

KG
11365
331

N 51

Reduced measures of

Double Stars.

E. Equatorial.

J. L. FAIRBANKS, Stationer, 336 Washington Street, Boston.

KG 11365. 381

RG-11365.331



Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in rev. in sec.	No. of obs.	Observer	Remarks.
<i>η Cassiopeae</i>								
1866 Aug 24	.65	226 18	124.13	5	.708	5	S	
27	.66	Par. 226 29	123.95	4	.680	5	S	
Nov 2	.84	223 56	125.97	4			W	Measure interrupted by clouds
<i>ξ Bootis</i>								
1866 June 30	.50	58 18	299.20	4	.552	4	S	
		56 36	300.90	1			W	
July 3	.51	55 20	299.00	3	.625 .567	1 3	W S	
July 6	.51	236 45	297.58	1	.655	2	W	
		237 26	296.90	1	.590 .660	1 1	L S	
Mean	.51		299.10		.591		W	
	.51		298.74				S	
<i>η Coronae</i>								
1866 Aug 10	.61	145 38	28.70	3	.143	3	L	
		140 8	34.20	3	.135	2	S	
Aug 13	.63	137 36	36.73	6	.200	2	W	Distance more satisfactory to observer than usual.
		142 38	31.70	3	.115	2	S	
Aug 24	.65	315 27	34.98	3			L	Not well divided.
		328 14	22.20	4			S	
Mean	.63		36.73		.170		W	
	.63		31.84				L	
	.63		28.65				S	
<i>44 Bootis</i>								
1866 Aug 3	.59	298 52	235.47	7	.490	3	W	
		293 20	241.00	3			S	
		296 25	237.92	3	.503	3	L	
17	.63	299 57	238.82	3	.552 .472	5 4	L W	
Mean	.59	298 52	235.47		.508		W	
	.59		241.00				S	
	.61		238.37				L	
<i>μ^2 Bootis</i>								
<i>= P XV 74</i>								
1866 Aug 3	.59	295 ?	239 ?	1			L	
<i>P XV 76</i>								
1866 Aug 13	.63	216 15	318 5	1			W	

Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in no. in "	No. of obs.	Observer	Remarks
<i>Coronae</i>								
1866 Aug 10	.61						w	Too close to measure. Elongation not even certain
13	.62	149 225	205 or off 129 "				w s	
<i>51(ξ) Librae</i> <i>A+B.C</i>								
1866 July 14	.54	103 5	71.25	6	.690 6.76	4	w	
" A13 1866 Aug 13	.63						w & s	Cannot be separated or even elongated
<i>Σ 1999</i>								
1866 July 14	.54	73 44 72 51	100.60 101.48	4 4	1.112 10.90	4	w s	
<i>49 Serpentic</i>								
1866 July 14	.54	209 6	325.23	5	.363	3	s	
Aug 6	.60	29 56	324.40	4	.410 .387 .387	3 3	w s	
Mean					.387 { 3.79			
<i>σ Coronae</i> <i>(A13)</i>								
1866 July 3	.51	339 0 338 38	195.33 195.70	1 1	.335 .33	1 1	w s	
July 6	.51	340 15 343 15	194.08 191.08	1 1	.345 [.53]	1 1	w s	
Aug 22	.64	336 8 336 37	194.30 193.82	6 6	.310 .317	3 3	w s	
Aug 24	.65	339 41 339 29	190.75 190.95	3 3	.385 3.65	4 4	s s	
Mean	.61 .62 .63		194.40 190.82 193.82		.344 { 3.37		w s	
A+B.C Aug 24	.65	83 58	86.47	5	.365 52.58			
<i>η Draconis</i>								
1866 Aug 13	.62	210 22	143 58	5	.488	4	s	
Aug 24	.65	208 48 205 11	141 38 145 15	5 3	.566 577	5 3	s s	
Sept 3	.68	208 14	142 12	4	.47	1	w	

Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in rev. in "	No. of obs.	Observer	Remarks
<i>2 Ophiuchi</i>								
1866 July 12	.53	156 16 148 12	18.07 26.13	8 4	.223 .200	3 2	W S	
Aug 6	.60	149 35	24.75	3			W	Seeing not good.
Mean	.55 .53		19.89 26.13		.214 { 2.10		W S	
<i>2076</i>								
1866 July 10	.53	205 21 209 56 209 7	328.98 324.40 325.22	3 3 3	.950 1.063	2 2	S L W	
July 11	.53	27 25	326.92	2	.985	2	W	
Mean	.52 .53		325.90 324.40 328.98		1.000 { 9.80		W L S	
<i>5 Hercules</i>								
1866 Aug 6	.60	32	142 or off.	1			S	Extremely uncertain
Aug 13	.62						W	Not separable.
<i>7 Hercules</i>								
1866 Aug 10	.61						W & S	Not sure of elongation
<i>46 Hercules</i>								
1866 Aug 10	.61	8 49	165.52	5	.485	4	W	
Aug 13	.62	192 32	161.80	3	.550	4	S	
Mean					.518 { 5.08			
<i>19 Ophiuchi</i>								
1866 July 10	.52	263 38	90.70	2	2.233	3	W	
July 11	.53	82 14	92.10	4	2.290	2	W	
Mean	.52		91.63		2.256 { 22.11			
<i>210 Hercules</i>								
1866 Aug 6	.60	265 32 269 19	268.80 265.02	3 3	.363 .437	3 3	S L	
Aug 22	.64	83 6	267.33	5	.395	6	W S	
	.64				.393 { 3.90			

Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in rev. in "	No. of obs.	Observer	Remarks
<i>γ Draconis</i>								
1866 Aug 24	.65	350 36	179.83	5	.298	6	S	
Sept 1	.67	351 30	178.93	3	.270 .285	1 2	W S	
<i>δ Herculis</i>								
1866 Aug 3	.59	353 18	181.03	3	2.111	3	W	
Aug 6	.60	173 37	180.72	3	2.053	3	L	
Mean					2.082	{ 20.41	6	
<i>ρ Herculis</i>								
1866 Aug 10	.61	227 25 224 43	306.92 309.62	3 4	.434	5	W S	
Aug 13	.62	40 59	313.35	3	.400	5	L	
Mean					.417	{ 4.09	10	
<i>Σ 2173</i>								
1866 July 12	.53	234.9	119.4	4	.163		S	
Aug 3	.59	225 213 246.7	129 141 107.6	1 1 3			S L W	
Aug 24	.65	218.2	132.2	2			S	Too unsteady to measure well.
27	.65	203	147	1			S	Very uncertain
Sept 6	.68						W	Elongated but not measurable.
9	.69	17 30 2 45 1 45	152.93 167.68 168.68	1 1 1			Clark W S	
Mean	.62 .59 .59 .69		122.6 141 131.8 152.9	4 1 9 1			W L S Clark	
<i>315 Herculis</i>								
1866 Aug 24	.65	94 58	75.47	6	1.112	4	S	
Aug 25	.65	274 27	75.98	3	1.097	3	L	
Mean					1.106	{ 10.84	7	

Star and date	Dec. of year	Circle reading	Position	No. of obs	Distance in rev. in "	No. of obs	Observer	Remarks
61 Ophiuchi								
1866 July 10	52	261 14	93.10	2	2.274	5	W	
July 11	53	79 47	94.55	3	2.030	2	W	
Mean	53		93.97	5	2.204 21.60	7		
w Hercules components of companion								
1866 July 26	57	82 48 83 2	91.53 86.30	3 3	.11	1	L S	Distance doubtful
Aug 3	59	89 56 88 1 86 56	84.40 86.32 87.40	3 3 3	.08 .11	1 1	Clark W L	
Mean	59 58 57 59		86.32 89.46 86.30 84.40	3 6 3 3	.10 { 0.98	3	W L S Clark	
companion from principal star								
1866 July 26	57	110 53	243.45	1			L	
Z 2234								
1866 July 12	53	154 16	200.07	2	1.675	2	S	
Aug 3	59	155 10	199.17	3	1.754	3	W	
Sept 6	68	150 59	199.45	6	1.798	6	W	
Mean	65 53		199.36 200.07	9 2	1.764 { 17.29	11	W S	
Quadruple star in "trifid" nebula B8								
1866 July 31	58	252 32 77 10	281.80 277.17	3 5	.190	2	L W	
Aug 2	59	259 0	275.33	4	.287	3	S	
5	60	252 11 252 34 256 44	282.15 281.77 277.60	3 3 3	.297 .230	3 3	W Pierce S	
1866 α B July 31	58	140 43	213.62	3	1.143	3	L	
Aug 5	60	140 19	214.02	3	1.067	3	S	
α Y July 31	58	147 41	26.65	3		3	L	
Aug 5	60	151 8	23.20	3	.633	3	S	

Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in rev.	in "	No. of obs.	Observer	Remarks
ϵ 2253									
1866 July 11	.53	244 32 93 54	79.80 80.43	3 3	1.495 1.710		2 2	W S	
Aug 3	.59	275 42	78.63	3	1.737		3	W	
Mean	.56 .53		79.22 80.43	6 3	1.660	16.27	7	W S	
τ Ophiuchi									
1866 July 6	.51	285 58	248.37	3	.272		2	W	
July 12	.53	285 24 288 49	248.93 245.52	4 3	.160		3	W S	
Aug 27	.66 par.	282 29	247.95	7	.140		3	S	
Sept 6	.68	281 36	248.83	3	.154 205		3 2	do W	Seeing very bad.
Sept 10	.69	105 11	245.25	5	.234		4	W	
Mean	.59 .60 .68		247.26 246.74 248.83	12 10 3	.191	1.87	17	W S L	
γ Ophiuchi									
1866 July 3	.51	71 5 72 17	103.25 102.05	2 1	.605 .550		3 2	W S	
July 10	.52	74 12	100.13	2	.610		2	L	
July 11	.53	73 10	101.17	2	.655		2	W	
Aug 27	.66	253 23	97.05	3	.437		3	W	
Mean	.58 .51 .52		99.96 102.05 100.13	7 11 2	.563	5.52		W S L	
Star "c" in neb.									
δ 2008									
1866 Aug 25	.65	50 28	299.97	3	.430	4.21	2	S	
ζ 2303									
1866 Aug 25	.65	309 44 304 10	220.70 226.27	3 4	.333 .334		3 3	L S	
Sept 6	.68	132 6	218.33	6	.360		4	W	
Mean					.344	3.37			
ξ 2309									
Aug 25	.65	1 25 1 55	349.02 348.52	4 3	.413 .415		3 4	S L	
					.414	4.06			
452 Hercules									
1866 Aug 17	.63								If found, too close to be separated.

Star and date	Dec. of year	Circle reading	Position	N _o of obs.	Distance in rev. in"	N _o of obs.	Observer	Remarks
Σ 2318								
1866 Aug 24	.65	275 29	254.95 on app.	3	2.117	3	L	
Aug 25	.65	274 44	255.70 on app.	3	2.133	4	S	
Mean					2.126	{ 20.83	7	
Σ 2346								
1866 July 11	.53	249 21	284.98	3	1.863	3	S	
July 26	.57	65 48	288.53	2	1.910	2	L	
		66 17	288.05	2	2.100	2	S	
Mean	.57 .55		288.53 286.21	2 5	2.101	{ 20.59	7	L S
ϵ Lyrae								
1866 Aug 10	.61	157 20	17.00	4	.350	4	S	
Aug 17	.63	158 52	19.90	4	.353	3	W	
Mean					.351	{ 3.44	6	
δ Lyrae								
1866 Aug 10	.61	207 24	146.93	4	.400	3	S	
Aug 17	.63	215 28	143.30	7	.317	3	W	
Mean					.358	{ 3.51	6	
δ from ϵ δ & δ Lyrae								
1866 Aug 10	.61	181 48	172.53	2	31.502	308.80	5	S
ζ Lyrae								
1866 Aug 20	.64	20 58	149.47	4	4.531	44.40	4	S
Σ 2396								
1866 July 10	.52	232 42	301.63	2	1.710	2	S	
July 11	.53	51 30	302.83	2	1.774	5	W	
Mean					1.756	{ 17.21	7	
Σ 2455								
1866 Aug 5	.60	238 29	115.85	4	435	2	W	
		239 22	114.97	4	340	3	S	
Aug 25	.65	236 42	113.73	3	390	3	L	Distance considered rather too small
Mean					.382	{ 3.74	8	

Star and date	Dec. of year	Circle reading	Position	N_p of obs	Distance in rev.	Distance in "	N_p of obs	Answer	Remarks
<i>Aquilae</i>									
1866 July 10	.52	344. 24	9.93	2	.295		2	S	
July 26	.54	344 30	9.83	2	.323		3	L	
		340 36	13.73	2	.325		2	S	
Mean	.54 .57		<u>11.83</u> 9.83	4 2	.316	{ 3.10	7	S L	
Σ 2503									
1866 Aug 25	.65	67 41	282.75	3	.237	2.32	3	S	
π Aquilae									
1866 Aug 22	.64	226 53	123.55	3	.214 .176 210		5 5 6	w L S	
Mean					<u>.201</u>	{ 1.97	16		
W XIX 1273									
1866 Aug 8	.60	205.4 201.8	148.9 152.5	5 4				S w	
Sept 6	.68	194 30	155.93	3				w	Measured with great difficulty
Mean	.65 .60		<u>153.97</u> 148.9	7 5				w S	
α 250 Aquilae = Σ 21656									
1866 July 10	.52	300 52	233.47	4	.903		3	w	
July 11	.53	302 22	231.97	3	1.020		4	S	
Mean					<u>.970</u>	{ 9.51	7		
α^2 Capricorni									
1866 July 10	.52		150					w	Estimated.
July 11	.53	199 56	154.42	2	.900		1	w	
July 29	.58	261 8	153.20	2	.907		3	S	
		205 29	148.85	4	.823		3	S	
Mean	.52 .56		<u>154.42</u> 150.30	2 6	.870	{ 8.53	7	w S	
components of companion									
1866 July 11	.53	293 45	60.58	1				w	
July 29	.58	271	83	1				S	

Star & date	Dec of year	Circle reading	Position	No of obs.	Distance in rev.	Distance in "	No of obs.	Observer	Remarks
P XX 178 (AC)									
1866 July 31	.58	248.8	105.5	3	2.415		2	S	
Aug 5	.60	69 14	105.10	3	2.470		2	S	
Mean	.59		105.30	6	2.442	23.93	4	S	
(AB) July 31	.58	97 16	257.07	3	1.607		3	S	Duplicity of B not apparent
Aug 5	.60	98 34	255.77	2	1.550		2	S	
Mean	.59		256.55	5	1.584	15.52	5	S	
Components of B									
1866 Aug 5	.60	29 10 44 15	145.17 130.08	1 1				W S	
Sept 27	.74	330 22 321	200.07 209	2 2				W S	Seen several times distinctly separated but only at rare intervals.
Mean	.69 .69		181.77 182.69	3 3				W S	
4 Aquarii 1866 Aug 5	.60	59 38 210	114.70 144	3 1				S W	Duplicity uncertain
Aug 8	.60	210 214	144 140	1 1				W S	} Suspected, not certain.
Sept 1	.67	302	48	2				W	Thought to be separated, Images faint but steady.
Sept 6	.68							W	Encumbered but could not separate it.
Sept 16	.71	257	93	2				W	
Oct 5	.76	49 50 41	121 119.75	1 4				S W	Stars distinctly separated. Power of 1200. No lower power elongates it.
P XX 376									
1866 July 24	.56	66 47 68 1/3	287.55 286.03	3 3	.313 .210		3 3	L S	
Aug 5	.60	252 47	281.55	3	.322		3	W	
Mean					282 { 2.76		9		

Star and date	Dep. of year	Circle reading	Position	No of obs	Distance in arc in "	No of obs	Observer	Remarks
<i>λ Equulei</i>								
1866 July 15	.54	100 15 97 26	74.08 76.90	3 3	1.153 1.123	3 3	W S	
July 24	.56	98 32	75.80	4	[2.153]	3	S	1.153 probably
Sept 16	.71	274 3	76.38	8	1.160	3	W	
Mean	.66 .55		75.75 76.127	11 7	1.147	11.24 12	W S	
<i>" 203</i>								
1866 July 15	.54	63.5 248.8	29 0.8 285.5	2 2	.140	3	S W	
July 24	.56	67 35	286.75	3	.150	4	S	
Sept 16	.71	241 32	288.90	3	.069 .116	5 2	W S	
Oct 11	.78	242 29	287.95	4	.080 .125 .122	1 3 2	W S S	Good measure of distance
Mean	.65 .55		287.72 288.37	9 5	.114	1.12 20	W S	
<i>λ Equulei</i>								
1866 July 31	.58	310 25	223.92	3	.330	3	S	
Aug 5	.60	309 47 309 51	224.55 224.48	4 4	.340 .300	1 3	W S	
Mean					.319	3.13 7		
<i>12 Aquarii</i>								
1866 July 11	.53	347 18 160 56	187.03 193.40	3 4	.445 .325	2 2	W S	
July 29	.58	163 13	191.12	3	.358	4	S	
Mean	.53 .55		187.03 192.42	3 7	.372	3.65 8	W S	
<i>61 Cygni</i>								
1866 Aug 20	.64	238 52	111.57	6	1.909	3	W	
Sept 16	.71	239 32 238 42	110.90 111.73	2 4	1.947	5	W S	
Mean	.66 .71		111.40 111.73	8 4	1.933	18.94 8	W S	

Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in rev.	Distance in "	No. of obs.	Observer	Remarks.
<i>δ Equulei</i>									
1866 July 10	.53	328 5	26.25	3	3.563		3	w	
July 11	.53	329 15	25.08	3	3.525		2	w	
Mean	.53		25.66	6	3.548	34.77	5	w	
<i>" A B</i>									
1866 Sept 27	.74							W & S	Stated to be double by O. Struve. Ast. Soc. Notices, Vol. XX p. 10.
30	.75							W & S	Could not be sure of elongation
Oct 5	.76							w	Showed a round and tolerably steady disc with rings under a power of 1200.
11	.78	300 240	50 } or off. 110 }					w S	Cannot separate with 1200. Not worth while to try a higher. Cannot really be separated. Neither observer confident of measure.
<i>20 Pegasi</i>									
1866 July 10	.52							w	Too close to observe
July 15	.54	37 1 39 46	317.32 314.57	2 4	.170		3	w S	
July 26	.57	38 47 39 2/4	315.55 314.93	2 2	.180 .167		1 3	L S	
Mean	.54 .55 .57		317.32 314.69 315.55	2 6 2	.170	1.67	7	w S L	
<i>κ Pegasi</i>									
1866 Aug 13	.62	53 2	301.30	4	1.227		4	S	
Aug 24	.65	47 23	303.05	3	1.310		3	L	
Mean					1.263	12.38			
<i>Σ 2833</i>									
1866 July 11	.53	196 8	338.20	3	.973		3	S	
July 26	.57	19 46	334.57	4	.970		3	S	
Sept 10	.69	12 16	338.17	6	.905		6	w	
	.69 .55		338.17 336.13	6 7	.938	9.19	12	w S	

Star and date	Dec. of year	Circle reading	Position	N _g in rev.	Distance in"	N _g obs.	Observer	Remarks.
Σ 2847								
1866 Aug 5	.60	43 48 50 18	310.53 304.03	3 4	.235 .138	2 4	w s	
Aug 13	.62	51 35	302.75	3	.107	3	L	Distances considered rather too small by observer Definition too poor to measure distance
Aug 17	.63	233 11 225 30 233 0	305.58 313.27 305.77	4 1 1			w s L	
Aug 24	.65	47 47	302.65	3	.135	2	s	
Sept 3	.68	43 2	307.40	3	.115	2	L	
Mean	.62 .62 .65		307.70 304.67 305.17	7 3 7	.142	{ 1.39		w s L
Σ 2838								
1866 Aug 24	.65	165 38	184.80	5	1.118	4	s	(dist. 2.118?)
Sept 10	.69	166 48	183.63	4	2.108	4	s	
					2.235	2	w	
	.67		184.28	9	2.137	{ 20.94		s w
41 Aquarii								
1866 Aug 24	.65	233 6	117.33	4	.520 .547	3 3	L s	Seeing very bad
Sept 10	.69	225 16	125.17	6	.517	6	w	
Mean					.525	{ 5.15		12
π XXII 33								
1866 Aug 6	.60	11 10	343.17	1			w	
Aug 24	.65	185 54 7 23	344.53 343.05	3 3	.940 1.060	4 3	s L	
Mean					.991	{ 9.71		
ζ Aquarii								
1866 July 29	.58	196 18	338.03	4	.422	4	s	
July 31	.58	77 54	336.43	3	.397	3	L	
Sept 6	.68	12 27	337.98	6	.351	6	w	
Oct 5	.76	15 30	334.93	5	.337	4	s	
Mean	.68 .68 .58		337.98 336.31 336.43	6 9 3	.373	{ 3.66		w s

Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in rev.	Distance in"	No. of obs.	Observer	Remarks.
37 Pegasi									
1866 July 31	'58							L	Probably found but not well seen as double.
Aug 3	'59							w	Not separable. Seeing not very good.
Sept 1	'67	73.7 73.9	96.7 96.5	3 2				w S	Apparent elongation
Sept 10	'69	37.5	132.9	2	off.			S	Elongation pretty doubtful.
Sept 12	'70							w	Not separable
Oct 5	'76	69 54	101 116	2 2				w S	Separated with a power of 600
P. XXII 275									
1866 Aug 24	'65	40.7 9.15	129.7 160.9	3 1				L S	No separation. Angle estimated.
Sept 10	'69	352 18	178.13	3	off.			w S	Not so well separated with a higher power. Elongation doubtful.
Sept 12	'70							w	Not separable.
P. XXIII 63 (98 Argemini)									
1866 Aug 24	'65							S	Tried power of 688 but could not be sure of duplicity.
Sept 10	'69	0 30	169.93	1	off.			w S	Could not perceive any elongation.
Σ 1643									
1866 May 15	'37	319 45	53.42	1				w	
Σ 1670 (x Virginis)									
1866 May 15	'37	28 0	165.17	1	off.	.510 5.00	1 1	L w	
Σ 1664									
1866 May 15	'37	121 10 119 45	252.00 253.42	1		2.000 19.60	1 1	w L	
Σ 1661									
1866 May 15	'37	319 15	233.92	1		.300 2.94	1 1	w	
Regulus				1					
1866 July 11	'53							w & S	Companion about 200" from apparent zenith toward the left.
July 14	'54	153	21					w	Near horizon; apparent elongation.

1866phae. proj

Star and date	Dec. of year	Circle reading	Position	No. of obs.	Distance in sec. in "	No. of obs.	Observer	Remarks
b Andromedae								
1866 Sept 27	.74	358 4	352.37	6	.200 .130	1 3	W S	
Sept 30	.75							Star well separated but no measures taken.
Oct 2	.75	2 15	348.18	6	.109	3	S	
γ Andromedae (B.C.) i.e. components of companion								
1866 Sept 27	.74	218 8 243 13	132.30 107.22	1 1			W S	Images seen distinctly by both observers, but not at the time of measurement.
Sept 30	.75	250 5	100.35	3			W	
ε Arietis								
1866 Sept 27	.74	329 52	200.57	6	.030	4	S	Separated easily, power 400
Oct 11	.78	326 55	203.52	4	.162	3	L	
Dec 1	.92	152 33	198.15	5	.195 .102	2 3	W S	
Σ 2410								
1866 Sept 15	.71	254 43 253 24 255 7	95.72 97.03 95.32	3 3 3	.135 .111 .146	1 1 1	W L S	
Oct 23	.81	76 30 72 0	93.40 97.90	4 2			W S	
Mean	.77 .74 .71		94.39 96.35 97.03	7 5 3	.131 { 1.28		W S L	

Star and date	Dec. of year	Circle reading	Position	Nrg. of obs.	Distance in no. in "	Nrg. of obs.	Observer	Remarks.
α Draconis								
1866 Sept 15	71	189 57 190 3/3	340.48 339.88	3 1	3.230	3	L W	
Oct 23	81	190 12	339.70	4	3.231	3	W	
Mean	79 71		339.74 340.48	5 3	3.230	{ 31.65	W L	
δ Cygni								
1866 Aug 30	66						W	Could not divide it. Seeing very poor.
Sept 3	68	240	110 or dph.				W	Approximate
Sept 12	70	40	130 or dph.				W	Approximate
Oct 23	81	110	240 (sic.)				S	Felt tolerably confident of a faint close companion in the 10th quality.
							W	Could see none.
β Aquilae								
1866 Sept 27	74	333 49 331 29	16 37 18 57	5 5	1.170	11.47	6 5	W S
Lal. 38337								
1866 Oct 4	76	72 18	98 8	5	1.267 1.374	6 5	W S	
Schjellerup. No 32								
1866 Sept 27	74	267 39	82 47	6	.531 .610	4 4	W S	
Oct 3	76	268 10	82 16	5			W	Seeing too poor for distances
Mean					570	{ 5.59		

Star and date	Dec. year	Circle reading	Position	No. of obs.	Distance in rev. in "	No. of obs.	Observer	Remarks
Star found by Mr. Clark $20^h 35^m + 40^\circ 6'$								
1866 Sept 12	.70	326 56 323 51	23.50 or off 26.58 "	5 3	.090 .094	3 2	W L	
Sept 15	.71	330 15	20.18 "	1			S	
Sept 16	.71						W & S	Unable to resolve it with any power.
Mean					.092 { 0.90	5		
Lat. 42240.1								
1866 Oct 5.	.76						W & S	No companion visible
Lat. 42263								
1866 Oct 5	.76						W & S	A companion visible, but too faint to measure.
53 Aquarii								
1866 Sept 10	.69	226 49 48 1/6	303.62 302.17	4 4	.837 .860	3 3	W S	
					.848 { 8.31	6		
Star mentioned by O. Struve Ast. Soc. Not. XX/12 $22^h 51^m 8 + 8^\circ 39'$								
1866 Sept 27	.74	60° or 70° 61	110 or 100 or off 109	1 1			W S	
Oct 1	.75						W	Not certainly elongated
Nov 17	.88						W & S	Not separable. Power of 600. Star unsteady. Seeing otherwise good.
P. XXIII 69								
1866 Sept 10	.69	270 43	259.72	6	.609	4	W	
Nov 2	.84	270 8	259.77	6	.520 .672	6 1	W Davis	
					.566 { 5.55	11		

Star and date	Dep. of year	Circle reading	Position	No of obs	Distance in rev. in "	No of obs	Screen	Remarks
P XXIII, 100, companion of 7.5 mag. star								
1866 Oct 7	.77	306 57	223.48	2			W	
		308 30	221.93	1			S	
Oct 31	.83						W & S.	Not visible.
Z 3037								
1866 Aug 27	.66 par	140 38	27 48	3	.240	4	S	
Sept 30	.75	315 42	34 44	3		W		Companion too faint to measure its distance.
Z 3057								
1866 Aug 27	.66 par	233 38	296.80	4	.320	6	S	
Sept 8	.69	233 25	297.02	4	.372	4	S	
Mean	.68		296.91	8	.341	10	S	
Z 3062								
1866 Sept 8	.69	254 4	276.37	4	.132	4	S	Distances not very trustworthy
Sept 30	.69	254 26	276.00	3	.140	2	L	
Sept 30	.75	257 8	273.30	3	.118	2	W	
		254 15	276.18	6	.097	3	S	

Andromedae

1866 Sept 27

Dec.
of
year

Circle reading

Position

No.
of
obsDistance
in m in "No.
of
obs

Observer

Remarks

358 4

6 -200

1

W

Stars steady and observation
satisfactory

.130

3

S

Oct 2

2 15

6 .109

3

S

Seeing good during most of
the measures.

Recorded on p. 14

38 Piscium

1866 Nov 2

84

294 19

235.58

~~236.38~~

5

.476

.548

5

S

2

Mean

.488 { 4.78 6

Star found by
JMS0^h 42^m + 2° 33'

1866 Dec 7

94

about 270°

about 3"

W O 802
found by JW

1866 Dec 3

92

90+ 40
114 17
25 17
90+ 1
118 25
24 29

5

.135

2

W

W

4

.083

3

S

S

.104 { 1.02 5

2 Piscium

1866 Nov 2

84

286 23

63.52

~~64.32~~

5

2.423

23.75

5

S

Cape of Good Hope
Catal. 3432

1866 Dec 2

92

130 48

219.90

5

.930

9.11

3

W

2 142

1866 Nov 17

88

206 32

323.37

~~324.17~~

5

2.024

19.84

5

S

Star and date	Dec. of year	Circle reading	Position	No. of obs	Distance in rev. in "	No. of obs	Observer	Remarks
Σ 125								
1866 Nov 2	'84	350 36	359.30 ~~0.10~~	5	2.319	5	w	
Nov 17	'88	171 41	358.22 ~~359.02~~	5	2.650	5	s	
Mean					2.484	{ 24.34	10	
66 beti								
1866 Nov 1	'84	119 30	230.40 ~~231.20~~	1	1.805	1	D	
		121 21	229.55 ~~228.55~~	3	1.572	3	s	
Nov 2	'84	300 34	230.13 ~~229.33~~	5	1.634	5	s	
1867 Jan 4	1.01	123 40	227.03	5	1.654	5	s	
"		90+ 27 24	233.30	5	1.654			
"		123 27	227.25	5			w	
"		90+ 214 50	225.87	5			w	
84 beti								
1866 Nov 17	'88	205 57	323.95 ~~324.45~~	5	0.488	4.78	5 s	
γ beti								
1866 Nov 2	'84	242 55	286.98 ~~287.78~~	5	.313	5	s	
1867 Jan 4	1.01	241 31	289.18	4			s	
		239 30	291.20	5			w	
"		90+ 330 0	290.70	2	.315	5	w	
Mean					.314	{ 3.08	10	
P III 98								
1866 Nov 26	.91	290 32	239.38 ~~240.18~~	5	.667	6.54	5 w	
Σ 651								
1867 Jan 12	1.03	285 51	64.85	5			w	
"		90+ 16 0	64.70	5	1.543	6	w	
"		286 51	63.85	5			s	
"		90+ 16 47	63.92	5	1.552	5	s	
Mean					1.547	{ 15.16	11	

Star and date	Dec. of year	Circle reading	Position	Ny. of obs.	Distance in rev.	Distance in "	Ny. of obs.	Observer	Remarks
Σ 2760 1866 Nov 17	.88	126 34	223.330	5	1.048	10.27	5	W	
Σ 2925 1866 Nov 17	.88	164 57	184.957	5	.695	6.81	6	W	
Σ 2895 1866 Nov 17	.88	145 45	224.157	5	.665	6.51	4	W	
P XXII 219 1866 Nov 2	.84	277 36	~~252.30~~ ~~253.10~~ 251.85	6	.349		3	W	
Nov 17	.88	278 3	~~252.65~~	6	.440		3	W	
Nov 21	.89				.420 .380		1 1	W S	
Mean					.396	3.88	8		
94 Aquarii 1866 Oct 23	.81	184 24	~~345.50~~ ~~346.30~~	5	1.324 1.322		4 2	W S	
Nov 2	.84	5 10	~~344.73~~ ~~345.50~~	5	1.297		6	W	
Mean					1.310	12.84	12		
π b _{ep} hei 1866 Oct 23									Neither W. nor S could see the companion.

Star and date	Deg. of year	Circle reading	Position	No. of sts	Distance in rev. in"		No. of sts	Observer	Remarks
Sirius									
1867 Jan 23		99 33	71°15'	6	1.027	10.06	5	W	Companion distinctly seen by W. & S. Must be variable (JW) Appears reddish (JW) Very unsteady during measures of distance Star unsteady
		95 52	74.83	6	1.049	10.28	3	S	
Jan 24		97 10	73.53	8	1.064	10.43	5	S	Companion not quite as well seen as last night at first; improved afterward
Jan 28		97 20	73.37	5	1.085	10.63	5	W	Companion reddish; well seen on wire, Better defined than ever before and easily measured.
Feb 6		96 29	74.22	3				S	Images at first perfect but tremulous; companion afterward disappeared
Feb 7		97 38	73.07	9	1.112	10.90	6	S	
Feb 25		97 52	72.83	6	1.179	11.55	4	S	Companion unusually distinct; perhaps better seen than ever before.
		99 0	71.70	1	1.144	11.21	3	Mean Clark	
Feb 27		96 54	73.80	5	1.030	10.09	5	S	Seeing poor and becoming worse; star blurring and very unsteady.
Mar 19		102.27	72.18	7	1.160	11.37	10	W	Seeing good at first; afterward poorer
Mar 30		281.70	72.75	6	1.228	12.03	10	W	Companion well seen at first; never better
Apr 2		100.19	74.26	10	1.223	11.99	10	W	Seeing excellent
Apr 21		103.35	71.10	4	1.106	10.84	5	W	

	Position				Distance in "			
Cassiopeae Σ 60 1867 Feb 26.	40° 34'	130° 08'	5	.668	6.55	4	S	Stars eyes
95 Ceti Feb 1	268	6	102.60	3			W	Poor.
7 Tauri = Σ 412	208	143.	1				S	Rough setting without illumination
Star found by J.W. α = 3h 40m S = 16° 55' Jan 29	552° 50'	117.87	3	2.681	26.27	4	W	Magn 10 x 10.5 Smaller precedes.
α = 3h 55m S = 16° 10' Jan 28	223	40	127.03	4	.917	8.99	3	W Magn 10 x 9. Comp s.f. Stars ⊥ eyes.
α = 4h 01m S = 16° 10' Jan 28	267	55	180.78	6	1.855	18.18	4	W Magn 9 x 9. Stars eyes
Σ 6220 Jan 19 Feb 10	175	52	94.82	8	.415	4.07	3½	W Pretty good measures.
θ Orionis = Σ 748 Sixth Star = α ₁ from Jan 23 Jan 28 Dec 26 α and β. Jan 28 Jan 29 Mean	39 34 23 20 224.72 230.94 40 8 37 27	131.13 119.37 124.48 108.26 310.59 311.25 310.91	6 3 5 5 5 5 5		3.51 2.60 3.57 3.64	3 3 5 5	W W D W S	Seeing fine Stars eyes. Stars eyes. Right eye (unusual)
β and β ₁ Jan 28 Dec 26	356 9 179.16	344.55 350.04	5 5		.494	4.84	5	W P Seeing fine
β and δ Jan 28 Jan 29 " " Mean	318 21 318 6 317 20	323.5 32.60 33.37 32.77	5 5 5					W Stars ⊥ eyes S Stars ⊥ eyes Right eye (unusual) S " " " left eye
ε and δ Jan 28 " 29	230 27 232 26	300.25 298.27	5 5	2.005	19.65	2	W D	Stars eyes
α and ε Jan 28 " 29	290 56 289 55	239.93 240.95	5 5				W S	Stars ⊥ eyes " " "

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Reductions of the Observations upon Double Stars made during the year 1857.

1866phae.proj.:.332W

7

9

6

5

Triple Star AB.

Same Star AC.

α Piscium $\Sigma 202$

Dec 1

Dec 5

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Star & Date Date in years Circle Reading Position μ Distance in sec. in second Mt. Ob. Remarks

R.A. 1. hour.

60 Ceti $\Sigma 91$

Oct 25	205.18	324.92	5	.50	4.9	1	P 4 ^h P.
Nov. 27	205.70	323.61	5				P 2 ^h P.
Dec 2	205.82	323.49	5	.513	5.03	5	P 2 ^h P Stars & eyes Comp n.p.
Dec 5	204.58	324.73	5	.463	4.54	5	P 5 ^h P.
Dec 10	205.40	323.91	5	.519	5.09	5	P 2 ^h P

3 Piscium $\Sigma 100$

Nov 30	105.59	63.72	8	2.801	2.745	6	P Stars & eyes. Stars large, moving
--------	--------	-------	---	-------	-------	---	-------------------------------------

$\Sigma 103$

Oct 24	279.76	70.34	5	.518	5.08	5	P Double distances.
--------	--------	-------	---	------	------	---	---------------------

Oeltz 751

Oct 18	108.50	61.30	5	1.070	1.049	1	S Stars 9x10 Comp f.
--------	--------	-------	---	-------	-------	---	----------------------

42 Ceti $\Sigma 113$

Nov 26	4.22	165.09	8	.127	1.24	5	P 6 ^h P. Stars n. large dancing
Dec. 1	3.41	165.90	5				P 4 ^h P Stars & eyes
Dec 5	3.73	165.58	7	.141	1.38	5	P 5 ^h P
Dec 18	5.00	164.31	3				P 5 ^h P. Seeing hardly good enough to observe

$\Sigma 125$

Dec 7	352.05		5	2.750	[2.695]	10	P 2 ^h P. Reject these distances, because discordant
Dec 7	351.54		5				P 3 ^h P
Dec 18	351.85		5	2.654	2.601	5	P 3 ^h P Stars & eyes.
Dec 18				2.646	2.593	5	P 2 ^h P
Dec 19	349.98		10	2.657	2.604	10	P Fine observing
Dec 26	351.12		5	2.652	2.599	5	P

P.I. 123 = $\Sigma 138$

Nov. 26	137.52	31.72	5				P 3 ^h P Stars & eyes
" "	141.20	28.04	5				P 5 ^h P " " "
Dec 2	138.74	30.50	5	.147	1.44	5	P 3 ^h P " " " Stars moving

Triple Star AB.

Oct 2		115	0		2	0	S A 9 ^h mag. B 11 mag.
Dec 16	51.95	117.36	4	.460	4.51	2	S A 9 mag. B 10 mag. B fell.

Same Star AC.

Oct 2		200	0		12	0	S C 11 ^h mag.
Dec 16	315.80	213.51	4	1.450	1.421	2	S C 12 mag. C south

α Piscium $\Sigma 202$

Dec 1	202.06		5				P Stars & eyes 1 ^h P. Through clouds
Dec 5	200.43		10	.339	3.32	5	P 6 ^h P Star moving, visible at intervals

Reductions of the Observations upon Double Stars made during the Year 1867.

23

R.A. 2 hours.

66 Ceti $\Sigma 231$

Dec 2

299.12

50.19

5

1.606

15.74

5

P $1\frac{1}{2}$ P stars 11 eyes

" "

1.609

15.77

5

P $3\frac{1}{2}$ P " " " $\Sigma 280$

Nov 11

3.47

167.10

5

.406

3.98

5

P

84 Ceti $\Sigma 295$

Nov. 18

203.15

326.16

0

.466

4.57

0

S Comp. n. p.

Dec 1

202.07

327.24

5

.568

5.57

7

P $1\frac{1}{2}$ P

Dec 2

207.0

322.3

0

Dec 7

204.00

325.31

5

.522

5.12

5

P $2\frac{1}{2}$ P stars 1 eye. A difficult star to measure pos. of.

Dec 11

205.38

323.93

 $2\frac{1}{2}$

.594

5.82

1

P $1\frac{1}{2}$ P

Reductions of the Observations of Double Stars made during the year 1867.

Star and date	date in year	Circ. Reading	Position	Alt	Distance in sec.	in seconds	Alt	Obs.	Remarks
R.A. 3 hours.									
5 Ceti									
Feb 1		268° 6'	102.60	3				W	Poor.
7 Taur = $\Sigma 412$									
Feb 27		208	143	0				S	
PM 98 = $\Sigma 422$									
Dec 1		287.44	61.87	5				P 1 st P	
Dec 18		290.12	59.17	5	.619	6.07	5	P	
Dec 19		285.60	63.71	10				P	Seeing fine
Star found by J.W.									
Jan 29		52° 50'	117.87	3	26.81	26.27	4	W	Mag 10 & 10.5 Comp p.
32 Eridani									
Dec 18		4.66		7 $\frac{1}{2}$	7.28	7.13	5	P	Stars 1 eyes.
Star found by J.W.									
Jan 28		223° 40'	307.03	4	.917	8.99	3	W	Stars 1 eyes Mag 9 & 10 Comp s.f.

Reductions of the Observations of Double Stars made during the year 1867.

Star and Date	Decimal Date	Circle Reading	Position	Dist. since	Dist. since	Dist. since	Dist. since	Remarks
				in ver.	in "			
R.A. 4 hours. & 5 hours								
$\alpha = 4^h 01^m S = -16^{\circ} 10'$								
Jan 28		269° 55'	180.78	6	1.855	1.818	4	W Mags 9 & 9. Stars 11 eyes.
$\Sigma 622$								
Jan 19.		175° 52'	94.82	8	.415	4.07	3½	W Pretty good measures.
380 β Aurigae = $\Sigma 742$								
Dec 10		275.27	74.04	6	.367	3.55	6	P
θ Orionis = $\Sigma 748$								
a and a ₁								
Jan 23		39° 34'	131.13	6				W
Jan 28		231 20	119.37	3	.351	3.47	3	W
Dec 26		224.72	124.59	5	.262	2.57	5	P Seeing fine
Dec 26		230.94	118.26	5	.366	3.59	5	D
Same star a and b.								
Jan 28		40° 8'	310.57	5				W Stars 11 eyes
" 29		39 27	311.25	5				S Stars 11 eyes Right eye unusual
Same star a and c								
Jan 28		290° 56'	239.93	5				W Stars 1 eyes
" 29		289 55	240.95	5				S " " "
Same star b and b ₁								
Jan 28		40 8	310.57	5				W Stars 11 eyes
Jan 29		39 27	311.25	5				S " " " Right eye (unusual)
Dec 26		174.16	350.16	5	.496	4.86		P Seeing fine
Jan 28		356 9	344.55	5				W
Dec 26		179.16	350.04	5	.496	4.86		P Seeing fine
Same star b and d								
Jan 28		318 21	32.35	5				W Stars 1 eyes
Jan 29		318 6	32.60	5				S Stars 1 eyes Right eye (unusual)
Jan 29		317 20	33.37	5				S Stars 1 eyes Left eye
Same star c and d.								
Jan 28		230 27	300.25	5				W Stars 11 eyes
Jan 29		232 26	298.27	5	2.005	19.65		D

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Reductions of the Observations upon Double Stars made during the Year 1867.

Star & Date	Declination Date	Circle Reading	Position	Dist. in. in "	Dist. in. in "	Dist. in. in "	Dist. in. in "	Remarks
R.A. 6 hours (concluded.) α RA 7 hours.								
Feb 1	2° 11'	348.52	3	1.01	9.9	1	W	Very good measures. Comp. n.
SIRIUS								
Jan 23	99 33	71.15	6	1.027	10.06	5	W	Unsteady during measures of dist. *
" "	95 52	74.83	6	1.049	10.28	3	S	Star unsteady.
" 24	97 10	73.53	8	1.064	10.43	5	S	Comp. not quite as well seen as last night at first; afterward improved.
" 28	97 20	73.37	5	1.085	10.63	5	W	Comp. well seen on wire. Better defined than ever before and easily measured. Reddish.
Feb 6	96 29	74.22	3				S	Images at first perfect but troublesome. Comp. afterward disappeared.
" 7	97 38	73.07	9	1.112	10.90	6	S	
" 25	97 52	72.83	6	1.179	11.55	4	S	Comp. unusually distinct. perhaps better seen than ever before.
" "	99 0	71.70	1	1.144	11.21	3	Alvan Clark	
" 27	96 54	73.80	5	1.030	10.09	5	S	Seeing poor & becoming worse; star blurring and v. unsteady.
Mar 19	102.277	72.18	7	1.160	11.37	10	W	Seeing good at first; afterward poorer.
" 30	281.70	72.75	6	1.228	12.03	10	W	Comp. well seen at first; never better.
Apr 2	100.19	74.26	10	1.223	11.99	10	W	Seeing excellent.
" 21	103.35	71.10	4	1.106	10.84	5	W	
Dec 26	273.70	75.61	2	1.19	11.66	1	S	
Σ 1037								
Jan 28	220 28	130.23	5	.265	2.60	4	W	Measure of pos. v. difficult. Components equal.
Feb 6	218 12	132.50	5	.203	1.99	3	W	Double dist.
" 22	31 1	139.68	5				S	Stars 11/20
Mar 8	31 23	139.38	5	.168	1.65	3	W	Double distances.
Dec 10	207.28	142.03	4				S	Seeing too poor for dist. Stars 1 eyes.
Σ 1060								
Feb 1	327 25	23.28	3	.724	7.10	4	W	Comp. foll.
Σ 1104								
Jan 29	39 36	311.10	5	.18	1.7	1	S	Stars 11 eyes Comp. n.p.
" "	32 46	316.93	5				D	
" "	35 46	313.93	5				W	
Feb 1	34 45	315.95	5	.306	3.00	3	W	Double distances.
" 27	39 49	310.88	5	.238	2.33	3	S	
Σ 1119								
Dec 10	181.73	67.58	3	.370	3.63	2	S	Stars 1 eyes Comp. n. Following of Pro.
W. VII. 990								
Mar 21	348	93	0			0	W	Rough setting without illum.
" 25	351.00	93.45	5	.40	.5	0	W	P.B. Seeing good.
Apr 21				.105	1.03	3	W	Double distances Seeing good.
Lab 14927								
Mar 30	34.00	50.45	5	.180	1.76	3	W	Stars 11 eyes
Apr 21				.155	1.52	7	W	Double distances.

Reductions of the Observations upon Double Stars made during the Year 1867.

Star and Date	Original Date	Circle Ready	Position	At interval	Distance in"	1st	2d	Remarks.
8 hours.								
Cancri $\Sigma 1196$								
A & B.								
Jan 28		304	34	226.13	4	0.6" 60"/5	0	W Power No 5 Comp p.
Feb 1		303	23	227.32	4	.06	0	S " " "
" 6		304	34	226.13	3			W Quite unsteady
" 6		291	15	239.45	2			S Seeing not good
$\Sigma 1196$								
A & B & C.								
March 21		39.34		45.11	5	.591	5.79	5 S Stars 11 eyes. Double distances.
$\Sigma 1216$								
Jan 28		228	45	301.95	1	.5	0	W Unsatisfactory
Feb 1		223		308	1 1/2			W " " "
Feb 7		216		315	1			S "Possibly a ft. comp. n.p. in this position"
Mar 19		32		334	2			W Comp 1243. Pretty decided elongation between 36° and 28°
$\Sigma 1060$								
Feb 1		327	25	23.28	3	.724	7.10	7 W Comp. f.
$\Sigma 1104$								
Jan 29		39	36	311.10	5	.18	1.7	1 S Stars 11 eyes Comp. n.p.
" "		32	46	316.93	5			D
" "		35	46	313.93	5			W
Feb 1		34	45	315.95	5	.306	3.00	5 W Double distances
Feb 27		39	49	310.88	5	.238	2.33	2 S
$\Sigma 1423$								
Feb 26		309	47	220.92	5	.326	3.19	5 S Double distances. Comp. s.
" 27		311	24	219.30	4			S Seeing not steady
Mar 19		141.88		212.57	5	.394	3.86	7 W Double dist. Comp p.
" 21		312.82		221.63	5	.345	3.38	9 S " " Stars 1 eyes
" 26		319.54		214.91	5	.388	3.80	5 W " " "
Schjellorup 12								
Feb 1		359	8	351.57	4 1/2	.254	2.49	9 W Double distances. Comp. n.
" 6		177	35	353.12	5	.11	1.1	0 S
Schjellorup 13								
Feb 6		92	37	258.08	3	.749	7.34	3 S Star wk. precedes a little the fainter

Reduction of the Observations upon Double Stars made during the Year 1867

Stars and Date	Decimal Date	Circle Reading	Position	Wt in rev.	Distance in "	Wt	Ch.	Remarks.
157 <i>Syrinx</i> Σ 1338								
Feb 22		309° 47'	148.77	3			S	Stars 1 eye
" 27		311.24	146.10	2	200	1.96	3	S " 11 eyes Position v. uncomfortable
Mar 19		141.88	144.51	7	244	2.39	7	W Double distances
" 21		312.82	143.45	5	223	2.19	5	W " " Unsatisfactory measures
" 26		319.54	145.97	5	175	1.72	5	S " "
w <i>Leonis</i> Σ 1356								
Feb 1		233	298	2				W & S Seen double. Prevailing direction
Apr 26		145.17	299.28	6				W Elong. almost to sep. Comp. n.
" 26		140.5	304.0	1				
8 <i>Sextantis</i>								
Feb 1		260 28	90.23 22					W Star extremely unsteady, but well separated.
W 11296.								
Apr 19		79	95	2		3	0	W Very rough Comp. v. fl. nearly S.
" "		85.85	88.60	2	405	3.97	2	S Position pretty good distances rough
" 25		79	95	2				S Rough settings without illum.
" "		88.2	86.3	1				S
May 3		82.00	92.50	3	390	3.82	3	W Seeing not v. good but air clear & comp. occasionally dist.
7 <i>Leonis</i>								
Mar 19		62.78	111.67	6	359	3.52	5	W Double distances
" 21		66.06	108.39	5	354	3.47	5	S " " Stars 11 eyes
" 26		63.26	111.19	5	323	3.17	5	W " " "
" 30		62.94	111.51	5	340	3.33	5	S " " "
Schjellamp 14								

RA 17-21 hours.

 μ Herculis $\Sigma 2084$

PAC

July 24
Aug 5
" 9

69.60	15.40	5
79.62	5.38	4
81.7	3.30	1
75.05	9.95	2

S Power 3. One m. P. St. H. eyes ^{measures made with a horn} difficulty coming to great altitude
W
S Very poor measure
S Power 4 Measures not r. found

 τ Ophiuchi $\Sigma 2262$

July 17
" 31
Aug 26

105.06	250.94	5	.254	2.49	3
279.5	353.0	1			
[305.06]	228.94	5]	*.164	1.61	10

W Star H. eyes Star too unstable to measure distances.
W
W P. 4. Preceding component probably smaller.

* Circle soon after found to have slipped.

 γ Ophiuchi $\Sigma 2272$

July 17
Aug 26

76.78	98.22	5	.544	5.33	7
76.02	98.98	5	.550	5.39	10
[268.00]	86.00	5]	*.468	4.59	5

S Star H. eyes. Dist. measures almost impras. High wind.
S " " " Seeing not good
W " " " P. 3. Comp. f.

Oels 19003.4

Aug 20

228.32	305.68	5	.828	8.11	3
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S Mag 7 x 8.5 Comp. f.

Anonyma

Aug 17

89.		1		1.	0
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S P. approx. Mag 8 x 10. S.p. of two.

LS 113 = BAC 6631

Aug 17

180.22	173.78	4	1.807	17.71	3
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S Star 1 eyes Comp. f.

 $\Sigma 2347$

Nov 11

51.00	298.88	5	.143	1.40	5
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P Stars hazy but sometimes showing finely

20 Regasi

Nov 11

34.98	155.59	5	.153	1.50	5
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P Double distances. Equal mag.

P xxii 33 $\Sigma 2877$

Nov 19.

2.87	346.44	7	.761	7.46	6	P Staus 11 eyes. Seeing not v. good.
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S Aquarii $\Sigma 2909$

Oct 24

194.77	335.33	3	.351	3.44	7	P Double distances
193.42	336.68	5	.408	4.00	7	D " "

W xxii 465

found 6 quill from black

Nov 11

17.8	152.77	6	.153	1.50	5	W Only seen well occasionally
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37 Regasi $\Sigma 2912$ P xxii 219 $\Sigma 2944$

Oct 24

279.80	80.30	5	.348	3.41	7	P
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Oct 5 22454

Nov 11

73.38	97.15	5	.313	3.07	5	P P.3. Staus 11 eyes. Max. 9x9(S)
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 $\Sigma 2964$

Oct 24

247.66	103.44	5	.898	8.80	7	P
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 $\Sigma 2995$

Oct 31

320.70	29.40	5	.498	4.88	6	P Southern star a little the larger
140.37	28.94	6	.529	5.18	6	P

Nov 18

Oct 5 22773

Oct 18

68.26	281.34	5	.600	5.88	4	S Comp. f. Meas 8 x 10.
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P xxiii 69 $\Sigma 3008$

Oct 31

Nov 21

Dec 1

88.17	81.93	7	.129	1.26	7	P Double dish. Staus dancing
266.76	82.55	5	.554	5.43	6	P Staus 11 eyes. P.2. Staus unstable
154.84	14.47	5	3.458	33.89	3	P P.2.

 $\Sigma 3037$

Feb 26

" "

31.2	40	208.03	5	.304	2.98	6	S Staus 11 eyes P.3. Rather unstable Comp. sp.
31.4	55	215.78	5				D

sp.

