2. RED SUBLUMINOUS STARS

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(UBVRI) observations of known subluminous stars were published in a previous discussion (Eggen, 1970a) where the bulk of the objects, both red (RSL) and blue (BSL) populated a sequence extending for M (I) near $+11\overset{m}{.}5$ at (R – I) near $0\overset{m}{.}0$ to M (I) of $+15^{m}$ near $R-I=+0\overset{m}{.}3$. However, four RSL stars appeared to form a separate sequence near $M(I)=+11^{m}$ and R – I between $+0\overset{m}{.}3$ and $+0\overset{m}{.}7$. These four stars, plus an additional object (LTT 2236) are listed in Table I together with the source of luminosity; the weights of the trigonometric parallaxes are given in parentheses following the parallax. These five stars are represented in Figure 1 by crosses; the top of the steep sequence of subluminous stars is shown as the hatched region in the figure. For reference, Figure 1 also contains (1) the Hyades main sequence (Eggen, 1969b), indicated by a broken curve, (2) the evolved main sequence of the old disk population (Eggen, 1970b), shown by open circles, and (3) the subdwarfs, which are listed in

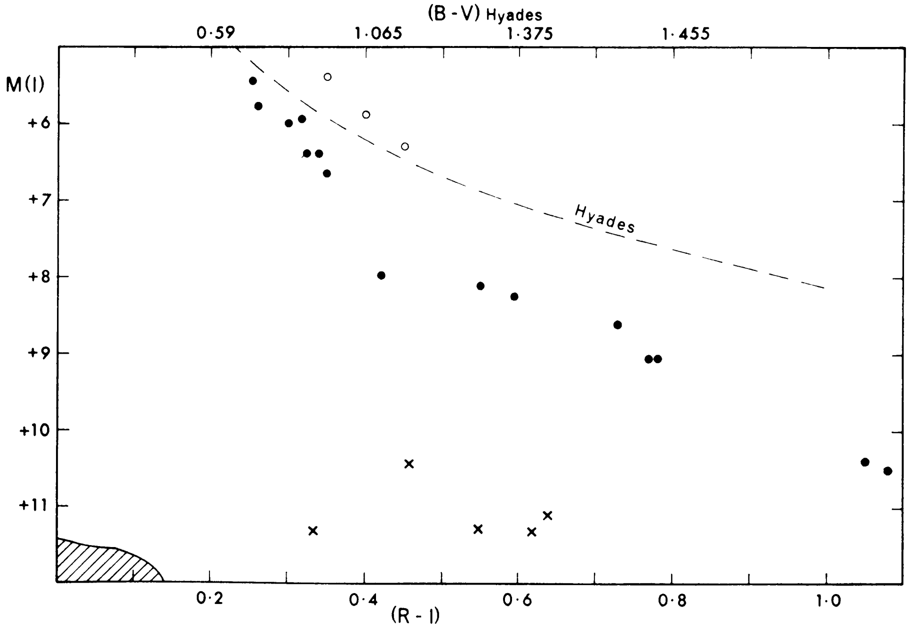

Fig. 1. Evolved, old disk population main sequence stars (open circles), Hyades cluster stars (broken curve), subdwarfs (filled circles, and RSL stars (crosses) in the $(M_I, R-I)$ plane. The top of the steep sequence of subluminous stars (white dwarfs) is shown as the hatched area in the lower left hand corner.

Luyten (ed.), White Dwarfs, 8–17.

TABLE I

Subluminous red stars

Name	EG	V_E	B − V	U − B	R	R − I	M(I)	Remarks
G 14-24	96	$12^m.78$	$+0^m.75$	$0^m.00$	$12^m.32$	$+0^m.335$	$+11^m.3$	0″.074 (8), Ross 974
LTT 2236	–	13.19	+1.16	+0.72	12.72	+0.46	+10.4	0″.042 (8)
GH 7-138	32	15.65	+1.05	+0.32	14.81	+0.55	+11.3	Hyades cluster
Wolf 1037	–	14.19	+1.42	+1.22	13.24	+0.62	+11.3	0″.054 (8), G 18-51
HR 58973B	–	13.50	+0.86	+0.15	12.72	+0.64	+11.1	βTrA cpm, LTT 6333

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TABLE II

Late type subdwarfs

Yale	V_E	B – V	U – B	R	R – I	M(I)	π_{tr}(wt)
887.0	8.51	+0.86	+0.37	8.10	+0.34	+ 6.4	0.053 (58)
948.1	11.85	+1.37	+1.02	10.90	+0.37	+ 8.6	0.048 (12)
1181.0	8.90	+1.53	+1.07	7.84	+0.77	+ 9.05	0.251 (18)
1857.0	8.32	+0.62	–0.14	8.15	+0.26	+ 5.8	0.038 (61)
2392.0	8.07	+0.595	–0.025	7.68	+0.255	+ 5.45	0.040 (16)
2512.0	11.02	+1.40	+0.95	10.04	+0.775	+ 9.05	0.091 (7)
2745.0	6.45	+0.75	+0.17	6.08	+0.30	+ 6.0	0.110 (36)
3044.0	10.85	+1.00	+0.68	10.23	+0.42	+ 8.0	0.043 (15)
3252.0	13.43	+1.58	+1.08	12.21	+1.05	+10.4	0.070 (12)
3425.0A	9.10	+0.78	+0.13	8.71	+0.32	+ 6.4	0.040 (35)
3425.0B	9.45	+0.85	+0.30	9.00	+0.35	+ 6.65	
3669.0	7.52	+0.84	+0.24	7.20	+0.32	+ 5.9	0.063 (40)
3783.1	12.73	+1.64	+1.20	11.63	+1.08	+10.5	0.099 (10)
5741.1A*	12.13	+1.28	+1.05	11.26	+0.55	+ 8.1	0.030 (*)
5741.1B*	12.84	+1.39	+1.16	11.39	+0.595	+ 8.2	

* The values for the bright and faint components are, respectively, 0″.024(14) and 0″.042(7).

Table II. In addition to the photometric results, Table II contains the Yale Parallax Catalogue number, the mean trigonometric parallax and its weight, in parentheses, as well as the resulting values of M(I).

The luminosity of any one star in Table I cannot be accepted without some reserve.

(1) The single trigonometric parallax, determined at the Cape, for G 14-24 is large and apparently (Greenstein and Eggen, 1966) well determined. The total annual proper motion is 0.″47, leading to a tangential velocity of 275 km/sec if the star were a subdwarf ($\pi = 0.''008$). The radial velocity is +156 km/sec so the resulting total space motion of 320 km/sec does not eliminate the possibility that this is a subdwarf.

However, the requirement that the trigonometric parallax is in error by a factor of 10 is very unlikely. The spectrum of the star is indistinguishable from that of a weak-lined subdwarf (Eggen and Greenstein, 1965).

(2) The single trigonometric parallax of 0.″042 (wt. 8) for LTT 2236 has been determined at the Cape Observatory (Yale, No. 1216.1). If the star is a subdwarf the parallax is 0.″012 and the total annual proper motion of 0.″52 would give a tangential velocity of 200 km/sec. Additional parallax determinations are needed.

(3) The membership of GH 7-138 (van Altena, No. 71) in the Hyades cluster seems well established on the basis of three determinations of the proper motion (van Altena, 1969; Table IIIc).

(4) The single trigonometric parallax determination for Wolf 1037 (LTT 16591) is from the Mount Wilson Observatory. As a subdwarf the parallax would be 0.″015 and the large annual proper motion of 1.″68 would lead to a tangential velocity of 530 km/sec. The radial velocity of –160 km/sec, which may be variable, gives a total space motion of 550 km/sec. As for G 14-24, the spectrum is indistinguishable from

that of a very weak-lined subdwarf, K-type star (Joy, 1947). Additional parallax observations are needed.

(5) Spectra of LTT 6333 are not available. The luminosity is based on the assumption that the proper motion of LTT 6333 (0.″40 223°) is common with that of HR 5897 (β Tr A, 0.″42 205°) which is 157″ distant. The single trigonometric parallax determination for HR 5897 is 0.″078 (wt. 7) from the Cape Observatory and the photometric value, from (u, b, v, y) photometry is 0.″063.

The five late type, subluminous stars discussed above also show abnormal values of the ultraviolet excess. This is demonstrated in Figure 2(a) where the continuous

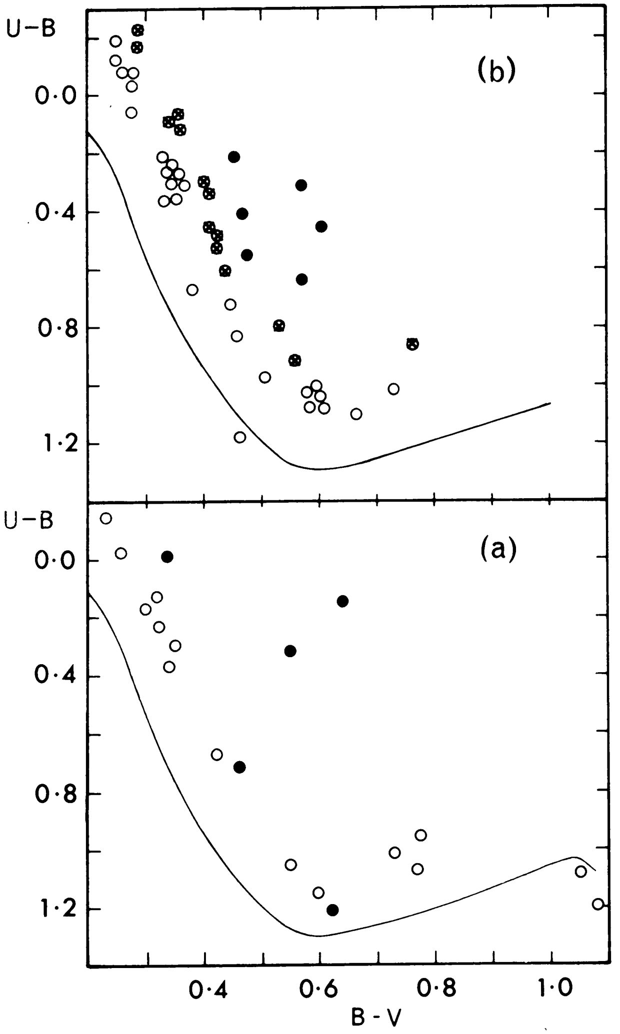

Fig. 2. The continuous curve in both panels represents the main sequence stars of the Hyades cluster. The open and filled circles in (a) represent the subdwarfs and subluminous stars in Tables II and I, respectively. The open circles in (b) represent probable subdwarfs (sd?) in Table III, the crossed circles, possible RSL stars and the filled circles, probable RSL stars.

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TABLE III

Possible RSL stars

Star	V_E	B − V	U − B	μ	Sp.	Δ(U − B)	Type	π(sd)
	R	R − I	N, N	θ	δ(U − B)	Δ(B − V)		T(sd)
L 233-10	14.46	+0.835	+0.22	0″.21	g	+0.235	RSL	0″.007
LTT 929	14.00	+0.465	3,2	173°	+0.29	+0.90		150
L 729-4	13.26	+0.985	+0.40	0.46	k	+0.095	RSL?	0.010
LTT 1244	12.82	+0.41	2,2	170	+0.40	+0.575		200
L 127-50	15.20	+0.95	+0.27	0.24	k	+0.04	sd?	0.003
LTT 1346	14.80	+0.36	2,3	178	+0.47	+0.545		400
L 298-26	13.73	+0.91	+0.30	0.38	g	+0.09	sd?	0.006
LTT 1358	13.30	+0.365	2,2	90	0.36	+0.53		300
LTT 1561*	14.49	+0.92	+0.25	0.31	k	+0.05	sd?	0.004
G77-43	14.11	+0.345	3,3	149°	+0.43	+0.505		350
L 54-9	13.64	+0.47	−0.22	0.24	g	+0.34	RSL?	0.0035
LTT 1607	13.40	+0.28	3,1	84	+0.23	+0.635		300
LTT 1721*	14.12	+0.825	+0.07	0.27	k	+0.155	RSL?	0.0045
G 160-6	13.78	+0.355	2,2	190	+0.415	+0.73		300
Ross 580*	13.04	+0.79	+0.08	0.23	k-m	+0.18	RSL?	0.0075
G 160-8	12.58	+0.35	2,2	150	+0.33	+0.70		150
L 807-30	14.23	+1.26	+0.92	0.44	g	+0.09	RSL?	0.011
LTT 2030	13.53	+0.56	2,3	155	–	+0.36		200
L 665-68	12.95	+0.67	−0.08	0.40	k	+0.105	sd?	0.004
LTT 2175	12.75	+0.265	3,3	138	+0.285	+0.43		450
Strand 11*	13.28	+1.015	+0.48	0″.32	–	+0.08	RSL?	0″.010
G 99-8	12.78	+0.42	2,2	72	+0.39	+0.52		150
Strand 12	14.83	+1.20	+1.19	0.34	–	−0.01	?	
G 99-9	13.80	+0.475	1,2	77	–	−0.05		
G 99-47	14.08	+0.61	−0.11	1.07	–	+0.165	sd?	0.0025
–	13.83	+0.25	4,3	208	+0.25	+0.39		2000
L 595-22	12.25	+0.38	−0.25	0.32	–	+0.09	*	*
LTT 2415	12.20	+0.155	5,2	124	+0.27	+0.265		
L 812-11	13.14	+1.00	+0.53	0.88	g	+0.095	RSL?	0.011
LTT 2535	12.58	+0.42	4,4	140	+0.31	+0.47		350
L 455-129	13.66	+1.34	+1.04	0.86	f:	+0.035	sd?	0.012
LTT 2826	13.62	+0.605	2,2	154	–	+0.25		450
G 112-28	13.72	+1.12	+0.82	1.01	–	+0.05	sd?	0.011
–	13.10	+0.465	3,2	169	–	+0.295		450
G 113-36	15.45	+1.14	+0.64	0.30	–	+0.215	RSL	0.0065
–	14.73	+0.57	1,3	141	–	+0.645		200
LTT 3144*	11.97	+0.93	+0.51	1.00	k-m	+0.155	RSL?	0.018*
G 113-40	11.41	+0.41	3,3	157	+0.19	+0.465		250
L 190-19	13.30	+1.00	+0.675	0.39	g	+0.025	sd?	0.0085
LTT 3807	12.73	+0.38	2,3	272	+0.165	+0.205		200
L 36-61	13.08	+1.12	+0.79	0.43	k	+0.18	RSL?	0.0185
LTT 3862	12.22	+0.53	1,1	121	–	+0.46		100
L 260-53	13.27	+1.47	+1.10	1″.11	g	−0.08	sd?	0″.024
LTT 5622	12.55	+0.67	1,2	249	–	+0.19		200
L 477-3	11.90	+0.88	+0.28	0.52	g:	+0.06	sd?	0.011
LTT 5864	11.62	+0.335	2,2	245	+0.32	+0.43		200
L 478-87	13.24	+0.925	+0.365	0.26	a-f	+0.055	sd?	0.007
LTT 5889	12.88	+0.355	2,2	270	+0.335	+0.43		200

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Table III (continued)

Star	V_E	B − V	U − B	μ	Sp.	Δ(U − B)	Type	π(sd)
	R	R − I	*N*, *N*	θ	δ(U − B)	Δ(B − V)		*T*(sd)
L 262-45	13.80	+0.92	+0.31	0.32	f	+0.145	RSL?	0.007
LTT 5944	13.34	+0.40	2,1	213	+0.37	+0.64		200
Ross 1038*	12.33	+0.765	+0.055	0.96	m	+0.025	sd?	0.0065
G 15-13	12.05	+0.275	2,1	207	+0.31	+0.355		700
L 624-39	12.20	+0.845	+0.105	0.39	g	+0.115	sd?	0.010
LTT 6307	11.91	+0.345	2,3	186	+0.425	+0.65		200
L 628-48	12.90	+0.68	−0.16	0.30	f	+0.11	RSL?	0.0045
LTT 6447	12.78	+0.275	3,2	231	+0.385	+0.57		300
−3°3968A*	9.63	+0.74	+0.09	0.75	G5	+0.17	RSL?	0.031*
G 17-25	9.24	+0.32	4,6	193	+0.23	+0.555		100
−3°3968B	13.88	+1.43	+1.46:	0.73	–	−0.05	?	
G 17-27	13.01	+0.63	2,4	190	–	−0.18		
G 17-28	14.28	+1.42	+1.07	1.26	–	−0.045	sd?	0.012
–	13.67	+0.605	2,3	226	–	+0.22		500
G 19-17	14.67	+1.42	+0.46	0.28	–	−0.045	RSL	0.011
–	13.86	+0.605	1,3	189	–	+0.83		100
L 754-45*	11.52	+0.535	−0.19	0″.24	g	+0.195	sd?	0″.0085
LTT 3966	11.13	+0.255	3,2	253	+0.255	+0.495		150
L 754-46	13.10	+0.84	+0.23	0.24	g	+0.13	sd?	0.0085
LTT 3967	12.52	+0.35	5,2	253	+0.29	+0.55		150
G 163-59	14.86	+1.46	+0.86	1.14	–	−0.035	RSL?	0.016
–	13.84	+0.77	1,2	202	–	+0.44		350
L 611-42	12.78	+0.56	−0.18	0.31	g:	–		
LTT 4210	–	–	4,–	287	+0.27	–		
L 611-43	14.94	+1.00	+0.54	0.31	g:	+0.355	RSL	0.009
LTT 4211*	14.05	+0.57	5,1	287	+0.30	+0.745		150
L 614-137	14.30	+1.36	+1.02	0.60	k	+0.005	sd?	0.0115
LTT 4667	13.52	+0.585	2,2	154	–	+0.265		250
L 105-2	13.10	+0.695	−0.04	0.24	a	+0.115	sd?	0.005
LTT 4896	12.80	+0.28	2,2	300	+0.295	+0.475		250
L 328-123	14.25	+1.08	+0.62	0.45	k	+0.04	RSL?	0.0065
LTT 4953	13.84	+0.435	3,2	296	+0.35	+0.42		350
LTT 5074*	12.94	+0.95	+0.30	0.58	g	+0.02	sd?	0.0085
G 14-39	12.40	+0.35	3,2	288	+0.44	+0.48		350
L 196-36	12.28	+1.36	+1.08	0.30	g	+0.01	sd?	0.031
LTT 5220	11.49	+0.59	2,2	165	–	+0.31		50
L 547-141	12.69	+0.87	+0.23	0.47	k	+0.07	sd?	0.008
LTT 5472	12.25	+0.335	3,3	270	+0.35	+0.48		250
L 836-104	13.65	+0.73	−0.07	0.25	k	+0.03	sd?	0.0035
LTT 5560	13.42	+0.265	2,2	201	+0.375	+0.43		350
Ross 858	13.64	+1.31	+1.04	0″.61	k	+0.06	sd?	0″.018
LTT 6979	12.82	+0.595	2,3	210	–	+0.25		150
LTT 7424*	12.86	+1.00	+0.56	0.31	g	+0.19	RSL	0.0145
G 155-35	12.42	+0.475	2,2	214	+0.28	+0.58		100
L 1143-61*	13.76	+0.87	+0.37	0.59	k	+0.07	sd?	0.005
G 25-1	13.37	+0.335	2,2	197	+0.21	+0.34		600
Ross 770*	11.75	+1.19	+0.97	1.10	K4	+0.07	sd?	0.031
LTT 8417	11.00	+0.51	5,4	192	–	+0.245		150
L 716-108	13.76	+1.32	+1.00	1.05	m	+0.05	sd?	0.016
LTT 8975	12.87	+0.59	1,3	156	–	+0.29		250

Table III (continued)

Star	V_E	B − V	U − B	μ	Sp.	Δ(U − B)	Type	π(sd)
	R	R − I	N, N	θ	δ(U − B)	Δ(B − V)		T(sd)
LTT 9372*	13.57	+ 1.00	+ 0.42	0.40	k	+ 0.17	RSL	0.0155
G 157-20	13.16	+ 0.465	3,2	115	+ 0.42	+ 0.695		150
L 793-57	13.52	+ 0.88	+ 0.34	0.75	g	+ 0.07	sd?	0.0055
LTT 9765	13.05	+ 0.34	7,4	169	+ 0.26	+ 0.39		650

*LTT 1561: Lowell, $\mu = 0''.31$, $\theta = 139°$.
LTT 1721: Lowell, $\mu = 0''.31$, 158°.
Ross 580: LTT 1728. Lowell, $\mu = 0''.28$, $\theta = 149°$.
Strand 11/12: Lowell, $\mu = 0''.29$ and $0''.29$, $\theta = 78°$ and 78°.
LTT 2415: Almost certainly a subluminous star.
LTT 3144: Lowell, $\mu = 0''.96$, $\theta = 156°$. Trigonometric parallax (Y2019.0) is $0''.045$, $wt = 15$.
LTT 3966/7: LDS 315, 27″300°.
LTT 4210/1: LDS 350, 40″256°.
LTT 5074: Lowell, $\mu = 0''.59$, $\theta = 290°$.
Ross 1038: Lowell, $\mu = 0''.87$, $\theta = 213°$.
− 3°3968A: Also LTT 6621, $\mu = 0''.82$, $\theta = 191°$. The two stars are separated by 20′. The trigonometric parallax (Y3767.0) is $0''.046$, $wt = 17$.
LTT 7424: Lowell, $\mu = 0''.30$, $\theta = 225°$.
L 1143-61: Lowell, $\mu = 0''.66$, $\theta = 198°$. Also G 141-35, $\mu = 0''.61$, $\theta = 199°$.
Ross 770: The trigonometric parallax (Y5100.0) is $0''.008$, $wt = 6$.
LTT 9372: Lowell, $\mu = 0''.49$, $\theta = 116°$.

curve represents the Hyades cluster stars and the open circles represent the subdwarfs in Table II. The RSL stars in Table I are shown in Figure 2a as filled circles and the resulting values of Δ(U − B) = $+0^{\rm m}.8$, $+1^{\rm m}.0$ and $+1^{\rm m}.1$ for G 12-24, GH 7-138 and HR 5897B, respectively, are considerably larger than expected from the abundance effect alone.

The high ultraviolet (HUV) excess criterion for isolating possible RSL stars was previously applied to some 1000 southern proper motion stars (Eggen, 1969a), About 100 objects, or 10 percent of the proper motion stars, were found to be probably subluminous by this criterion. Observations of R and R − I are now available for 51 of these stars and are listed in Table III together with (1) the discoverer's number and the identifications in the LTT catalogue (Luyten, 1957) or lists published by Giclas and his associates (Lowell Observatory Bulletins); (2) the (UBV) photometry and the number (N, N) of (UBV) and (R, I) observations, respectively; (3) the annual proper motion and its direction; (4) the spectral type or color class (Luyten, 1957) and the ultraviolet excess, δ(U − B); (5) the values of Δ(U − B) and Δ(B − V) obtained from the (R − I, B − V) and (R − I, U − B) relations for Hyades cluster stars (Eggen, 1970b); (6) the probable classification of the star, discussed below, and (7) the photometric parallax and resulting tangential velocity if the star is assumed to a subdwarf and falling on the mean subdwarf sequence in Figure 1.

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The stars in Table III are shown in the (R – I, U – B) plane of Figure 2b where the continuous curve represents the relation for Hyades cluster, main sequence stars. The open circles in Figure 2b represent objects that, by analogy with Figure 2a, could be subdwarfs, the crossed circles are possible subluminous stars on the basis of the large ultraviolet excesses and the filled circles represent HUV objects that are probably subluminous. The filled circles are referred to as RSL objects in the penultimate column of Table III, the crossed circles as RSL? stars and the open circles as sd? stars. From a comparison with Figure 2a it is assumed that the sd? stars may include a few RSL objects, the crossed circles may include a few subdwarfs and the filled circles may all represent RSL stars.

The distribution of tangential velocities listed in the last column of Table III and based on the assumption that all of the stars are subdwarfs, adds some weight to the classification of six objects (filled circles in Figure 2b) as RSL stars. Omitting one obvious subluminous star, G 99-47, for which the subdwarf assumption leads to the improbable tangential velocity of 2000 km/sec, the mean value for the 26 'sd?' stars, or common proper motions systems, is $T = 300$ km/sec compared with 140 km/sec as the mean for the 6RSL stars. That is, the stars assigned to the RSL classification on the basis of the ultraviolet excess almost certainly have smaller tangential velocities than the probable subdwarfs. The known RSL stars in Table I have a mean tangential velocity of 40 km/sec and the six stars shown as filled circles in Figure 2b also give a mean of 40 km/sec if the same mean luminosity, M (I) = $+11\overset{\mathrm{m}}{.}1$, is assumed. The 'RSL?' stars, crossed circles in Figure 1b, give an intermediate value of 230 km/sec as the mean tangential velocity on the subdwarf assumption. Some of these stars are undoubtedly RSL stars and from a consideration of both the tangential velocity and the color, the most likely candidates in this group are Ross 580, G 99-8/9, LTT 3862 and – 3°3968A, B. The trigonometric parallax listed in the notes to Table III for this last pair places the fainter component among the RSL stars, with M (I) = $+10\overset{\mathrm{m}}{.}7$ at R – I = $+0\overset{\mathrm{m}}{.}63$, but gives the brighter component values of M (I) = $+7\overset{\mathrm{m}}{.}2$ at R – I = $+0\overset{\mathrm{m}}{.}32$. Spectroscopic observations would be of great interest.

TABLE IV

Photometric parallaxes for probable RSL stars

Name	M(I) =		Name	M(I) =	
	+ 11.1	+ 14.5		+ 11.1	+ 14.5
LTT 929	0″.031	–	LTT 5220	0″.110	–
Ross 580	0.060	0.280	Ross 1038	0.072	0.350
G 99-8	0.055	–	– 3°3968	See text	–
G 99-47	0.031	0.150	LTT 7424	0.070	–
LTT 2415	0.060	0.150*	LTT 9372	0.048	–
LTT 3862	0.075	–	LTT 9765	0.048	0.230
LTT 4211	0.033	–			

* M (I) = + 13.0

The most likely RSL stars in Table II are listed in Table IV together with the photometric parallax based on the assumption that, like the stars in Table I, the luminosities are near M (I) = + 11$^{m}_{.}$1. The stars in Table IV also include the three 'sd?' objects in Table III with tangential velocities greater than 600 km/sec from the subdwarf assumption (G 99-47, Ross 1038 and LTT 9765). As RSL stars the five objects in Table IV with (R – I) less than + 0$^{m}_{.}$35 may populate the steeper sequence of subluminous stars (white dwarfs) for which the luminosities would be near M (I) = + 14$^{m}_{.}$5 and in these cases the resulting parallax is also listed in the table.

All of the stars in Tables I and III are of interest but astrometric and spectroscopic observations of those in Tables I and IV are especially important and will probably settle the questions of the reality of the upper sequence of subluminous stars apparently defined by the objects in Table I.

In the previous discussion (Eggen, 1969a) attention was called to two common proper motion systems in which one component may be an RSL object. The (R – I) photometry for these stars gives the following;

Star	V_E	B – V	U – B	R	R – I	N,N	μ	θ	
G 22-9	10$^{m}_{.}$10	+0$^{m}_{.}$705	+0$^{m}_{.}$15	9$^{m}_{.}$84	+0$^{m}_{.}$26	2,3	0$''\!\!.$305	192°	LTT 7511
-8	13.52	+0.96	+0.33	12.97	+0.41	4,3	0.305	192°	LTT 7512
LTT 5430	9.34	+0.815	+0.35	9.06	+0.295	4,2	0.22	170	
LTT 5428	13.98	+0.70	+0.20	13.58	+0.23	3,3	0.23	268	

The components of the first pair are separated by 33″ and those of the second by 300″. From the (R, I) photometry it appears that the first pair may consist of halo population subdwarfs with a parallax of 0$''\!\!.$009 and tangential velocity of 160 km/sec. If this interpretation is correct, the radial velocity may be very large. If LTT 5430 is a normal, main sequence star the companion LTT 5428, has M (I) near + 10$^{m}_{.}$2 and is an RSL object with tangential velocity of 45 km/sec.

An additional common proper motion pair that deserves astrometric and spectroscopic attention is the following:

Star	V_E	B – V	U – B	R	R – I	μ	θ
G85-44	12$^{m}_{.}$48	+ 1$^{m}_{.}$50	+ 1$^{m}_{.}$00	11$^{m}_{.}$28	+ 1.04	0$''\!\!.$61	171°
G85-40	14.76	+ 1.15	+0.67	14.10	+0.46	0.61	170°

The components are separated by 1$^{\circ}_{.}$2. The fainter component is also G83-53 (0$''\!\!.$63, 172°), and G 97-16 (0$''\!\!.$58, 168°) whereas the brighter component is also G 97-12 (0$''\!\!.$61, 167°) and Ross 388 (0$''\!\!.$59, 173°). In spite of the large separation, the large common proper motion makes it almost certain that the stars are physically related. If the brighter star populates the Hyades main sequence the parallax is 0$''\!\!.$039, the tangential velocity is 75 km/sec and the fainter component is a RSL star with M (I) = + 11.6 at (R – I) = + 0$^{m}_{.}$46, making it nearly identical to LTT 2236 in Table I.

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