1993phae.proj..155S

RG
11366
v.329

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1993phae.proj.1333.

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1893phae.proj.1333.

March 29 1893

Measurements of bright double stars
Phot. R. N. obs.,

No 64 14 Aurigæ

5	7	+32.6
8	40	
+3	33	

Abandoned for present.

No. 56 80 Tauri.

4	29	+ 9.9
8	43	
+4	14	

Orders to left + above.

8:10

242.0	ftw. dis.	
30.0	148.0 ✓	
240.0		
32.9	152.9 ✓	
	300.9 ✓	~~-0.9~~ ✓
241.6	√9.1	-2.89
33.4	151.8 ✓	
239.6		-2.94 ✓
31.5	151.9 ✓	
	303.7 ✓	~~-1.0~~ ✓
	56.3	-3.00 ✓

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1893phae.proj.1333.

March 29, 1893

Index to right & below.

329.0		
126.0	157.0 ✓	
328.8		
124.0	155.2 ✓	
	312.2 ✓	~~-1.4~~ ✓
328.0	~~47.8~~	-3.37
124.4	156.4 ✓	
327.1		~~-3.44~~
8:18 125.5	158.4 ✓	
	314.8 ✓	~~-1.6~~ ✓
	~~45.2~~	-3.50

Mean = 3.19

Images rather unlike. Image of bright star which was made equal to the other is a little elongated & prismatic.

No 45 ℓ Persei.

3	34	+ 33.6
9	15	
+5	41	

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1893phae.proj.1333.

March 29, 1893.

Index to right + below

8.38

322.1 < ftr. dis.
130.0 167.9 ✓
322.2
131.7 169.5 ✓
337.46 ✓ ~~3.0~~ ✓
321.5 22.6 − 5.02
131.8 170.3 ✓
323.0 − 5.02
130.1 167.1 ✓
337.4 ✓ ~~− 3.0~~ ✓
Index to left + above ~~22.6~~ − 5.02

54.1
221.0 166.9 ✓ − 4.94
52.1
220.6 168.5 ✓
335.4 ✓ ~~2.8~~ ✓
52.0 246 − 4.84
221.3 169.3 ✓ − 4.86
53.3
220.0 166.7 ✓
336.0 ✓ ~~2.9~~ ✓
8.50 240 − 4.89
8.44

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1893phae.proj.1333.

March. 29, 1893.

No 57 τ Tauri.

4	35	+22.7
9	41	
+5	6	

Index to left = above.

9:04

246.8	ftr. dia.	
28.0	141.2 ✓	
241.0		
32.7	151.7 ✓	
	292.9 ✓	~~-4.6~~ ✓ 1
240.3	67.1	-2.60 ✓
32.9	152.6 ✓	
245.5		-2.64 ✓
28.0	142.5 ✓	
	295.1 ✓	~~-6.7~~ ✓ 1
Index to right =	~~164.9~~	-2.68 ✓
334.0		
118.5	144.5 ✓	Mean = -2.72
330.0		
122.5	152.5 ✓	
	297.0 ✓	~~-6.7~~ ✓ 1
331.0	66.0	-2.75
123.9	152.9 ✓	
332.9		-2.80
119.5	146.6 ✓	
	299.5 ✓	~~-6.8~~ ✓ 1
	60 ✓	-2.80

9:15

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1893phae.proj.1333.

March 29, 1893.

No 59 ω Aurigae.

4	5.1	+ 37.7
10	0	
+5	9	

Index above.

9:25	197.0	∠ ftr. dis.	
	349.0	152.0 ✓	
	200.0		
	345.5	145.5 ✓	
		297.5 ✓	~~-0.8~~ ✓
	200.9	62.5 ✓	-2.77
	345.2	144.3	
	198.2		-2.72
	349.0	150.8 ✓	
		295.1 ✓	~~-0.7~~ ✓
	Index below.	64.9	-2.68
	287.1		
	80.0	152.9 ✓	Mean = -2.70
	295.0		
	74.0	139.0 ✓	
		291.9 ✓	~~-0.6~~ ✓
	290.0	68.1 ✓	-2.57
	Observations unsatisfactory	73.8	143.8
	difficult on account	285.9	-2.69
9:38	of proximity of bright	80.8	154.9 ✓
	star to faint star.		298.7 ✓ ~~-0.8~~ ✓
			61.3 -2.81

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1893phae.proj.1333.

March 29, 1893.

Nr. 60 11, 12 Camelop.
4 55 + 58.8
10 27
+5 32

Index to left & below.

9:57

133.4 ⟨ftr. dis
230.7 97.3 ✓
128.2
236.6 108.4 ✓
205.7 ✓ +1.5 ^
−0.49 131.8 103.3 −3.09
−0.50 236.0 104.2 ✓
132.0 −3.12
−0.51 234.7 102.7 ✓
206.9 ✓ +1.5 ✓ ^
1 ✓ 3. ✓ −3.14

Index to right & above

Mean = −0.57 218.8
325.7 106.9 ✓ ~~Mean 3.07~~
218.8
327.0 108.2 ✓
215.1 ✓ +1.3 ✓ ^
−0.62 218.9 144.9 −3.51
328.2 109.3 ✓
−0.64 223.2 −3.42
10:08 325.0 101.8 ✓
211.1 ✓ +1.4 ✓ ^
−0.60 148.9 −3.32

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1893phae.proj.1333.

March 29, 1893.

No 61 19H Camelop.
5 0 + 79.1
10 58
+5 58

Index to right

10:18

197.0 ⌊ ftr. dia.
350.0 153.0 ✓
194.0
352.0 158.0 ✓
311.0 ✓ ~~= 1.3~~ ✓ 1

192.2 ~~49.0~~ -3.31
352.2 160.0 ✓
194.8 -3.41
349.9 155.1 ✓
315.1 ✓ ~~= 1.5~~ ✓ 1

Index to left ~~442~~ -3.31

287.5
79.8 152.3 ✓ mean = -3.34
283.9
79.8 155.9 ✓
308.2 ✓ ~~= 1.2~~ ✓ 1

285.1 ~~378~~ -3.19
82.3 157.2 ✓
286.0 -3.2
80.3 154.3 ✓
311.5 ✓ ~~= 1.3~~ ✓ 1

10:27

~~48.5~~ = 3.34
Images a little elongated & colored.

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1893phae.proj.1333.

March 29, 1893.

No 102 ℓ Canarii.

8 39 + 29.2
11 16
2 37

~~Images a little elongated & colored.~~
Images to left.

10:41

~~293.0~~ ~~293.0~~
74.1 141.1 ✓
290.8
74.6 143.8 ✓
284.9 ✓ ~~-0.3~~ ✓ ^
75.1 -2.34
291.0
75.8 144.8 ✓
-2.39
298.2
74.2 143.1
287.9 ✓ ~~-0.4~~ ✓ ^
Index to right 72.1 ~~-2.44~~
23.7
161.1 137.4 ✓ Mean = -2.40
19.9
166.8 146.9 ✓
284.3 ✓ ~~-0.3~~ ✓ ^
19.7 75.7 -2.32
166.7 147.0 ✓
-2.40
21.9
10:50 164.0 142.1 ✓
289.1 ✓ -0.5 ✓ ^
70.9
-2.40

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1893phae.proj.1333.

Mar. 29. 1893.

Measurements on this last star taken without driving clock as rope of same broke after measurements on preceding star. Care was taken however to ~~keep~~ have images in center of field when settings were mad.

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1893phae.proj.1333.

March 31, 1893

Meas. of bright double stars. Phot R. U. obs.

No. 45 ε Persei.

3	34	+ 33.6
8	25	
+4	51	

Index to left & above.

7: 43.

272.6	∠ ftr. dbs.	.0 ✓	
79.6	167.2		
270.0			
81.2	171.2 ✓		
	338.4	3.1 ✓	1
270.3	21.8	8.10	
81.8	171.5 ✓		
272.8		5.13	
80.0	167.2 ✓		
	338.7 ✓	3.2 ✓	1
	21.3	8.15	

Index to right & below.

2.0			
170.0	168.0	Mean 8.08	
1.5			
170.0	168.5 ✓		
	336.5 ✓	-2.9 ✓	1
1.8	23.6	-4.94	
170.7	168.9 ✓	-8.03	
1.8			
171.2	169.4 ✓	8.11	
	338.3 ✓	-3.1 ✓	1

7: 52

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1893phae.proj.1333.

March 31, 1893.

No 56 88 Tauri.

4	29	+ 9.9
8	49	
+ 4	20	

Index right ~~& below~~.

8:00

188.9 Lft dia.
344.2 155.3 ✓
188.9
343.0 154.1 ✓
309.4 ✓ ~~+1.2~~ ✓
~~30.6~~ -3.24
190.2
343.7 153.5 ✓
188.0 -3.24
344.0 156.0 ✓
309.5 ✓ ~~+1.2~~ ✓
Index to ~~left~~ -3.24
279.0 Mean = -3.20
72.4 153.4 ✓
280.4
73.8 153.4 ✓
306.8 ✓ ~~+1.1~~ ✓
-3.13
278.0
71.9 153.9 ✓
279.0 -3.16
8:08 73.3 154.3 ✓
308.2 ✓ ~~1.8~~ ✓
-3.19

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1893phae.proj.1333.

March 31. 1893.

No 57 τ Tauri.

4 3 35 +22.7
9 0
+4 25

Index above

8:12

281.9 < ftr. dis.
67.0 145.1 ✓
282.1
71.2 149.1 ✓
294.2 ~~0.6~~ ✓ ^
279.0 ~~658~~ -2.65
72.9 153.9 ✓
282.0
69.0 147.0 ✓ -2.77
300.9 ✓ ~~0.9~~ ✓ ^

Index below. 59.1 -2.89
13.0
160.0 147.0 ✓ Mean = -2.84
9.0
163.5 154.5 ✓
301.5 ✓ ~~-0.4~~ ✓ ^
9.5 ~~586~~ -2.92
164.0 154.5 ✓
13.0 -2.91

8:21

159.5 146.5 ✓
Image of faint star rather poor. 301.0 ✓ ~~-0.9~~ ✓ 1.
59.0 -2.90

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1893phae.proj.1333.

March 31, 1893.

No 59 ω Aurigae.

4	51	+37.7
9	16	
+4	25	

d nder below.

8:26

98.9 L ftr. dia

252.5	153.6 ✓		
103.0			
244.4	141.4 ✓		
	295.0 ✓		~~-0.6~~
103.0	65.0		-2.64
247.5	144.5 ✓		
101.0			-2.67
251.0	150.0 ✓		
	294.5 ✓		~~-0.7~~ ✓
d nder above	65.5		-2.66
187.0			
345.0	158.0 ✓	Mean = 2.82	
193.8			
340.4	146.6 ✓		
	304.6 ✓		~~-1.0~~ ✓
193.8	65.4		-3.04
341.9	148.1 ✓		
190.0			-2.96
342.5	152.5 ✓		
	300.6 ✓		-2.85 ~~-1.9~~ ✓

8:48

Observations difficult on account of close proximity of ~~fdin~~ bright star.

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1893phae.proj.1333.

March 31, 1893.

No 60 11, 12 Camelop.

1905

4 55 +58.8

9 43

+4 48

Index to right & above.

8:55

31.0 ⌐ ftr. dis

143.4 112.4 ✓

31.0

142.0 111.0 ✓

223.4 ✓ ~~+1.2~~ ✓ ^

31.8 136 — 0.84

142.8 111.0 ✓

33.0 — 0.79

140.2 107.2 ✓

218.2 ~~+1.3~~ ✓ ^

Index to left ~~above~~ 141.8 — 0.74

125.0

227.6 102.6 ✓ Mean = −0.66

125.2

228.4 103.2 ✓

205.8 ~~+1.5~~ ✓ ^

123.9 154 2 — 0.49

228.8 104.9 ✓

123.8 — 0.~~45~~

9:04 228.9 105.1 ✓

~~209.0~~ +1.4 ✓ ^

210.0 ✓

1050 — 0.65

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1893phae.proj.1333.

March 31, 1893.

No. 61. 19 H. Camelop.

5	0	+ 79.1
10	8	
+ 5	8	

Index to left & below.

9:26

99.0 (fractions.

254.2	155.2 ✓	
99.8		
253.3	153.5 ✓	
	308.7 ✓	~~1.2~~ ✓ 1
97.3	~~51.3~~	− 3.22
255.3	158.0	
98.0		− 3.34
254.1	156.1 ✓	
	314.1 ✓	~~1.5~~ ✓ 1

Index to right ~~45.9~~ − 3.46

8:0

164.3	156.3 ✓	Mean = − 3.46
6.9		
166.0	159.1 ✓	
	315.4 ✓	−1.5 ✓ 1
5.8	~~44.5~~	− 3.53
165.0	159.2 ✓	−
7.1		✓ − 3.57
9:35 165.0	157.9	
	317.1 ✓	~~1.6~~ ✓ 1
	42.9	− 3.61

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1893phae.proj.1333.

March 31, 1893

No 64 14 Aurigae.

5 7 + 32.6
10 32
+5 25

Index above.

9:43

108.1 Left dis.
249.1 146.0 ✓
101.0
251.0 150.0 ✓
296.0 ✓ ~~0.7~~ ✓ ↑
~~64.0~~ -2.71
101.6
251.1 149.5 ✓
104.1 -2.70
250.0 145.9 ✓
295.4 ✓ ~~0.7~~ ✓ ↑
Index below. 64.6 -2.69
192.8
339.0 ~~146.2~~ ~~147.8~~ ✓ Mean = -2.76
189.7
340.9 151.2 ✓
~~299.0~~ ~~0.8~~ ✓ 1
189.0 297.4 ✓ -2.76
342.8 153.8 ✓
192.1 -2.81

9:51

338.2 146.1 ✓
299.9 ✓ -~~0.9~~ ✓ 1
60.1 -2.86

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1893phae.proj.1333.

March 31, 1893.

No. 81 26 Aurigae.

5	30	+30.4
10	46	
+5	16	

O index to right + below.

9:56

11.8 < ftr. dia.
161.0 149.2 ✓
9.6
162.1 152.5 ✓
301.7 ✓ ~~4.9~~ ✓
8.7 ~~✓8.3~~ −2.93
163.6 154.9 ✓
11.0 2.99
161.0 150.0 ✓
304.9 ✓ ~~1.1~~ ✓
~~3.5~~ −3.0✓
~~I index to left + above.~~
100.6
250.0 149.4 ✓ mean = −2.98
99.0
252.0 153.0 ✓
302.4 ✓ ~~1.0~~ ✓
99.0 ~~✓7.6~~ −2.9✓
253.2 154.2 ✓
101.1 −2.96
10:03 250.1 149.0 ✓
303.2 ✓ ~~1.6~~ ✓
56.8 −2.98

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1893phae.proj.1333.

March. 31, 1893.

No 91 ε Geminorum.

6	36		+ 25.2
11	16		
+ 4	40		

Index to left & above.

10.29	179.0	ptr. dis.	180
	353.5	174.5 ✓	
	178.2		
	354.0	175.8 ✓	
		350.3 ✓	-4.9 ✓ A
6.27	179.7	97	180
	353.3	173.6 ✓	
6.62	179.3		
	353.5	174.2 ✓	
6.37		347.8 ✓	-4.4 ✓ A
		12.2	

Index to right & below.

Mean = 6.42	269.8		270
	83.2	173.4 ✓	
	269.8		
	83.2	173.4 ✓	
6.20		346.8 ✓	-4.2 ✓ A
	270.5	132	270
6.23	83.6	173.1 ✓	
	269.5		
10.38	83.6	174.1 ✓	
6.26		347.2 ✓	-4.3 ✓ A
		128	

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1893phae.proj.1333.

March 31, 1893.

No. 102 ℓ Cancri.

8	39	+ 29.2
11	39	
+3	00	

Index to right & below.

10:52

13.8 ℓ ftr. dia.

158.3	144.5 ✓	
16.5		
156.5	140.0 ✓	
	284.5 ✓	
16.0		−2.36
156.0	140.0 ✓	
		−2.32
14.1		
157.0	142.9 ✓	
	282.9 ✓	−2.28

Index to left

107.2		
244.4	137.2	
107.3		
244.1	135.8	
	273.0	0.0
109.8		
245.8	136.0	
106.0		
245.1	139.1	
	275.1	−0.1

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1893phae.proj.1333.

March 31, 1893.

Sky becoming cloudy. last two sets remeasured. damages found to be getting out of center of field.

Index to lifo a above.

	106.0	
	243.0	137.0 ✓
	106.8	
	246.9	140.1 ✓
		277.1 ✓ ~~0.1~~ ✓
	106.2	82.9 − 2.11
	246.9	140.7 ✓
	108.3	−2.14
11.02	246.8	138.5 ✓
		279.2 ✓ ~~0.2~~ ✓
		80.8 − 2.17

Mean = 2.13

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1893phae.proj.1333.

April 4 1893

Measurement of bright double stars Obst R. N. obs.

No. 52. ε Persei.

3	50	+ 39.6
8	45	
+4	55	

Cloudy. Companion invisible.

Becoming thickly cloudy.

Raining closed dome.

8;25 Cloudy and still raining.

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1893phae.proj.1333.

April 5, 1893.

Measurement of bright double stars. Shott 2, N. obs.

No. 63 ρ Orionis.

5	7	+ 2.8
8	32	
+3	25	

Higher power eyepiece.

Index above.

7:30

59.0 < brighter d's.
86.0 27.0 ✓
60.3
81.0 26.7 ✓ −3.38
47.7 ✓ ~~+5.4~~ ✓
~~312.3 ✓ 1.4~~ 1

59.0
82.8 23.8 ✓ −3.39
58.8
82.2 23.4 ✓ −3.40
47.2 ✓ ~~+5.4~~ ✓
Index below ~~312.8 ✓ 1.4~~ 1
151.9
172.8 20.9 ✓
150.2 mean = 3.40
172.1 21.9 ✓ −3.62
42.8 ✓ ~~+5.6~~
~~317.2 ✓ 1.6~~ ✓

149.4
174.0 24.6 ✓ −3.57
151.0
7:53 171.2 20.2 ✓ −3.52
44.2 ~~+5.5~~ ✓
~~317.2 1.5~~ 1

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1093phae.proj.1333.

April 5, 1893.

Same stars measured a quinquies before but with eyepiece usually used.

Index below

8:05

319.5 < ~~straighter dis.~~
332.7 13.2 v
314.3
340.0 25.7 v
38.9 v -3.83 ~~+5.8~~
~~321.1 v~~ ~~-1.8 v^~~
317.9
338.2 20.3 v
320.2 -3.96
334.5 14.3 v
34.6 v -4.09 ~~+6.1~~
~~326.4 v~~ ~~-2.1 v^~~

Index above

227.0
250.0 23.0 v Mean = -3.86
227.7
245.5 17.8 v
40.8 v -3.72 ~~+5.7~~
~~319.2~~ ~~-1.7 v^~~
228.1
244.2 16.1 v -3.77
226.0
8:20 249.0 23.0 v
39.1 v -3.82 ~~+5.8~~
~~320.9 v~~ ~~-1.8 v^~~

Measurements rather difficult. Region now lifting rather low, images somewhat blurry and indefinite.

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1893phae.proj.1333.

April 5, 1893

No 69 δ Orionis

5	26	−0.4
9	46	
+4	20	

Index above + to right.

8:37

63.5 2 ftr. dia.

232.3 168.8 ^

66.9

229.2 162.3 ^

331.1 ^

28.9 − 4.48 ~~2.5~~ ^

65.0

228.0 163.0 ^ − 4.42

64.1

230.3 166.2 ^

329.2 ^ − 4.35 ~~2.3~~ ^

~~39.8~~

Index below + to left.

154.9

321.8 166.9 Mean = − 4.36

156.5

319.1 162.6 ^

329.5 ^ ~~2.4~~ ^

157.2 30.5 − 4.37

317.7 160.5 ^

153.8 4.29

8:46

321.1 167.3 ^

~~321.1~~ 327.8 ^ ~~2.2~~ ^

32.2 − 4.21

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1893phae.proj.1000.

April 5, 1893

No. 88 8 Monocerotis.

6	17.	+ 4.7
10	2	
+ 3	45	

Index to left & below,

8:57

343.1	~~352.9~~		
130.7	149.7	147.6 ^	
350.6	342.0		
119.9	132.2	129.4 ^	
		277.0	~~0.1~~
	348.2	283.0	−2.11
	120.9	132.7	
	346.1		2.11
	130.5	144.4 ^	
		277.1	−0.1 ^
		279	−2.11

Index to right & above,

	85.0		2.00
	209.5	128.5	
	73.9		
	217.2	143.3	
		271.8 ^	+0.1 ^
		272	+0.1
	74.7		−1.86
	219.0	144.3	
	82.2		1.90
9:08	208.5	126.3	
		270.6	+0.1 ^
		274	−1.92

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1893phae.proj.1333.

April 5, 1893.

No 94. λ Geminarum.

7	11	+16.8
10	26	
+3	15	

Index to right + above.

240.0

53.8 173.8

Abandoned, companion practically invisible. sky somewhat hazy.

No. 91 ε Geminarum.

6	36	+ 25,2
10	42	
+4	6	

Index above + to left.

9:34

61.0 < ftr. dbl.

234.0 173.0 ↑

62.1

233.8 171.7 ↑

344.7 ↑ ~~3.9~~ ↑

1.3 −5.7

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1893phae.proj.1333.

April 5, 1893.

Index above & to left.

		-5.87
61.5		
233.3	171.8 ^	-5.92
61.0		
234.6	173.6 ^	
	345.4 ^	~~4.01~~
	146	-5.98

Index below & to right.

151.5		
324.4	172.9 ^	
150.6		
324.6	174.0 ^	
	346.9 ^	~~4.2 ^~~
150.6	131	-6.21
325.2	174.6 ^	
150.9		-6.34
324.7	173.8 ^	
	348.4 ^	~~-4.5 ^~~
	116	-6.48

Mean = -6.13

9.43

No 95 δ Geminorum.

7	12	+22.2
11	0	
+3	48	

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1893phae.proj.1333.

April 5, 1893

δ Geminorum

Index to right

9:53

333 2 (ftr. dia.		
140.0	167.8	
334.1		
140.0	165.9	
	333.7	-2.7
334.0		
138.9	164.9	
334.5		
139.7	165.2	
	330.1	-2.4

Index to left.

haze thick.

Somewhat clearer. Index to left.

65.2		
229.8	164.6	
67.7		
227.8	160.1	
	324.6	-2.0
66.0		
228.9	162.9	

10:15 Sky becoming too thick to finish settings.

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April 5, 1893.

10.35 Sky now thickly covered with clouds. Troubled ~~now~~ throughout evening by increasing haze + cloud, seeing rather poor and gradually growing worse.

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Apr. 4. 1893.

Measts. of Bright Double Stars. Gr. B.

δ Orionis.

5 26 −0.4

9 34

74 4

Object glass dewed.

Clouds.

Object glass heavily coated with dew. and growing worse.

9h 0m Considerably cloudy also. Much southern cloud. Air reeking with moisture.

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Apr. 11. 1893.

R Tauri. Ot. obs.

4	22	+10.0
9	3	
+4	41	

Twilight rather strong.
Twilight now faint enough for an estimate 0 3.5 R, R 1.5 f in large telescope too faint for finder.
7.58 Est. 12.5

Stars o + p are the stars indicated as such in book 64 page 194 + are presumably o + p in Mr. Reed's notation as the note there also indicates. Absolute estimate is probably somewhat in error as the region is so low that combined with some remaining twilight absolute estimate is somewhat affected.

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1893phae.proj.1333.

April 11. 1893

R Persei

3	24	+35.0
9	37	
+6	13	

h 3 R, R 2 k in finder,
h 2.5 R, R 2.5 k in large telescope,
8,15 Estimate 8.3

Comp. stars h & k are in the original notation of the chart which is Chandler's notation. It turns out that this is one of the stars in which a selection of comp. stars is not wanted apparently.

R. Cassiop.

23	51	+49.7
33	56	
+10	5	

f 2 R, R 2 g in finder.
f 2 R, R 2 g in large telescope.
8:35 Est. 6.5

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1893phae.proj.1333.

April 11, 1893.

Seems to be a low aural arch under pole.

T. Hydrae.

8	44	+ 8.5
10	25	
+1	41	

o 2 I, I 3 p in large telescope too faint for finder.

9:14 Estimate 12.4

o & p in notation of book 64 page 188. The variable is star assumed as such in book 64 page 188, but it looks a little on closer inspection as if the variable might really be the star marked with a cross in said diagram. Est of star with cross in diagram as below.

Var (?) = q. in large telescope too faint for finder.

9:17 Est 12.9

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April 11, 1893.

R. Geminorum.

7	0	+ 22.1
10	55	
+ 3	55	

l 2 R, R 2 m in finder,
l 2 R, R 2 m in large telescope.

9:42 Est 8.0.

S. Bootis

14	16	+ 54.6
11	30	
− 2	46	
12	00	
+ 9	14	

n 2 S, S 2 o in large telescope rather too faint for finder.

10:12 Est. 12.7

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1893phae.proj.1333.

April 11, 1893.

R. Draconis.

16	26	+67.4
11	48	
4	38	
12	0	
+7	22	

k 2.5 $\frac{R}{L}$, R 1.5 $\frac{L}{}$ in finder.
k 3 $\frac{R}{L}$, R 2 L in large telescope.

10:26 Est. 9.2

Nova Aurigae

5	23	+32.0
12	3	
+6	40	

Index above.

10:45

346.9
92.2 105.3 ✓
343.9
92.0 108.1 ✓
213.4 ✓ ~~+1.4~~ ✓
146.6 −0.64

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1893phae.proj.1333.

April 11, 1893.

Index below.

75.1		
182.7	107.6 ✓	
74.4		
179.9	105.5 ✓	
	213.1 ✓	+~~1.4~~ ✓
74.8	146.9	−0.64
178.3	103.5 ✓	
74.8		
182.4	107.6 ✓	
Index above.	211.1 ✓	+~~1.4~~ ✓
344.6	148.9	−0.60
92.0	107.4 ✓	
347.6		
89.9	102.3 ✓	
	209.7 ✓	+~~1.4~~ ✓
	150.3	−0.57
345.7		
95.5	109.8 ✓	
343.8		
91.1	107.3 ✓	
	217.1 ✓	+~~1.3~~ ✓
Index below.	142.9	−0.72
73.0		
182.5	109.5 ✓	
72.0		
184.0	112.0 ✓	−0.80
	221.5 ✓	+~~1.2~~ ✓
	138.5	

10:58
10 51.5

p 3 Nova, Nova 2.5 p. in large telescope.
rather too faint for finder.

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1893phae.proj.1333.

April 11, 1893.

~~the~~ region a little low, observations rather difficult.

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1893phae.proj.1333.

Posted to here.

Apr. 14. 1893.

Sky still rather bright for faint variables.

Experiments with single lens eyepiece on double stars.

	316.8		
166.9	123.7	166.9	
	319.2		
162.8	122.0	162.8	
		329.7	-2.4
168.1	316.9		
	125.0	168.1	
167.9	316.1		
	124.0	167.9	
		336.0	-2.7
	316.0		
169.0	125.0	169.0	
	316.8		
168.3	125.1	168.3	
		337.3	-3.0
	315.5		
170.2	125.7	170.2	
	314.2		
172.8	127.0	172.8	
170.4		343.0	-3.6
172.2			
1688.6			
168.86			

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1893phae.proj.1333.

April 18, 1893

315.6
126.0
314.4
126.6

170.4
172.2
342.6

-2.6

315.7
124.0
318.0
123.1

168.3
169.1
337.4

-2.7

317.1
123.1
319.0
122.5

166.9
163.5
329.5

-2.4

318.6
123.7
315.5
125.7

165.1
170.2
335.3

-2.8

316.7
125.1
317.0
124.7

168.4
167.7
336.1

-2.9

319.0
123.8
316.7
123.9

164.8
167.2
332.0

-2.6

168.3
165.1
166.0
163.5
165.1
170.2
168.4
167.7
164.8
167.2
10 | 1666.3
166.63
164.46
1.49
167.74

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1893phae.proj.1333.

April 18, 1893.

322.2	
128.9	166.7
324.0	
127.0	163.0
323.9	
125.8	161.9
325.0	
121.8	156.8
325.9	
128.5	162.6
322.8	
127.6	164.8
323.5	
125.8	162.3
323.8	
127.9	164.1
324.9	
127.3	162.4
326.2	
125.8	159.6
320.0	162.42
132.2	172.2
320.0	
134.2	174.2
322.1	
131.0	168.9
321.0	
132.0	171.0

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1893phae.proj.1333.

April 18, 1893.

321.0	
129.7	168.7
321.0	
129.0	168.0
321.2	
131.0	169.8
321.5	
130.9	169.4
321.0	
132.1	171.1
320.0	
132.2	172.2

170.55
162.4
132.97
166.44

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1893phae.proj.1333.

April 18, 1893.

Comet Holmes.

3	56	+36.9
10	50	
+6	54	

Comet not found.

Measd of bright double stars N. obs, Phot. R.

No 95 δ Geminorum.

7	12	+ 22.2
11	42	
+4	30	

Index below.

4.45

124.6 < ptn. dis.
291.0 166.4 ✓ ^
123.0
291.1 168.1 ✓ ^
334.5 ✓ ^ ~~-2.8~~ ✓ ^
25.5 -4.76

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1893phae.proj.1333.

April 18, 1893. -476

123.0
289.5 166.5 -4.72
122.0
289.0 167.0
333.5 -2.7
Index above 26.5 -4.67

212.8
18.0 165.2
213.0
18.0 165.0
330.2 -2.4
213.5 29.8 -4.42
17.0 163.5
212.5 -4.42
19.2 166.7
330.2 -2.4
29.8 -4.42

9:54

No. 108 α Leonis Mean = -4.57

10 2 +2.6
12 2
72 0

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1893phae.proj.1333.

April 18, 1893.

Index to right

10:04

118.8
293.7 174.9
121.1
293.8 172.7
347.6 −4.3
124 −6.33
120.8
293.2 172.4
120.3 −6.14
293.2 172.9
345.3 −4.0
147 −5.96

Index to left. Mean = 6.23

210.1
23.9 173.8
210.0
24.0 174.0
347.8 −4.4
210.0 12.2 −6.37
24.0 174.0
210.6 −6.22
23.8 173.2
347.2 −4.8
10:12 128 −6.26

Images somewhat elongated and a little troublesome.

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1893phae.proj.1333.

April 18, 1893.

No 116 83 Leonis

11	20	+ 3.7
12	20	P. A. 170° Dist. 30" Mags. 6.2, 7.2
+1	00	

Index to left + below.

10:20

328.9		
87.2	118.3	
326.9		
82.0	115.1	
	233.4	+0.9
329.0	126.6	−1.05
84.0	115.0	
328.0		−1.08
88.5	120.5	
	235.5	+0.9
	1240	−1.10

Index tonight's a[illegible]

61.0		Mean = −
173.0	112.0	
60.9		
172.6	111.7	
	223.7	+1.2
61.0	136.3	0.83
174.2	113.2	
61.9		−0.83
170.5	108.6	
	221.8	+1.2
	138.2	− 0.81

Mean = − 0.96

10:31

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1893phae.proj.1338.

Posted to here inc.

April 18, 1893.

S Cygni.

20	8	+57.1
12	58	
−7	30	
12	00	
+4	30	

S Cygni not certainly seen but at times it is possibly suspected, when adjacent gdmag. star is just behind bar. If seen it must be as faint as 14.9

16:50

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1893phae.proj.1333.

April 19, 1893.

Measts. of Bright double stars. Ht. obs.

No 6

March 29, 1893 –
June 14, 1893

5
9
+ 4

+0.4

7.130

-2.3
-4.31
-4.
-2.4
-4.44

216.0
18.5 162.5 Mean = -4.20
214.2
18.7 164.5
327.0
-2.2
214.6 33.0 -4.19
19.0 164.4
214.2 -4.17
16.2 162.0
326.4
-2.2
-4.15

7.40

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1893phae.proj.1333.

April 19, 1893.

Measts. of Bright Double stars. U. obs.

No 69 δ Orionis.

5 26 −0.4
9 33
+4 7

Index to right – above.

7:30
124.8 ⟨ ftr. dis.
288.0 163.2 ✓ ^
123.5
289.0 165.5 ✓ ^
328.7 ✓ −2.3 ✓ ^
31.3 ^ −4.31 ✓
123.0
289.6 166.6 ✓ ^
124.0 −4.29
288.0 164.0 ✓ ^
330.6 ✓ −2.4 ✓ ^
29.4 −4.45 ✓

Index to left – below.

216.0
18.5 162.5 ✓ ^ Mean = −4.20
214.2
18.7 164.5 ✓ ^
327.0 ✓ ^ −2.2 ✓ ^
214.6 33.0 −4.19
19.0 164.4 ✓ ^
214.2 −4.17
7:40
16.2 162.0 ✓ ^
326.4 ✓ ^ −2.2 ✓ ^
326 −4.15

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1893phae.proj.1333.

April 19, 1893.

No 64 14 Aurigae.

5 7 + 32.6
9 52
+4 45

Index to left + below.

7:46

308.0 < fer. dia.
105.7 157.7
310.2
101.5 151.3
309.0 +.2
313.2 151.8 -3.23
103.0 149.8
309.0 -3.15
104.4 155.4
305.2 +.1
-3.07

Index right + above.

40.5
192.3 151.8 Mean = -2.96
44.2
189.0 144.8
296.6 -.7
63.4 -2.73
45.7
190.1 144.4
39.4 -2.78

7:57

194.0 154.6
299.0 -.8
61.0 -2.82

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1893phae.proj.1333.

April 19, 1893.

No 88. ~~8~~ Monocerotis

6	1.7	+ 4.7
10	29	
+4	12	

Index ~~to night~~ above.

8.25

144.0	∠ ftr. dis	
273.2	129.2 ✓	
137.0		
277.0	140.0 ✓	
	269.2	~~+0.1~~
136.2	90 8	-1.89
275.9	139.7	
140.0		-1.92
271.5	131.5 ✓	
	271.2	~~+0.1~~ ✓
	~~268.8~~	-1.95

Index ~~to left~~ below.

223.7		
5.0	141.3 ✓	Mean = 1.90
238.0		
359.7	121.7 ✓	
	263.0 ✓	~~+0.5~~
229.9	97.0	1.73
1.8	131.9 ✓	
224.4		-1.89
7.3	142.9 ✓	
	274.8 ✓	~~0.0~~
	852	-2.05

8:34

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1893phae.proj.1333.

April 19, 1893.

No 94 λ Geminarum.

7	11	+16.8
10	51	
43	40	

8
X: 48

Andeb below.

118.0	< ftr. dis.	
291.0	173.0	
118.6		
291.2	172.6	
	345.6	+4.0
119.0	172	−6.01
291.2	172.2	
116.0		−6.20
293.0	177.0	
	349.2	+4.6
Andeabove	11.8	−6.44
209.1.		
20.3	171.2	−6.16
208.0	Mean	
22.1	174.1	
	345.3	−4.0
208.0	172.7	−5.96
23.9	~~175.9~~	
209.7.		6.01
21.0	~~171.3~~	
	~~347.2~~	~~−4.3~~
	347.2	−6.26

10
X: 07

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1893phae.proj.1333.

April 19, 1893

Observations difficult on account of faintness of companion its closeness to primary & some haze.

No 97 α Geminarum.

7	27	+ 32.1
11	20	
+3	53	

Index

9h46 Measurement of principal components & faint companion Burt. R. D. obs.

Index to right & above.

9h18

278.0 ∠ ftr. dia.

95.8 177.8 ✓

277.4

96.0 178.6 ✓

356.4 ✓ ~~7.0~~ ✓

−9.02 277.3 ~~3.6~~

−9.05 96.0 178.1 ✓

277.8

−9.08 95.6 177.8 ✓

356.5 ✓ ~~7.1~~ ✓

Mean = 8.32 Index to left ~~[illegible]~~ w.

7.2

185.2 178.0 ✓

9.2

184.9 175.7 ✓ ~~[illegible]~~ ✓

−7.80 358.7 ✓ ~~5.6~~

7.60 6.3

−7.40

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1893phae.proj.1333.

April 19, 1893.

Index to left + below.

9.2
184.1 174.9 ✓
8.5
9:27 186.0 177.5 ✓ ~~+4.4~~ ✓
352.4 ✓ ~~-5.3~~ ✓

Measurement of principal ~~components~~ Phot H. ~~No. 96.~~ Index below. Σ 1160.

9:34 322.9 ℓ ftr. dis
89.0 126.1 ✓ ^
325.0
78.8 113.8 ✓ ^
239.9 ✓ ^ ~~+4.8~~ ✓
329.5 121.1 -1.17
80.0 110.5 ✓ ^
323.1 -1.10
85.3 122.2 ✓ ^
232.7 ~~+4.0~~ ✓
Index ab~~ve~~ 127.2 -1.04
64.0
164.1 100.1 ✓ Mean = 0.99
55.3
17~~6~~.0 120.7 ✓ ^
220.8 ✓ ^ ~~+1.2~~ ✓
52.7 137.2 -0.79
174.0 121.3 ✓ ^
59.8 -0.88
9:46 168.2 108.4 ✓ ^
229.7 ✓ ^ ~~+1.0~~ ✓
138.3 -0.87 ^

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1893phae.prpj.1333.

April 19, 1893.

Observations difficult on account of closeness of components + rather bad seeing. Images in reversing very nearly but not quite overlap. Obs. made very slowly and with much care.

No 99 x Geminarum.

7	37	+ 24.7
12	13	
+4	36	

Companion seen but is so close & faint that with the bad seeing it cannot be handled tonight.

No. 100 π Geminarum.

7	39	38.7
12	23	
+4	44	

Index to left + below.

10.22

298.0	< ftr dis	
113.0	175.0 ✓	
299.0		
110.8	171.8 ✓	
	346.8 ✓	~~4.2~~ ✓
	10.2	−6.20 ✓

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1893phae.proj.1333.

April 18, 1893.

π Geminorum (cont.)

−6.20				
−5.87	Index to left + below.			
		299.3		
		111.0	171.7 ˅˄	
		300.7		
		111.2	170.5 ˅˄	
~~−6.20~~			342.2 ˅	−3.5 ˅˄
−5.54	Index to right + ~~above.~~		~~167~~	
		30.0		
Mean = −5.56		201.0	171.0 ˅˄	
		31.0		
		199.2	168.2 ˅˄	
−5.20			339.2 ˅˄	−3.2 ˅˄
		29.9	~~208~~	
−5.24		200.1	170.2 ˅˄	
		31.0		
10:31		200.7	169.7 ˅˄	
−5.28			339.9 ˅˄	−3.3 ˅˄
			201	

Observations rather difficult on account of faintness of companion & closeness to primary.

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1893phae.prpj.1333..

April 19, 1893.

No 108 α Leonis.

10	2	+ 12,6
12	45	
+ 2	43	

Index to right & below.

10:37

118,1	ftr. dia		
292.4	174.8		
119.8			
292.2	172.4		
	347.2		-4.3
	128	-6.26	
119.9			
292.0	172.1	-6.14	
118.7			
292,3	173.6		
	345.7		-4.0
	114.3	-6.02	

Index to left & above. Mean = -5.83

210.2			
20.0	169.8		
210.0			
20.8	170.8		
	340.6		-3.4
209.9	19.4	-5.36	
21.8	170.9	-5.52	
209.8			
21.2	171.4		
	343.3		-3.7
	167	-5.68	

10:45

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1893phae.proj.1333.

April 19, 1893

Images somewhat elongated.

Considerable light cloud + haze during evening - gradually growing clearer.

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1893phae.proj.1333..

April 24, 1893.

Meas'ts of Bright Double stars at B. H. obs.

No 71 λ Orionis.

5 28 +9.8

4 52

4 24

Images rather unsteady + blurry.

Index ~~to right~~ above.

7:37

147.0 per. dis

264.6 117.6

140.3

267.0 126.7

244.3 +0.7

142.1

267.8 125.7

148.9

266.5 117.6

243.3 +0.7

Index below.

220.0

75.6 145.6 ✓

236.5

355.2 118.7 ✓

It is impossible to finish settings on the above star, the images are so unsteady, close + blurry that a portion of the time all four

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1893phae.proj.1333.

April 24, 1893.

images are seemingly as one. Star abandoned + previous settings rejected.

No. 81 : 26 Aurigae.

5	30	+ 30.4
10	22	
+4	52	

Index above.

8:00

52.2 ft. of div.

197.0	144.8	
47.3		
204.2	156.9	✓
	301.7	0.9
47.5	158.8	-2.93
206.6	159.1	
53.8		-2.92
196.0	142.2	✓
	301.3	0.9
	587	-2.91

Index below.

322.1		
113.1	151.0	
320.0		
110.7	150.7	✓
	301.7	0.9
	583	-2.93

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1893phae.proj.1333.

April 24, 1893.

Index below. -2.87

323.7
108.9 145.2
320.0
8:39 113.4 153.4
298.6 -2.84
614 -2.81
mean = -2.99

Series interrupted in middle on account of going over to West Dome to examine some comparison stars for U. Orionis.

No 91 ε Geminorum.

6	36	+25.2
11	12	
+4	36	

Index to lists above.
8:50 132.0 ptr. dis.
303.5 171.5
131.7
304.0 172.3
343.8 -3.7
162 -V.J

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1893phae.proj.1333.

April 24, 1893.

Index to right & below.

220.3
34.2 173.7 ✓ ^
221.0
34.5 173.5 ✓ ^ ✓
347.2 ^ ~~-4.3~~ ✓ ^
222.0 124 - 6.26
34.0 172.0 ✓ ^
221.6
33.9 172.3 ✓ ^
344.3 ✓ ^ ~~-3.8~~ ✓ ^
Index to left ~~above.~~ 157 -5.82
310.1
124.0 173.9 ✓ ^
311.1
123.2 172.1 ✓ ^
346.0 ✓ ^ ~~4.1~~ ✓ ^
311.2 140 -6.07
123.8 172.6 ✓ ^
310.2
124.0 173.8 ✓ ^
346.4 ✓ ^ ~~4.1~~ ✓ ^
Index to right ~~below.~~ 136 - 6.13
41.2
213.9 172.7 ✓ ^
40.4
214.3 173.9 ✓ ^
346.6 ✓ ~~4.2~~ ✓ ^
134 -6.16

9:04

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1893phae.proj.1333.

April 24. 1893.

No 95 δ Geminarum. Plate H.

7	1.2	+ 22.2
11	35	
4 4	23	

Index to right ~~+ below~~.

~~134.0~~

29.9 < for dis.

9:30

195.8	165.9 ˅ ^	
29.0		
196.1	167.1 ˅ ^	
	333.0 ˅ ^	~~2.6~~ ˅ ^
Index to left.	~~27.0~~	− 463
300.9		
105.8	164.9 ˅ ^	
299.1		
105.4	166.3 ˅ ^	
	331.2 ˅ ^	~~2.5~~ ˅ ^
299.8	~~28.8~~	− 449
105.0	~~165.2~~ ˅ ^	
300.5		
105.0	164.5 ˅ ^	
	329.7 ˅ ^	− ~~2.4~~ ˅
	30 3	− 438

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1893phae.proj.1300

April 24, 1893.

Index to right

30.2
196.0 165.8
30.0
195.6 165.6
331.4 2.5
28.6 -4.51
29.5
196.0 166.5
29.6
195.7 166.1
332.6 -2.6
Index to left 27.4 -4.60

121.0
283.1 162.1
121.3
286.0 164.7
326.8 -2.2
322 -4.18

9.51

Settings necessarily made very slowly. Seeing bad. All one could do was to wait for images to steady & then to make equalization.

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1893phae.proj.1333.

April 24, 1893.

~~96~~ 97
No. ~~25~~ 1 α Geminarum. Phot R.

7	27	+ 32.2
12	21	
+4	54	

Means of Bright component + distant faint compan.
Index to right + above.

10:00

219.8 ⟨ for dis.

35.5	175.7	
219.2		
36.3	177.1	
	352.8	

-7.51

Index to left + below.

310.0		
125.2	175.2	
309.0		
125.4	176.4	
	351.6	
	8.4	

-7.18

309.4		
124.8	175.4	
310.0		
125.0	175.0	
	350.4	
	9.6	

-6.89

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1893phae.proj.1333

April 24, 1893.

Index to right & above.

39.2
215.8 176.6
39.0
215.9 176.9 −5.7
353.5
6.5

−7.70

38.9
215.9 177.0
38.9
215.8 176.9 −5.9
353.9
6

−7.87

Index to left & ~~below~~.

130.2
305.0 174.8
130.0
305.0 175.0
349.8 −4.8
10.2

10:12 — 6.76

Means of two principal components.

No. 96. Plot H.

Index to left & below.

10:20

320.8 ptr. dis
81.9 121.1
332.2
72.2 100.0
221.1 ~~+1.2~~
138.9 −0.80

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1893phae.proj.1333.

April 24 1893.

Index to right + above,

240.8		
340.8	100.0	
232.2		
353.5	121.3	
	221.3	71.2
232.2	138.7	−0.80
255.1	122.9	
237.7		
340.2	102.5	
	225.4	71.1
Index to left ~~below~~,	134.6	−0.88
319.2		
85.1	125.9	
328.5	109.5	
780	~~110.5~~	
	~~236.4~~	~~70.9~~
329.8	126.6	
75.5	105.7	−1.09
320.7		
85.9	125.2	
	230.9	71.0
Index to right ~~above.~~	129.1	−1.00
62.3		
163.9	101.6	
51.0		
178.3	127.3	
	228.9	71.0
	131.1	−0.96

10:30

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1893phae.proj.1333.

April 24, 1893.

Gradually becoming more cloudy in latter part of series. Images almost bad not quite centrally reversed.

No 108. ☌ Leonis

10	2	+ 12.6
13	12	
73	10	

Index to right & below.

10:48

51.6		
228.3	176.7 ✓	
52.0		
228.0	176.0 ✓	✓.✓
	352.7 ✓	~~5.4~~
	07.3	−7~~48~~.

Index to left & ~~above~~.

142.8		
315.3	172.5 ✓	
141.5		
317.2	175.7 ✓	
	348.2 ✓	−4.4 ✓
	11.8	−644
142.1		
317.0	174.9 ✓	
143.0		
316.2	173.2 ✓	
	348.1 ✓	−4.4 ✓
	11.9	−642

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1893phae.proj.1333.

April 24, 1893.

Index to right & below.

233.1			
45.8	172.7		
233.5			
46.0	172.5		
	345.2		−3.9
	14.8	−0.95	
233.0			
46.7	173.7		
232.8			
47.5	174.7		
	348.4		−4.5
	1.16	−6.48	

Index to left ~~& above~~.

324.4			
136.7	172.3		
323.2			
138.0	174.8		
	347.1		−4.2
	12.9	−6.20	

10:59

Measts through cloud. Cloud gradually growing somewhat thicker during last series.

Much troubled during evening by clouds and bad seeing.

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1893phae.proj.1333.

April 25, 1893

Phot. Wedge Zone. Ok. Obs.
series 112 + 9°

6	33	+10.0
10	6	
+3	33	

7:55 Twilight still rather strong.

8:00	1269	4.10	
		4.39	
		4.11	12.60' √.46'
	1280	2.50	
		2.82	
		2.58	7.90' 3.42'
	1283	2.70	
		2.57	
		2.40	7.67' -3.32'
	1286	2.88	
		3.00	
		3.00	8.88' 3.42'
	1288	3.53	
		3.38	
		3.40	10.31' 4.46'

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1893phae.proj.1333.

April 25. 1893.

1290	3.20		
	3.13		
	3.42	9.75	4.22
1293	~~3.17~~	3.49	
	~~3.18~~	3.30	
	~~3.10~~	3.44	10.23 4.48
1295	4.36		
	4.32		
	4.49	13.17	5.70
1296	2.89		
	3.20		
	3.02	9.11	3.94
1331	3.88		
	4.10		
	4.00	11.98	5.19
1332	3.61		
	3.61		
	3.81	11.03	~~4.82~~ 4.78
1335	3.20		
	3.12		
	3.20	9.52	4.12

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1893phae.proj.1933.

April 25, 1893.

1349	3.89		
	4.06		
	4.10	12.05'	5.22'
1350	4.49		
	4.69		
	4.98	14.16'	6.13'
1374	4.01		
	4.30		
	4.06	12.37'	5.36'
1376	5.09		
	5.18		
	5.11	15.38'	6.66'
1392	2.86		
	3.19		
	3.10	9.15'	3.96'
1403	2.25		
	2.29		
	2.41	6.95'	3.01'
1418	3.11		
	3.27		
	3.20	9.58'	4.15'

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1893phae.proj.1333.

April 25. 1893.

1416	3.19		
	3.03		
	3.30	9.52	4.12

1418 accidentally taken before 1416.

1423	2.49		
	2.82		
	3.00	8.31	3.~~48~~ 60
1424	3.64		
	3.71		
	3.80	11.15	4.83
1427	2.70		
	2.93		
	3.11	8.74	3.78
1433	2.69		
	2.99		
	2.90	8.58	3.72
1449	2.98		
	3.10		
	3.00	9.08	3.93

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1893phae.proj:1333.

April 25, 1893.

1450	3.30		
	3.10		
	3,10	9.50	4.11
1458	2.11		
	2.17		
	2.20	6.48	2.81
1459	3,10		
	2.90		
	2.79	8.79	3.81
1463	3.08		
	3,11		
	3,10	9.29	4.02
1464	3.89		
	3.96		
9:02	4.08	11.93	5.17

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1893phae.proj.1333.

April 25, 1893

Measts. of Bright double stars.

No 97. — ζ Geminorum. Short R.
Same class as on Apr. 24.

7	27	+ 32.2
11	50	
+4	23	

Index to right ↓ below. A.

9:25

142.0
316.0 174.0 ✓
141.9
316.8 174.9 ✓
348.9 ✓ ~~4.6~~

Index to left ~~above~~ 5.6 5.7 ✓

231.9
47.8 175.9 ✓
231.0
47.9 176.9 ✓
352.8 ~~5.4~~

231.0 7.2 ✓ 7.51
47.8 176.8
231.2
47.1 175.9 ✓
352.7 ~~5.4~~
7.3 7.48

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1893phae.proj.1333.

April 25, 1893.

Index to right & below.

321.2
137.3 176.1
320.8
137.6 176.8
352.9
7.1
321.6 -7.54
138.0 176.4
321.1
137.0 175.9
352.3
7.7 -5.37

Index to left & above.

52.9
226.1 173.2
51.9
9:35 226.2 174.3
347.5 -4.3
Observations difficult. 12.5 -6.31

No. 96 d Geminorum. Phot H.

Index to right.

9:40 228.0
353.1 125.1
236.0
346.8 110.8
235.9
12.1 -1.10

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1893phae.proj.1333.

April 25, 1893.

Index to left.

332.0		
70.8	98.8 ✓	
320.0		
84.0	121.0 ✓	
	219.8 ✓	+1.2 ✓
320.9	140 ×2 ✓	−0.77
83.5	~~122.6~~	
331.0		
72.1	101.4 ✓	
	223.7 ✓	+1.2 ✓
Index to ~~right~~	136.3	−0.85
44.2	129.4	
174.0	~~130.2~~	
60.2		
168.0	107.8 ✓	
	237.6 ✓	~~+0.9~~ ✓
59.8	122.4	−1.14
165.7	105.9 ✓	
49.0		
176.1	127.1 ✓	
	233.0 ✓	+1.0 ✓
Index to left.	127.0	−1.04
152.7		
253.5	100.8 ✓	
140.2		
9:55 260.5	120.3 ✓	+1.2 ✓
	221.1 ✓	~~+1.0~~
	138.9	−0.86

Image do not reverse quite centr

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1893phae.proj.1333.

April 25, 1893.

No 101 — 3 Cancri. Phot H.

8	5	+ 18.0
12	40.	
+ 4	3.5	

Index to left + above.

10: 13

148.3
256.0 107.7 ✓ ↑
145.0
262.1 117.1 ✓ ↑
224.8 ✓ ↑ + 1.1 ✓ ↑
−0.87

Index to right + ~~below~~.

234.8
349.1 114.3 ✓ ↑
234.2
353.2 119.0 ✓ ↑
233.9 ✓ ↑ + 1.0 ✓ ↑
−1.05
233.7 126.7
350.1 116.4 ✓ ↑
233.2
350.1 116.9 ✓ ↑
233.3 ✓ ↑ + 1.0 ✓ ↑
−1.05
126.7

Index to left + ~~above~~.

331.8
77.2 105.4 ✓ ↑
324.5
79.0 114.5 ✓ ↑
219.9 ✓ ↑ + 1.2 ✓ ↑
−0.77

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1893phae.proj.1333.

April 25, 1893.

I index to left + above.

320.1
79.8 119.7
324.8
77.4 112.6
232.3 +1.0

— 1.03

I index to right ~~1277~~

53.0
172.8 119.8
55.0
169.4 114.4
234.2 +0.9
125.8

10:27 — 1.07

Double star measured has a position angle of 105° distance 7"

No 107 23h Ursae Majoris.

Phot. R.

9 22 +63.6
13 5
+3 43

Index above.

10:40

143.2
315.0 171.8
144.9
313.4 168.5
340.3 ~~3.5~~
197 −5.32

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1893phae.proj.1333:

28

Pasted to here inc.

April 25, 1893.

Index below.

234.7			
45.0	170.3 ↑		
231.3			
46.8	175.5 ↓		−4.0 ↓ ↑
	345.8 ↓ ↑		−4.3
231.8	172 ↑		−6.04
46.3	174.5 ↓ ↑		
233.2			
44.0	170.8 ↓ ↑		
	345.3 ↓ ↑		−4.0 ↓ ↑
Index above:	172		−5.96
323.2			
135.0	171.8 ↓ ↑		
323.5			
134.7	171.2 ↓		
	343.0 ↓ ↑		−3.6 ↓ ↑
325.0	170		−5.64
134.0	169.0 ↓ ↑		
323.1			
135.1	172.0 ↓		
	341.0 ↓ ↑		−3.4 ↓ ↑
Index below	170		−5.460
55.0			
223.0	168.0 ↓ ↑		
53.7			
224.8	171.1 ↓ ↑		
	339.1 ↓ ↑		−3.2 ↓ ↑
	209		−5.19

10:50

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1893phae.proj.1333.

April 26, 1893.

Phot. Wedge gone. Obs.
Series 143. + 9°.

6	33		+10.0
10	1		
+3	28		

7:33	1374	4.29		
		4.40		
		4.50	13.19<	5.71'
	1376	5.49		
		5.40		
		5.35	16.24<	7.03'
	1424	3.31		
		3.61		
		3.61	10.53<	4.56'
	1427	2.75		
		2.99		
		2.80	8.54<	3.70'
	1433	2.60		
		2.90		
		3.03	8.53<	3.69'

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1893phae.proj.1336

April 26, 1893.

1449	2.90		
	3.10		
	3.45	9.45 <	4.09
1450	3.10		
	3.21		
	3.10	9.41 <	4.07
1458	2.50		
	2.70		
	2.79	7.99 <	3.46
1459	2.98		
	3.02		
	3.00	9.00 <	3.90
1463	3.02		
	3.10		
	3.29	9.41 <	4.07
1464	3.79		
	3.96		
	3.75	11.50 <	4.98
1472	2.78		
	2.99		
	2.90	8.67 <	3.75

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1893phae.proj.1333.

April 26, 1893.

1474	2.21		
	2.39		
	2.53	7.13′ <	3.09′
1476	2.92		
	3.11		
	3.02	9.05′ <	3.92′
1480	2.80		
	2.83		
	3.00	8.63′ <	3.74′
1481	4.29		
	4.38		
	4.39	13.06′ <	5.65′
1484	2.70	Slightly preceeding, brighter	
	2.61	& southern of two.	
	2.57	7.88′ <	3.41′
1485	3.09		
	3.39		
	3.37	9.85′ <	4.27′
1490	3.56		
	3.49		
	3.20	10.25′ <	4.44′

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1893phae.proj.1333.

April 26, 1893.

15 01	2.40		
	2.80		
	2.93	8.13 <	3.52
15 08	3.51		
	3.40		
	3.42	10.33 <	4.47
15 16	2.61		
	2.69		
8½ d	2.89	8.19 <	3.55

Becoming somewhat cloudy.

Too much light cloud to continue.

Clouds becoming worse.

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1893phae.proj.1333.

April 26, 1893

No 95 δ Geminorum. Phot. R.

7	12	+22.2
11	32	
+4	20	

Index to right above.

9:03

144.8 ⟨ fr. dis.

312.7	167.9 ⟨	
145.0		
316.0	166.0 ⟨	
	333.9	−2.7
Index to left	26.1	−4.71
237.0		
41.0	164.0 ⟨	
235.7		
43.7	168.0 ⟨	
	332.0	−2.6
235.4	28.0	−4.53
43.4	168.0 ⟨	
235.5		
41.1	165.6 ⟨	
	333.6	−2.7
	26.4	−4.68

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1893phae.proj.1333.

April 26. 1893.

Index to right & above.

145.7		
311.0	165.3	
146.2		
310.0	163.8	
	329.1	2.3
	307	4.34
144.1		
311.1	167.0	
146.7		
310.1	163.4	
	330.4	2.4
	329.6	4.43

Index to left.

236.5		
40.1	163.6	
237.9		
43.2	165.3	
	328.9	2.3
	31.1	4.32

9.19

Hurried a little on latter part of measurement in order to show Prof. Barnard some celestial objects.

~~Images also very faint~~

Observations difficult & images faint on account of clouds & moonlight.

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1893phae.proj.1333.

Apr. 26 or 27, 1893.

Showed Professor Barnard & Gentlemen with Phot. R. on. large telescope. - also other Photometers, and their general use.

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1893phae.proj.1333.

Posted to Lera.

Apr. 24. 1893.

Cloudy first of evening now somewhat clearer.

7:40

No. 88, 8 Monocerotis.

6	17	+ 4.7
10	23	
+ 4	6	

Seeing bad, Images very poor, so much cloud that it is almost impassible to make equalization.

Brt Star has wholly disappeared.

No 101 5 Cancri. Phot H.

8	5	+ 18.0
10	40	
+ 2	35	

Star faint.

Stars too faint to measure.

9:02. Still thickly cloudy.

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1893phae.proj.1333.

Posted to here.

May 5. 1893.

~~No. 96.~~

Phot. measts. of bot. Double Stars. G. B.

No. 96. ζ Geminorum.

7	27	+32.2
11	0	
73	33	

Cloudy.

Expts with New Compound Micro-scope on Phot. R. on East Equatorial.

ζ Geminorum. Close components.

Index left & below.

14A.2	110.1	
2V-A.3		
140.A	119.7	
260.V	229.A	+1.0
	130 Z	— 0.97

Index right & above.

242.0
3AV.0
23V.C
0.A

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1893phae.proj.1333.

May V. 1893.

Some interfers in fore vanes set.
Very cloudy also. Reject.

V V.V
177.0 121.V
63.9 100.3
164.2 221.8 V 1.2 V
138.2 −0.81

63.V 101.6
16V.1
V1.9 124.3 V 1.1 V
176.2 22V.9 V
134.1 −0.89

Index to left & below.

77.9 103.9
1V4.0 ~~96.1~~ Wrong mirror probably.
14V.V 121.6
267.1 ~~197.7~~
22V.VV 1.1 V
13 4.V −0.89

143.6 122.4
266.0
149.1 113.0
262.1 23V.4 V 0.9
124.6 −1.09

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1893phae.proj.1333.

May 1, 1893.

Index to right & above.

9h 30m

240.1 10.9
346.4
234.4 120.6
3 11.0 226.1 +1 +1
133.5 −0.91

Most of the observations made through much cloud, and with much difficulty. Here does not seem to be a good working field with microscope on Plotting-table to-night, for some reason.

10h 15m So cloudy that nothing more can be done.

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1893phae.proj.1533.

May 6, 1893

Phot meas'ts. of Bright Double stars N. obs.

No 96 α Geminorum.

7	27	+ 32.2
10	32	
+3	5	

Clouds thick.

Put on Phot B. with compound microscope. field seems to be much improved. Star images from one or two momentary glimpses quite good,

8.40 Cloudy everywhere & growing worse with no prospect of clearing.

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1893phae.proj.1333.

May 4. 1893.

Phot. measts. of Bright double stars. Phot of R. Ast. obs.

No 96 & ~~ξ~~ Geminorum.

7	27	+32.2
10	51	
+3	24	

Index to right + below.

7:40

326.9 ℓ ftr dis.
90.0 123.1 ✓ 1
339.1
77.0 97.9 ✓ 1
221.0 ✓ 1 +1.2 ✓ 1
Index to left + above. 139.0 −0.79

251.8
344.8 93.0 ✓ 1
239.7
359.9 120.2 ✓
213.2 ✓ 1 +1.4 ✓ 1
238.2 146.8 −0.64
1.3 123.1 ✓ 1
251.4
349.0 97.6 ✓ 1
220.7 ✓ 1 +1.2 ✓ 1
139.3 −0.79

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1893phae.proj.1033.

May 8, 1893.

Index to right & below.

325.9		
92.2	126.3	
335.7		
77.0	101.3	
	227.6	+1.1
339.2	132.4	-0.93
77.0	97.8	
327.0		
87.0	120.0	
	217.8	+1.3
Index to left →	142.2	-0.73
74.9		
168.1	93.2	
63.1		
7:55 182.0	118.7	
	212.1	+1.4
	147.9	-0.62

Lt. M. Hodge Gone N. obs.

Series 114. +9°

.6	54	+9.9
11	30	
+4	36	

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1893phae.proj.1333.

May 8, 1893.

8:25	1472	3.29		
		3.30		
		3.35	9.94	4.30
	1474	2.70		
		2.90		
		2.82	8.42	3.65
	1476	3.11		
		3.01		
		3.06	9.18	3.97
	1480	2.82		
		2.98		
		3.13	8.93	3.87
	1481	4.04		
		4.08		
		3.87	11.99	5.19
	1484	2.59		
		2.76		
		2.70	8.05	3.49
	1485	2.71		
		3.00		
		2.79	8.50	3.68

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1893phae.proj.1333.

May 8, 1893

1490		3.40		
		3.37		
		3.10	9.87	4.27
1501		2.37		
		2.77		
		2.70	7.84	3.39
1508		3.50		
		3.47		
		3.38	10.35	4.48
1516		2.89		
		2.71		
		2.75	8.35	3.62
1524		2.61		
		2.90		
		3.00	8.51	3.68
1525		2.79		
		2.99		
		2.90	8.68	3.76
1528	2.14	~~2.98~~		
	2.49	~~3.41~~		
	2.61	~~2.89~~	7.24	3.13

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1993phae.proj.1338.

May 8, 1893.

1530	2.78	same star as in series 18.	
	2.92		
	2.88	8.58	3.72
1531	3.79		
	3.51		
	3.61	10.91	4.72
1534	2.90		
	3.11		
	3.18	9.19	3.98
1541	3.49		
	3.52		
	3.49	10.50	4.55
1545	2.53	same as in series 18.	
	2.79		
	2.90	8.22	3.56
1554	2.40	same as in series 18.	
	2.72		
	2.58	7.70	3.33
1559	2.63		
	2.60		
	2.61	7.84	3.39

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1893phae.proj.1333.

May 8, 1893.

1564	2,87	same as in series 18.	
	2,91		
	2,89	8.67	3.75
1565	2.69		
	2.70		
	2.72	8.11	3.51
1577(?)	3.41		
	3.39		
	3.40	10.20	4.42
1586	4.50		
	4.52		
	4.61	13.63	5.90
1620	4.70		
	4.70		
	4.68	14.08	6.10
1630	3.42		
	3.52		
9:15	3.68	10.62	4.60

Region too low to continue farther.

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1893phae.proj.1333.

May 8, 1893 -

Bright double stars

No 106 38 Lyncis.

9	11	+37.3
13	21	
+4	10	

Seeing so poor that star can not be sufficiently well enough to measure.

No 105 σ^2 Ursae Majoris

9	0	+67.6
13	33	
+4	33	

Abandoned. Seeing so bad that stars can not be sufficiently to be measured.

No. 107. 23 h Ursae Majoris Dist. R

9	22	+63.6
13	47	
+4	25	

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1893phae.proj.1333.

~~Index to~~ May 8, 1893.

Index to left & above

10:31

146.1 ⟨ftr. dia.
316.1 170.0
145.0
317.0 172.0
342.0 ~~-3.5~~

Index to right & below. -5.52

~~239.0~~
56.5
226.5 170.0
54.5
226.9 172.4
342.4 ~~-3.6~~

55.0 17.6 -5.57
226.9 171.9
57.6
226.0 168.4
340.3 ~~-3.8~~

Index to left & ~~226.7~~ -5.32
144.0
318.2 174.2
145.8
316.0 170.2
344.4 ~~-3.8~~

145.5 15.6 -5.83
317.2 171.7
145.1
318.2 173.1 -5.89
344.8 ~~-3.9~~

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1893phae.proj.1333.

May 8, 1893.

Index to right + below.

2 58.7
47.0 168.3
237.0
10:47 46.4 169.4
337.7 -3.1
22.3 -.05

No. 110 S Leonis.

10 10 + 24.1
14 12
+ 4 2

Index to right

10:54 74.0 after dis.
212.8 138.8
71.4
214.6 143.2
282.0 -.43
Index to left 78.0 -2.20
159.0
306.9 147.9
160.1
306.9 146.8
294.7 -.67
653 -2.67

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1893phae.proj.1333.

May 8, 1893.

Index to left.

159.2
305.5 146.3 ✓ 1
158.7
305.1 146.4 ✓ 1
292.7 ✓ 1 ~~0.6~~ ✓

Index to right ~~6.7~~ 3 −2.60 ✓

253.0
34.0 141.0 ✓ 1
251.0
34.0 143.0 ✓ 1
284.0 ✓ 1 ~~0.3~~ ✓ 1
76.0 2.32

252.0
33.9 141.9 ✓ 1
252.4
34.4 142.0 ✓ 1
283.9 ✓ 1 ~~−0.3~~ ✓ 1
76.1 −2.31 ✓

Index to ~~right~~ left.

238.0
124.9 146.9 ✓ 1
337.7
125.1 147.4 ✓ 1
294.3 ✓ 1 ~~0.7~~ ✓ 1
65.7 ✓ −2.65

11.05. 3

11.9
10 59.5 ✓
15 59.5 ✓

I images elongated into spectra. so that discs could not be obtained only general light impression compared.

Seeing tonight very poor. Star discs large & very unsteady.

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1893phae.proj.1333.

May 7, 1893.

Phot. Measts. of Bright Double Stars.
Phot R. W. obs.

No. 101 γ Cancri.

8	5	+ 18.0
11	7	
+3	2	

7.53

Under above.

22.1	ftr. dir.	✓
142.3	120.2	✓
25.3		
135.0	109.7	✓ ✓
	229.9	✓ ✓ +1.0 ✓
India	130.1	− 0.98
115.0		
225.7	110.7	✓ ✓
117.0		
225.5	108.5	✓ ✓
	219.2	✓ ✓ +1.2 ✓
112.0	140.8	− 0.76
227.4	115.9	✓ ✓
112.4		
225.1	112.7	✓ ✓
	228.6	✓ ✓ +1.1 ✓
	131.4	− 0.9

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1893phae.proj.1333.

May 9, 1893.

Index above.

200.0			
316.9	116.9		
201.9			
316.0	114.1		
	231.0		~~+1.0~~
205.0	29.0		−1.00
312.5	107.5		
208.7			
311.5	102.8		
	210.2		~~+1.4~~
Index below	149.8		−0.98
292.3			
47.0	114.7		
292.1			
46.0	113.9		
	228.6		+1.1
	131.4		−0.90

8:18

N. M. Wedge Zone. N. Obs.

Series +9°

7	13	+9.9
11	53	
+4	40	

Wedge Zone abandoned Sky too hazy.

Clouds.

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1893phae.proj.1333.

May 9, 1893.

No. 103 ε Hydrae.

8	4.0	+6.9
12	10	
+3.	30	

Star too close to be separated and measured in this seeing.
Troubled by clouds.

No. 107 23 h Ursae Majoris.

9	22	+63.6
12	22	
+3	0	

Index below.

9.06

52.0 ⟨ ftr. dis.

224.5	172.5 ✓	
52.9		
224.8	171.9 ✓	
	344.4 ✓	~~3.8~~ ✓

Index above 6 −5.83

145.0		
313.0	168.0 ✓	
143.0		
314.0	171.0 ✓	
	339.0 ✓	~~3.2~~ ✓
	21.0	−5.18

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1893phae.proj.1333.

May 9, 1893.

Index above.

143.0
314.0 171.0
144.1
313.0 168.9
339.9 −3.3
Index below 20.1 −0.2

reject. Images faint from clouds.

~~234.3~~
~~43.7~~ ~~69.4~~
~~224.2~~
~~42.8~~ ~~178.6~~
~~348.0~~ ~~−4.4~~

232.8
43.8 171.0
234.0
43.0 169.0
340.0 −3.3
20.0 −0.2

233.4
43.1 169.7
234.0
43.6 169.6
339.3 −3.2

Clouds.

Index above 21.7 −0.11

324.2
133.8 169.6
324.0
133.2 169.2 −0.16
~~340.8~~ ~~3.4~~
338.8 ~~3.2~~

9:30

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1893phae.proj.1333.

May 9, 1893.

Much troubled by clouds.

No 169 ν Serpentis

17	14.	− 12.7
13	4	
−4	10	
12	0	
+7	50	

Too low.

No 168 δ Herculis

17	10	+ 25.0
13	12	
−3	58	
12	0	
+8	2	

9;50

Index to right & below.

232.9 (per. dis.

45.0 172.1 ν₁

234.9

42.9 168.0 ν₁

340.1 ν₁ −3.3 ν₁

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1893phae.proj.1333.

May 9. 1893.

Index to left & above.

323.1	171.9 ✓ 1
135.0	~~171.9~~
324.3	
133.0	168.7 ✓ 1
	~~340.8~~ 340.6 ✓ 1 — 3.4 ✓ 1
324.2	
133.0	168.8 ✓ 1
324.0	
134.3	170.3 ✓ 1
	339.1 ✓ 1 — 3.2 ✓ 1

Index to right & below.

53.7	
224.7	171.0 ✓ 1
54.9	
225.7	170.8 ✓ 1
	341.8 ✓ 1 — 3.5 ✓ 1
52.5	
225.9	173.4 ✓ 1
52.1	
225.0	172.9 ✓ 1
	346.3 ✓ 1 — 4.1 ✓ 1

Index to left & above.

143.2	
313.3	170.1 ✓ 1
143.7	
313.8	170.1 ✓ 1
	340.2 ✓ 1 — 3.3 ✓ 1

10:08

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1893phae.proj.1333.

May 9, 1893.

No 171 ν Draconis.

17	30	+55.3
13	40	
−3	50	
12	00	
+8	10	

Index to left & above. B.

10: 22

268.0 < North. pre. dis.
11.0 103.0 ✓
267.1 − 0.46
8.0 100.9 ✓↑
203.9 ✓↑ +1.5 ✓
176.1

Index to right ~~& below.~~ A.

358.3 1.0
96.2 97.9 ↑ 97.0 96.0
8.8 9.8
91.0 82.2 ↑ 91.2 81.4 +2.0 ↑
180.1 ↑ 171.4 +2.0
000 179.9
8.0
89.9 81.9 ✓↑
358.1
99.6 101.5 ✓↑
183.4 ✓↑ +1.9 ✓↑
176.6 −006

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1893phae.proj.1333.

May 9, 1893.

Index to left & above. B.

85.0		
191.0	106.0 ✓	
94.1		
186.0	91.9 ✓	
	197.9 ✓	~~+1.7~~ ✓
96.0	162.1	− 0.34
185.0	89.0 ✓	
91.2		
18.6.7	95.5 ✓	
	184.5 ✓	~~+1.9~~ ✓
	~~[illegible]~~	− 0.08

A. Index to right & below.

181.2		
278.8	97.6 ✓	
184.2		
276.4	92.3 ✓	
	189.9 ✓	~~+1.8~~ ✓
	170.1	− 0.19

10:37

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1893phae.proj.1333.

May 9, 1893.

S Cygni.

20	8	+57.2
14	8	
−6	0	
+12	0	
+6	0	

10h 48 Star t seen, S Cygni not seen probably fainter than 15.0.

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1893phae.proj.1333.

May. 10, 1893

Phot. Measts. of Bright Double Stars.
Shat R. N. obs.

No 146 pi Bootis.

15	20	+37.8
10	53	
− 4	27	
12	0	
+7	33	

Index to right & below.

7.32

250.9 after dis.
27.7 136.8 ✓ ✓ ✓ 8
253.0
27.1 134.1 ✓ ✓
270.9 ✓ ✓ ~~+0.4~~ ✓
~~289.1~~ −1.94

~~Index to left & above.~~

346.5
114.2 127.7 ✓ ✓
343.8
114.6 130.8 ✓ ✓
258.5 ✓ ✓ +0.4 ✓
344.5 101.5 −1.62
114.2 129.7 ✓ ✓
344.8
114.2 129.4 ✓ ✓
259.1 ✓ ✓ +0.4 ✓
100.9 −1.63

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1893phae.proj.1333.

May 10, 1893

Index to right & below

69.0
208.9 139.9 ✓ 1
69.4
209.2 139.8 ✓ 1
279.7 ✓ 1 ~~0.2~~ ✓
70.0 A 0.3 -2.19
210.5 140.5 ✓ 2
71.0
209.1 138.1 ✓ 1
278.6 ✓ 1 ~~0.2~~ ✓ 1
~~Index to left above.~~ A 1.4 -2.15
163.2
297.0 139.8 ✓ 1
161.8
293.1 131.3 ✓ 1 -1.79
265.1 ✓ 2 ~~+0.2~~ ✓ 1
94.9

7 8:47

No 153 κ Herculis

16	2	+17.4
11	22	
-4	40	
+12	00	
+7	20	

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1893phae.proj.1333.

May 10, 1893.

Index to left + above.

256.8 } fri. dis.
18.2 } 121.4 ✓ ↑

255.1
23.1 128.0 ✓ ↑

249.4 ✓ ↑ ~~+0.6~~ ✓ ↑

Index to right + ~~below.~~ −1.40

7:58

351.6
109.2 117.6 ✓ ↑

348.5
109.0 120.5 ✓ ↑

238.1 ✓ ↑ ~~+0.8~~ ✓ ↑

348.0 121.9 −1.15

107.5 119.5 ✓ ↑

350.1
107.5 117.4 ✓ ↑

236.9 ✓ ↑ ~~+0.9~~ ✓ ↑

Index to left + ~~above.~~ −1.13

81.0
198.9 117.9 ✓ ↑

75.3
202.0 126.7 ✓ ↑

244.6 ✓ ↑ ~~+0.7~~ ✓ ↑

78.0 115.4 −1.29

203.0 125.0 ✓ ↑

77.9
198.5 120.6 ✓ ↑

245.6 ✓ ↑ ~~+0.7~~ ✓ ↑

114.4 −1.31

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1893phae.proj.1333.

May 10, 1893.

Index to right & below.

	171.0	
	290.0	119.0 ✓ 1
	170.4	
8:10	287.9	117.5 ✓ 1
8:04		236.5 ✓ 1 ~~+09~~ ✓
		1235 −1.12

Ll. M. Wedge gone. Ol. abs.

Series IIV. +9°.

7	1·3	+9.9
11	48	
+4	35	

8:25	1586	4.57		
		4.51		
		4.69	13.77	5.96
	1590	3.28		
	following +	3.31		
	brighter of pair.	3.51	10.10	4.37

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1893phae.proj.1333.

May 10, 1893

1604	2.48		
	2.48		
	2.55	7.51	3.25
1610	3.02		
	3.10		
	3.06	9.18	3.97
1620	4.95		
	4.81		
	5.10	14.86	6.43
1630	3.57		
	3.68		
	3.88	11.13	4.82
1646	2.41		
same star as in	2.50		
zone 17.	2.47	7.38	3.20
1648	3.53		
	3.75		
	3.70	10.98	4.75
1656	2.30		
same star as in	2.30		
zone 17	2.27	6.87	2.97

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1893phae.proj.1333.

May 10, 1893.

1662	1.99		
same star as in	2.30		
zone 17.	2.22	6.51'	2.82'
1663	2.54		
same star as in	2.45		
zone 17.	2.50	7.49'	3.24'
1667	3.94		
	3.50		
	3.89	11.33'	4.91'
1670	2.93		
	3.03		
	3.02	8.98'	3.89'
1680	3.87		
	3.95		
	3.80	11.62'	5.03'
1682	2.00		
same star as in	2.10		
zone 17	2.08	6.18'	2.68'
1687	3.47		
	3.49		
	3.40	10.36'	4.49'

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1893phae.proj.1333.

May 10, 1893.

1697	3.10		
	3.18		
	3.10	9.38	4.06
1700	2.75		
same star as in	2.55		
zone 17	2.39	7.69	3.33
1706	3.13		
	3.27		
	3.50	9.90	4.29
1708	2.63		
	2.32		
	2.38	7.33	3.17
1709	2.40		
	2.56		
	2.50	7.46	3.23
1717	3.29		
	3.50		
	3.49	10.28	4.45
1718	2.29		
	2.30		
	2.31	6.90	2.99

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1893phae.proj.1333.

May 10, 1893.

~~2.33~~ wrong.

1722	2.78		
	2.56		
	2.76	8.10	3.51
1723	3.90		
	4.09		
	3.70	11.69	5.06
1732	2.91		
	3.05		
	3.00	8.96	3.88
1734	2.63		
	2.90		
	2.92	8.45	3.66
1738	~~3.19~~ wrong.		
	2.51		
	2.59		
	2.52	7.62	3.30
1745	3.30		
	3.31		
	3.10	9.71	4.20
1753	4.50		
	4.57		
	4.48	13.55	5.87

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1893phae.proj.1333.

May 10, 1893.

	1765	4.88		
		4.99		
9:23		5.13	15.00	6.~~46~~ ~~50~~
	1769	3.97		
		4.30		
9:25		4.21	12.48	5.40

In connection with taking star 1687 it was noticed there was some trouble about the stars light and on investigating it was found that the Phot. moved so easily in the tail-piece of the telescope, that care had to be exercised not to rotate the Phot. when one shoved the wedge back & forth. Special care taken in ~~latter~~ part of gone sub-segment to this as it was found Phot. seemed to rotate rather easily and with gradually increasing facility. It is thought probable however that there is no serious trouble with gone either before or after star 1687, at which time it was first discovered since the motion of star between bars due to rotation of earth would naturally carry the star behind one of

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1893phae.proj.1333.

May 10, 1893

bars during measurement if Phot. was out of adjustment & hence would naturally be noticed.

Bright Double stars. Phot B. O. obs.

No 116 83 Leonis.

11	21	+3.7
13	33	
+2	12	

Index to right & above.

10:10

178.0
277.0 99.0 ✓ ↑
170.5 ✓
289.0 118.5 ✓ ↑
217.5 ✓ ↑ +1.3 ✓ ↑
~~142.5~~ -0.66

Index to left ~~& bottom~~.

263.0
13.6 110.6 ✓ ↑
261.0
9.0 108.0 ✓ ↑
218.6 ✓ ↑ +1.3 ✓ ↑
141.4 -0.75

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1893phae.proj.1333.

May 10, 1893

Index to left & below.

262.5		
16.7	114.2	
263.6		
18.4	114.8	
	229.0	+1.0
	131.0	-0.96

Index to right

353.0		
104.0	111.0	
348.9		
109.6	120.7	
	231.7	+1.0
	128.3	-1.01
350.7		
108.0	117.3	
349.2		
102.1	112.9	
	230.2	+1.0
	129.8	-0.98

Index to left &

~~75.1~~		
78.9		
79.2		
201.7	122.5	
79.5	122.0	
201.5	~~119.3~~	
	244.5	+0.7
	116.5	-1.29

10.23

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May 10, 1893

R. Ursae Maj. Ob. obs.

10	32	+69.2
13	57	
+3	25	

± 3 R, R 3 u in large telescope two faint for finder.

10.38. Est. 12.5

~~S Bootis~~

Brit. Double stars Obst R. Ob. obs.

No 117 I Leonis

11	22	+3.6
14	12	
+2	50	

Index to left + below.

10.50

246.1		
31.5	145.4	v 1
244.8		
30.5	145.7	v 1
291.19		v 1 −0.5
86.6		−254

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1893phae.proj.1333.

May 10, 1893.

Index to right & above.

332.3			
120.9	148.6		
334.1			
121.2	147.1		
	295.7	−0.7	
	65.8	−2.64	
337.6			
122.2	144.6		
332.3			
122.0	149.7		
	294.3	−0.7	
	65.7	−2.65	

Index to left & below.

64.1			
216.7	152.6		
65.8			
207.7	141.9		
	294.5	−0.7	
	65.5	−2.66	
69.8			
209.5	139.7		
68.5			
201.0	142.5		
	282.2	−0.3	
	77.8	−2.26	

Index to right & above.

159.1			
290.2	131.1		
158.5			
300.2	141.7		
	272.8	0.0	
	87.2	−1.99	

11:00

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1893phac.prof.1333.

May 11 1893

Obst. meas^ts of Bright double stars N. Obs.
Obst. R.

No 146 μ Bootis

15	20	+37.8
11	3	(20 ✓)
−4	17	
+12	00	
+7	43	

Index to right + below.

7.41

250.2 Fitzsdis. ✓
28.4 138.2 ✓1
250.2
29.2 139.0 ✓1
277.2 ✓1 ~~0.1~~ ✓1
~~Index to left + above~~ −2.11

344.5
115.2 130.7 ✓1
346.0
115.8 129.8 ✓1
260.5 ✓1 ~~+0.3~~ ✓1
343.4 99.5 −1.67
114.7 131.3 ✓1
340.8
116.8 136.0 ✓1
267.3 ✓1 40.2 ✓1
927 −1.80

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1893phae.proj.1333.

May 11, 1893.

Index to right & below.

69.3		
210.0	140.7	
66.8		
211.2	144.4	
	285.1	~~-0.3~~
67.1	284.9	-2.35
211.2	144.1	
67.9		
210.8	142.9	
	287.0	~~-0.4~~
	~~73.0~~	-2.41

Index to left ~~& above~~.

163.9		
295.4	131.5	
162.2		
294.8	132.6	
	264.1	~~+0.2~~
	95.9	-1.76

8:52

No 153 K Herculis.

16	2	+17.4
11	36	
-4	26	
12	00	
+7	34	

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1893phae.prgj.1333.

May 11, 1893.

8:07

Index to left & above.

~~20.1~~

257.0 < ftr. dis.

20.0 123.0

255.8

20.0 124.2

247.2 ~~+0.6~~

Index to right & below. 1.30

348.0

105.5 117.5

348.0

109.0 121.0

238.5 ~~+0.8~~

121.5 −1.16

350.7

108.0 117.3

347.1

108.6 121.5

238.8 ~~+0.8~~

Index to left & above 121.2 −1.17

77.0

190.0 113.0

76.0

198.7 122.7

235.7 ~~+0.9~~

124.3 −1.10

76.1

197.8 121.7

79.5

198.0 118.5 −1.20

240.2 ~~+0.8~~

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1893phae.proj.1333.

May 11, 1893.

Index twilight & below.

169.2
288.0 118.8
166.0
289.5 123.5
242.3 +0.8
1177 1.24

8:20
8 10.0

N. M. Wedge Zone N. obs.

Series 116. +19°

6	49		+19.9
12	26		
+5	37		
7	1		
12	28		
+7	27		

9:02 1659 4.45
4.20
4.12 12.77 5.53

1663 2.90
2.72
2.82 8.44 3.65

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1893phae.prpj.1333.

May 11, 1893.

1669	2.18		
	2.34		
	2.19	6.71	2.91
1670	2.16		
	2.47		
	2.50	7.13	3.09
1671	3.10		
	3.09		
	3.18	9.37	4.06
1678	3.08		
	3.20		
	3.20	9.48	4.10
1682	2.79		
	2.81		
	2.80	8.40	3.64
1684	3.40		
Southern a brighter	3.40		
component.	3.46	10.26	4.44
1687	2.28		
	2.49		
	2.39	7.16	3.10

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1893phae.proj.1333.

May 11, 1893

1743	4.02		
	3.85		
	4.37	12.24	5.30
1777	3.36		
	3.43		
	3.46	10.25	4.48
1780	2.39		
	2.32		
	2.35	7.06	3.06
1795	2.21		
	2.65		
	2.49	7.35	3.18
1797	2.99		
	2.94		
	2.96	8.89	3.85
1839	2.68		
	2.80		
	2.75	8.23	3.56
1841	2.48		
preceding & brighter	2.59		
of two rather close	2.50	7.57	3.28
stars.			

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1893phae.proj.1333.

May 11, 1893.

1853	2.32		
	2.49		
	2.49	7.30	3.16
	270		
1868	~~2.29~~ wrong.		
	2.69		
	2.70	8.09	8.50
1878	2.62		
	2.87		
	2.88	8.37	3.62
1885	2.40		
	2.33		
	2.49	7.22	3.13
	288		
1889	~~2.44~~ wrong.		
	2.70		
	2.83	8.41	3.64
18,92	3.40		
	3.59		
	3.52	10.51	4.55
1895	2.90		
	3.08		
	3.21	9.19	3.98

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1893phae.proj.1323.

May 11, 1893.

1899	2.58		
	2.84		
	2.79	8.21	3.55
1900	3.90		
	4.11		
	4.04	12.05	5.22
1909	2.68		
	2.72		
	2.70	8.10	3.51
1914	2.77		
	2.98		
	2.90	8.65	3.75
1916	2.60.		
	2.69		
	2.65	7.94	3.44
1930	2.70		
	2.50		
	2.40	7.60	3.29
1931	1.82		
Star quite faint.	1.89		
	1.85	5.56	2.41

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1893phae.proj.1333.

May 11, 1893

~~2.48~~
~~2.69~~
~~2.38~~ ~~7.50~~ 3.25

9:57
~~9:02~~

Zone was started as near to the western horizon as was thought advisable at the time. but after a few stars had been taken (some of them being constants) it was found that a few would have to be ~~skipped~~ omitted as the region was ~~found to be rather too low to take them with safety, in~~ getting rather low to take many more stars consecutively, the stars being rather faint on account of the light haze & dust in the sky; an omission of a few stars was consequently made, taking however one or two constants in the interval, & then a new start was made the zone running from this point consecutively. Stars in zone rather faint in general ~~on~~ account of haze. This haze however is nothing that is particularly perceptible to the eye, but is rather evident from the fact that stars seemed somewhat faint.

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1893phae.proj.1333.

May 11, 1893.

Bright double stars. Phot. R. Ast. obs.

No 116 83 Leonis.

11	20	+3.7
14	0	
72	40	

Index to night

10; 33

167.8 ~~after dis.~~

284.2 116.4 ✓

174.0

282.3 108.3 ✓

224.7 ✓ +1.4 ✓

Index to left ~~135.3~~ −0.8 ✓

260.0

19.9 119.9 ✓

257.1

16.0 118.9 ✓

238.8 ✓ +0.8 ✓

258.5 121.2 −1.17

13.6 115.1 ✓

254.0

14.6 120.0 ✓

235.1 ✓ +0.9 ✓

124.9 −1.09

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1893phae.proj.1333.

May 11, 1893.

Index to right.

351.5		
111.0	119.5 ✓	
349.5		
111.7	122.2 ✓	
	241.7 ✓	+0.8 ✓
352.3	118.9	−1.2
106.8	114.5 ✓	
351.6		
111.0	119.4 ✓	
	233.9 ✓	+0.9 ✓
Index to left	126.1	−1.06
80.3		
203.7	123.4 ✓	
77.7		
198.0	120.3 ✓	
	243.7 ✓	+0.7 ✓
	116.3	−1.27

10:43

No 117. Tr Leonis.

10:45

Index to left + below.

246.0 <	ftr. dis.	
27.8	141.8 ✓	
244.0		
30.8	146.8 ✓	
	288.6 ✓	−0.5 ✓
	71.4	−2.46

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1893phae.proj.1338.

May 11, 1893

Index to right & above.

339.8
119.2 139.4
337.7
121.5 143.8
283.2 −0.3
338.0 76.8 −2.9
120.1 142.1
338.4
120.0 141.6
283.7 −0.3
76.3 −2.31

Index to left & below

62.2
215.9 153.7
67.7
208.8 141.1
294.8 −0.7
67.5 65.2 −2.67
211.0 143.5
69.0
214.0 145.0
288.5 −0.5
71.5 −2.46

Index to right & above.

160.1
298.0 137.9
157.7
10:56. 301.1 143.4
281.3 −0.2
78.7 −2.26

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1893phae.proj.1333.

May 12, 1893

Phot. measts. of Bright double stars.
Phot R. W. obs.

No 144 δ Bootis.

15	10	+ 33.8
11	13	
+3	57	
12	00	
+8	3	

Light cloud.

7:55

Index to right + above.

328.8 ℓ ftr. dis.
129.8 161.0 ✓ 1
325.8
131.6 165.8 ✓ 1
326.8 ✓ 1 ~~2.2~~ ✓ 1
~~313.2~~ ~~below~~ − 4.18

Index to left

545
222.3 167.8 ✓ 1
560
220.8 164.8 ✓ 1
332.6 ✓ 1 −2.6 ✓ 1
27.4 − 4.60

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1893phae.proj.1333.

May 12, 1893.

Index to left & below.

57.5

221.0 163.5 ✓ n

55.8

221.5 165.7 ✓ 2

329.2 ✓ 1 ~~-2.3~~ ✓ 1

Index to right ~~+ above~~ 808 -4.35

Clouds.

147.1

310.1 163.0 ✓ 1

148.0

308.5 160.5 ✓ 1

323.5 ✓ 2 ~~2.0~~ ✓ 1

147.3 365 -3.97

310.0 162.7 ✓ 1

146.0

310.6 164.6 ✓ 1

327.3 ✓ 2 ~~-2.2~~ ✓ 1

Index to left + below 327 -4.21

238.0

37.9 159.9 ✓ 1

234.8

8:23 42.1 167.3 ✓ 1

327.2 ✓ 2 ~~-2.2~~ ✓ 1

328 -4.21

Observations taken through some cloud. Cloud stopping observations at times.

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1893phae.proj.1333.

May 12, 1893

Σ 1888 No 142 . ζ Boötis.

14	46	+ 19.6
12	6	
−2	40	
12	0	
+10	40	

Star too close to be measured in this seeing.

No 141 α Librae.

14	44	− 15.5
12	14	
− 2	30	
+12	00	
+ 9	30	

Standard above.

8:42

243.0 < fr. dis

30.4 147.4 ✓ 1

248.0

24.2 136.2 ✓ 1

283.6 ✓ 1 ~~0.3~~ ✓

~~Seeing very bad, much cloud.~~ 2.30

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1893phae.proj.1338.

May 12, 1893.

Index below.

342.5.

118.9 136.4

340.0

121.1 141.1

277.5 -0.1

282.5 -2.2

338.1

121.7 143.6

340.0

118.8 138.8

282.4 -0.3

77.6 -2.27

Index above.

68.1

210.0 141.9

69.9

210.7 140.6

282.5 -0.3

269.9 77.5 -2.27

211.1 141.2

71.0

209.1 138.1

279.3 -0.2

Index below. 80.7 -2.17

157.9

299.9 142.0

156.0

8:58 301.1 145.1 -2.41

287.1 -0.4

Considerable cloud. Images ~~rather poor~~ abs somewhat difficult.

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1893phae.proj.1333.

May 12, 1893

No 153. κ Herculis.

16	2	+17.4
12	42	
−3	20	
12	00	
+8	40	

Index to left + above.

9:18

258.2 ⌊ffr dis.

15.0	116.8 ✓	
254.1		
18.9	124.8 ✓	
	241.6 ✓	+0.8 ✓

Index to right + ~~Clear~~ 4 −1.23

350.2		
107.0	116.8 ✓	
349.0		
105.8	116.8 ✓	
	233.6 ✓	+0.9 ✓
349.0	126.4	−1.05
108.6	119.6 ✓	
346.0		
107.0	121.0 ✓	
	240.6 ✓	+0.8 ✓
	119.4	−1.21

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1893phae.proj.1333.

May 12, 1893.

Index to left & above.

~~84.0~~

Cl'ds. rather thick. 79.8

199.9 120.1 ✓

76.5

201.0 124.5 ✓

244.6 ✓ ~~+0.7~~ ✓

79.2 115.4 −1.29

203.1 123.9 ✓

78.9

199.0 120.1 ✓

244.0 ✓ ~~+0.7~~ ✓

Index to right ~~Below~~. 1.28

170.1

290.1 120.0 ✓

clouds. 170.0

9:55 1292.3 122.3 ✓

9 86.5 clouds. 242.3 ✓ ~~+0.8~~ ✓

117.7 −1.24

10:40 Now a little clearer.

No. 190 5 Lyrae.

18	40	
14	20	+37.5
−4	20	
12	00	
−7	40	

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1893phae.proj.1333.

May 12, 1893.

Index to right & below.

10.46

259.3 ftr. dis.

20.0 120.7 ✓

262.0

17.6 115.6 ✓

236.3 ✓

1237 ~~+0.9~~

1.11

Index to left & above.

340.5

111.1 130.6 ✓

clds. 346.6

107.8 121.2 ✓

251.8 ✓ ~~+0.5~~ ✓

1082

349.1 1.46

108.1 119.0 ✓

345.2

110.5 125.3 ✓ 1.29

244.3 ✓ ~~+0.7~~ ✓

~~1157~~

Index to right & below.

80.4

198.1 117.7 ✓

72.8

205.3 132.5 ✓ 1.42

250.2 ✓ ~~+0.6~~ ✓

1098

76.4

204.8 128.4 ✓

83.7

201.2 117.5 ✓

245.9 ✓ ~~+0.7~~ ✓

1146.1 1.32

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1893phae.proj.1333.

May 12, 1893.

Border to left + above.

164.2

290.1 125.9 ✓ 1

170.1

11:02 287.2 117.1 ✓ 1 1.26 ✓

243.0 ✓ 1 ~~10.7~~ 1

117.0

Somewhat troubled by clouds throughout Evening.

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1893phae.proj.1333.

May 15, 1893.

Cloudy.

7:40 Still cloudy.

8:10. Still cloudy.

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1893phae.proj.1333.

May 18 in 1893

Phot. measts. of Bright double stars.
Phot R. Hubs.

No 160 16, 17 Draconis.

16	33	+53.2
11	40	
−4	53	
12	60	
+7	7	

Ordinary eyepiece
Index to right. dis. A.

7:48

303.1 ~~equa. dis.~~
44.0 100.9 ✓ 1
307.8
39.0 91.2 ✓ 1
192.1 ✓ 1 + 1,8 ✓ 1
Index to left. D. 167 9 +0.23

46.1
120.3 74.2 ✓ 1
37.2
128.4 91.2 ✓ 1 ∓0.28
165.4 ✓ 1 +2,3 ✓ 1

34.3
126.9 92.6 ✓ 1
45.2
122.9 77.7 ✓ 1 ∓0.18
~~169.3~~ +12,2 ✓ 1
170.3 ✓ 1

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1893phae.proj.1333.

May 18, 1893.

Index to right. A.

135.3			
214.2	78.9	v	
125.0			
225.4	100.4	v	−0.01
	179.3	v	+2.0 v
125.0			
224.0	99.0	v	
132.0			
216.0	84.0	v	+0.06
	183.0	v	+1.9 v

~~177.0~~ B.

Index to left

226.0			
296.1	70.1	v	
217.2			
308.3	91.1	v	−0.36
	161.2	v	+2.4 v

8:12

Measts. extremely difficult on account of poor seeing + also from the fact that the northern ~~component~~ star is the brighter component of a close double.

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1893phae.proj.1333.

May 18, 1893.

No 161 = Σ 207 ♓. 17 Draconis.

Compound microscope.
R. A. 100° Dist. 4" Mags. 50, 60
Index ~~to left~~ below. B.

8.22

324.2		
61.9	97.7 ✓	
311.7		
71.1	119.4 ✓	
	217.1 ✓	+1.3
Index ~~to left~~ above.	142.9	A. 0.72
44.8		
157.3	112.5 ✓	
41.0		
161.0	120.0 ✓	1.03
	232.5 ✓	+1.0 ✓
	127.5	
40.1		
163.2	123.1 ✓	
38.1		
161.9	123.8 ✓	
	246.9 ✓	+0.7 ✓
Index below.	113.1	B 1.33
128.0		
253.6	125.6 ✓	
136.0		
241.3	105.3 ✓	
	230.9 ✓	~~+1.0~~ ✓
	129.1	1.09

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1893phae.proj.1333.

May 18, 1893.

Index below.

137.1
246.6 109.5 ✓ 1
129.3
251.2 121.9 ✓ 1
231.4 ✓ 1 ~~+1.0~~ ✓ 1

Index above ~~128.6~~ + 1.01

227.2
235.1 107.9 ✓ 1
215.0
342.9 127.9 ✓ 1
235.8 ✓ 1 ~~+0.9~~ ✓ 1
124.2 1.10

8.144

Troubled by clouds in last set. Observations rather difficult.

Clouds.

No 171 ν Draconis

17	30	+55.3
12	55	
-4	35	
12	00	
+7	25	

Clouds

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1893phae.proj.1333.

May 18, 1893.
Ordinary eyepiece.

9:00

Index to left + above. B.

270.1 ↙ ↗ dis
347.0 76.9 ✓ ↑
262.2 0.03
358.5 96.3 ✓ ↑
173.2 ✓ ↑ ~~+2.1~~ ✓ ↑

Index to right + below. A.

Clouds.

351.6
92.0 100.4 ✓ ↑
1.0 0.07
77.0 76.0 ✓ ↑
176.4 ✓ ↑ ~~+2.1~~ ✓ ↑

1.0
78.5 77.5 ✓ ↑
349.8 0.05
89.9 100.1 ✓ ↑
177.6 ✓ ↑ ~~+2.0~~ ✓ ↑

Index to left + above. B.

85.2
178.9 93.7 ✓ ↑
85.3 0.00
171.8 86.5 ✓ ↑
180.2 ✓ ↑ ~~+2.0~~ ✓ ↑
179.8

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1893phae.proj.1333.

May 18, 1893.

Index to left ~~below~~ above.

87.9		
166.1	78.2 ✓ 1	
79.0		
184.0	102.0 ✓ 1	0.00
	180.2 ✓ 1	~~+2.0~~ ✓ 1

Index to ~~right~~ below. ~~179.8~~

171.8		
272.9	101.1 ✓ 1	0.09
178.5		
262.1	83.6 ✓ 1	
	184.7 ✓ 2	~~+1.9~~ ✓
	175.3	

9:38

Above measts. partly through clouds.

~~No. 188 (?)~~ ~~ε Lyrae (?)~~
No 189 5 Lyrae.

18	40	+39.6
13	55	
-4	45	
+12	00	
+7	15	

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1893phae.proj.1003.

May 18, 1893.
Compound microscope.
Index to right & below.

10; 35

320.6 (south following image dis.
40.5 79.9 ✓ 1
317.1
48.2 91.1 ✓ 1
171.0 ✓ 1 +2.2 ✓ 1

Index to left & above.

46.0
138.9 92.9 ✓ 1
51.3
130.4 79.1 ✓ 1
172.0 ✓ 1 +2.2 ✓ 1

52.0
132.0 80.0 ✓ 1
47.8
137.7 89.9 ✓ 1
169.9 ✓ 1 +2.2 ✓ 1

Index to right & below.

141.1
221.4 80.3 ✓ 1
136.2
226.0 89.8 ✓ 1
170.1 ✓ 1 +2.2 ✓ 1

136.1
228.1 92.0 ✓ 1
141.3
221.6 80.3 ✓ 1
172.3 ✓ 1 +2.1 ✓ 1

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1893phae.proj.1333.

May 18, 1893.

Index to left & above.

~~224.8~~ reject
~~216.5~~ 91.7
~~213.0~~
~~333.1~~ 120.1

1.8
103.7 101.9 ✓
11.8
11:10 91.1 79.3 ✓
181.2 ✓ +2.0 ✓

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1893phae.proj.1223.

May 20, 1893.

Examination of Obrat R. on μ Draconis with modification of Eye Piece.

No 164. μ Draconis

17	3	+ 54.6
12	58	
−5	5	
12	0	
+6	55	

D. M. Wedge gone. Alt obs.

Series 11th +19°

6	49	+ 19.9
12	29	
+5	40	

8:23	1552	5,20		
		5,25		
		5,29	15.74'	6.82'
	1554	3.30		
		3.40		
		3,38	10.08'	4.36'

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1893phae.proj.1333.

May 20, 1893.

1558	3.50		
	3.12		
	3.25	9.87	4.27
1565	3.15		
	2.87		
	2.95	8.97	3.88
1582	3.10		
	3.00		
	3.08	9.18	3.91
1592	3.75		
	3.70		
	3.80	11.25	4.87
1600	4.00		
	4.50		
	4.32	12.82	5.55
1603	3.25		
	3.00		
	3.20	9.45	4.09
1604	3.00		
	2.70		
	2.85	8.55	3.70

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1893phae.proj.1338.

May 20, 1893

1611	3.20		
	3.50		
	3.48	10.18	4.41
1614	2.90		
	2.95		
	2.99	8.84	3.83
1617	2.60		
	2.92		
	2.68	8.20	3.85
1621	2.42		
	2.78		
	2.51	7.71	3.34
1626	3.40		
	3.20		
	3.26	9.86	4.27
1633	2.85		
	3.25		
	3.00	9.10	3.94
1636	2.70		
	2.52		
	2.67	7.89	3.42

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1893phae.proj.1333.

May 20, 1893.

1638	2.48		
	2.25		
	2.37	7.10	3.07
1642	3.01		
	3.25		
	2.95	9.21	3.99
1648	3.05		
	2.92		
	2.87	8.84	3.83
1690	2.38		
	2.28		
	2.20	6.86	2.97
1700	2.70		
	2.88		
	2.55	8.13	3.52
1703	2.82		
	2.77		
	3.10	8.69	3.76
1708	3.81		
	3.45		
	3.52	10.78	4.67

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1893phae.proj.1333.

May 20, 1893.

1726	3,10		
	2.85		
	3,02	8.97	3.88
1739	3,74		
	3,61		
	3,80	11.15	4.83
1743.	5.62		
	5.75		
	5,58	16.95	7.34
1777	4.12		
	3,91		
9:52	3,90	11.93	5.17

No. 171 γ Draconis. Nobs.

17	30
14	25
−3	0
4	5

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1893phae.proj.1333.

May 20. 1893.

Index to left and above. B.

267.0 ∠ above for di.
11.2 10K.2 ↑
267.9 99.9 ↑ — 0.46
7.4 204.1 ↑ 1.5 ↑
155.9

Index to right and below. A.

3r9.0 96.7 ↑
9r.7 A3.r ↑
A.6 140.2 ↑ 2.0 ↑ 0.00
92.1 179.8

A.r A1.7 ↑
90.2
3rA.6 100.r ↑
99.1 142.2 ↑ 2.0 ↑ 0.04
177.8

Index to left and above. B

A7.0 ~~11.3~~
192.3 10r.3 ↑
93.6
1Ar.7 92.1 ↑
197.4 ↑ 1.7 ↑ 0.33
162.6

93.A 90.1 ↑
143.9
90.K 9r.A ↑
146.2 16r.9 1.9 ↑ 0.11
174.1

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1893phae.proj.1333.

May 20. 1893.

Index to right and below.

180.6
277.3
184.0
276.7

96.7 ₁
91.7 ₁
184.4 ₂ ~~11.4~~ ₁
171.6

— 016

No. 190 ζ Lyrae. Tr. obs.

18ʰ	40ᵐ
1ᵈ	2
−3	3ᵈ
4	22

Index to right and below.

260.1
22.3
261.1
18.0

122.2 ₁
116.9
239.1 ₁ ~~+0.4~~ ½
120.9

117

Index to left and above.

339.7
110.2
343.3
106.9

130.5 ₁
123.6 ₁
254.1 ₂ ~~+0.5~~ ½
105.9

151

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1893phae.proj.1333.

May 20. 1893.

3K7.2 122.8
104.0
3K6.1 12K.2
110.3 2K7.0 +0.9 1.35
130

Index to right and below.

K1.7 115.5
19K.2
5K.3
20K.4 12K.5
2K5.0 +0.7 1.30
115.0

76.1 124
20K.2
K0.7 120.1
200.4 2KK.2 +0.6 1.38
151.8

Index to left and above.

16K.9 125.1
290.0
164.1 11K.8
286.9 2K3.9 +0.7 1.28
116.1

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1893phae.proj.1333.

May 22, 1893.

~~Photometasts~~

No. 106 38 Lyncis.

Experiments with higher power eyepiece Phot. R,

9	11	+37.3
12	8	
+2	57	

As Dr. Wilson has come experiment is concluded.

~~No. 189. 5 Lyrae.~~

~~+8 40 +39.5~~

Showed Dr. Wilson & his students the moon, ζ Geminorum & Saturn with various eyepieces etc,

Becoming considerably cloudy.

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1893phae.proj.1333.

May 22, 1893.

No 189 .5 Lyrae.

18	40	+ 3.9.5
17	25	
-4	15	
+12	00	
+7	45	

Clouds steadily growing thicker so that nothing can be done. Tried 5 Lyrae with various eyepieces & compound microscope on Plutometer but clouds so thick & seeing so bad that nothing can be done with it

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1893phae.proj.1333.

May 24, 1893.

Phot. meas. of bright Double Stars. Phot. R. W. obs.

No 147 δ Serpentis.

15	29	+11.0
11	55	
−3	34	
12	00	
+8	26	

Seeing so extremely bad that images cannot be brought to focus.

No 171 ν Draconis

2 in. eyepiece Phot. R.

17	30	+55.3
12	22	
−5	8	
12	0	
+6	52	

Orders below. B.

Seeing poor.

8.04

171.9 ✓ 1 North preceding dis.

258.2 86.3 ✓ 1

165.3 −0.03

260.8 95.5 ✓ 1

181.8 ✓ 1 +2.0 ✓

178.3

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1893phae.proj.1333.

May 24, 1893.

Index above.			A.
260.2			
346.0	85.8 ✓		
255.2			0.07
353.0	97.8 ✓		
	183.6 ✓	+1.9 ✓	
	176.4		
256.1			
350.0	93.9 ✓		
263.6			0.01
350.0	86.4 ✓		
	180.3 ✓	+2.0 ✓	
Index below.	179.7		B.
343.8			
89.0	105.2 ✓		
348.6			
83.5	94.9 ✓		0.38
	200.1 ✓	+1.6 ✓	
	159.9		
349.1			
79.8	90.7 ✓		
345.5			
84.2	98.7 ✓		0.18
	189.7 ✓	+1.8 ✓	
Index above.	170.3		A.
reject: ~~83.0~~	77.5		
~~165.7~~	175.5 98.0 ✓		
	82.0		
8:16	168.7 86.7 ✓		0.09
	184.7 ✓	+1.9 ✓	
	175.3		

Seeing variable. Images much of the time

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1893phae.proj.1333.

May 24, 1893.

quite blurry, steadying down at intervals.

L. M. Wedge Gone. Ob. obs.

Series 118 +19°.

8	32	+19.9
12	50	
+4	18	

8:37

2026	4.40		
	4.40		
	4.50	13.30	5.76
2044	2.90		
	3.21		
	3.10	9.21	3.99
2056.	2.72		
	2.93		
	2.95	8.60	3.72
2059	2.18		
	2.11		
	2.06	6.35	2.75

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1893phae.proj 1333.

May 24, 1893.

2061	2.65		
	2.59		
	2.52	7.76	3.36

altered focus slightly.

2069	5.02		
	5.37		
	5.54	15.93	6.90
2083	4.72		
	4.77		
	4.73	14.22	6.16
2087	3.23		
	3.39		
	3.39	10.01	4.33
2092	3.90		
	4.10		
	4.05	12.05	5.22
2114	4.47		
	4.67		
	4.60	13.74	5.95
2119	4.61		
	4.89		
	4.88	14.38	6.23

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1893phae.proj.1333.

May 24, 1893.

2121	2.82		
	3.07		
	2.90	8.79	3.81
2122	2.70		
	2.76		
	2.71	8.17	3.54
2123	2.61		
	2.79		
	2.60	8.00	3.46
2131	4.07		
	4.21		
	4.36	12.64	5.47
2140	2.51		
	2.79		
	2.92	8.22	3.56
2145	4.29		
	4.38		
	4.27	12.94	5.60
2149	3.02		
	3.02		
	3.23	9.27	4.01

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1893phae.proj.1333.

May 24, 1893.

2151	3.51		
	3.71		
	3.72	10.94	4.74
2153	5.08		
	4.88		
	4.90	14.86	6.43
2158	3.12		
	3.22		
	3.29	9.63	4.17
2159	3.72		
	3.89		
	3.66	11.27	4.88
2167	2.39		
	2.20		
	2.28	6.87	2.97
2175	4.10		
	4.09		
	4.11	12.30	5.33
2183	2.61		
following, northern,	2.59		
+ brighter of pair.	2.60	7.80	3.38

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1893phae.proj.1333.

May 24. 1893.

2185	4.47		
	4.37		
	4.10	12.94	5.60
2188	3.60		
	3.74		
	3.88	11.22	4.86
2189	2.53		
	2.80		
	2.79	8.12	3.52
2192	2.40		
	2.56		
	2.69	7.65	3.31
2206	2.60		
	2.47		
	2.65	7.72	3.34
2213	2.59		
	2.50		
	2.62	7.71	3.34
2218	4.85		
	5.01		
9:32	4.98	14.84	6.43

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1893phae.proj.1333.

May 24, 1893

2220	2.61		
	2.97		
	2.84	8.42	3.65
2221	2.51		
	2.51		
	2.57	7.59	3.29
2224	2.91		
	3.20		
	3.37	9.48	4.10
2227	2.79		
	2.84		
	2.85	8.48	3.67
2234	3.13		
following, southern	2.99		
& brighter compon-	3.18	9.30	4.03
ent measured.			
2237	2.93		
	2.99		
	3.00	8.92	3.86
2247	2.89		
	3.00		
	3.02	8.91	3.86

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1893phae.proj.1008.

May 24, 1893

2248	3.87		
	3.69		
	3.89	11.45	4.96
2253	3.82		
	3.88		
	3.82	11.52	4.99
2262	4.19		
	4.20		
9:50	4.30	12.69	5.49

Bright Double Stars Phot. R. Ol. obs.

No 111 γ Leonis

10	13	+20.5
14	22	
+4	9	

Tried various eyepieces but seeing is so very bad & images so unsteady that ~~stars cannot~~ close stars cannot be measured tonight.

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1893phae.proj.1333.

May 24, 1893

No. 118 93 Leonis.

11	42	+20.9
14	37	
72	55	

Index to right.

10:20

222.3 < ftr. dis.
24.2 161.9 ✓ ↑
220.3
26.5 166.2 ✓ ↑
328.1 ✓ ↑ -2.3 ✓ ↑
Index to left. 317.9 — 4.27

311.8
117.8 166.0 ✓ ↑
311.0
117.8 166.8 ✓ ↑
332.8 ✓ ↑ -2.6 ✓ ↑
311.0 27.3 — 4.62
118.5 167.5 ✓ ↑
312.1
117.3 165.2 ✓ ↑
332.7 ✓ ↑ -2.6 ✓ ↑
27.3 — 4.61

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1893phae.proj.1333.

May 24, 1893

Index to right

45.0
206.0 161.0 ✓ ↑
42.5
208.0 165.5 ✓ ↑
326.5 ✓ ↑ −2.2 ✓ ↑
33.5 −4.16
44.0
207.0 163.0 ✓ ↑
44.9
207.0 162.1 ✓ ↑
325.1 ✓ ↑ −2.1 ✓ ↑
339 −4.07

Index to left.

132.4
297.5 165.1 ✓ ↑
133.8
10:30 294.8 161.0 ✓ ↑
326.1 ✓ ↑ −2.1 ✓ ↑
339 −4.13

S Bootis.

14 18 454.5
15 5
+47

10:52 W 1.5 S, S 2.5 O in large telescope two faint for finder. Est. 12.5

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1893phae.proj.1333.

May 29, 1893.

Considerably cloudy.

Phot. measts of Bright Double Stars. Phot R. W. obs.

No. 173 ψ Draconis.

17	45	+72.2
12	25	
−5	20	
+12	00	
+6	40	

So much cloud & twilight that star cannot be found.

Clouds.

Index to right.

8:00

313.8
73.0 119.2 ✓1
310.1
75.0 124.9 ✓1
244.1 ✓1 ~~+0.7 ✓1~~
~~Index to left 115.9~~ 120

44.5
162.4 117.9 ✓1
42.5
163.1 120.6 ✓1 1.16
238.5 ✓1 ~~+0.8 ✓~~
~~126.5~~

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1893phae.proj.1333.

May 29, 1893.

Drudges to left.

	42.9		
	163.8	120.9 ✓ ↑	
	44.4		
	163.9	119.5 ✓ ↑	
		240.4 ✓ ↑	~~+0.8~~ ✓ ↑
Index to right		~~119.6~~	1.20
	135.1		
	252.0	116.9 ✓ ↑	
	132.2		
	254.7	122.5 ✓ ↑	
		239.4 ✓ ↑	+0.8 ✓ ↑
	132.0	120.6	1.18
	251.3	119.3 ✓ ↑	
	135.1		
	252.0	116.9 ✓ ↑	
		236.2 ✓ ↑	+0.9 ✓ ↑
Index to left		123.8	+1.11
	220.5		
	338.1	117.6 ✓ ↑	
	220.8		
8h 0	340.8	120.0 ✓ ↑	+1.14
		237.6 ✓ ↑	~~+0.9~~ ✓ ↑
		~~122.4~~	

Clouds now quite thick above observations made through constantly varying clouds.

8:35 Still Cloudy, No stars visible.

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1893phae.proj.1333.

May 31, 1893

Photo. Measts of Bright double stars. Shot R. H. obs.

No 173 γ Draconis.

17	45	γ 72.2
12	10	
−5	35	
+12	00	
+6	25	

Clouds.

Index to right.

7:31

135.1 ✓ 1 str. dis.
252.2 117.1 ✓ 1
137.0
250.0 113.0 ✓ 1
230.1 ✓ 1 11.0 ✓ 1
Index to ~~left~~ 137.9 115

220.3
345.7 125.4 ✓ 1
219.8
348.0 ~~129.8~~ 12 2 ✓ 1 ~~10.5~~ ✓
~~255.2~~
253.6 ✓ 1
106.2 150

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1893phae.proj.1333.

May 31, 1893.

~~22~~

Index to left.

220.2		
342.8	122.6 ✓	
219.9		
344.9	125.0 ✓	
	247.6 ✓	~~40.6~~ ✓
	~~112.4~~	1.36

Index to right.

313.8		
74.0	120.2 ✓	
312.5		
73.1	120.6 ✓	
	240.8 ✓	~~40.8~~ ✓
~~311.8~~	~~119.2~~	1.20 ✓
73.6	121.8 ✓	
313.6		
73.7	120.1 ✓	
	241.9 ✓	~~40.8~~ ✓
	118.1	1.23

Index to left.

43.9		
164.7	120.8 ✓	
43.6		
165.0	121.4 ✓	1.24 ✓
	242.2 ✓	~~40.8~~
	~~117.8~~	

8:41

Means made through ~~raining~~ clouds.

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1893phae.proj.1333.

May 31, 1893.

No 190 S Lyrae.

18	40	+37.5
12	43	
−5	57	
+12	00	
+6	3	

8.07

Index to left & above.

133.0		
252.9	119.9	
125.8		
256.0	130.2	
	250.1	+0.6
	109.9	1.42

Index to right & below.

226.2		
335.7	109.5	
220.0		
344.0	124.0	1.05
	233.5	+0.9
	126.5	
221.9		
346.0	124.1	
224.1		
341.2	117.1	
	241.2	+0.8
	119.2	1.22

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1893phae.proj.1333.

May 31, 1893.

Index to left + above.

309.0		
79.0	130.0	
317.4		
70.9	113.5	
	243.5	+0.7
	116.5	1.27
315.7		
69.1	113.4	
307.1		
80.0	132.9	
	246.3	+0.7
	113.71	1.33

Index to ~~right + below~~,

46.6		
161.9	115.3	
41.0		
167.5	126.5	
	241.8	+0.8
	118.2	1.23

8:17

Measurements made through varying clouds, images growing alternately fainter + brighter

Rather too hazardous to proceed at present.

From the bad state of the sky causing the images to be faint – continually varying + also from the fact that two of the counter balls have got together causing the dome

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1893phae.proj.1333.

May 31. 1893.

to move with great difficulty so that there is danger of breaking the ergs it is not thought best to proceed farther tonight.

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1893phae.proj.1333.

June 1, 1893

Phot. meas^ts. of Bright double stars Photo R. & Ht. obs.

No 173 γ Draconis.

17	45	+72.2
12	30.	
−5	15	
+12	00	
+6	45	

7:40 Clouds & twilight star invisible as yet.

Index to night.

7:54

135.0 ∠ ftr. dis.
249.8 114.8 ↓
135.0
253.6 118.6 ↓ ↑
233.4 ↓
126.6 ↑ +0.9 ↓ ↑
Index ~~to Sept.~~ 1.05

227.0
337.2 110.2 ↓ ↑
221.0
345.0 124.0 ↓ ↑
234.2 ↓ ↑ +0.9 ↓ ↑
125.8 1.07

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1893phae.proj.1333.

June 1, 1893.

Index to life.

220.5
344.4 123.9
220.3
340.4 120.1
244.0 +0.7
Index to neg. 116.0 −1.28

317.2
72.6 115.4
314.9
73.4 118.5
233.9 +0.9
314.4 126.1 −1.06

73.3 118.9
312.7
71.8 119.1
238.0 +0.9
Index to life. 122.0 −1.15

45.9
162.1 116.2
42.0
8:04 162.7 120.7 −1.13
236.9 +0.9
123.1

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1893phae.proj.1333.

June 1, 1893.

No 168. [illegible] Herculis.

17	10	+ 25.0
13	10	
-4	00	
12	00	
+8	00	

8:16

d index to left.

107.8	< ftr. dis	
277.8	170.0 ✓	
107.0		
279.0	172.0 ✓	
	342.0	-3.5 ✓

d index to right.

18.9		
189.2	170.3 ✓	
18.8		
188.0	169.2 ✓	
	339.5	-3.2 ✓
17.8		
189.0	171.2 ✓	
18.0		
189.2	171.2 ✓	
	342.4	-3.6 ✓

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1893phae.proj.1333.

June 1, 1893.

Index to left.

108.0		
277.5	169.5 ✓	
108.5		
277.1	168.6 ✓	
	338.1 ✓	−3.1 ✓
107.1		
277.5	170.4 ✓	
108.0		
276.8	168.8 ✓	
	339.2 ✓	−3.2 ✓

Index to right.

198.0		
8.6	170.6 ✓	
197.0		
8.4	171.4 ✓	
	342.0 ✓	−3.5 ✓

Lt. M. Wedge Zone: Ht. obs.

Series 119 +19°

9	36	+19.6
13	56	
+4	20	

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June 1, 1893.

9:06	2262	3.89		
		4.00		
		4.03	11.92	5.16
	2270	4.17		
		4.20		
		4.62	12.99	5.62
	2271	3.29		
		3.40		
		3.89	10.58	4.58
	2276	3.49		
		3.67		
		3.79	10.95	4.74
	2278	3.63		
		3.68		
		3.99	11.30	4.89

There is no star in the position of 2280 nor was any seen in zone 43. the 9.5 nearest following follows 2278 - 2 min 18.5 sec. & is about 3' south of it. This is the star measured below.

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1893phae.proj.1333.

June 1, 1893.

2280.	2.69		
	2.90		
	2.75	8.34	3.61
2284	4.20		
	4.27		
	4.39	12.86	5.57
2291	3.40		
	3.49		
	3.52	10.41	4.51
2293	4.10		
	4.33		
	4.18	12.61	5.46
2295	2.62		
	3.00		
	3.01	8.63	3.74
2296	3.30		
	3.19		
	3.25	9.74	4.22
2300	2.07		
star faint	2.30		
	2.22	6.59	2.85

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1893phae.proj.1333.

June 1, 1893

2323	3.89		
	3.46		
	3.48	10.83	4.69
2335	4.99		
	5.03		
	5.30	15.32	6.63
2339	3.09		
	3.10		
	3.11	9.30	4.03
2344	2.77		
	2.92		
	2.99	8.68	3.76
2347	3.00		
	3.20		
	3.31	9.51	4.12
2363	4.69		
	4.80		
	4.69	14.18	6.14
2367	2.20		
	2.49		
9.54	2.54	7.28	3.15

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1893phae.proj.1333.

June 1, 1893.

Not safe to proceed farther with zone. At times during zone slight haze was suspected but sky was carefully watched & as nothing definite could be seen in the way of cloudiness zone was continued.
Moon having risen it was noticed in connection with last star that there was more or less cloud in this region & around about, hence zone was immediately stopped. It is possible there may have been more haze during zone than was certainly seen.
The results of this zone should be carefully compared with that in which these stars were previously taken.

No. 112 54 Leonis

10	49	+25.4
15	5	
+4	16	

Index to right & below.

10:12

354.0		
127.0	133.0 ✓	
353.8		−1.66
121.9	128.1 ✓	
261.9	✓	+0.5 ✓

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1893phae.proj.1333.

June 1, 1893.

Index to left & above.

84.3.
209.0 124.7 ✓
83.7
212.8 129.1 ✓
253.8 ✓ +0.5 ✓
106.2 −1.5
87.1
212.2 125.1 ✓
85.3
210.0 124.7 ✓
249.8 ✓ +0.6 ✓
110.7 −1.4

Index to right & below.

174.0
306.5 132.5 ✓
174.0
303.2 129.2 ✓
261.7 ✓ +0.3 ✓
99.3 −1.67
173.5
301.0 127.5 ✓
172.1
305.0 132.9 ✓
260.4 ✓ +0.3 ✓
99.6 −1.67

Index to left & above

262.1 ~~206.8~~
36.1 ~~82.5~~ 134.0 ✓
262.0
10:27 31.3 129.3 ✓
263.3 ✓ +0.3 ✓
96.7 −1.74

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1893phae.proj 1333.

June 1, 1893.

seeing rather poor images decidedly blurry at times.

No 118 93 Leonis.

11	42	+20.9
15	30	
+3	48	

Index to right & above.

10:35

262.9		
70.0	167.1 ✓	
265.3		
70.6	165.3 ✓	
	332.4 ✓	-2.6 ✓
	276	-4.59

Index to left & below.

358.3		
159.2	160.9 ✓	
357.4		
158.0	160.6 ✓	
	321.5 ✓	-1.9 ✓
	38.0	-3.89
356.9		
157.1	160.2 ✓	
357.9		
156.0	158.1 ✓	
	318.3 ✓	-1.7 ✓
	41.7	-3.68

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1893phae.proj.1333.

June 1, 1893

Index to right + above.

84.0			
251.4	168.4 ✓ 1		
86.8			
249.1	162.3 ✓ 1		
	329.7 ✓	~~-2.4~~ ✓ 1	
	330.3	~~-2.3~~ -4.38	
86.0			
248.9	162.9 ✓ 1		
84.9			
249.8	164.9 ✓ 1		
	327.8 ✓ 1	~~-2.2~~ ✓ 1	
	~~330.2~~	-4.23	

Index to left ~~+ below~~,

179.0			
338.5	159.5 ✓ 1		
176.6			
340.8	164.2 ✓ 1		
	323.7 ✓ 1	~~-2.0~~ ✓ 1	
	363	-3.98	

10:45

More or less light cloud round about.

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1893phae.proj.1333.

~~June 5, 1893.~~

~~H.M. Stars.~~

Measurement of suspected variable ~~H.M.~~
+62° No. 596 & 594 with Phot R. N. obs.

3	30	+62.8
13	18	
+9	48	

8:10 Not visible yet. twilight & clouds.

8:30 Too much clouds & twilight to measure it yet, star found.

Clouds

Index to right & above.

9:05 297.9 ℓ ftr. dis.
clouds.

43.2	105.3 ^
296.0	
35.8	99.8 ^
	205.1 ^ +1.5 ✓

Index to left & below.

9:15 So cloudy in this region that it is impossible to measure stars with certainty, abandoned

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1893phae.proj.1333.

June 5, 1893.

D.M. Hedge Gone. Obs.

Series 120 +19°.

10	32	+20.0
44	41	
+4	09	

9:40	2363	4.60		
		4.60		
		4.75	18.95	6.04
	2385	3.50		
		3.57		
		3.87	10.94	4.74
	No number.	2.58		
		2.72		
		2.70	8.00	3.46

The above star follows 2385 18.5 seconds in same dec. It is not in the D.M. & it seems strange that the D.M. people should not have seen it if it is not variable as it rather bright now.

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June 5, 1893.

2395*	2.88		
	2.96		
	2.92	8.76	3.79
2390	2.30		
	2.37		
	2.32	6.99	3.03

2395 accidentally taken before 2390

2399	2.71		
	2.89		
	2.85	8.45	3.66
2401	4.10		
	4.05		
	4.16	12.31	5.33
2405	2.92		
	3.18		
	3.10	9.20	3.98
2419	3.90		
	4.20		
	4.58	12.68	5.49

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1893phae.proj.1333.

June 5, 1893.

2424	3.69		
	3.73		
	3.51	10.93	4.73
2431	3.49		
	3.81		
	3.72	11.02	4.77
2435	2.61		
	2.99		
	2.99	8.59	3.72
2438	4.49		
	4.59		
	4.79	13.87	6.00
2446	4.60		
	4.69		
	4.60	13.89	6.01
2448 wrong star	~~3.79~~		
	~~4.12~~		
	~~4.35~~	~~12.26~~	5.31
2448	2.88		
	3.20		
	3.10	9.18	3.97

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June 5, 1893.

2449	2.72		
	2.89		
	2.85	8.46	3.66
2455	2.59		
	2.49		
	2.60	7.68	3.33
2458	3.20		
	3.20		
	3.10	9.50	4.11
2465	2.71		
	2.97		
	3.02	8.70	3.77
2469	3.57		
	3.39		
	3.46	10.42	4.51
2471	3.22		
	3.32		
	3.68	10.22	4.43
2496	4.29		
	4.18		
	4.10	12.57	5.44

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1893phae.proj.1333.

June 5, 1893.

2497.	3,20		
	3,59		
	3.46	10.25	4.44
2500	3,10		
	3,10		
	3,12	9.32	4.04
2501	2.73		
	2.81		
	3,04	8.58	3.72
2513	2.60		
	2,81		
	2,82	8.23	3.56
2517	2.90		
	2,99		
	3,00	8.89	3,85
2522	3,42		
	3,79		
	3,94	11.15	4.83
2523	2,60		
	2,80		
	2,71	8.11	3.51

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1893phae.proj.1333.

June 5, 1893.

2550	4.18		
	4.31		
	4.30	12.79	5.54
2552	4.89		
	4.95		
	4.99	14.83	6.43
	reject. ~~3.42~~ wrong.		
2559	4.10		
	4.19		
	4.15	12.44	5.39
2567	2.94		
	2.98		
	2.93	8.85	3.83
2572	2.49		
	2.59		
	2.52	7.60	3.29
2582	2.81		
	2.80		
	2.78	8.39	3.63
2587	2.31		
same star as observed in series 46	2.12		
	2.20	6.63	2.87
star faint.			

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1893phae.proj.1333.

June 5, 1893

2594	5,11			
	5.01			
11;00	5,09	15.21	.	6,59

At time of beginning gone, sky in this region seemed clear although stars did not look quite bright in South east. ~~Sky~~ ~~however~~ surrounding sky steadily clearing up during gone. Gone thought to be all right.

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1893phae.proj.1333.

June 7, 1893

Measts of bright double star Pluto. B. Va. als.

No. 110 Ω Leonis

10	10	+24.1
13	20	
73	10	

8:00 Clouds.

8:14 Images practically invisible, clouds.

9:00 Now a little clearer. Images rather poor.

Index to right

9:02

289.1		
59.1	139.0 ✓ 1	
277.5		
60.1	142.6 ✓ 1	
	281.6 ✓ 1	~~-0.2~~ ✓ 1
Index to left.	74.4	~~-2.24~~
9.0		
149.9	140.9 ✓ 1	
3.5		
156.2	152.7 ✓ 1	-2.63
	293.6 ✓ 1	-0.6 ✓ 1
	66.4	

On June 6 1893, the bearings and driving gear of the 15 inch telescope, were cleaned and oiled.

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1893phae.proj.1333.

June 7, 1893.

Index to left.

4.5		
152.5	148.0 ✓	
9.0		
148.1	139.1 ✓	
	287.1 ✓	−0.4 ✓
Index to ~~right~~	~~292~~	2.41
96.8		
241.4	144.6 ✓	
100.9		
240.5	139.6 ✓	
	284.2 ✓	~~−0.3~~ ✓
101.0	~~75.8~~	−2.02
242.1	141.1 ✓	
97.9		
243.3	145.4 ✓	
	286.5 ✓	~~−0.4~~ ✓
Index to ~~left~~	~~235~~	239
187.8		
330.4	142.6 ✓	
184.5		
333.3	148.8 ✓	
	291.4 ✓	~~−0.6~~ ✓
	~~64.6~~ ✓	−2.00

9.13

9 07.5

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1893phae.proj.1333.

June 7, 1893.

No 117 T Leonis.

11	22	7.3.6
14	38	
+3	16	

Star not found clouds.

Index to left & below.

9.34

277.9

61.0 143.1 ✓

275.1

62.0 146.9 ✓

290.0 ✓ ~~0.5~~ ✓

-2.51

Index to right ~~& above~~.

8.5

147.6 139.1 ✓

6.9

149.0 142.1 ✓

281.2 ~~0.2~~ ✓

8.8 78.8

-2.23 ✓

149.0 140.2 ✓

8.0

147.9 139.9 ✓

280.1 ~~0.2~~ ✓

.799

-2.20

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1893phae.proj.1333.

June 7, 1893.

Index to left & Below.

95.0			
242.0	147.0		
99.0			
236.3	137.3		
	284.3	−0.3	
98.0	75.7	−2.3	
237.0	139.0		
94.0			
240.0	146.0	−0.3	
	285.0		
	75.0	−2.3	

Index to right & above.

190.0			
333.2	143.2		
186.1			
9:47 331.2	145.1		
	288.3	−0.5	
	71.7	−2.4	

Images at times rather faint from clouds.

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1893phae.proj.1333.

June 7, 1893.

No 114 v Ursae Majoris.

11	12	+33.8
15	15	
+4	3	

Clouds.

No 119 17 Comae Ber.

12	23	+26.6
15	17	
+2	54	

10:00

Index above

200.4		
318.9	118.5 ✓	
196.7		
322.1	125.4 ✓	
	243.9	~~+0.7~~ ✓
Index below	116.1	−1.2
290.8		
45.2	114.4 ✓	
283.9		
52.9	129.0 ✓	
	243.4	~~+0.7~~ ✓
	116.6	−1.27

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1893phae.proj.1333.

June 7, 1893.

Index below.

285.0
53.8 128.8 ✓
289.6
50.1 120.5 ✓
249.3 ✓ ~~+0.6~~ ✓

Index above +10.7 − 1.40

14.2
143.0 128.8 ✓
22.0
137.0 115.0 ✓
243.8 ✓ ~~+0.7~~ ✓
20.0 116.2
134.2 114.2 ✓
15.8
140.6 124.8 ✓
239.0 ~~+0.8~~ ✓
Index below (21.0 − 1.17

109.3
231.8 122.0 ✓
103.2
233.5 130.3 ✓ 1.49
253.3 ✓ +0.5 ✓
106.7

10:12
10:6

Measurement partly ~~through~~ clouds causing images to vary at times.

Clouds.

Mean −1.32

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1893phae.proj.1333.

June 7, 1893.

No 121 24 Comae Ber.

12	29	+19.1
15	52	
+3	23	

10:34

Index below R.

104.0
237.0 133.0 ✓^
107.1
229.9 122.8 ✓^
255.8 ✓^ ~~+0.4~~ ✓
~~1042~~ I. 1.56

Index above

194.9
324.0 129.1 ✓^ Mean = 1.34
199.1
311.3 112.2 ✓^
241.3 ✓^ ~~+0.8~~ ✓

Clouds.

202.0 1187 1.22
316.0 114.0 ✓^
199.0 1.12
317.0 118.0 ✓^
232.0 ✓^ ~~+1.0~~ ✓
1280 1.02

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1893phae.proj.1333.

June 7, 1893.

Index below.

~~101.0~~

~~238.0~~ 137.0

Clouds.

Sky so cloudy that images cannot be equalized. C.

10 vg Much troubled throughout evening by clouds.

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1893phae.proj.1333.

June 8, 1893.

Thickly cloudy.

8.35 Still cloudy & growing worse
no stars visible.

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1893phae.proj.1333.

June 10, 1893.

Measurement of suspected variable
D.M. +62° No 596 comp. with 594, Phot R,

3	3.0	Color ε.	+62.8
13	45		
+10	15		

Twilight still rather strong.

Under twilight above,

8:43

291.1 < ftr. dis.
44.4 113.3 ✓^
296.0
42.6 106.6 ✓^
219.9 ✓^ +1.2 ✓
140.1 -0.77
360.0

Under to left above,

23.3
137.0 113.7 ✓^
21.5
135.9 114.4 ✓^
228.1 ✓^ +1.1 ✓
18.8 131.9 -0.94
134.9 116.1 ✓^
22.0
135.0 113.0 ✓^
229.1 ✓^ +1.0 ✓
130.9 -0.96

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1893phae.proj.1333.

June 10, 1893.

Index to right & above.

112.4		
227.4	115.0 ✓^	
113.1		
227.0	113.9 ✓^	
	228.9 ✓^	+1.0 ✓
113.1	131.1	-0.96
225.3	112.2 ✓^	
112.1		
223.0	110.9 ✓^	
	223.1 ✓^	+1.2 ✓
	1869	-0.84

Index to left & ~~above~~.

202.5		
315.0	112.5 ✓^	
200.4		
316.5	116.1 ✓^	
	228.6 ✓^	+1.1 ✓
	131.4	-0.95

9.01.
8 52

Observation a little difficult. stars somewhat faint + flickering, troubled slightly by some light cloud during measurement but observation thought to be good

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1893phae.proj.1333.

June 19, 1893.

D. M. Hodge gone Obs. abs.

Series 121. + 9°.

10	44	+ 9.9
14	50	
4	6	

9:30	2380	4,10		
		4,11		
		4,39	12.60	5.46
	2393	2.61		
	star rather faint for a 9.3.	2.98		
		3.09	8.68	3.76
	2400	2,19		
		2.49		
		2,60	7.28	3.15
	2405	2.69		
		2.60		
		2,65	7.94	3.44

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1893phae.proj.1333.

June 10, 1893.

2416	2.53		
	2.60		
	2.55	7.68	3.33
2417	2.71		
	2.98		
	3.11	8.80	3.81
2418	~~3.85~~ wrong.		
	4.41		
	4.58		
	4.54	13.53	5.86
2421	2.31		
	2.72		
	2.70	7.73	3.35
2423	4.11		
	4.20		
	4.30	12.61	5.46
2434	2.70		
same star ob-	2.91		
served as in	2.91	8.52	3.69
gone 75.			
2435	2.70		
	2.78		
	2.78	8.26	3.58

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1893phae.proj.1333.

June 10, 1893.

2441	4.88		
	4.88		
	4.92	14.68	6.36
2442	2.70		
~~2442~~	2.98		
	2.99	8.67	3.75
2444	2.58		
	2.70		
	2.65	7.93	3.43
2446	2.53		
	2.78		
	2.79	8.10	3.51
2447	2.30		
	2.40		
	2.38	7.08	3.07
2450	2.58		
	2.70		
	2.62	7.90	3.42
2457	2.50		
	2.80		
	2.72	8.02	3.47

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1893phae.proj.1333.

June 10, 1893

2461	2.52		
	2.48		
	2.50	7.50	3.25
2467	2.39		
	2.77		
	2.86	8.02	3.47
2475	2.49		
	2.67		
	2.62	7.78	3.37
2477	2.90		
	2.95		
	2.93	8.78	3.80
2479	3.31		
	3.20		
	3.39	9.90	4.29
2480	2.70		
	3.00		
	3.01	8.71	3.77
2482	5.20		
	5.10		
	5.20	15.50	6.71

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1893phae.proj.1333.

June 10, 1893.

2484	3.05		
	2.80		
	2.99	7.84	3.83
2490	3.49		
	3.59		
	3.77	10.85	4.70
2491	2.59		
	2.60		
	2.62	7.81	3.38
2501	2.39		
	2.57		
	2.48	7.44	3.22
2505	2.25		
Fair, Southern &	2.27		
slightly btr. af	2.30	6.82	2.95
Two			
2506	3.99		
	4.28		
	4.49	12.76	5.52
2507	2.38		
	2.62		
	2.62	7.62	3.30

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June 10, 1893

2508	2.32		
	2.37		
	2.49	7.18	3.11
2516	3.92		
	3.98		
	3.89	8.79	5.10
2521	2.59		
	2.74		
	2.64	7.97	3.45
2524	2.60		
	2.57		
	2.55	7.72	3.34
2525	2.60		
	2.59		
	2.70	7.89	3.42
2528	2.60		
	2.80		
	2.69	8.09	3.50
2531	2.89		
	3.07		
	3.19	9.15	3.96

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June 10, 1893

25-32	2.79		
	2.90		
	2.99	8.68	3.76
2543	3.52		
	3.60		
	3.69	10.81	4.68
2547	3.22		
	3.30		
	3.40	9.92	4.30
2562	3.37		
	3.59		
	3.39	10.35	4.48
2566	2.89		
	2.90		
	2.92	8.71	3.77
2568	2.93		
Star has a ruth-	3.12		
11:18 close fr. companion	3.25	9.30	4.03
north following			

2579 ⊘

While taking star 2568, it was noticed that the stars light was growing faint and on looking out

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some clouds were found to be about but it is thought that the zone is probably all right as not much cloud had apparently risen in the region of the zone. It is however possible that some stars may have been a little affected.

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Pasted to here inc. June 14, 1893

8.38 Sky thickly cloudy & growing worse with no possible chance of getting comet.

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