA 29 SF3.

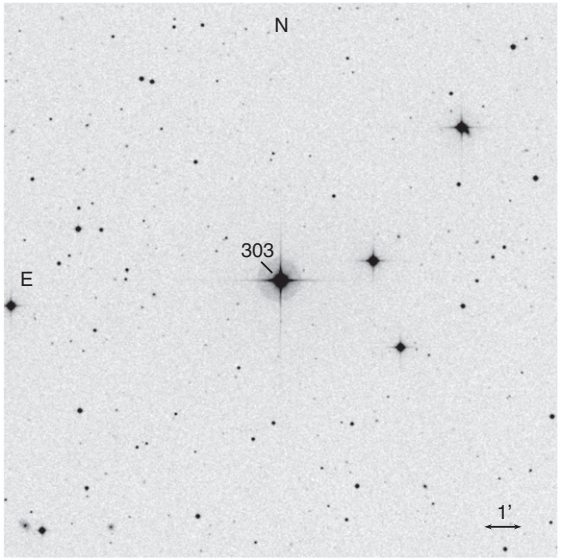

Figure 33. Field, 15′ on a side, of SA 29 SF4.

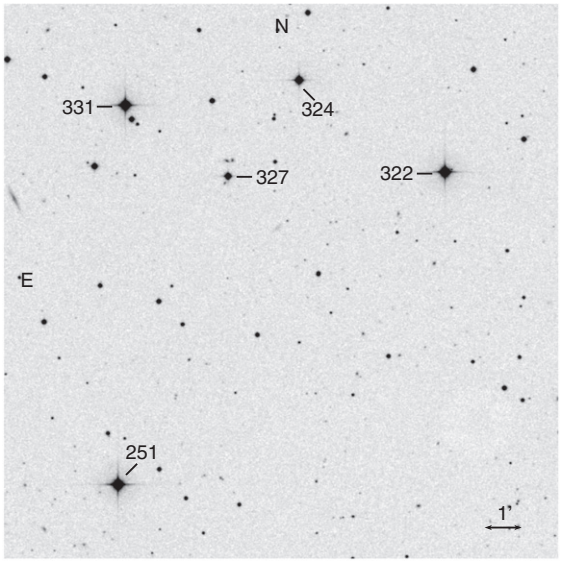

Figure 34. Field, 15′ on a side, of SA 29 SF5.

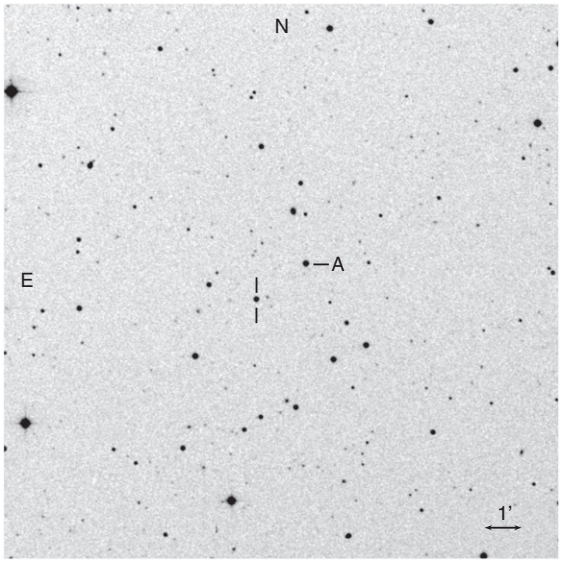

Figure 35. Field, 15′ on a side, of the sequence in the vicinity of the star PG 0943+521.

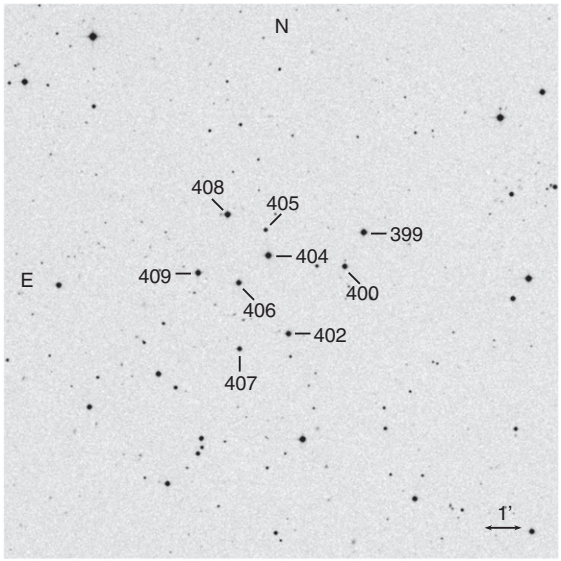

Figure 36. Field, 15′ on a side, of SA 29 SF6.

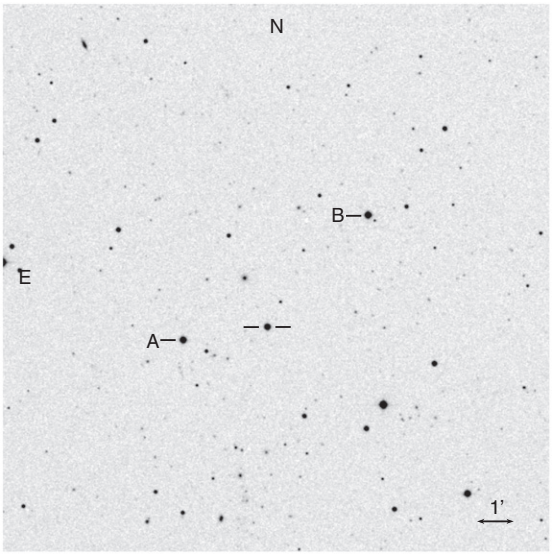

Figure 37. Field, 15′ on a side, of the sequence in the vicinity of the star GD 300.

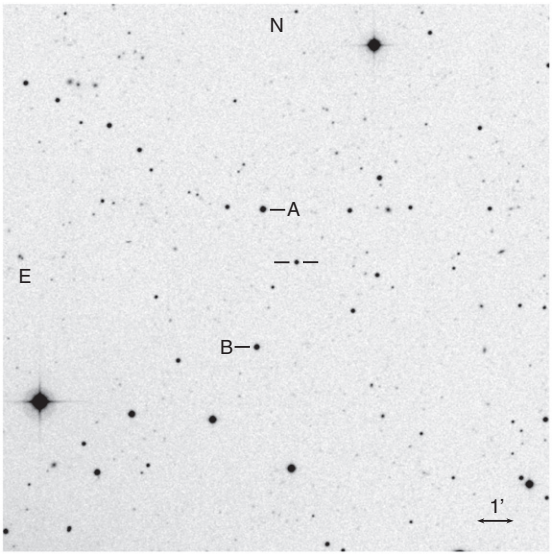

Figure 38. Field, 15′ on a side, of the sequence in the vicinity of the star KUV 348-07.

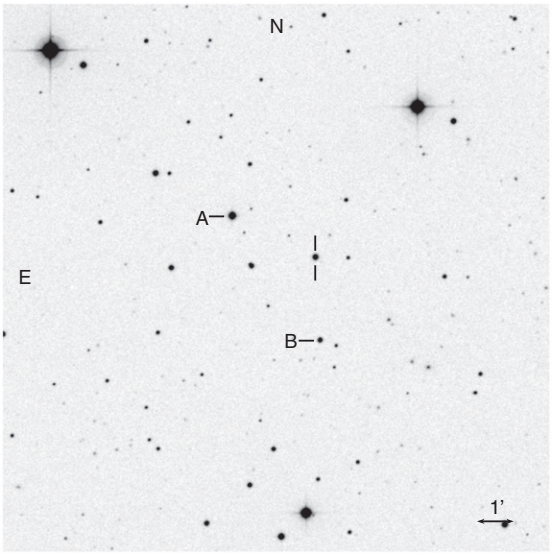

Figure 39. Field, 15′ on a side, of the sequence in the vicinity of the star KUV 348-13.

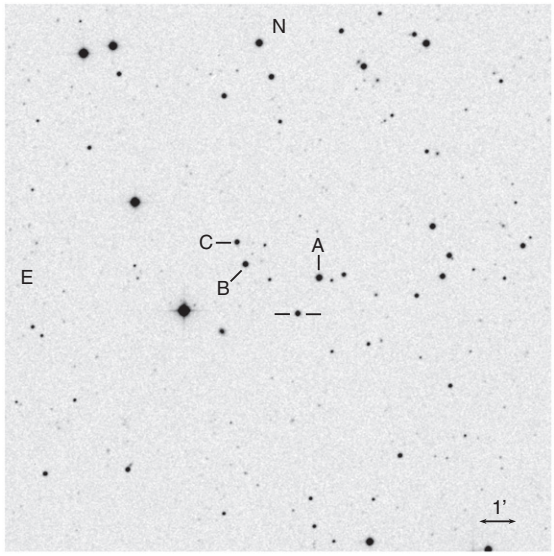

Figure 40. Field, 15′ on a side, of the sequence in the vicinity of the star KUV 348-14.

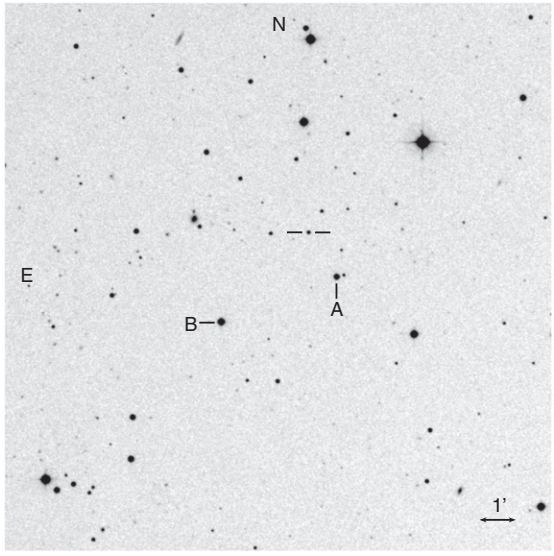

Figure 41. Field, 15′ on a side, of the sequence in the vicinity of the star GD 111.

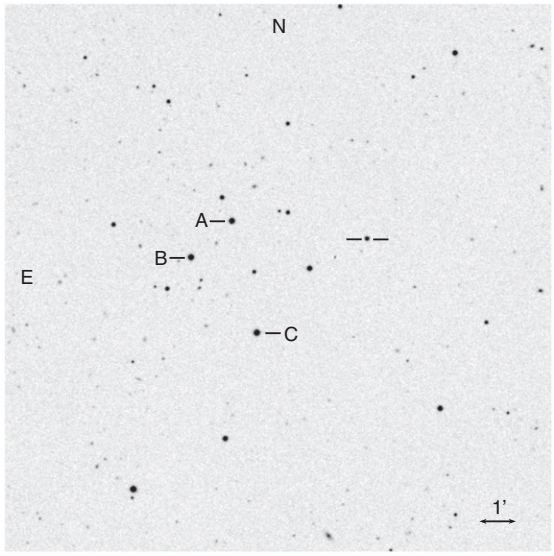

Figure 42. Field, 15′ on a side, of the sequence in the vicinity of the star GD 310.

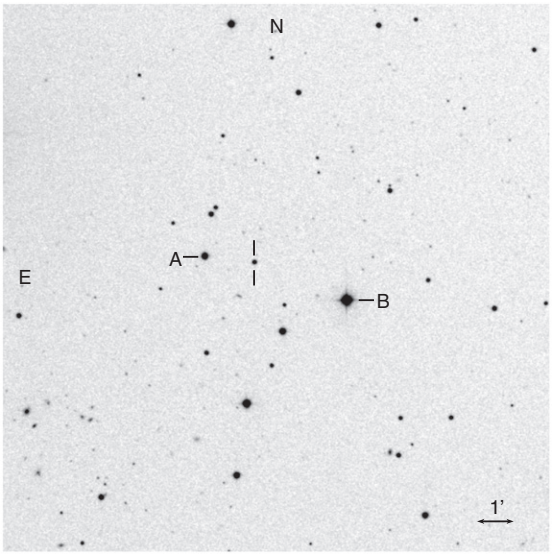

Figure 43. Field, 15′ on a side, of the sequence in the vicinity of the star PG 1126+469.

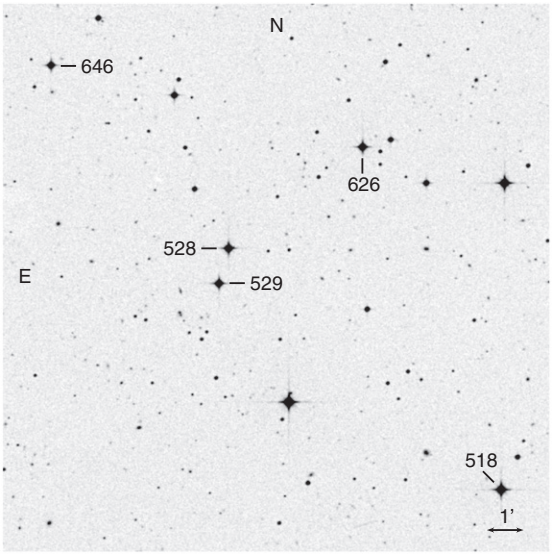

Figure 44. Field, 15′ on a side, of SA 103 SF1.

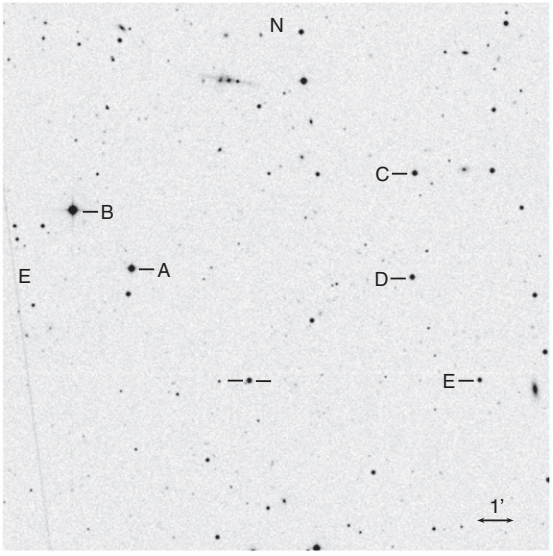

Figure 45. Field, 15′ on a side, of the sequence in the vicinity of the star GD 314.

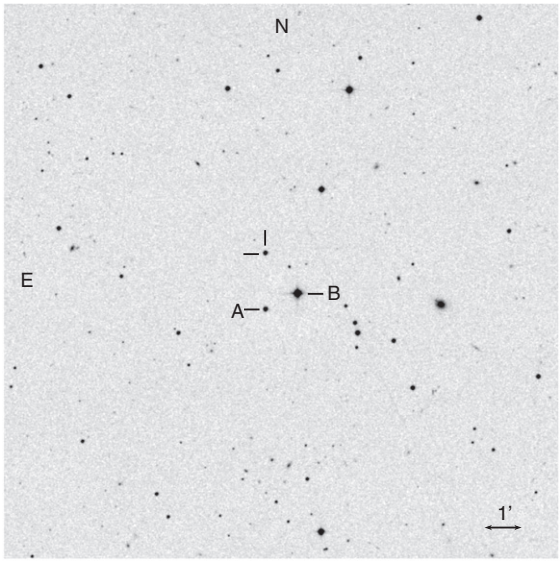

Figure 46. Field, 15′ on a side, of the sequence in the vicinity of the star PG 1210+533.

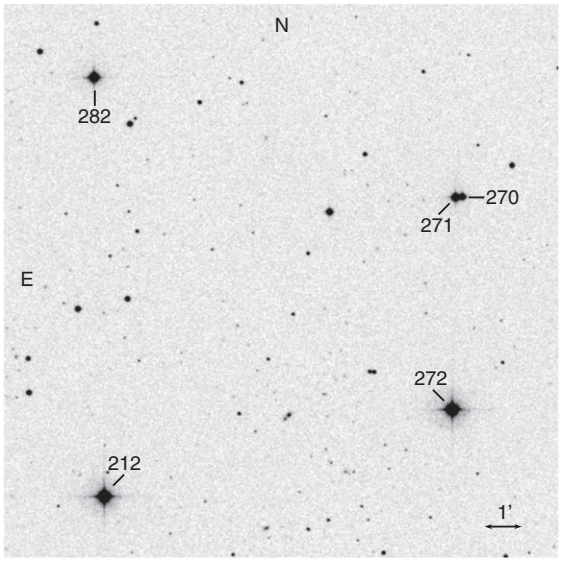

Figure 47. Field, 15′ on a side, of SA 32 SF1.

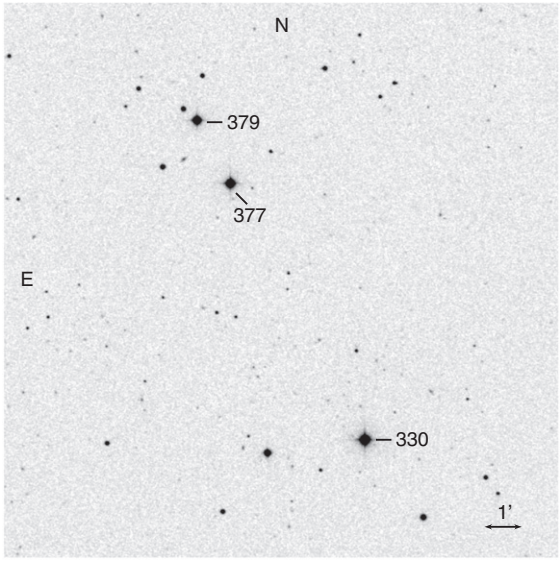

Figure 48. Field, 15′ on a side, of SA 32 SF2.

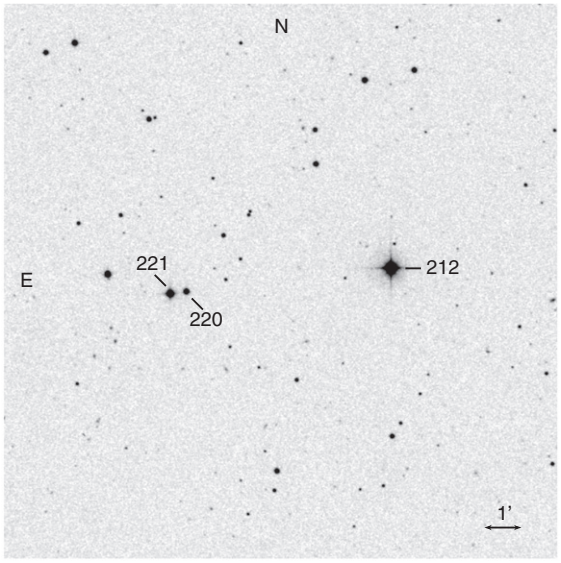

Figure 49. Field, 15′ on a side, of SA 32 SF3.

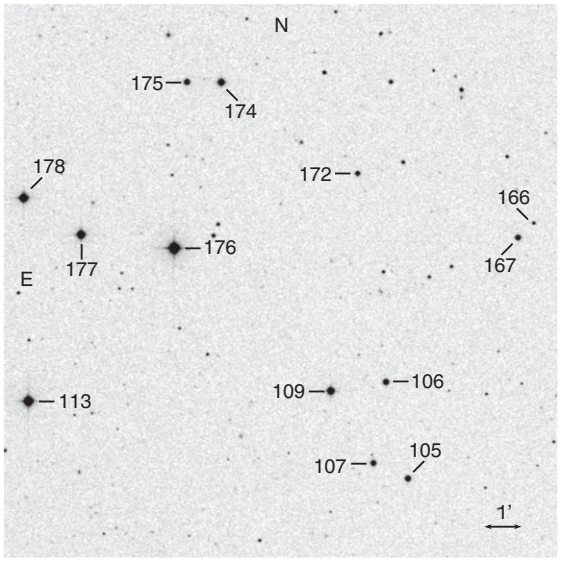

Figure 50. Field, 15′ on a side, of SA 32 SF4.

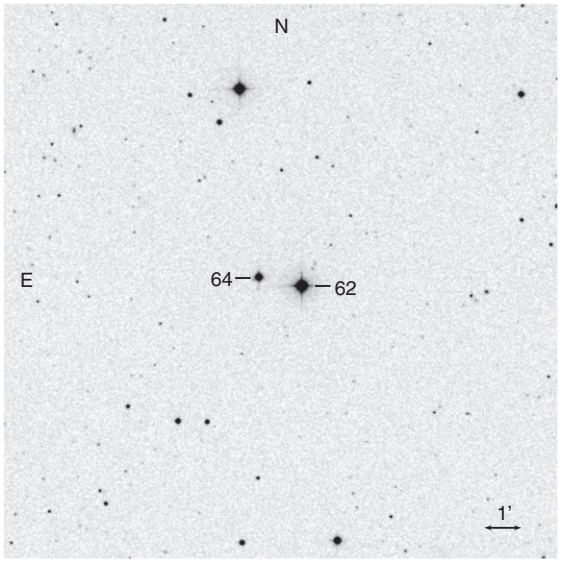

Figure 51. Field, 15′ on a side, of SA 32 SF5.

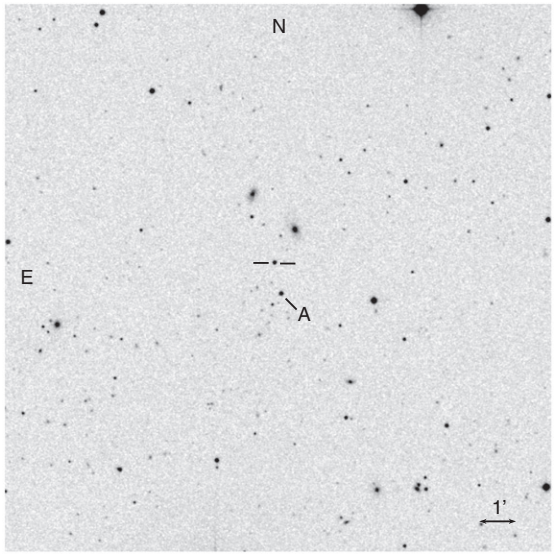

Figure 52. Field, 15′ on a side, of the sequence in the vicinity of the star PG 1314+442.

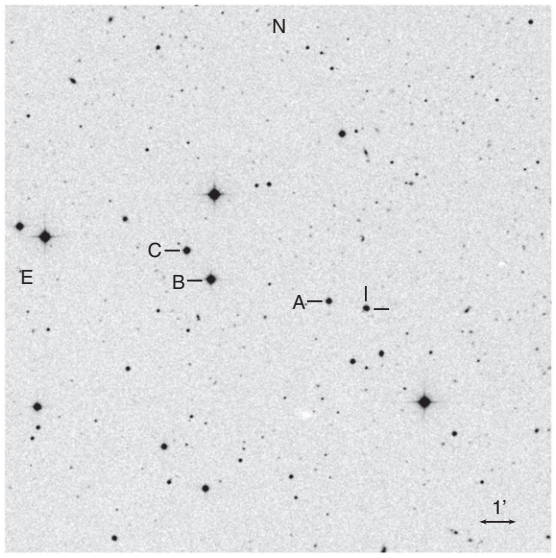

Figure 53. Field, 15′ on a side, of the sequence in the vicinity of the star GD 325.

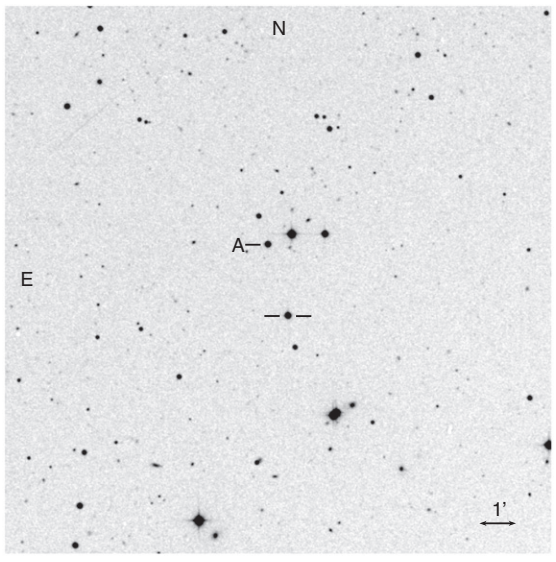

Figure 54. Field, 15′ on a side, of the sequence in the vicinity of the star PG 1343+578.

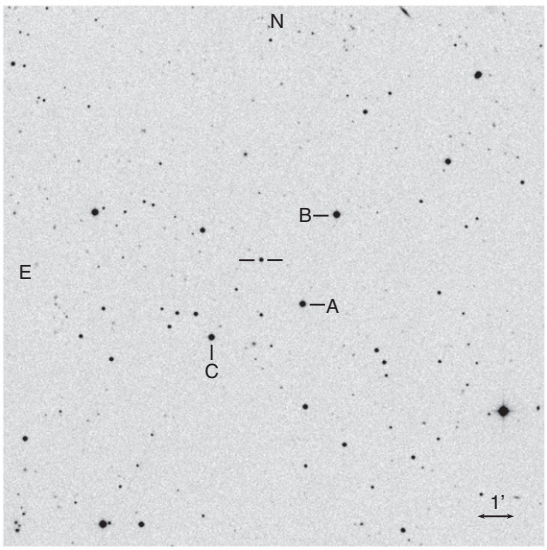

Figure 55. Field, 15′ on a side, of the sequence in the vicinity of the star GD 336.

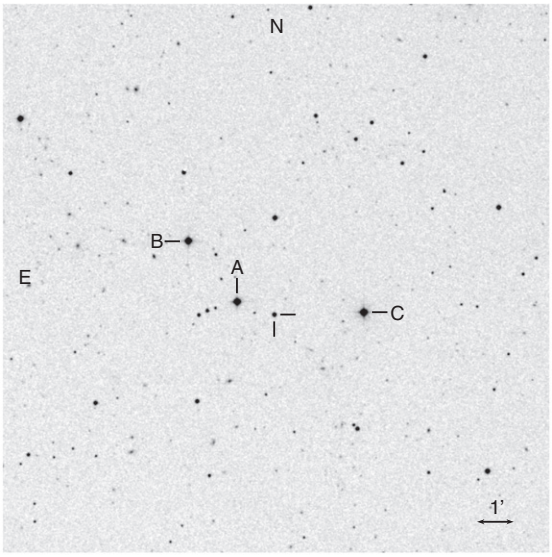

Figure 56. Field, 15′ on a side, of the sequence in the vicinity of the star PG 1430+427.

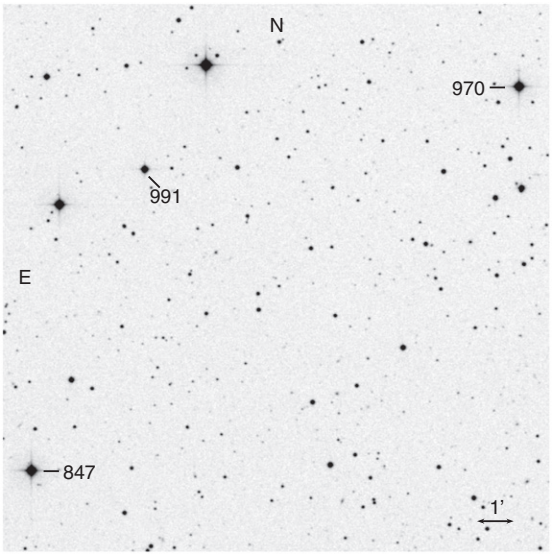

Figure 57. Field, 15′ on a side, of SA 107 SF4.

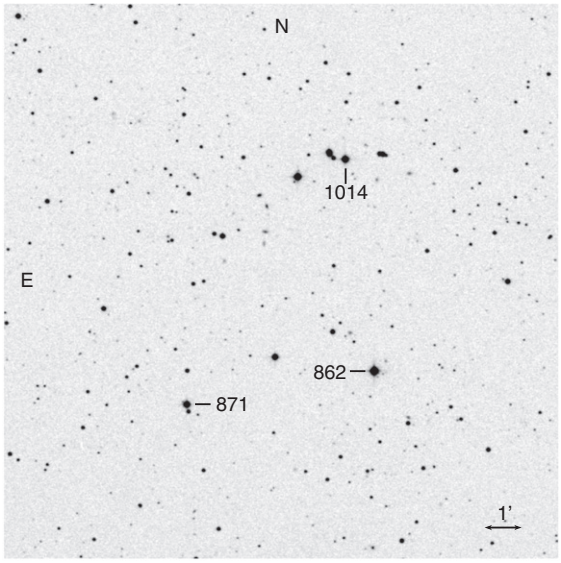

Figure 58. Field, 15′ on a side, of SA 107 SF5.

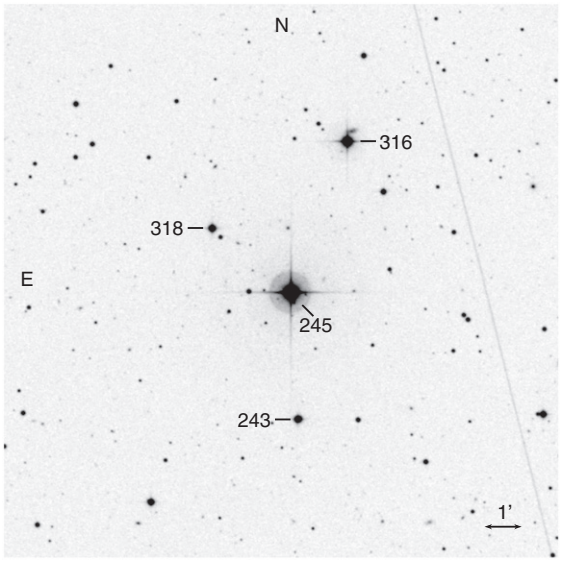

Figure 59. Field, 15′ on a side, of SA 35 SF1.

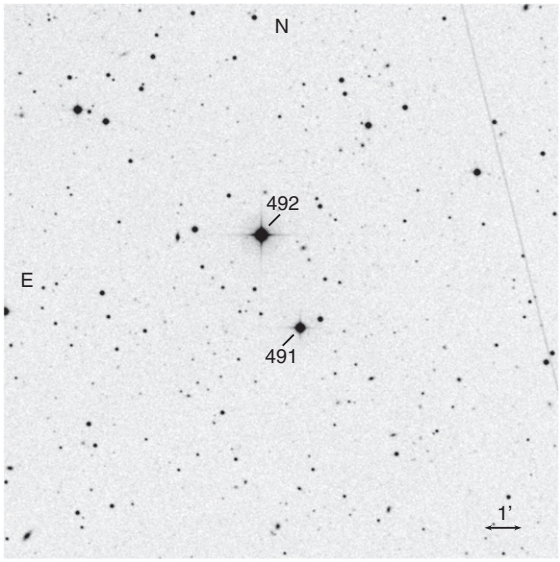

Figure 60. Field, 15′ on a side, of SA 35 SF2.

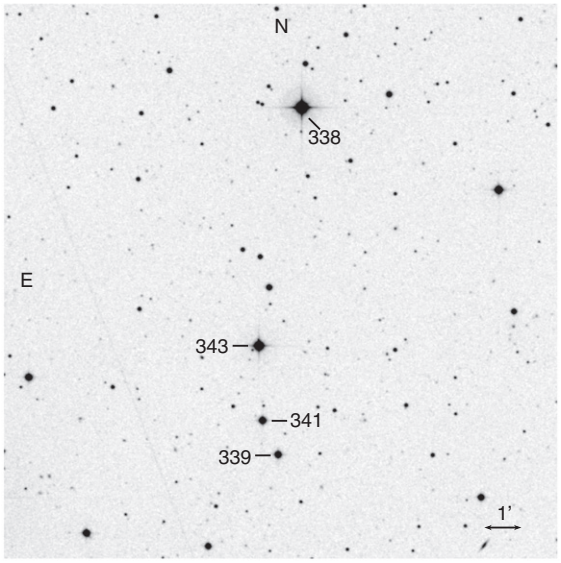

Figure 61. Field, 15′ on a side, of SA 35 SF3.

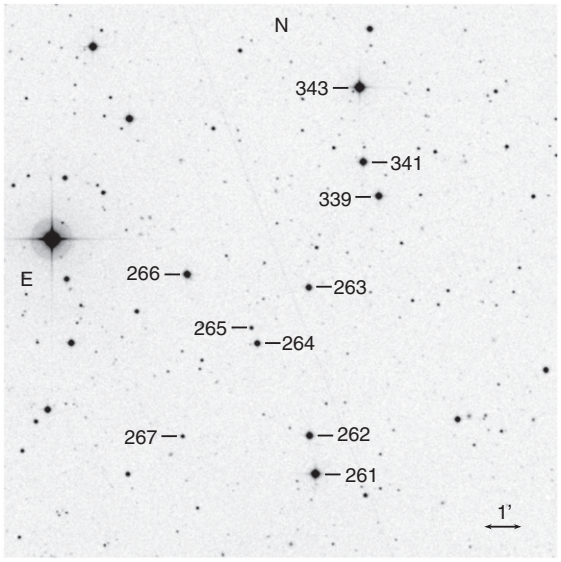

Figure 62. Field, 15′ on a side, of SA 35 SF4.

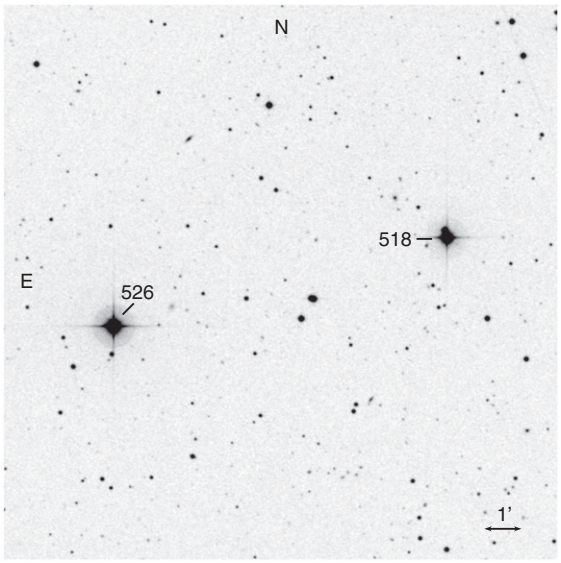

Figure 63. Field, 15′ on a side, of SA 35 SF5.

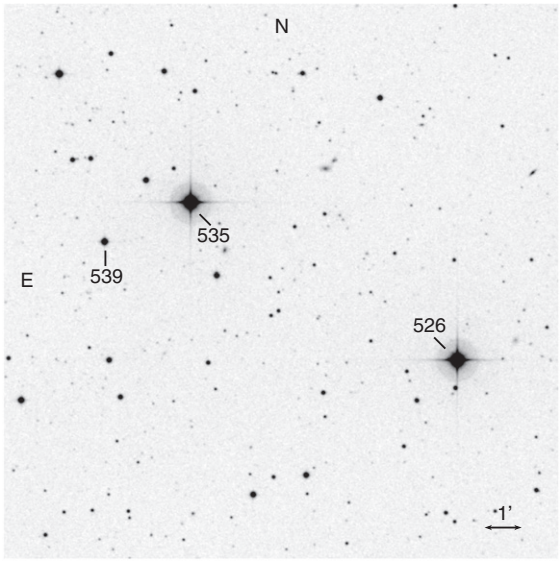

Figure 64. Field, 15′ on a side, of SA 35 SF6.

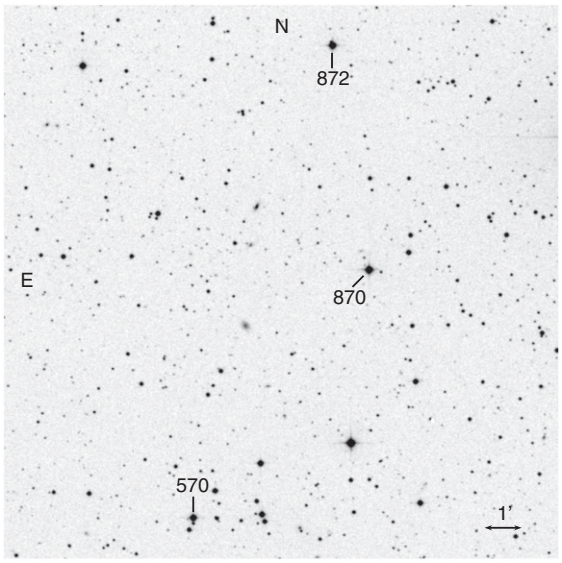

Figure 65. Field, 15′ on a side, of SA 108 SF1.

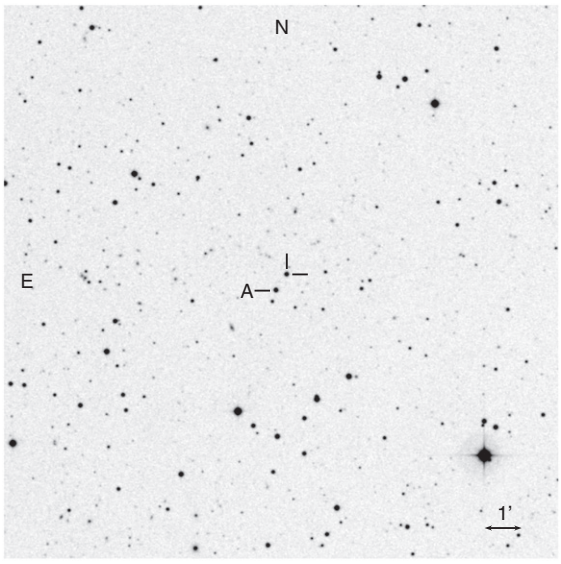

Figure 66. Field, 15′ on a side, of the sequence in the vicinity of the star KUV 433-03.

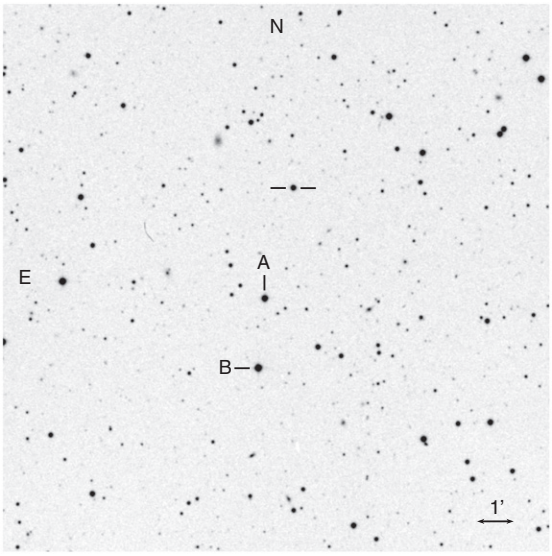

Figure 67. Field, 15′ on a side, of the sequence in the vicinity of the star GD 358.

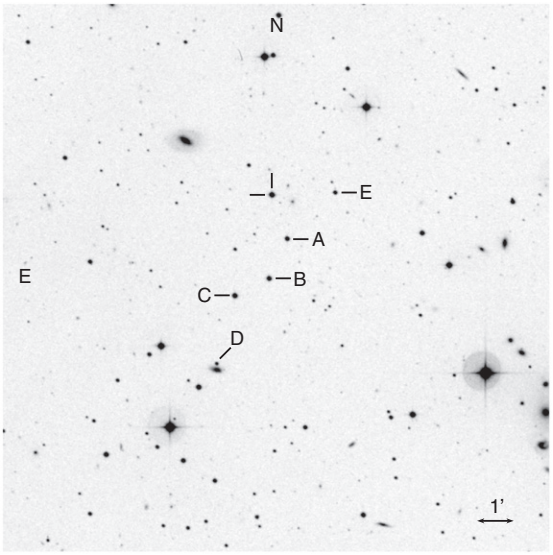

Figure 68. Field, 15′ on a side, of the sequence in the vicinity of the star PG 1648+536.

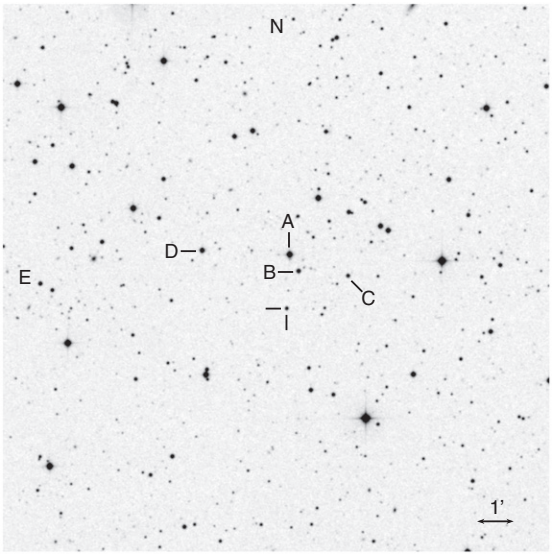

Figure 69. Field, 15′ on a side, of the sequence in the vicinity of the star GD 363.

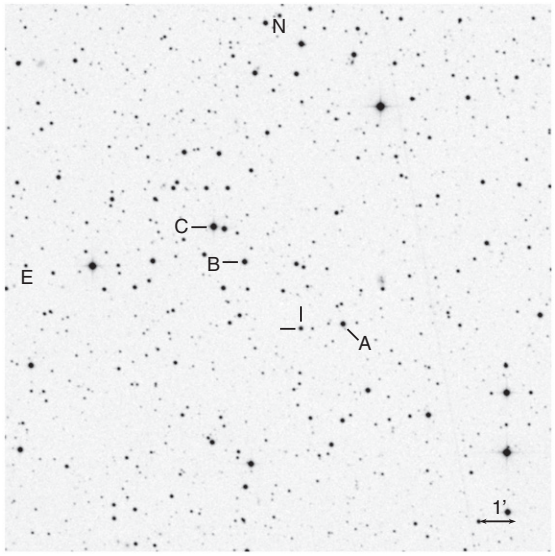

Figure 70. Field, 15′ on a side, of the sequence in the vicinity of the star GD 378.

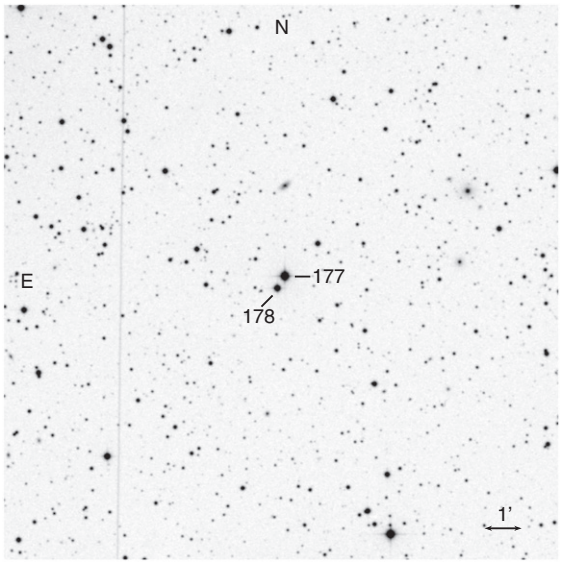

Figure 71. Field, 15′ on a side, of SA 38 SF1.

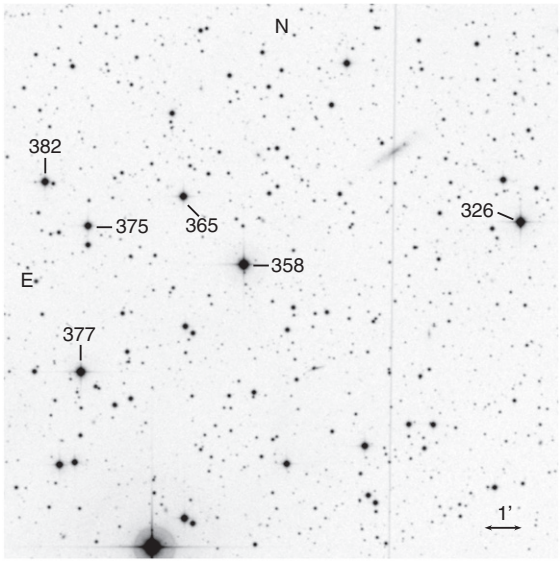

Figure 72. Field, 15′ on a side, of SA 38 SF2.

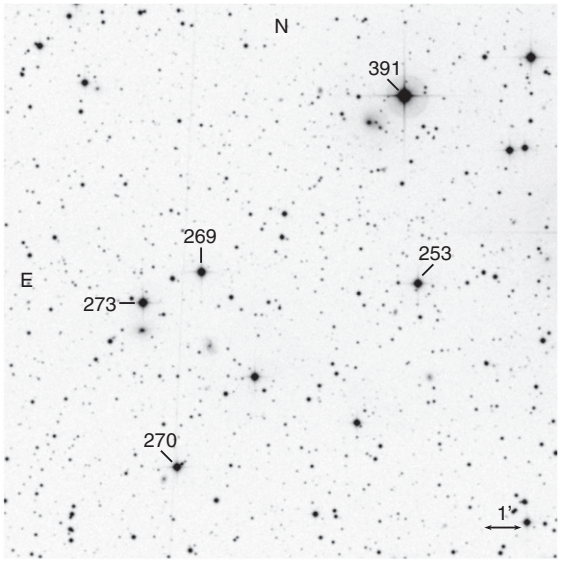

Figure 73. Field, 15′ on a side, of SA 38 SF3.

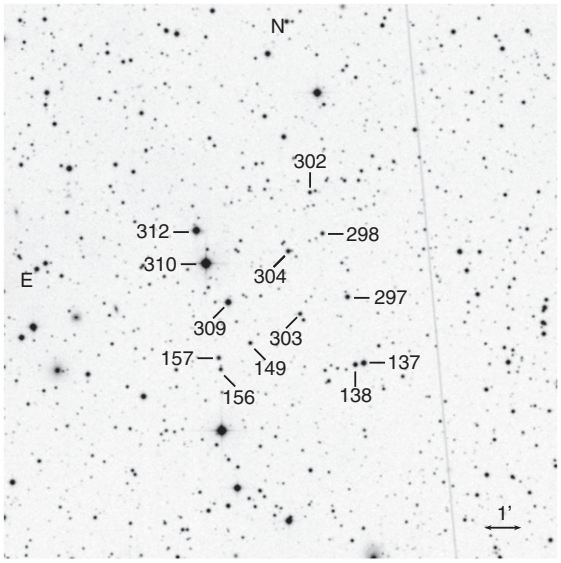

Figure 74. Field, 15′ on a side, of SA 38 SF4.

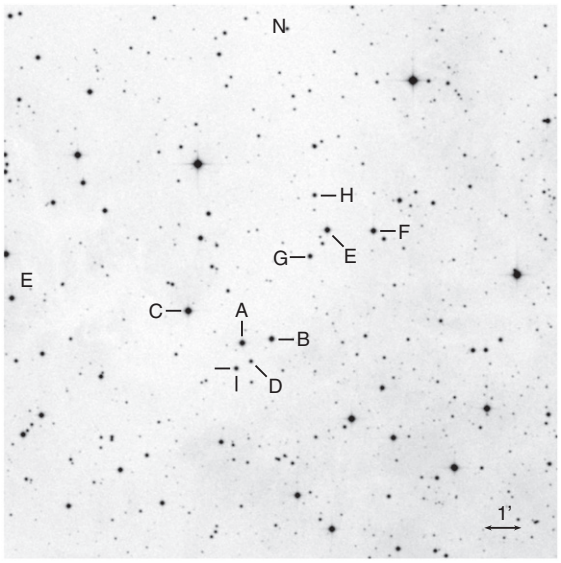

Figure 75. Field, 15′ on a side, of the sequence in the vicinity of the star GD 391.

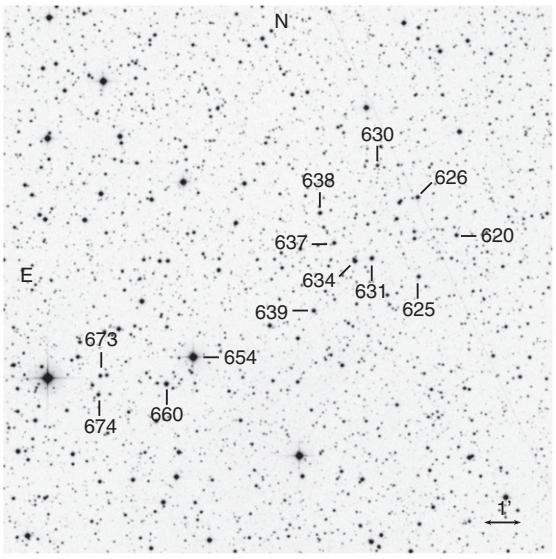

Figure 76. Field, 15′ on a side, of SA 41 SF1.

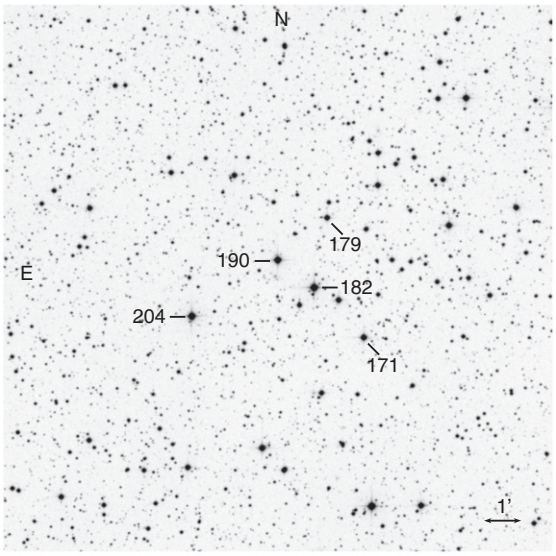

Figure 77. Field, 15′ on a side, of SA 41 SF2.

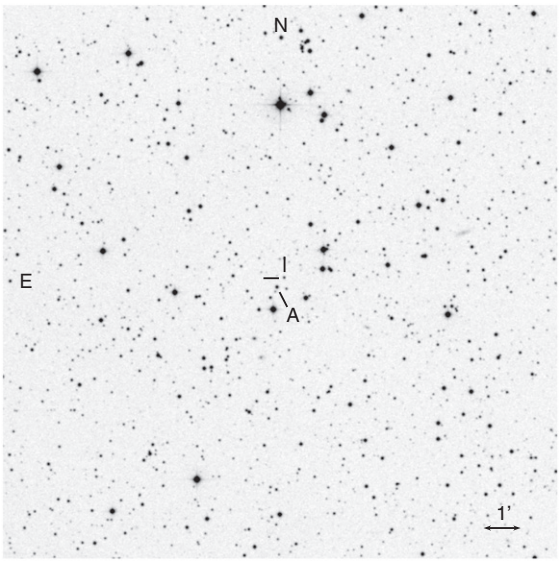

Figure 78. Field, 15′ on a side, of the sequence in the vicinity of the star GD 405.

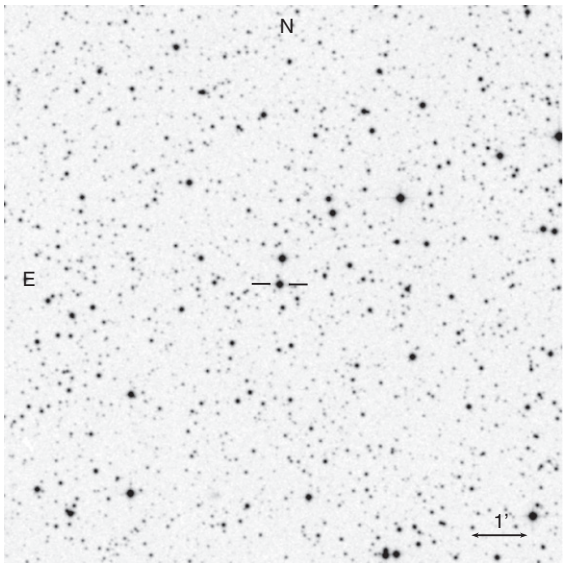

Figure 79. Field, 10′ on a side, of GD 410.

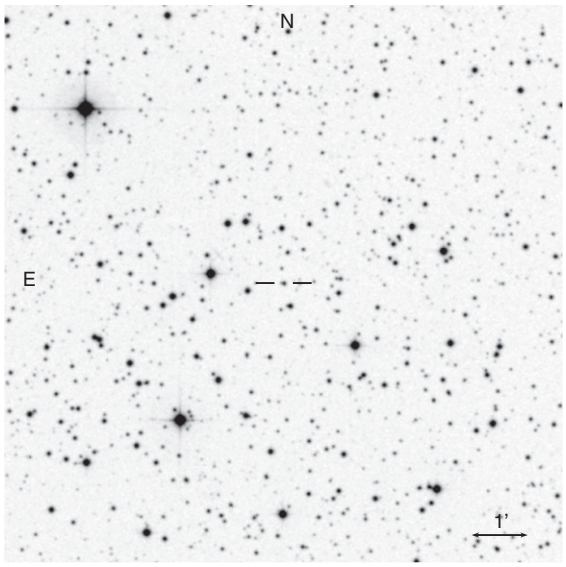

Figure 80. Field, 10′ on a side, of GD 273.

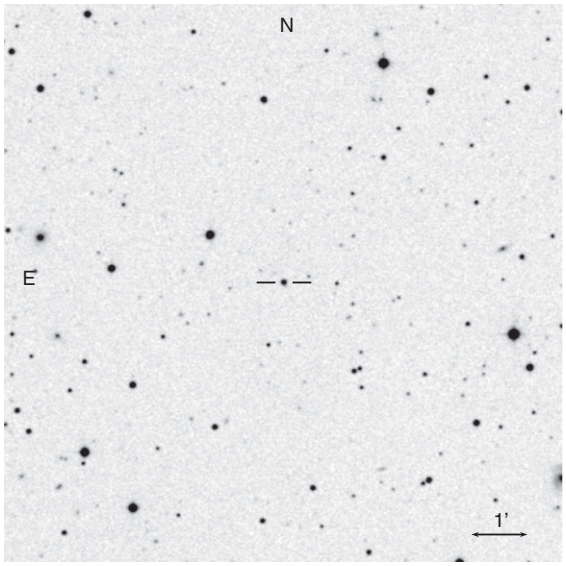

Figure 81. Field, 10′ on a side, of GD 11.

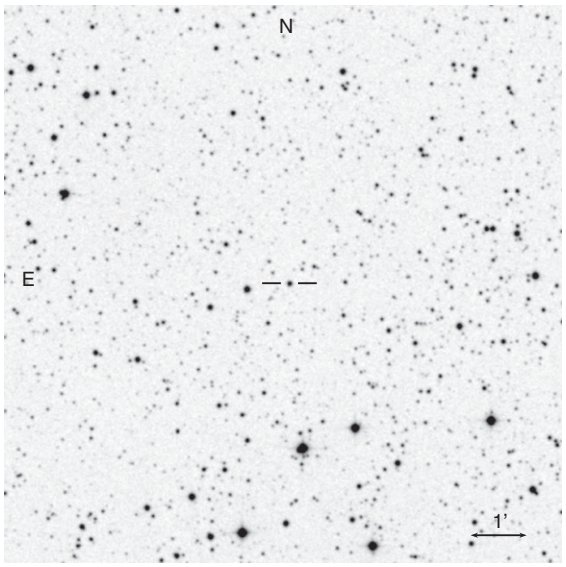

Figure 82. Field, 10′ on a side, of GD 418.

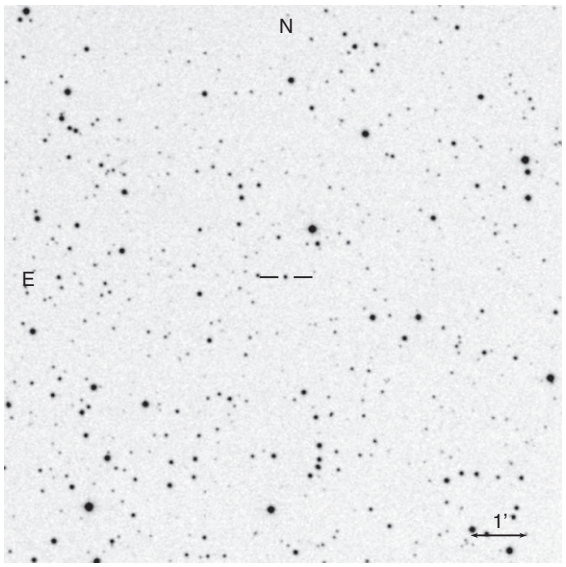

Figure 83. Field, 10′ on a side, of GD 276.

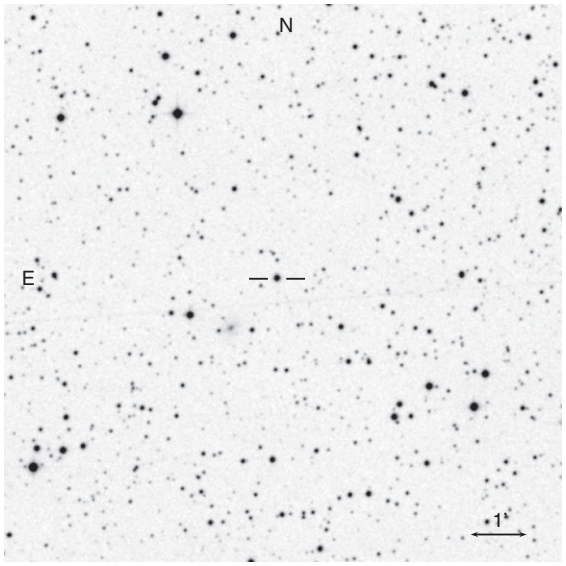

Figure 84. Field, 10′ on a side, of GD 281.

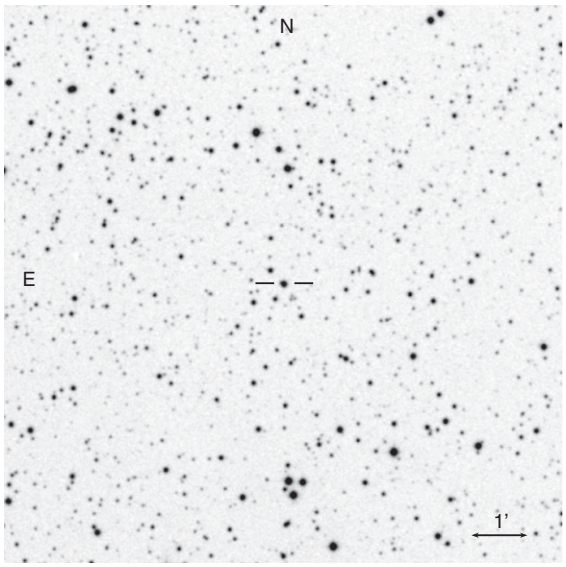

Figure 85. Field, 10′ on a side, of GD 283.

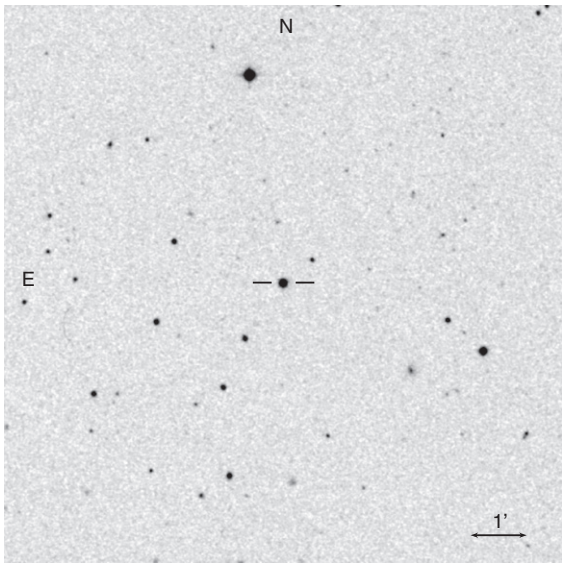

Figure 88. Field, 10′ on a side, of KUV 352-09.

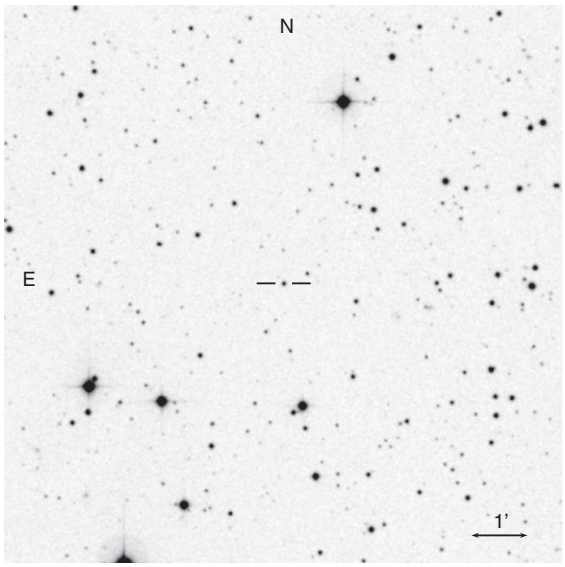

Figure 86. Field, 10′ on a side, of GD 38.

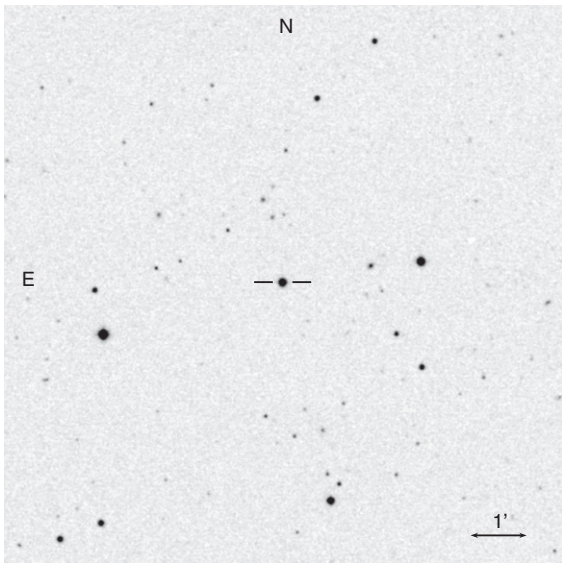

Figure 89. Field, 10′ on a side, of GD 153.

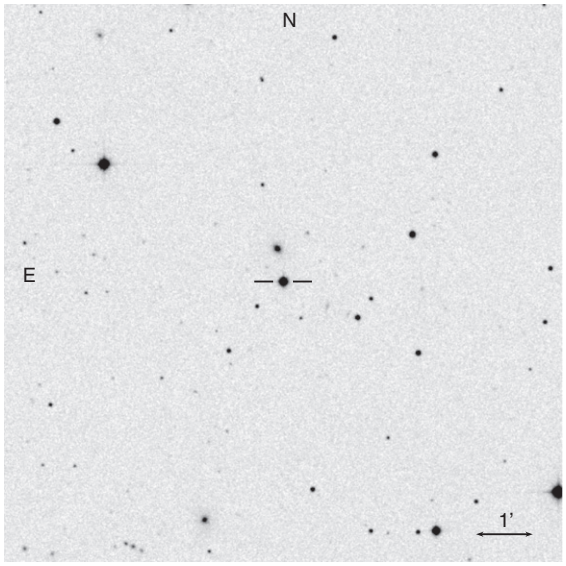

Figure 87. Field, 10′ on a side, of GD 299.

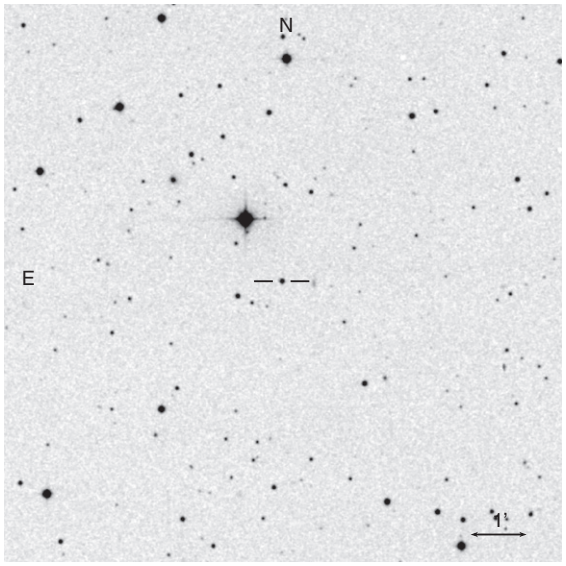

Figure 90. Field, 10′ on a side, of GD 251.

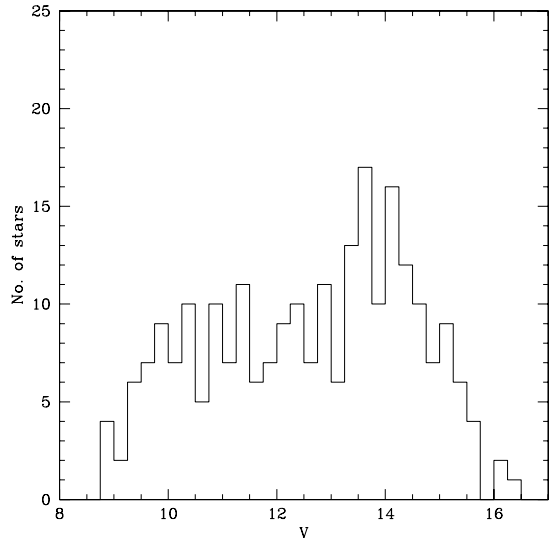

Figure 91. Magnitude distribution for the standard stars listed in Table 2 with five or more measures in intervals of 0.25 V mag.

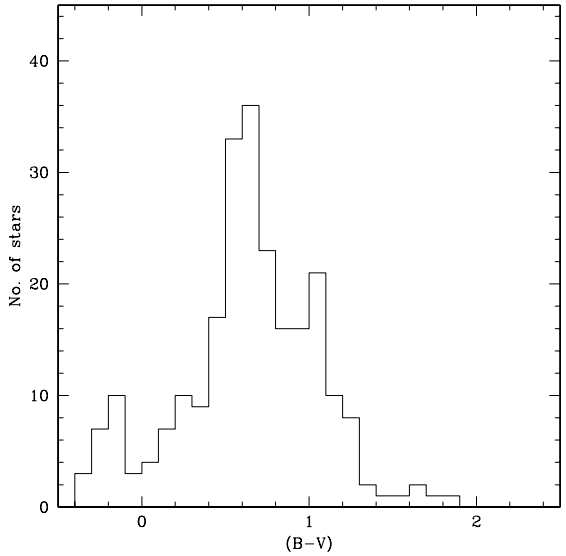

Figure 92. Distribution in $(B - V)$ color index for the standard stars listed in Table 2 with five or more measures in intervals of 0.1 mag.

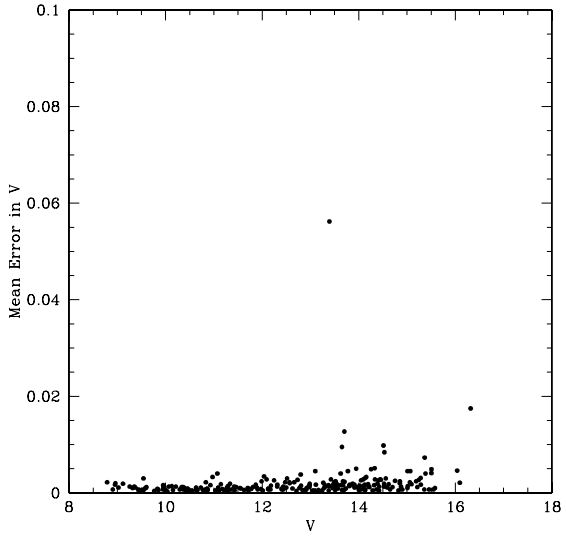

Figure 93. Mean error of the mean of a single observation in V for the standard stars as a function of V.

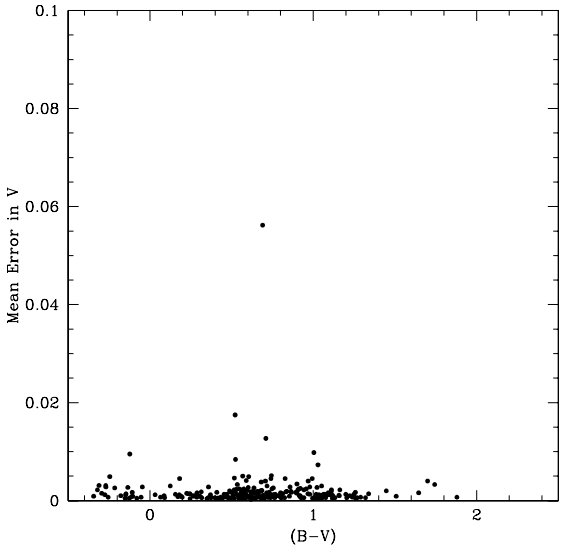

Figure 94. Mean error of the mean of a single observation in V for the standard stars as a function of $(B - V)$.

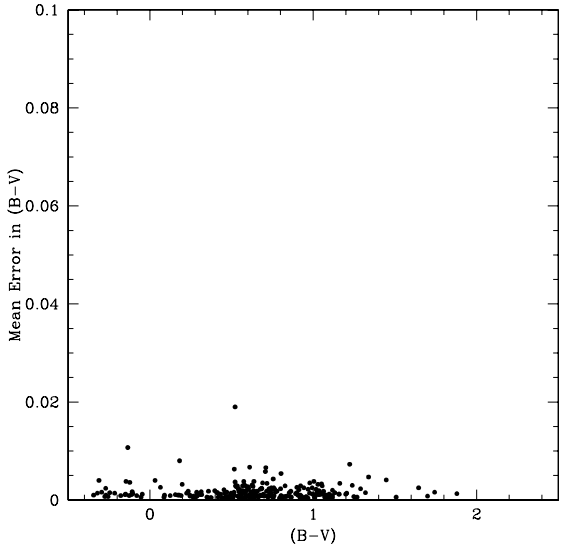

Figure 95. Mean error of the mean of a single observation in $(B - V)$ for the standard stars as a function of $(B - V)$.

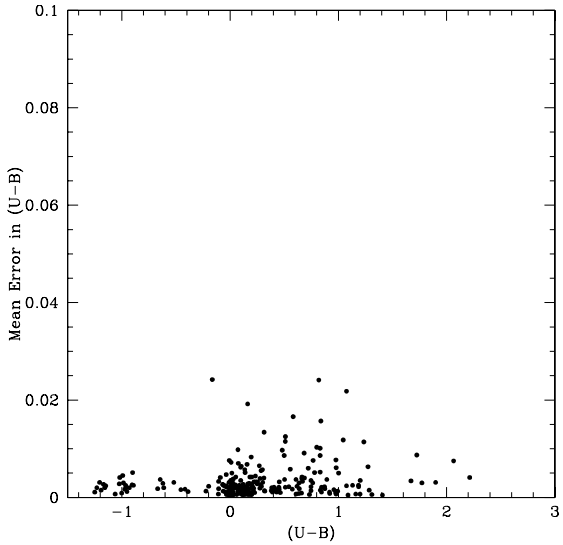

Figure 96. Mean error of the mean of a single observation in $(U - B)$ for the standard stars as a function of $(U - B)$.

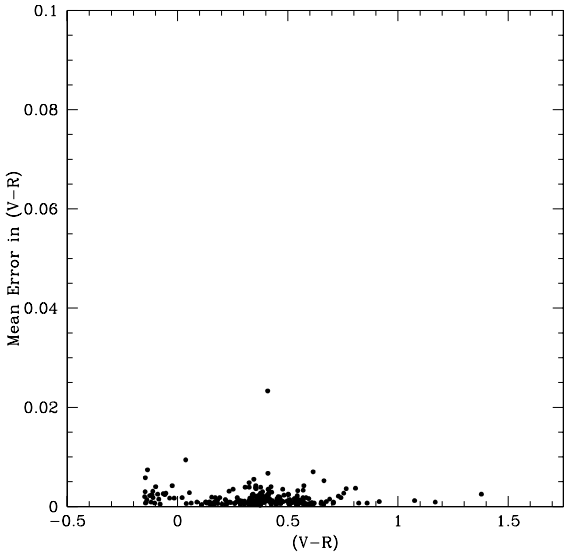

Figure 97. Mean error of the mean of a single observation in $(V - R)$ for the standard stars as a function of $(V - R)$.

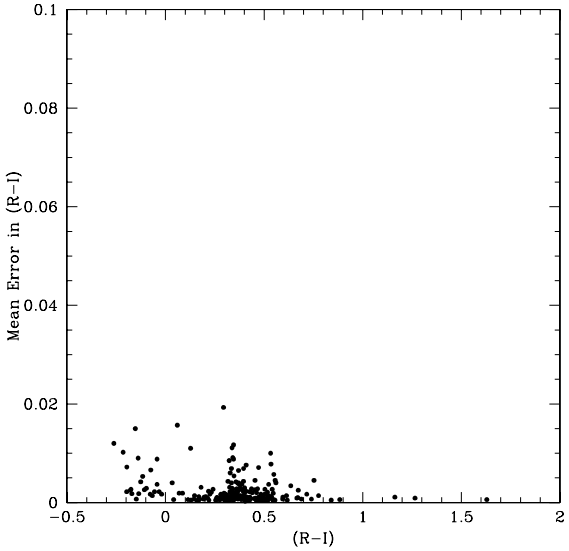

Figure 98. Mean error of the mean of a single observation in $(R - I)$ for the standard stars as a function of $(R - I)$.

Figures 100 and 101 illustrate the $[(U - B), (B - V)]$ and $[(V-R), (R-I)]$ color–color plots for all stars with five or more measures each. Two stars stand off the main sequence in the $[(V-R), (R-I)]$ color–color plot. The star at $(V-R) = +0.234$ and $(R - I) = +0.776$ is GD 325, a white dwarf and suspected variable star (NSV 19892). The other outlier star is KUV 348-07, with colors $(V - R) = +0.252$ and $(R - I) = +0.560$. Actually, KUV 348-07 is a Seyfert 1 galaxy.

4. COMMENTS ON INDIVIDUAL STARS

A number of the stars in Table 2 are of interest for several reasons. Hence, additional references are given for selected stars in this section. Most of these stars have additional identifications. Therefore, a description follows next of the stellar nomenclature the reader will encounter. These different star naming systems and catalogs are given in alphabetical order. Further information can be located via recourse to VizieR and SIMBAD.

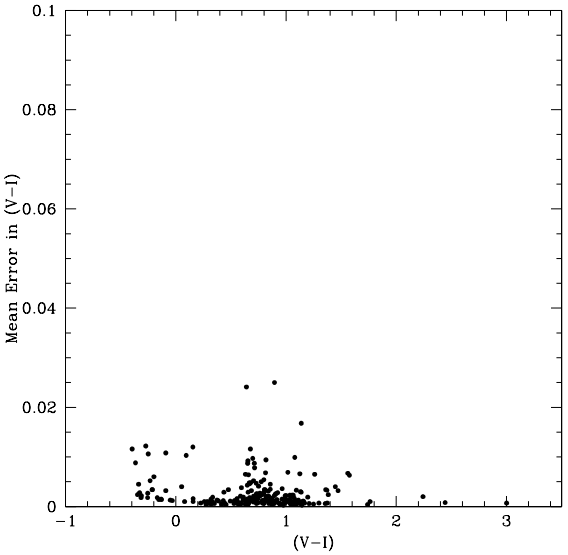

Figure 99. Mean error of the mean of a single observation in $(V - I)$ for the standard stars as a function of $(V - I)$.

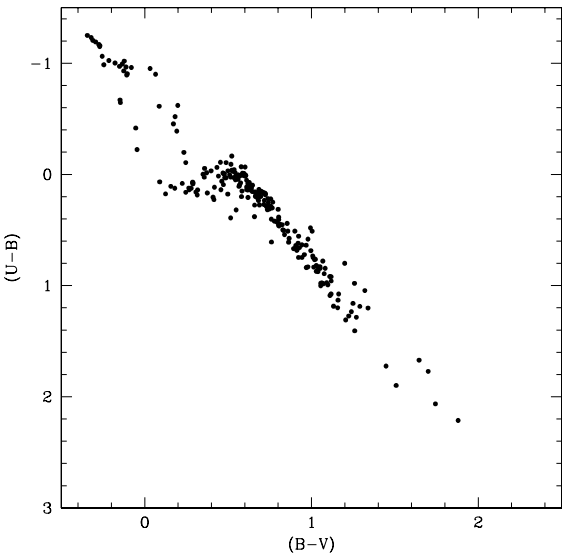

Figure 100. $[(U - B), (B - V)]$ color–color plot for stars measured in this paper with five or more observations.

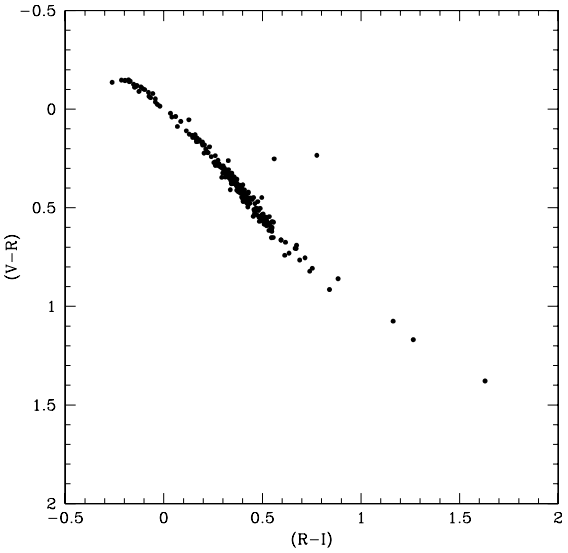

Figure 101. $[(V - R), (R - I)]$ color–color plot for stars measured in this paper with five or more observations.

AAVSO: The American Association of Variable Star Observers maintains databases which include identifications, positions, charts, and for many stars, decades long photometric data, all available to the astronomical public.

ADS: An Aitken double star (Aitken 1932).

BD: The Bonner Durchmusterung is a multiple volume star catalog published between 1852–1859 by Argelander et al. (1859, 1861, 1862). It is a visual survey of stars in declination zones from +89 to −01 deg. The Sudliche Bonner Durchmusterung covers the declination range from −02 to −21 (Schoenfeld 1886).

BPM: The Bruce Proper Motion survey was published by W. J. Luyten in the University of Minnesota Observatory Publications, in 1963 (Luyten 1963a, 1963b).

BPS: A catalog of candidate field horizontal-branch stars was published by Beers et al. (1988).

Feige (F) stars: A search for faint blue stars (Feige 1958, 1959).

G: Proper motion stars published by Giclas and colleagues in the Lowell Observatory Bulletins (Giclas et al. 1971, 1978).

GCRV: General Catalogue of Stellar Radial Velocities (Wilson 1953).

GD: A list of white dwarf suspects compiled by Giclas and colleagues in Lowell Obs. Bulletins (Giclas et al. 1980).

GJ: The nomenclature GJ pertains to stars in the Gliese & Jahreiß (1979) catalog of nearby stars.

GSC: The Hubble Space Telescope Guide Star Catalog (GSC) acronym first appeared in Lasker et al. (1990).

HD: The Henry Draper Catalogue was published in the Annals of the Harvard College Observatory, vols. 91-99 in the time interval 1918–1924 (Campbell & Pickering 1913; Cannon & Pickering 1918a, 1918b, 1919a, 1919b, 1920, 1921, 1922, 1923, 1924).

IDS: The Index Catalogue of Double stars was published in 1963 (Jeffers et al. 1963).

IRAS: Suggest perusal of http://cds.u-strasbg.fr/cgi-bin/Dic-Simbad?IRAS for origin and many locations of information concerning IRAS nomenclature.

KUV: The name originated in a paper describing a search for ultraviolet-excess objects (Noguchi et al. 1980); see Kondo et al. (1982) for photometry.

Luyten devised several numbering systems for the white dwarf and high proper motion stars that he discovered.

1. *LB*: Luyten blue stars; reference summary in http://cds.u-strasbg.fr/cgi-bin/Dic-Simbad?LB.
2. *LFT*: A catalog of stars whose proper motions were greater than 0.″5 annually (Luyten 1955).
3. *LHS*: A summary catalog of stars whose proper motions were greater than 0.″5 annually (Luyten 1976, 1979a).
4. *LTT*: A catalog of stars in the southern hemisphere whose proper motions exceed 0.″2 annually (Luyten 1957).
5. *NLTT*: The New Luyten Two Tenths catalog (Luyten 1979b, 1979c, 1980a, 1980b; Luyten & Hughes 1980) contains stars whose proper motions are greater than 0.″2 annually.

NSV: The NSV terminology began with the New Catalog of Suspected Variable Stars (Kukarkin & Kholopov 1982). One can now most easily access variable and suspected variable star information by entering the Sternberg Astronomical Institute's webpage,[4] clicking on the "GCVS Research Group" (General Catalog of Variable Stars), and then going to the appropriate catalog.

NSVS: The Northern Sky Variability Survey (Woźniak et al. 2004).

PG: Palomar-Green stars, a study of ultraviolet-excess objects (Green et al. 1986).

ROSAT: The ROSAT data came from the Roentgen Satellite, an X-ray observatory; the several ROSAT references may be found at http://cds.u-strasbg.fr/cgi-bin/Dic-Simbad?RE.

Ross: The Ross star numbers arise from a series of papers in the Astronomical Journal by F.E. Ross on high proper motion stars. The papers appeared in the time interval 1925–1939.

SA: The Kapteyn Selected Areas (SAs) were defined in 1915 and were distributed around the sky in declination zones separated by 15 deg as a basis for early galactic structure studies (reviewed by Blaauw & Elvius 1965). Coordinates and magnitudes for stars in these 206 selected areas were published by Pickering & Kapteyn (1918) and Pickering et al. (1923, 1924). Charts for the SA stars have been published by Brun & Vehrenberg (1965).

SDSS: The Sloan Digital Sky Survey, which contains some fifty million galaxies, quasars, stars, and other objects (Schneider et al. 2002), plus later data releases.

TYC: The Tycho-2 catalog of the 2.5 million brightest stars (Høg et al. 2000).

WD: The WD numbering system exists for white dwarf stars. Excellent online sources of information for white dwarf stars include J. Holberg's website[5] and G. McCook and E. Sion's website.[6] A print description of the latter is in McCook & Sion (1999).

Wolf: Wolf star numbers are stars cataloged by M. Wolf in his studies of high proper motion stars. These papers appeared in the Astronomische Nachrichten in the time interval 1919–1931.

GD 2 [00:07:32; +33:17:28] white dwarf
GD 410 [00:35:25; +60:58:11] white dwarf
GD 8 [00:39:52; +31:32:29] white dwarf
SA 20-245 [00:44:21; +45:55:13] = BD+45 188
SA 20-39 [00:45:34; +45:36:48] = BD+44 156
SA 20-43 [00:45:42; +45:35:15] = BD+44 157
SA 20-297 [00:45:52; +45:53:45] = BD+45 192
SA 20-446 [00:46:48; +46:10:50] = BD+45 197
SA 20-456 [00:47:12; +46:10:57] = HD 4461 = BD+45 201
GD 273 [01:06:20; +56:04:57] white dwarf
GD 10 [01:06:54; +39:30:57] white dwarf

[4] http://www.sai.msu.su
[5] http://procyon.lpl.arizona.edu/WD/
[6] http://www.astronomy.villanova.edu/WDCatalog/index.html

GD 11 [01:09:23; +37:32:46] white dwarf
GD 275 [01:18:54; +52:27:14] white dwarf
GD 418 [01:23:24; +64:54:17] white dwarf
GD 276 [01:23:51; +47:47:15] white dwarf
GD 277 [01:29:24; +51:08:47] white dwarf
GD 13 [01:29:43; +42:28:18] white dwarf
GD 278 [01:30:58; +53:21:39] white dwarf
GD 421 [01:51:10; +67:39:32] white dwarf; NLTT 6125; ROSAT object (Pye et al. 1995)
GD 279H [01:51:56; +47 01 37] = GSC 03283-01238
GD 279B [01:52:02; +47:01:41] = TYC 3283-1242-1
GD 279 [01:52:03; +47:00:07] white dwarf; = GJ 3121
GD 281 [02:03:13; +54:48:29] white dwarf
GD 283 [02:35:31; +57:15:24] white dwarf
GD 38 [03:02:31; +38:01:00] white dwarf; = NLTT 9660 = WD 0259+378 = SDSS J030231.02+380058.7
SA 23-57 [03:44:59; +45:03:48] = IRAS 03415+4454
GD 61 [04:38:39; +41:09:32] white dwarf
GD 64 [04:57:23: +41:55:56] white dwarf; = NLTT 14208
SA 26-135 [06:42:59; +44:38:53] = HD 47881 = BD+44 1516
SA 26-234 [06:43:07; +44:50:33] = HD 47913 = BD+44 1517
SA 26-150 [06:43:37; +44:43:21] = HD 48028 = BD+44 1519
SA 26-58 [06:43:38; +44:25:11] = HD 48052 = BD+44 1520
SA 26-60 [06:43:42; +44:30:45] = HD 48051 = BD+44 1521
SA 26-172 [06:44:32; +44:34:06] = HD 48209 = BD+44 1524
SA 26-93 [06:45:13; +44:30:57] = IRAS 06415+4434 = TYC 2953-1709-1
GD 91 [08:30:09; +45 20 30] white dwarf; = LTT 12215 = Wolf 309
PG 0837+401B [08:40:58;+39 56 28] eclipsing binary; = NSVS 4818255
PG 0837+401 [08:41:01; +39:56:18] = KUV 345-28, an UV-excess object
KUV 345-30 [08:43:13; +39:44:50] white dwarf; = NSVS 4819428 = WD 0839+399 = PG 0839+399
PG 0846+558 [08:49:51; +55:35:15] white dwarf; an UV-emission source
GD 98 [08:57:30; +40:16:13] white dwarf; = NLTT 20587 = KUV 345-34 = PG 0854+405
GD 299 [09:38:20; +55:05:50] white dwarf; = PG 0934+554
SA 29-153 [09:41:34; +44:12:25] = HD 83697 = BD+44 1894 = GCRV 60807
SA 29-24 [09:42:58; +43:50:05] = BD+44 1898 = GCRV 60831
SA 29-303 [09:44:53; +44:25:08] = HD 84219 = BD+45 1757 = GCRV 60856
SA 29-322 [09:46:32; +44:22:33] = BD+45 1761 = GCRV 60867
PG 0943+521 [09:47:12; +51:54:09] dwarf nova; = ER UMa = AAVSO 0939+52. The single observation herein appears to have caught the star at a minimum (Ohshima et al. 2012)
SA 29-251 [09:47:22; +44:14:14] = BD+44 1904 = GCRV 60882
GD 300 [09:55:19; +51:36:59] white dwarf; = PG 0952+519
KUV 348-07 [09:56:52; +41:15:22] Seyfert 1 Galaxy; quasar; = PG 0953+415; large number of names in SIMBAD
KUV 348-13 [10:03:54; +40:34:18] = PG 1000+408 = BPS BS 16469-0043
KUV 348-14 [10:05:10; +38:46:15] an UV-emission source; also appears to be BPS BS 16469-0058 and KUV 10022+3901
GD 111 [10:05:49; +42:48:03] white dwarf
GD 310 [11:29:11; +38:08:52] white dwarf; = Feige 43 = PG 1126+384 = KUV 11265+3825
PG 1126+469 [11:29:29; +46:35:32] an UV-emission object
KUV 352-09 [11:36:24; +39:29:34] = BPS BS 17140-0072
GD 314 [12:04:39; +60:32:08] white dwarf; = Feige 55 = PG 1202+608
PG 1210+533 [12:13:25; +53:03:57] white dwarf; = LB 2272
SA 32-272 [12:55:10; +44:17:29] = HD 112297 = BD+45 2070 = GCRV 63698
SA 32-330 [12:55:26; +44:33:36] = BD+45 2071
SA 32-377 [12:55:45; +44:40:39] = BD+45 2072
SA 32-282 [12:56:03; +44:26:49] = BD+45 2073
SA 32-212 [12:56:03; +44:15:28] = BD+45 2074
GD 153 [12:57:02; +22:01:52] white dwarf; = LTT 13724 = NLTT 32398 = PG 1254+223 plus many others
SA 32-176 [12:57:03; +44:00:34] = BD+44 2235
SA 32-113 [12:57:26; +43:56:33] = BD+44 2237
SA 32-62 [12:58:30; +43:43:19] = BD+44 2420
PG 1314+442 [13:16:33; +43:59:05] subdwarf
GD 325 [13:36:02; +48:28:46] white dwarf; = GJ 2103 = NSV 19892 = PG 1334+487 = AAVSO 1331+48
PG 1343+578 [13:45:01; +57:30:13] an UV-emission source; horizontal branch star
GD 336 [14:31:57; +37:06:30] white dwarf; = PG 1429+373 = KUV 14299+3720 = ROSAT object, plus many additional names
PG 1430+427 [14:32:34; +42:30:19] white dwarf
SA 107-970 [15:37:26; +00:18:34] = IRAS 15348+0028
SA 107-847 [15:38:19; +00:08:05] = BD+00 3384
SA 35-316 [15:49:41; +44:35:24] = BD+45 2340
SA 35-245 [15:49:50; +44:31:19] = HD 141930 = BD+44 2511 = ADS 9802AB = GCRV 9130 = IDS 15466+4449AB
SA 35-492 [15:50:39; +45:00:37] = BD+45 2341
SA 35-338 [15:51:51; +44:41:52] = BD+45 2344 = GCRV 65782
SA 35-518 [15:53:29; +44:57:31] = HD 142592 = BD+45 2345 = GCRV 65804
SA 35-526 [15:54:20; +44:55:07] = HD 142741 = BD+45 2346
SA 35-535 [15:55:01; +44:59:20] = BD+45 2347
KUV 433-03 [16:38:26; +35:00:12] white dwarf; ROSAT object = PG 1636+351 = WD 1636+351
GD 358 [16:47:18; +32:28:33] pulsating white dwarf; = V777 Her = KUV 433-8; = PG 1645+325
PG 1648+536 [16:50:00; +53:31:32] subdwarf
PG 1648+536D [16:50:12; +53:27:00] object measured appears to be a star about 10″ north of the galaxy MCG+09-27-100
GD 363 [17:38:36; +41:52:32] white dwarf; = NLTT 45206
GD 378 [18:23:37; +41:04:02] white dwarf; = WD 1822+410 = SDSS J182337.01+410402.8
GD 378B [18:23:45; +41:05:48] eclipsing binary; = NSVS 5387131 = GSC 03108-00057
SA 38-326 [18:47:41; +45:24:39] =BD+45 2773
SA 38-358 [18:48:23; +45:23:22] =BD+45 2776
SA 38-391 [18:49:07; +45:19:17] = HD 174600 = BD+45 2779; = GCRV 11282

GD 391 [20:29:56; +39:13:32] white dwarf; = NLTT 49359; ROSAT object; = WD 2028+390
SA 41-654 [21:53:53; +45:33:07] = BD+44 3978
GD 405 [23:16:44; +47:27:16] white dwarf
GD 251 [23:34:21; +29:18:37] white dwarf; = PG 2331+290

It is a pleasure to thank the staffs of the Kitt Peak National Observatory (KPNO) and the Lowell Observatory (LO) for their hospitality and assistance over the years. At KPNO, Bill Binkert and H. Halbedel ensured that a night's observations went smoothly. The author extends thanks to Tom Kinman for advice and sagacious input over the years, including introducing him to the CCDPHOT program. Thanks go to the Director of KPNO for the loan of the J *UBVRI* filter set for use at the Lowell 1.8 m telescope. In particular, thanks go to the then Lowell Observatory Director, R. L. Millis, for the very generous telescope time assignments. In alphabetical order, L. Bright, T. Dunham, Jr., W. Lockwood, R. Nye, R. Oliver, D. Schleicher, B. Taylor, and L. Wasserman enabled productive observing runs. B. Skiff continued to be a fount of knowledge on a wide variety of topics, including local observing as well as highly relevant minutiae about stars, photometry, and the literature. The appearance of the figures and tables again are due to the skills of my colleague James L. Clem. The author also thanks him for comments on the manuscript. This research has made use of the VizieR Service and the SIMBAD database operated at CDS, Strasbourg, France. This observational program has been supported by NSF grants AST-9114457, AST-9313868, AST-0503871, and AST-0803158.

REFERENCES

Aitken, R. G. 1932, New General Catalogue of Double Stars (Carnegie Institution of Washington, Publ. 417)
Argelander, F. W. A., Schoenfeld, E., & Krueger, A. 1859, Astronomische Beobachtungen auf der Sternwarte der Koeniglichen Rheinischen Freidrich-Wilhelms-Universitat zu Bonn, Vol. 3 (−01 deg to +19 deg)
Argelander, F. W. A., Schoenfeld, E., & Krueger, A. 1861, Astronomische Beobachtungen auf der Sternwarte der Koeniglichen Rheinischen Freidrich-Wilhelms-Universitat zu Bonn, Vol. 4 (+20 deg to +40 deg)
Argelander, F. W. A., Schoenfeld, E., & Krueger, A. 1862, Astronomische Beobachtungen auf der Sternwarte der Koeniglichen Rheinischen Freidrich-Wilhelms-Universitat zu Bonn, Vol. 5 (+41 deg to +90 deg)
Barford, N. C. 1967, Experimental Measurements: Precision, Error, and Truth (London: Addison-Wesley)
Beers, T. C., Preston, G. W., & Shectman, S. A. 1988, ApJS, 67, 461
Blaauw, A., & Elvius, T. 1965, in Galactic Structure, ed. A. Blaauw & M. Schmidt (Chicago: Univ. of Chicago Press), 589
Brun, A., & Vehrenberg, H. 1965, Atlas of Harvard-Groningen Selected Areas (Duesseldorf: Treugesell-Verlag)
Campbell, L., & Pickering, E. C. 1913, AnHar, 63, 143
Cannon, A. J., & Pickering, E. C. 1918a, AnHar, 91, 1
Cannon, A. J., & Pickering, E. C. 1918b, AnHar, 92, 1
Cannon, A. J., & Pickering, E. C. 1919a, AnHar, 93, 1
Cannon, A. J., & Pickering, E. C. 1919b, AnHar, 94, 1
Cannon, A. J., & Pickering, E. C. 1920, AnHar, 95, 1
Cannon, A. J., & Pickering, E. C. 1921, AnHar, 96, 1
Cannon, A. J., & Pickering, E. C. 1922, AnHar, 97, 1
Cannon, A. J., & Pickering, E. C. 1923, AnHar, 98, 1
Cannon, A. J., & Pickering, E. C. 1924, AnHar, 99, 1
Clem, J. L., & Landolt, A. U. 2013, AJ, 146, 88
Cousins, A. W. J. 1976, MmRAS, 81, 25
Cutri, R. M., Skrutskie, M. F., van Dyk, S., et al. 2003, yCat, 2246, 0
Feige, J. 1958, ApJ, 128, 267
Feige, J. 1959, ApJ, 129, 600
Giclas, H. L., Burnham, R., Jr., & Thomas, N. G. 1971, Lowell Proper Motion Survey Northern Hemisphere. The G Numbered Stars. (Flagstaff, AZ: Lowell Observatory)
Giclas, H. L., Burnham, R., Jr., & Thomas, N. G. 1978, LowOB, 8, 89
Giclas, H. L., Burnham, R., Jr., & Thomas, N. G. 1980, LowOB, 8, 157
Gliese, W., & Jahreiß, H. 1979, A&AS, 38, 423
Green, R. F., Schmidt, M., & Liebert, J. 1986, ApJS, 61, 305
Høg, E., Fabricius, C., Makarov, V. V., et al. 2000, A&A, 355, L27
Jeffers, H. M., van Denbos, W. H., & Greeby, F. M. 1963, Publications of the Lick Observatory, Vol. 21
Johnson, H. L. 1963, in Basic Astronomical Data: Stars and Stellar Systems, ed. K. A. Strand (Chicago: Univ. of Chicago Press), 204
Kinman, T. D. 1998, PASP, 110, 1277
Kondo, M., Noguchi, T., & Maehara, H. 1984, AnTok, 20, 130
Kondo, M., Watanabe, E., Yutani, M., & Noguchi, T. 1982, PASJ, 34, 541
Kukarkin, B. V., & Kholopov, P. N. 1982, New Catalogue of Suspected Variable Stars (NSV), (Moscow: Publication Office "Nauka")
Landolt, A. U. 1973, AJ, 78, 959
Landolt, A. U. 1983, AJ, 88, 439
Landolt, A. U. 1992a, AJ, 104, 340
Landolt, A. U. 1992b, AJ, 104, 372
Landolt, A. U. 2007a, AJ, 133, 2502
Landolt, A. U. 2007b, in ASP Conf. Ser. 364, The Future of Photometric, Spectrophotometric, and Polarimetric Standardization, ed. C. Sterken (San Francisco, CA: ASP), 27
Landolt, A. U. 2009, AJ, 137, 4186
Landolt, A. U. 2012, JAVSO, 40, 355
Landolt, A. U., & Uomoto, A. K. 2007a, AJ, 133, 768
Landolt, A. U., & Uomoto, A. K. 2007b, AJ, 133, 2429
Lasker, B. M., Sturch, C. R., McLean, B. J., et al. 1990, AJ, 99, 2019
Luyten, W. J. 1955, A Catalogue of 1849 Stars with Proper Motions Exceeding 0.5 arcsec Annually (LFT) (Minneapolis: The Lund Press)
Luyten, W. J. 1957, A Catalogue of 9867 Stars in the Southern Hemisphere with Proper Motions Exceeding 0.2 arcsec Annually (LTT) (Minneapolis: The Lund Press)
Luyten, W. J. 1963a, Bruce Proper Motion Survey: The General Catalogue (Minneapolis: Univ. of Minnesota)
Luyten, W. J. 1963b, in Basic Astronomical Data: Stars and Stellar Systems, ed. K. A. Strand (Chicago: Univ. of Chicago Press), 46
Luyten, W. J. 1976, LHS Catalogue (Minneapolis: Univ. of Minnesota)
Luyten, W. J. 1979a, LHS Catalogue (2nd ed.; Minneapolis: Univ. of Minnesota)
Luyten, W. J. 1979b, NLTT Catalogue, Vol. 1 (Minneapolis: Univ. of Minnesota)
Luyten, W. J. 1979c, NLTT Catalogue, Vol. 2 (Minneapolis: Univ. of Minnesota)
Luyten, W. J. 1980a, NLTT Catalogue, Vol. 3 (Minneapolis: Univ. of Minnesota)
Luyten, W. J. 1980b, NLTT Catalogue, Vol. 4 (Minneapolis: Univ. of Minnesota)
Luyten, W. J., & Hughes, H. S. 1980, Proper Motion Survey with the 48-inch Schmidt Telescope LV. First Supplement to the NLTT Catalogue (Minneapolis: Univ. of Minnesota)
McCook, G. P., & Sion, E. M. 1999, ApJS, 121, 1
Noguchi, T., Maehara, H., & Kondo, M. 1980, AnTok, 18, 55
Ohshima, T., Kato, T., Pavlenko, E. P., et al. 2012, PASJ, 64, L3
Pickering, E. C., & Kapteyn, J. C. 1918, AnHar, 101, 1
Pickering, E. C., Kapteyn, J. C., & van Rhijn, P. J. 1923, AnHar, 102, 276
Pickering, E. C., Kapteyn, J. C., & van Rhijn, P. J. 1924, AnHar, 103, 343
Pye, J. P., McGale, P. A., Allan, D. J., et al. 1995, MNRAS, 274, 1165
Schneider, D. P., Richards, G. T., Fan, X., et al. 2002, AJ, 123, 567
Schoenfeld, E. 1886, Astronomische Beobachtungen auf der Sternwarte der Koeniglichen Rheinischen Freidrich-Wilhelms-Universitat zu Bonn, Vol. 8 (−02 deg to −22 deg)
Skrutskie, M. F., et al. 2006, AJ, 131, 1163
Tody, D., & Davis, L. E. 1992, in ASP Conf. Ser. 25, Astronomical Data Analysis Software and Systems I, ed. D. M. Worrall, C. Biemesderfer, & J. Barnes (San Francisco, CA: ASP), 484
Wilson, R. E. 1953, General Catalogue of Stellar Radial Velocities (Carnegie Institution of Washington, Publ. 601)
Woźniak, P. R., Vestrand, W. T., Akerlof, C. W., et al. 2004, AJ, 127, 2436
Zacharias, N., Finch, C. T., Girard, T. M., et al. 2013, AJ, 145, 44