

KG
11365
138

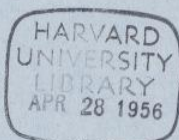
F.9

Prime Vertical.

Nov 1854 to

KG 11365.138

KG 11365.138



Mean places of stars

Name	Mag	R 1840	R 1845	Ann. Proc. for 1850	Sec. var. of Proc. in R	Ann. proper motion in R	Logarithms of				N.P.
							e	f	g	h	
α Andromedae	4.5	0 ^h 41 ^m 0 ^s .64		+ 3.275	+ 0.0305	+ 0.004	0.10922	0.08484	1.45140	0.09883	49°
β Andromedae	2.3	1 ^h 04 ^m 7.55		3.317	0.0265	0.019	0.10664	0.08689	1.45204	0.09507	55°
γ Andromedae	4.5		1 ^h 27 ^m 43 ^s .37	3.501	0.0349	0.012	0.10771	0.09094	1.45486	0.09798	
δ Andromedae	2.3		1 ^h 54 ^m 24 ^s .56	3.640	0.0374	+ 0.004	0.10661	0.09440	1.45699	0.09759	
Trombridge	5.8	6	2 ^h 20 ^m 21 ^s .10	3.682	0.0333		0.10367	0.09658	1.45761	0.09458	
π Persii	5		2 ^h 48 ^m 52 ^s .19	3.801	0.0329	0.005	0.10158	0.09960	1.45941	0.09343	
ρ Persii	var.		2 ^h 58 ^m 06 ^s .21	3.869	0.0340	0.002	0.10119	0.10089	1.46043	0.09355	
ν Persii	4	3 ^h 34 ^m 20 ^s .69		4.045	0.0323	0.001	0.09799	0.10465	1.46307	0.09189	
ϵ Persii	3.4		3 ^h 47 ^m 28 ^s .07	3.997	0.0275	0.000	0.09592	0.10466	1.46235	0.08993	
Piazzi IV 69	6		4 ^h 16 ^m 15 ^s .00	3.796	0.0167	0.008	0.09130	0.10383	1.45934	0.08549	
ζ Persii	5		4 ^h 25 ^m 57 ^s .81	4.135	0.0222	0.002	0.09170	0.10755	1.46442	0.08742	
i Aurigae	3	4 ^h 46 ^m 34 ^s .93		3.893	0.0132	0.002	0.08807	0.10563	1.46079	0.08404	57°
z Aurigae	4		4 ^h 51 ^m 39 ^s .21	4.176	0.0167	0.005	0.08840	0.10866	1.46503	0.08524	
η Aurigae	4.3		4 ^h 55 ^m 39 ^s .33	4.189	0.0159	0.006	0.08791	0.10889	1.46522	0.08493	
λ Aurigae 2 ^d st.	5.6		5 ^h 5 ^m 19 ^s .24	3.899	0.0099	0.000	0.08586	0.10614	1.46088	0.08278	
χ Aurigae	5		5 ^h 8 ^m 14 ^s .56	4.163	0.0124	0.047	0.08613	0.10883	1.46483	0.08365	
Piazzi V 63	6		5 ^h 14 ^m 39 ^s .45	3.859	0.0078	0.001	0.08464	0.10594	1.46027	0.08200	
ψ Aurigae	5	5 ^h 22 ^m 18 ^s .58		3.898	0.0067	0.007	0.08373	0.10641	1.46086	0.08161	57°
ϕ Aurigae	6		5 ^h 28 ^m 41 ^s .09	3.848	0.0053	0.002	0.08293	0.10605	1.46011	0.08109	
θ Aurigae	3		5 ^h 49 ^m 9 ^s .13	4.084	0.0023	+ 0.008	0.08056	0.10843	1.46365	0.08002	
δ Aurigae	6.5	6 ^h 18 ^m 16 ^s .84		3.858	0.0032	0.002	0.07687	0.10625	1.46027	0.07801	59°
γ Aurigae	5		6 ^h 39 ^m 48 ^s .03	4.254	0.0105	0.005	0.07349	0.11001	1.46618	0.07539	
ζ Aurigae	5		7 ^h 0 ^m 59 ^s .06	4.136	0.0144	+ 0.009	0.07083	0.10836	1.46443	0.07388	
ϵ Geminorum	5.4	7 ^h 0 ^m 56 ^s .89		3.829	0.0103	+ 0.002	0.07168	0.10537	1.45983	0.07540	59°
δ Aurigae	6		7 ^h 7 ^m 15 ^s .02	4.188	0.0167	0.003	0.06977	0.10880	1.46520	0.07302	
γ Geminorum	5		7 ^h 19 ^m 8 ^s .09	3.859	0.0138	0.012	0.06940	0.10517	1.46027	0.07402	
δ Geminorum	2.1		7 ^h 24 ^m 41 ^s .59	3.856	0.0147	0.008	0.06872	0.10497	1.46023	0.07363	
ϵ Geminorum	2.1		7 ^h 24 ^m 42 ^s .07	3.856	0.0147	0.008	0.06872	0.10497	1.46023	0.07363	
Bradley 1159	6		7 ^h 58 ^m 43 ^s .32	+ 4.148	0.0290	0.002	0.06251	0.10685	1.46460	0.06793	47°

for the Prime Vertical Transit. at H.C. Observatory.

	N.P.D. 1840	N.P.D. 1845	Ann. prec. Sec. variat. Ann. proper			Logarithms of			
			for 1850	Pre in N.P.D.	motion in N.P.D.	e'	f'	g'	h'
33	49° 47' 36".75	49° 45' 58".95	- 19".73	+ 0.086	+ 0.01	9.99362	9.75156	0.72229	0.13998
7	55.13.46.28	55.12.9.27	19.34	0.128	0.07	9.99773	9.81246	0.75266	0.16568
8		49.22.19.44	18.59	0.191	0.37	0.04724	9.77518	0.80651	0.19718
9		48.25.1.65	17.60	0.255	0.04	0.07704	9.79054	0.86950	0.22527
8		51.33.27.91	16.40	0.309		0.08583	9.83979	0.93477	0.24944
43		50.57.43.05	14.83	0.373	0.03	0.10958	9.86563	1.00709	0.27253
55		49.38.45.16	14.28	0.396	- 0.02	0.12199	9.86852	1.03023	0.27927
39		47.55.01.85	11.86	0.476	0.00	0.15190	9.90505	1.11867	0.30244
93		50.26.38.56	10.94	0.489	+ 0.03	0.14597	9.93071	1.14808	0.30927
19		58.55.0.96	8.75	0.498	0.12	0.11167	9.98889	1.21092	0.32220
42		49.3.35.46	7.97	0.553	0.01	0.16838	9.97287	1.23115	0.32586
04	57.5.40.24	57.5.9.21	6.26	0.539	0.01	0.13097	0.01298	1.27273	0.33243
4		49.9.26.22	5.86	0.582	0.00	0.17529	0.00379	1.28188	0.33371
33		48.58.54.43	5.53	0.587	0.05	0.17713	0.00821	1.28943	0.33469
8		57.29.53.69	4.71	0.553	- 0.02	0.13238	0.03088	1.30722	0.33688
5		50.2.44.91	4.46	0.592	+ 0.66	0.17424	0.02413	1.31259	0.33746
00		59.0.28.25	3.91	0.552	- 0.04	0.12487	0.04118	1.32398	0.33862
51	57.56.0.24	57.55.43.58	3.23	0.561	0.04	0.13238	0.04711	1.33794	0.33985
9		59.36.21.86	2.70	0.556	+ 0.01	0.12291	0.05376	1.34823	0.34061
2		58.48.16.49	0.92	0.595	0.11	0.16383	0.06904	1.38167	0.34220
01	59.24.56.02	59.25.4.85	+ 1.65	0.561	0.04	0.12496	0.09408	1.42577	0.34175
9		48.2.35.56	3.50	0.611	0.11	0.18628	0.11943	1.45478	0.33939
8		50.25.59.19	5.30	0.582	0.00	0.17014	0.13622	1.48148	0.33536
10	59.29.58.40	59.30.25.38	5.33	0.538	0.06	0.11896	0.12539	1.48179	0.33527
2		48.50.52.51	5.83	0.585	- 0.01	0.17691	0.14340	1.48898	0.33380
2		57.54.47.91	6.81	0.529	0.20	0.12444	0.14003	1.50262	0.33054
3		57.46.41.47	7.27	0.524	+ 0.07	0.12372	0.14402	1.50882	0.32878
		57.46.40.16	7.27	0.524	+ 0.07	0.12372	0.14402	1.50882	0.32878
3	47.6.26.70		+ 9.96	+ 0.525	..	0.16803	0.18689	1.54353	0.31559

Mean places of Stars

Name	Mag	R 1840	R 1845	Ann. Prec. for 1850	Sec. variat. Prec. in R	Ann. proper motion in R	Logarithms of			
							e	f	g	h
15 Cancri	6		8 ^h 3 ^m 31 ^s .89 +	3,735	- 0,0185	+ 0,004	0,06460	0,10247	1,45841	0,07192
32 Lyncis	6		8 ^h 23 ^m (20)	3,885	0,0264	0,004	0,06108	0,10297	1,46067	0,06840
6 ^h Cancri	6		8 ^h 44 ^m 33 ^s .00 +	3,661	0,0231	+ 0,007	0,05990	0,09952	1,45729	0,06940
10 Ursa maj.	4		8 ^h 50 ^m 33 ^s .41	3,967	0,0358	- 0,036	0,05643	0,10254	1,46190	0,06396
Piazzi VIII 245	5		8 ^h 56 ^m 39 ^s .14	3,848	- 0,0320	+ 0,007	0,05697	0,10089	1,46011	0,06530
16 Leonis min.	6		9 ^h 40 ^m 41 ^s .37 +	3,718	- 0,0357	+ 0,005	0,05237	0,09687	1,45815	0,06204
19 Leonis min.	5		9 ^h 48 ^m 10 ^s .09	3,719	0,0378	- 0,007	0,05113	0,09640	1,45816	0,06069
21 Leonis min.	4.5		9 ^h 58 ^m 16 ^s .28	3,561	0,0304	+ 0,010	0,05266	0,09398	1,45578	0,06378
μ Ursa maj.	3		10 ^h 13 ^m 4 ^s .28	3,616	0,0380	- 0,001	0,04902	0,09358	1,45661	0,05916
38 Leonis min.	6		10 ^h 30 ^m 14 ^s .86	3,478	0,0326	0,020	0,04961	0,09079	1,45451	0,06091
46 Leonis min.	4		10 ^h 44 ^m (49) +	3,372	- 0,0277	+ 0,007	0,05036	0,08856	1,45289	0,06286
55 Ursa maj.	5		11 ^h 10 ^m 40 ^s .00 +	3,301	- 0,0299	+ 0,001	0,04773	0,08574	1,45180	0,05967
2 Canum Venat.	6		12 ^h 8 ^m 20 ^s .67	3,026	0,0251	+ 0,008	0,04574	0,07799	1,44757	0,05733
6 Canum Venat.	5.6		12 ^h 18 ^m 12 ^s .21	2,981	0,0223	- 0,003	0,04667	0,07665	1,44685	0,05864
9 Canum Venat.	6		12 ^h 31 ^m 17 ^s .99	2,907	0,0218	+ 0,004	0,04593	0,07473	1,44572	0,05733
Troombridge 1931	6		12 ^h 42 ^m 48 ^s .22 +	2,873	- 0,0178	..	0,04785	0,07344	1,44520	0,05999
12 Canum Venat.	7		12 ^h 48 ^m 44 ^s .69	2,840	0,0174	- 0,019	0,04767	0,07253	1,44467	0,05958
12 Canum Venat.	3		12 ^h 48 ^m 46 ^s .07	2,840	0,0175	- 0,017	0,04767	0,07253	1,44467	0,05958
14 Canum Venat.	5	12, 58, 14, 95		2,819	0,0148	+ 0,006	0,04909	0,07150	1,44434	0,06151
B.F. 1812	6		13 ^h 2 ^m 29 ^s .61	2,786	0,0150	..	0,04856	0,07079	1,44383	0,06047
Piazzi XIII 27	5		13 ^h 6 ^m 40 ^s .95 +	2,737	- 0,0158	- 0,003	0,04746	0,06989	1,44305	0,05864
20 Canum Venat.	5.4		13 ^h 10 ^m 35 ^s .04	2,713	0,0154	0,010	0,04742	0,06928	1,44268	0,05845
Piazzi XIII 136	5		13 ^h 27 ^m (50)	2,680	0,0115	+ 0,011	0,04985	0,06755	1,44216	0,06138
25 Canum Venat.	5		13 ^h 30 ^m (30)	2,681	0,0109	..	0,05036	0,06736	1,44218	0,06204
Troombridge 2044	6.5		13 ^h 39 ^m 38 ^s .31	2,565	0,0112	..	0,04878	0,06530	1,44036	0,05916
δ Bootis	4.3		14 ^h 25 ^m 8 ^s .90 +	2,594	- 0,0037	- 0,004	0,05589	0,06215	1,44082	0,06734
γ Bootis	3.2		14 ^h 25 ^m 50 ^s .05	2,427	0,0050	+ 0,002	0,05349	0,06030	1,43818	0,06320
Troombridge 2145	6		14 ^h 37 ^m 43 ^s .52	2,329	0,0040	..	0,05374	0,05835	1,43663	0,06262
β Bootis	3		14 ^h 56 ^m 6 ^s .48	2,263	0,0023	+ 0,001	0,05559	0,05638	1,43557	0,06386
Piazzi XIV 263	6		14 ^h 56 ^m 54 ^s .82	2,398	0,0021	0,008	0,05733	0,05789	1,43771	0,06654

for Prime Vertical Transit

	M.D. 18 40	M.D. for 1845	Ann. Precess. Sec. variation Ann. proper			Logarithms for				
			for 1850	Precess. in N.P.D.	motion in N.P.D.	e'	f'	g'	h'	
192		59 ^h 53 ^m 3 ^s 37 ⁺	10, 32	+ 0, 467	+ 0, 06	0, 09854	0, 16378	1, 5A799	0, 31337	731
40		53 ^h 2 ^m 33 ^s 61 ⁺	11, 77	0, 459	0, 01	0, 12701	0, 59109	1, 56547	0, 30312	760
940		59 ^h 10 ^m 29 ^s 63 ⁺	13, 48	0, 396	- 0, 03	0, 08157	0, 18868	1, 58517	0, 28794	790
396		47 ^h 36 ^m 28 ^s 26 ⁺	13, 61	0, 425	+ 0, 28	0, 13814	0, 21938	1, 58665	0, 28661	796
530	50 ^h 54 ^m 46 ^s 68 ⁺		13, 99	0, 402	0, 06	0, 11870	0, 21472	1, 59098	0, 28247	799
204		49 ^h 38 ^m 59 ^s 31 ⁺	16, 48	+ 0, 309	- 0, 01	0, 09273	0, 23849	1, 61781	0, 24798	850
069		48 ^h 12 ^m 33 ^s 27 ⁺	16, 84	0, 294	0, 00	0, 09267	0, 24536	1, 62161	0, 24127	854
78		54 ^h 0 ^m 8 ^s 55 ⁺	17, 31	0, 263	0, 00	0, 05907	0, 23220	1, 62640	0, 23181	861
16		47 ^h 43 ^m 23 ^s 90 ⁺	17, 92	0, 237	- 0, 03	0, 07207	0, 25548	1, 63268	0, 21712	880
091		51 ^h 17 ^m 2 ^s 13 ⁺	18, 55	0, 193	+ 0, 05	0, 04108	0, 24996	1, 63897	0, 19881	903
86		54 ^h 57 ^m 3 ^s 63 ⁺	18, 99	+ 0, 158	+ 0, 26	0, 01255	0, 24139	1, 64335	0, 18236	919
067		50 ^h 57 ^m 53 ^s 80 ⁺	19, 60	+ 0, 102	+ 0, 08	0, 99847	0, 25889	1, 64931	0, 14996	945
733	48 26 55 24		20, 04	0, 017	0, 03	0, 92948	0, 26999	1, 65361	0, 06539	999
64	50 5 34 24		19, 99	- 0, 035	+ 0, 09	0, 91133	0, 26451	1, 65311	0, 04905	1009
33		48 ^h 16 ^m 17 ^s 71 ⁺	19, 87	0, 058	0, 03	0, 89469	0, 26929	1, 65191	0, 02646	1019
99		51 ^h 38 ^m 18 ^s 71 ⁺	19, 70	- 0, 078	..	0, 87181	0, 25767	1, 65036	0, 00619	1028
58		50 ^h 50 ^m 50 ^s 07 ⁺	19, 60	0, 008	..	0, 86300	0, 25929	1, 64931	0, 99473	1036
58		50 ^h 50 ^m 39 ^s 99 ⁺	19, 60	0, 008	- 0, 04	0, 86300	0, 25929	1, 64931	0, 99473	1037
1		53 ^h 22 ^m 13 ^s 69 ⁺	19, 40	0, 104	0, 01	0, 84544	0, 24963	1, 64738	0, 97615	1044
7		51 ^h 44 ^m 57 ^s 94 ⁺	19, 31	0, 110	..	0, 84001	0, 25422	1, 64651	0, 96836	1051
54		49 ^h 1 ^m 29 ^s 37 ⁺	19, 21	- 0, 115	+ 0, 06	0, 83479	0, 26189	1, 64551	0, 96009	1054
5		48 ^h 36 ^m 35 ^s 12 ⁺	19, 11	0, 120	0, 03	0, 82826	0, 26233	1, 64451	0, 95226	1057
8		50 ^h 1 ^m 18 ^s 56 ⁺	18, 59	0, 147	0, 09	0, 79741	0, 24801	1, 63940	0, 91647	1076
4		52 ^h 54 ^m 53 ^s 30 ⁺	18, 50	0, 150	..	0, 79326	0, 24453	1, 63850	0, 91071	1079
16		48 ^h 7 ^m 54 ^s 58 ⁺	18, 18	0, 158	..	0, 77467	0, 25642	1, 63528	0, 89093	1096
4		58 ^h 56 ^m 44 ^s 11 ⁺	16, 15	- 0, 224	- 0, 13	0, 71810	0, 20824	1, 61442	0, 78344	1161
0		51 ^h 0 ^m 40 ^s 19 ⁺	16, 12	0, 211	0, 14	0, 68883	0, 23184	1, 61403	0, 78177	1163
2		48 ^h 52 ^m 56 ^s 01 ⁺	15, 48	0, 216	..	0, 65811	0, 23232	1, 60725	0, 75145	1182
7		48 ^h 59 ^m 42 ^s 61 ⁺	14, 41	0, 230	+ 0, 05	0, 61931	0, 22302	1, 59558	0, 70272	1214
4		54 ^h 11 ^m 3 ^s 74 ⁺	14, 36	0, 244	0, 00	0, 64313	0, 20919	1, 59504	0, 70050	1215

Mean places of stars

Name	Mag	R 1840	R 1845	Ann. place for 1850	Sec. variat. Procl. in R	Ann. proper motion in R	Logarithms of				NPI
							e	f	g	h	
Groombridge 2201	6		15 ^h 8 ^m 34 ^s 14	2 165	0,0012	..	0,05627	0,05439	1,43400	0,06375	4.7
α Bootis	3		15 ^h 9 ^m 15 ^s 33	2 410	0,0013	+ 0,011	0,05902	0,05728	1,43792	0,06806	
μ Bootis	4.3		15 ^h 18 ^m 38 ^s 08	2 277	0,0009	- 0 010	0,05892	0,05521	1,43579	0,06686	
μ Bootis	8		15 ^h 18 ^m 39 ^s 43	2 277	0,0009	..	0,05892	0,05523	1,43580	0,06686	
α Corone	5		15 ^h 29 ^m 33 ^s 71	2 197	0,0001	+ 0 003	0,05967	0,05366	1,43451	0,06689	
ϕ Bootis	5		15 ^h 32 ^m 15 ^s 59	2 146	+ 0,0001	+ 0 007	0,05958	0,05289	1,43372	0,06648	
δ Corone	6		16 ^h 8 ^m 52 ^s 36								55
δ Corone		16 ^h 8 ^m (4.0)		2 265	+ 0,0008	- 0 023	0,06539	0,05254	1,43561	0,07146	55
α Corone	5	16 ^h 16 ^m 29 ^s 08		2 254	0,0009	+ 0 007	0,06630	0,05211	1,43544	0,07199	
γ Corone	5	16 ^h 16 ^m 27 ^s 54		2 257	0,0009	0 012	0,06639	0,05213	1,43548	0,07203	
η Herculis	5.6		16 ^h 23 ^m 33 ^s 21	+ 1 963	+ 0,0017	+ 0 006	0,06568	0,04837	1,43076	0,07066	
σ Herculis	4		16 ^h 29 ^m 6 ^s 44	1 930	0,0019	0 002	0,06633	0,04775	1,43024	0,07049	
ζ Herculis	3.2		16 ^h 35 ^m 26 ^s 67	2 295	0,0011	- 0 030	0,06884	0,05183	1,43898	0,07375	58
η Herculis	3		16 ^h 37 ^m 35 ^s 03	2 049	0,0014	+ 0 005	0,06811	0,04901	1,43246	0,07221	
53 Herculis	5		16 ^h 47 ^m 51 ^s 51	2 278	0,0011	- 0 009	0,07022	0,05129	1,43581	0,07446	
ϵ Herculis	3.4		16 ^h 54 ^m 21 ^s 63	+ 2 295	+ 0,0010	- 0 001	0,07117	0,05125	1,43608	0,07506	58
δ Herculis	5	16 ^h 55 ^m 41 ^s 96		2 211	0,0010	0 000	0,07111	0,05034	1,43474	0,07472	
θ Herculis	4		17 ^h 51 ^m (0)								
γ Herculis	4.5		17 ^h 52 ^m 22 ^s 87	2 293	0,0001	+ 0 003	0,07829	0,05034	1,43604	0,07874	
Groombridge 233	6		18 ^h 12 ^m 11 ^s 83	1 915	0,0003	..	0,08091	0,04609	1,42999	0,08030	
κ Lyrae	5.4		18 ^h 14 ^m 25 ^s 86	+ 2 101	- 0,0004	+ 0 002	0,08108	0,04835	1,43299	0,08030	54
α Lyrae	1		18 ^h 31 ^m 41 ^s 42	2 012	0,0007	0 020	0,08344	0,04746	1,43155	0,08184	
ϵ Lyrae (S. Star)	4	x	18 ^h 39 ^m 12 ^s 19	1 984	0,0010	0 002	0,08450	0,04721	1,43111	0,08256	50
ϵ Lyrae (N. Star)	4	+	18 ^h 39 ^m 14 ^s 53	1 986	0,0010	0 002	0,08450	0,04725	1,43115	0,08256	50
Groombridge 2677	6		18 ^h 44 ^m 10 ^s 93	1 583	0,0022	..	0,08613	0,04182	1,42460	0,08440	
β Lyrae	var		18 ^h 44 ^m 21 ^s 44	+ 2 213	- 0,0008	+ 0 002	0,08471	0,04993	1,43477	0,08222	
β Lyrae			18 ^h 44 ^m 23 ^s 39	2 213	0,0008	..	0,08470	0,04993	1,43477	0,08221	
Groombridge 2950	6	x	19 ^h 45 ^m 18 ^s 18	2 058	0,0014	..	0,09301	0,04990	1,43229	0,08816	
β Cygni	5		20 ^h 3 ^m 40 ^s 29	2 225	0,0007	0 003	0,09435	0,05269	1,43497	0,08824	

for Prime Vertical Transit.

	NPD 1840	NPD 1845	Ann Prec.		Sec variation		Ann proper		Logarithms of			
			for 1850	NPD in N.P.D.	motion in N.P.D.				e'	f'	g'	h'
75	47° 13' 46" 79	50° 45' 25" 03	+ 13" 63	- 2" 32	..	9,58367	0,22042	1,58693	9,66885	1231.		
06		56° 6' 13" 46	13, 58	0,259	+ 4" 09	9,63310	0,19799	1,58640	9,66680	1234		
86		52° 4' 34" 6	12, 97	0,253	- 4" 08	9,58999	0,20339	1,57943	9,64069	1249		
86		52° 6' 21" 47	12, 97	0,253	..	9,59006	0,20346	1,57956	9,64122	1250		
89		50° 28' 19" 65	12, 23	0,254	0, 00	9,55741	0,20082	1,57085	9,60993	1273		
48		49° 8' 19" 80	+ 12, 04	- 0,250	- 0, 07	9,54241	0,20210	1,56867	9,60224	1277		
5	55° 43' 56" 97		9, 33	- 0,292	+ 0, 04	9,53574	0,16491	1,53571	9,49815	1341		
	55° 43' 55" 79									1342		
99		55° 49' 57" 05	8, 74	- 0,296	0, 08	9,52560	0,15974	1,52809	9,47694	1352		
03		55° 55' 57" 17	8, 73	0,296	0, 02	9,52663	0,15945	1,52796	9,47664	1353		
86		47° 46' 27" 20	+ 8, 18	- 0,261	- 0, 09	9,42328	0,16850	1,52087	9,45779	1369		
49		47° 14' 24" 54	7, 73	0,260	0, 04	9,40666	0,16487	1,51499	9,44315	1376		
75	58° 6' 12" 39		7, 22	0,312	0, 43	9,52996	0,14304	1,50810	9,42645	1392		
21		50° 46' 47" 04	7, 04	0,280	+ 0, 07	9,43439	0,15290	1,50575	9,42115	1396		
46		58° 2' 18" 39	6, 26	0,316	0, 00	9,51725	0,13518	1,49495	9,39766	1416		
06	58° 50' 22" 00		+ 5, 65	- 0,321	- 0, 07	9,52146	0,12896	1,48642	9,38090	1422		
72		56° 12' 13" 64	5, 52	0,310	0, 03	9,48379	0,13134	1,48462	9,37769	1430		
										1554		
14		59° 47' 39" 16	0, 63	0,334	0, 00	9,50811	0,08488	1,40881	9,30203	1550		
0		49° 7' 17" 03	- 1, 08	0,279	..	9,33940	0,06621	1,37874	9,30402	1591		
0	54° 0' 13" 17		- 1, 28	- 0,306	- 0, 03	9,41868	0,06542	1,37517	9,30551			
84		51° 21' 26" 16	2, 78	0,291	0, 28	9,38488	0,04667	1,34676	9,32145	1596		
6	50° 29' 36" 97		3, 43	0,285	0, 07	9,37729	0,03792	1,33388	9,33169	1634		
6	50° 33' 30" 6		3, 43	0,285	0, 08	9,37769	0,03793	1,33382	9,33169	1642		
0		41° 24' 26" 97	- 3, 85	0,227	..	9,24784	0,02362	1,32525	9,33985	1644		
										1651		
2		56° 48' 49" 57	- 3, 87	- 0,317	+ 0, 02	9,46664	0,03912	1,32483	9,33985			
1		56° 49' 28" 54	3, 87	0,317	..	9,47654	0,03927	1,32508	9,33985	1652		
6		49° 47' 29" 11	8, 91	0,269	..	9,46253	9,96056	1,20666	9,48291	1653		
4		53° 36' 48" 82	10, 32	0,278	- 0, 11	9,53374	9,95166	1,16678	9,53474	1779		
										1805		

Mean places of stars

Name	Mag	R 1840	R 1845	Ann. prec. for 1850	Sec. variat. for Rec in R	Ann. prop. motion in R	Logarithms of			
							c	f	g	h
γ Cygni	3.2		20 ^h 16 ^m 40.04	2,150	- 0,0004	+ 0,003	0,09648	0,05240	1,43378	0,09032
ν Cygni	4		20 ^h 51 ^m 23.87	2,231	+ 0,0015	+ 0,003	0,10027	0,05526	1,43507	0,09304
β Cygni	5.6		20 ^h 59 ^m 57.16	2,332	0,0020	- 0,359	0,10032	0,05697	1,43667	0,09234
δ Cygni	5.6		20 ^h 59 ^m 58.61	2,332	0,0020	- 0,352	0,10032	0,05697	1,43667	0,09234
ϵ Cygni	4		21 ^h 8 ^m 36.38	2,376	0,0027	0,015	0,10094	0,05804	1,43736	0,09251
π Pegasi	5		22 ^h 2 ^m 21.84	2,654	+ 0,0065	+ 0,001	0,10341	0,06494	1,44176	0,09234
π Pegasi	4		22 ^h 3 ^m 6.47	2,656	0,0065	+ 0,002	0,10346	0,06500	1,44180	0,09236
δ Lacertae	5		22 ^h 23 ^m 48.39	2,575	0,0121	0,000	0,10803	0,06568	1,44052	0,09885
λ Lacertae	6		22 ^h 43 ^m 23.00	2,688	0,0145	0,003	0,10846	0,06857	1,44230	0,09867
α Andromedae	4.3		22 ^h 54 ^m 48.07	2,740	0,0164	0,005	0,10907	0,07007	1,44310	0,09921
β Andromedae	3									
γ Andromedae	6		23 ^h 19 ^m 48.91	2,860	+ 0,0207	+ 0,009	0,11008	0,07349	1,44498	0,10012
δ Andromedae	6		23 ^h 27 ^m 3.37	2,914	+ 0,0200	0,002	0,10905	0,07472	1,44583	0,09837
Greenwich 4199	6		23 ^h 53 ^m 49.40	3,040	0,0256	..	0,11027	0,07835	1,44778	0,10003

for Prime Vertical.

	N.P.D. 1840	N.P.D. 1845	Amplitude of Sec. variat. and proper			Logarithms of				
			for 1850	of Prec. in N.P.D.	motion in N.P.D.	e'	f'	g'	h'	
32		50° 14' 11.84	11, 28	0, 259	0, 02	9, 52817	9, 92441	1, 13745	9, 57172	1828
304		49° 25' 37.21	13, 65	0, 238	0, 03	9, 59536	9, 87916	1, 05492	9, 66964	1875
234		52° 0' 34.70	14, 19	0, 240	3, 30	9, 62637	9, 88320	1, 03380	9, 69316	1886
234		52° 0' 37.98	14, 19	0, 240	3, 93	9, 62637	9, 88320	1, 03367	9, 69331	1887
51		52° 36' 48.74	14, 72	0, 235	0, 51	9, 64605	9, 87751	1, 01215	9, 71654	1897
34	57° 36' 25" 39		17, 48	0, 190	0, 03	9, 75647	9, 86480	0, 87631	9, 85111	1976
36	57° 36' 17" 10		17, 51	0, 189	0, 03	9, 75757	9, 86422	0, 87445	9, 85284	1983
85		47° 40' 10.67	18, 32	0, 153	0, 01	9, 78197	9, 76681	0, 82457	9, 89948	2022
67		48° 51' 56.89	18, 95	0, 128	0, 00	9, 81823	9, 76192	0, 78179	9, 94092	2049
21		48° 30' 20.54	19, 25	0, 112	0, 03	9, 83868	9, 75089	0, 75943	9, 96393	2072
12		47° 56' 26.05	19, 75	0, 073	0, 05	9, 88148	9, 73233	0, 72042	0, 01112	2102
37		50° 37' 31.88	19, 85	0, 060	0, 03	9, 88897	9, 75713	0, 71165	0, 02440	2111
03		48° 29' 44.98	20, 05	0, 012	..	9, 93342	9, 73012	0, 69467	0, 06974	2142

Name	Mag	R.		N.P.D.			Prime Vertical Zenith Dist.	Transit over East Prime Vert. West Prime Vert.		
✓ Andromedæ	4.5	0 ^h	41 ^m 50 ^s	49°	42'	41"	28° 54' 33"	23 ^h 14 ^m 58 ^s	2 ^h 8 ^m 42 ^s	
β Andromedæ	2.3	1 ^h	1 ^m 38 ^s	55°	08'	56"	39° 19' 19"	22 ^h 20 ^m 36 ^s	3 ^h 42 ^m 40 ^s	
50 Andromedæ	4.5	1 ^h	28 ^m 19 ^s	49°	19'	14"	28° 3' 55"	0 ^h 9 ^m 50 ^s	2 ^h 46 ^m 48 ^s	
γ Andromedæ	2.3	1 ^h	55 ^m 01 ^s	48°	22'	06"	25° 55' 37"	0 ^h 2 ^m 43 ^s	2 ^h 47 ^m 19 ^s	
Broombridge 518	6	2 ^h	20 ^m 58 ^s	51°	30'	44"	32° 35' 40"	0 ^h 23 ^m 25 ^s	4 ^h 18 ^m 31 ^s	
π Persei	5	2 ^h	49 ^m 30 ^s	50°	55'	15"	31° 25' 01"	1 ^h 0 ^m 58 ^s	4 ^h 38 ^m 2 ^s	
β Persei	var.	2 ^h	58 ^m 45 ^s	49°	36'	22"	28° 41' 01"	1 ^h 34 ^m 03 ^s	4 ^h 23 ^m 27 ^s	
γ Persei	4	3 ^h	34 ^m 27 ^s	47°	53'	02"	24° 47' 12"	3 ^h 3 ^m 18 ^s	4 ^h 5 ^m 36 ^s	
ε Persei	3.4	3 ^h	48 ^m 08 ^s	50°	24'	49"	30° 22' 58"	2 ^h 8 ^m 3 ^s	5 ^h 29 ^m 3 ^s	
Piazzi IV 69	6	4 ^h	16 ^m 53 ^s	58°	53'	33"	45° 37' 13"	1 ^h 1 ^m 28 ^s	7 ^h 31 ^m 18 ^s	
ε Persei	5	4 ^h	26 ^m 39 ^s	49°	2'	16"	27° 26' 36"	3 ^h 14 ^m 53 ^s	5 ^h 38 ^m 25 ^s	
ι Aurigæ	3	4 ^h	47 ^m 33 ^s	57°	4'	7"	42° 36' 46"	1 ^h 48 ^m 26 ^s	7 ^h 46 ^m 40 ^s	
ζ Aurigæ	4	4 ^h	52 ^m 21 ^s	49°	8'	28"	27° 40' 18"	3 ^h 38 ^m 4 ^s	6 ^h 6 ^m 38 ^s	
η Aurigæ	4.3	4 ^h	56 ^m 21 ^s	48°	57'	59"	27° 17' 04"	3 ^h 46 ^m 24 ^s	6 ^h 6 ^m 18 ^s	
14 Aurigæ 2 ^d St.	5.6	5 ^h	5 ^m 58 ^s	57°	28'	07"	43° 16' 53"	2 ^h 3 ^m 21 ^s	8 ^h 8 ^m 35 ^s	
λ Aurigæ	5	5 ^h	8 ^m 56 ^s	50°	2'	00"	29° 35' 28"	3 ^h 35 ^m 45 ^s	6 ^h 42 ^m 7 ^s	
Piazzi ✓ 63	6	5 ^h	15 ^m 18 ^s	58°	59'	49"	45° 47' 22"	2 ^h 20 ^m 4 ^s	8 ^h 30 ^m 32 ^s	
α Aurigæ	5	5 ^h	23 ^m 07 ^s	57°	55'	11"	44° 01' 45"	2 ^h 29 ^m 34 ^s	8 ^h 16 ^m 40 ^s	
26 Aurigæ	6	5 ^h	29 ^m 20 ^s	59°	35'	55"	46° 45' 31"	2 ^h 9 ^m 24 ^s	8 ^h 49 ^m 16 ^s	
θ Aurigæ	3	5 ^h	49 ^m 50 ^s	58°	48'	07"	45° 28' 21"	3 ^h 37 ^m 09 ^s	10 ^h 2 ^m 31 ^s	
48 Aurigæ	6.5	6 ^h	19 ^m 14 ^s	59°	25'	21"	46° 28' 34"	3 ^h 00 ^m 39 ^s	9 ^h 37 ^m 49 ^s	
58 Aurigæ	5	6 ^h	40 ^m 31 ^s	48°	3'	11"	25° 11' 22"	7 ^h 00 ^m 39 ^s	8 ^h 20 ^m 23 ^s	
63 Aurigæ	5	7 ^h	1 ^m 40 ^s	50°	26'	52"	30° 27' 11"	5 ^h 21 ^m 00 ^s	8 ^h 42 ^m 20 ^s	
τ Geminorum	5.4	7 ^h	1 ^m 54 ^s	59°	31'	19"	46° 38' 09"	3 ^h 42 ^m 33 ^s	10 ^h 21 ^m 15 ^s	
64 Aurigæ	6	7 ^h	7 ^m 57 ^s	48°	51'	51"	27° 03' 22"	6 ^h 00 ^m 40 ^s	8 ^h 15 ^m 14 ^s	
ρ Geminorum	5	7 ^h	19 ^m 47 ^s	57°	55'	56"	44° 02' 59"	4 ^h 13 ^m 14 ^s	10 ^h 26 ^m 20 ^s	
σ Geminorum	2.1	7 ^h	25 ^m 20 ^s	57°	47'	54"	43° 49' 43"	4 ^h 19 ^m 54 ^s	10 ^h 30 ^m 46 ^s	
σ Geminorum	2.1	7 ^h	25 ^m 21 ^s	57°	47'	53"	43° 49' 41"	4 ^h 19 ^m 56 ^s	10 ^h 30 ^m 46 ^s	
Bradley 1159	6	7 ^h	59 ^m 25 ^s	47°	8'	56"				

Te

2

0

8

9

1

2

7

6

3

8

5

0

8

8

5

7

2

0

6

1

9

3

0

5

4

0

6

16

Name	Mag.	R	N. P. D.	L. D.	Transit	
					East.	West.
15 Cancri	6	8 ^h	41 ^m	49° 39'		
32 Lynceis	6		24			
6 ³ Cancri	6		45			
10 Urse Majoris	4		51			
Piazzi VIII 245	5		57			
16 Leonis minoris	6	9	41			
19 Leonis minoris	5		49			
21 Leonis minor.	4.5		59			
μ Urse Majoris	3	10	14			
38 Leonis minor.	6		31			
46 Leonis minoris	4	10	45			
55 Urse majoris	5	11	11			
2 Canum venat.	6	12	9			
5 Canum venat.	5.6		19			
9 Canum venat.	6		32			
Groombridge 1931	6	12	43			
12 Canum venati.	7		49			
12 Canum venat.	3		49			
14 Canum venat.	5	13	0			
B.F 1812	6	13	3			
Piazzi XIII 27	5	13	7			
20 Canum venati.	5.4	13	11			
Piazzi XIII 136	5	13	28			
25 Canum venat.	5	13	31			
Groombridge 2044	6.5		40			
δ Bootis	4.3	14	26			
γ Bootis	3.2		26			
Groombridge 2145	6		38			
β Bootis	3		57			
Piazzi XIV 263	6		57			

Stars suitable for ascertaining the azimuth of the transit instrument from the Prime vertical, and approximate times and altitudes.

Name of Star	Right ^{mean} Ascension Jan 0 - 1858	Sid. time of passage East	Sid. time of passage West.	Altitude.
Aldebaran	1..27..46.57	^h 23.. ^m 41		East 23.
γ Pegasi	0..05..55.58	4..50		21
β Andromeda		2..45		57
α Andromeda	0..01..03.21	3..40		44
α Aurigae	1..59..10.53	2..15		34
γ Andromeda	0..01..03.21	0..45 - 1.0	4..26	77 - 78.25 - 79.46
Procyon	7..32	1..53	13..11	^h 8.. ^m 25 -
Arcturus	14..09			

Stars suitable for observation on the Prime vertical
for Latitude, of Cambridge.

approximate times of passage over the Prime vertical, and Altitude,
for first wire East and first wire West.

Name of Star	Right Ascension.	Lidial time Eastern passage h m	Lidial time of Western passage	Altitude East West	
γ^1 Andromeda		0.52	2.38	79.46 - 78.38	81.30
β Cancri	5.17.19.04				
γ Aurigae					
ϵ Persei					
μ Geminorum	6.14.22.15				
γ Persei					
β Geminorum	7.11.38.37	2.50		35	
β Cancri					
γ Aurigae					
β Geminorum	7.36.37.28				
δ Cancri					
δ Cancri					
α^2 Geminorum	7.25.32.04	4.15		53 1/2	
η Can. Ven	12.49.22.68				
α Lyrae	18.32.07.79	16.36	20.27	East, West 67.07 - 68.45	1 wire
μ Urs. Maj		9.57		86.25 - 89.54	
Algol		1.26	4.17	73.4	

1858. Sept-3. Preliminary observations for P. V.

46 inch Troughton & Simms Transit.

Find for value of divisions of Level.

secured to circle of Transit Circle, attached Therm. + 72.2.

1st value of Runs of Reading microscope

$\bar{T} = 60$

Micron. read -	0.02.2	0.03.1	0.03.0	0.02.9	0.02.7
to 1 div -	5.00.3	5.06.8	5.05.8	5.05.0	5.05.9
- " -	5.03.7	5.02.8	5.02.1	5.03.2	

Ther. 75.9

mic. read -	0.03.0	0.02.6	0.02.8	0.02.9	0.03.3	Zero -
1 st =	5.05.8	5.04.7	5.05.0	5.05.0	5.04.3	
	5.02.8	5.02.1	5.02.2	5.02.1	5.01.0	

Level Readings, attached to transit circle
Circle reading $\bar{T} 5.02.04$ Cross South

North end South end of Bubble Ther. 75

75.5 75.5

141.5 07.8 Circle = $\bar{T} 53.3 = \bar{T} 4.08.74$
07.3 141.0 " 0.59.0

5.03.7
2.6
2.1
3.2
2.8
2.1
2.2
2.1
1.0
22.0
5.02.44

	77.5	76.2	61.5	d.m.	d.s.	
	87.0 9.5	67.0 9.2	52.5 = 0.9.0 = 9.35			
	96.5 9.5	58.0 9.0	44.8 9.7.7 = 9.25			
	107.5 9.0	46.5 11.5	33.9 - 0.10.9 10.25			
	117.0 9.5	37.0 9.5	26.6 - 0.07.3 9.50			
	128.0 11.0	26.8 10.2	16.5 - 0.10.1 10.60	60 th = 60.488		
	137.0 9.0	17.2 9.6	7.8 - 0.8.7 9.30			
	147.0 10.0	07.0 10.2	58.3 - 0.9.5 10.10			
Returned	136.5 10.2	18.2 11.2	8.9 - 0.10.6 10.70			
	127.0 9.8	28.5 10.3	17.3 - 0.8.4 10.05			
Range	117.0 10.0	39.0 10.5	26.7 - 0.9.4 10.25			
	106.9 10.1	49.5 10.5	35.3 - 0.8.6 10.30	d =		
	98.0 8.9	58.8 9.3	44.9 - 0.9.6 9.70			
	86.8 11.2	72.2 13.4	56.4 - 0.11.5 12.30			
	77.3 9.5	82.5 10.3	64.0 - 0.07.6 9.90			

72.9 Therm.

558. Sept 3

Value of Level divisions cont^d

Bubble - Range South of zero

North

South

Reading mic.

Mer 72.5

79.2

81.0

.01.4

dm

d.s

67.5 11.7

93.4 12.4

.14.6

0.10.2

= 12.05

56.5 11.0

104.8 11.4

.26.5

.11.9

11.20

47.2 9.3

114.2 9.4

.36.7

.10.2

9.35

36.5 10.7

126.0 11.8

.48.0

.11.3

11.25

27.0 9.5

135.0 9.0

.56.9

.08.9

9.25

17.0 10.0

145.0 10.0

.68.3

.11.4

10.00

06.2 10.8

156.0 11.0

.78.3

10.0

10.90

Returned

18.0 11.8

145.0 11.0

.68.0

10.3

11.40

27.0 9.0

136.0 9.0

.60.0

8.0

9.00

37.0 10.0

126.0 10.0

.50.7

9.3

10.00

48.0 11.0

115.0 11.0

.38.5

12.2

11.00

57.2 9.2

105.8 9.2

.29.6

8.9

9.20

68.5 11.3

94.0 11.8

.18.2

11.4

11.55

77.2 8.7

85.0 9.0

.10.0

8.2

8.85

Therm^o 73.2 attached

$$\log 60 = 1.778151$$

$$\log 60.488 = 1.781669$$

$$9.996482$$

$$2.022911$$

$$4.999993$$

1858. Nov. 6th a.m.

Ex. Ther. = 45

Ink Therm. 49

Value of Level divisions of 46 inch Transit

$$\begin{array}{r} 60 - 5 + 1 + 3 \\ 5 - 4 - 1.5 \end{array} \quad \begin{array}{r} r \\ 4 \end{array} \quad \begin{array}{r} d \\ 58.5 \end{array} \quad 60'' = \begin{array}{r} d \\ 59.70 \end{array}$$

North	South	Mean	dS	d _m
113.2	113.0	46.7	10.45	= 10.80
123.6 ^{10.4}	102.5 ^{10.5}	57.5 ^{10.8}	10.20	= 13.20
130.5 ^{9.9}	92.0 ^{10.5}	70.7 ^{13.2}	10.25	= 11.20
143.8 ^{10.3}	81.8 ^{10.2}	21.9 ^{11.2}	9.70	= 11.70
153.4 ^{9.6}	72.0 ^{9.8}	33.6 ^{11.7}	10.80	= 13.00
164.0 ^{10.6}	61.0 ^{11.0}	46.6 ^{13.0}	10.65	= 12.70
174.5 ^{10.5}	50.2 ^{10.8}	59.3 ^{12.7}	8.85	= 13.40
183.0 ^{8.5}	41.0 ^{9.2}	72.7 ^{13.4}	70.90	÷ 86.00 = 1.21

Return

183.8	40.4	72.8	10.40	= 13.20
173.6 ^{10.2}	57.0 ^{10.6}	59.6 ^{13.2}	9.90	= 13.50
163.8 ^{9.8}	61.0 ^{10.0}	46.1 ^{13.5}	10.80	= 13.10
153.0 ^{10.8}	71.8 ^{10.8}	33.0 ^{13.1}	9.80	= 11.50
143.2 ^{9.8}	87.6 ^{9.8}	21.5 ^{11.5}	9.65	= 10.00
133.8 ^{9.4}	91.5 ^{9.9}	71.5 ^{10.0}	8.85	= 11.10
124.9 ^{8.9}	100.3 ^{8.8}	60.4 ^{11.1}	11.70	= 14.60
113.2 ^{11.7}	112.0 ^{11.7}	45.8 ^{14.6}	71.10	÷ 87.00 = 1.22

Int. Ther. = 50.8

North	South	Mean	d.s	d.m
112.0	113.0	44.6	9.75	= 12.10
102.5 ^{9.5}	123.0 ^{10.0}	32.5	12.1	9.85 = 11.90
92.5 ^{9.7}	133.0 ^{10.0}	20.6	11.9	9.55 = 12.60
83.0 ^{9.8}	142.3 ^{9.3}	8.0	12.6	10.60 = 15.10
72.5 ^{10.5}	153.0 ^{10.7}	52.9	15.1	9.40 = 10.90
63.2 ^{9.3}	162.5 ^{9.5}	42.0	10.9	10.10 = 10.70
53.5 ^{9.7}	173.0 ^{10.5}	31.3	10.7	9.85 = 13.30
43.8 ^{9.7}	183.0 ^{10.0}	18.0	13.3	69.10 ÷ 86.60 = 1.253
				Therm. 57.0

Return

44.0		182.5		19.2	8.25 = 9.60
52.0	8.0	174.0	8.5	28.5	11.35 = 13.00
63.2	11.2	162.5	11.5	41.8	13.0 9.20 = 9.00
72.3	9.1	153.2	9.3	50.8	9.0 11.10 = 16.90
83.3	11.0	142.0	11.2	7.7	16.9 10.65 = 14.60
94.0	10.7	131.4	10.6	21.3	14.6 8.70 = 10.90
102.5	8.5	122.5	8.9	32.2	10.9 10.70 = 12.80
113.2	10.7	111.8	10.7	45.0	12.8 69.95 ÷ 86.80 = 1.25

Thorn - 57

$$\begin{array}{r} \log 60 = 1.778151 \\ \log 59.70 = \underline{1.775974} \\ 0.002177 \quad d_m = " 1.005 \\ \underline{0.090787} \\ 0.092964 \end{array}$$

Results for div. of Level

1858, Sept. 2.

$$128.9 \text{ dm} = 140.95 \text{ ds}$$

Ther. attached
73°

$$142.2 \text{ dm} = 145.00 \text{ ds}$$

73°

Final Eq

$$271.1 \text{ dm} = 285.95 \text{ ds}$$

$$\begin{array}{r} 2.43313 \\ 2.45629 \\ \hline 9.97684 \\ 9.99668 \end{array}$$

$$\text{ds} = 0.9481 \text{ dm}$$

$$\text{Also } 302.3 \text{ dm} = 300''$$

$$\text{ds} = 0.941$$

$$\text{with ath. Ther.} = +73^\circ$$

1858 Nov. 5

$$173 \text{ dm} = 142.0 \text{ ds}$$

50°

$$173.4 \text{ dm} = 139.05 \text{ ds}$$

51

$$346.4 \text{ dm} = 281.05 \text{ ds}$$

$$2.53958 \text{ ds} = 1.233 \text{ dm}$$

$$\text{dm} = 1.005$$

$$\begin{array}{r} 2.44878 \\ 0.09080 \\ \hline 0.00215 \\ 0.09298 \end{array}$$

$$\text{ds} = 1.239 \text{ with ath. Ther.} = +51^\circ$$

Feb. 25, 1862

Division of Level for Litter Transit

All

$$5' = 500 - 2.8$$

$$" \quad " \quad - 2.4$$

South End	North End	Circle	Attached Ther 22.0
187.0?	88.3	64.0	
185.5-	95.2	54.0	
182.0	100.8	44.0	
176.4	107.5-	34.0	
168.0	116.8	24.0	
160.2	124.5-	14.0	
155.0	131.3	8.0	
146.5-	140.3	54.0	
139.4	148.0	44.0	
133.3	154.2	34.0	
125.8	162.1	24.0	
119.0	168.8	14.0	
112.2	175.6	4.0	
106.4	182.0	54.0	
100.0	out of sight	44.0	
	Reverse		All Ther 23.0
106.5-	182.3	54.0	
112.8	175.5	4.0	
119.5-	169.3	14.0	
125.8	163.0	24.0	
131.8	156.8	34.0	
138.0	150.7	44.0	
145.0	143.5-	54.0	
152.3	136.5-	4.0	
159.5-	129.5-	14.0	
167.5-	121.3	24.0	
175.8	113.5-	34.0	
182.0	107.0	44.0	
186.0	101.8	54.0	All Ther 25.0

