KG
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514

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Apr. 11, 1892

~~5 2~~

Copelands Nova. Ht. obs.

+30.2

5⁻	23	
8	45⁻	
+3	22	

8	54	
+3	31	

7 23 Cloudy.
8 6 Now pretty clear.

9	40	
+4	17	

8 53 Nova certainly seen at intervals, but very difficult. It seems to be about 5 grades fainter than star 10. Star 11 thought to be seen and about equal to Nova. Star 12 barely suspected, and if seen would probably be one or two grades fainter than Nova.

9 32 Nova = Star 10 by Mr. Reed.

9 42 Nova ~~=~~ 4 Star 11 by Mr. Reed.

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1892phae.proj..515W

Apr. 11, 1892

Relative estimates of a portion of comparison stars for Nova Aurigae

9 45 (Star 8) 3 (Star 10) In large tel.
(Star 6) 3.5 (Star 8) " " "
(Star 4) 2 (Star 6) " " "
4 2.5 4 " " "
~~m 5 4~~ " " "
m 4.5 4 " " "
m 2.5 m " " "
t 5.5 m " " "
e 4.5 t " " "
r 3.5 e " " "
g 3 r " " "
~~f~~ 5 g " " "
o 4.5 f " " "
m 4.5 o " " "
m 5 m " " "
m 4.5 m In finder
l 6 m In large tel.
l 5.5 m In finder
k 5 l " "
k 5 l In large tel.
k 5 k " " "
k 4 k " finder
g 5 k " large tel.
10 48 g 4.5 k " finder.

Observations of the faint comp. stars somewhat difficult. Region getting rather low.

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Apr. 11, 1892.

Moon about full.

~~Coarata~~

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1892phae.proj..515w

Apr. 12, 1892

Copeland's Nova. At. obs.

5	23	+30.2
9	3	
+3	40	

7 38 Nova seen and considerably more easily than last night. Moon at the full but rather low.

8 11 (Star 10) 5 Nova

Star 13 at times suspected. If actually seen it must be at least 3 grades fainter than Nova.

When the above estimate of Star 10 and Nova were taken, both stars were well seen, but shortly light cloud came over the region and this with the increasing altitude of the moon rendered further observation difficult. Neither stars 11 or twelve 12 certainly seen. Star 13 is the one on photograph. 13 At. obs.

of 7

A 45 Star (10) 3 Nova, by Mr. Reed.

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1892phae.proj..515w

Apr. 12, 1892

Relative estimates of several faint comparison stars for Nova to fill an interval 8 h. obs.

9 6 (Star 8) 3 (Star 10) In large tel.
(Star 6) 4.5 (Star 8) " " "
y 2 (Star 6) " " "
y 3 y " " "

9 18 Sky becoming more cloudy.

10 45 Still cloudy.

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1892phae.proj..515w

Apr. 13, 1892.

Copeland's Nova, Mt. obs.

5	23	+ 30.2
9	12	
+3	49	

Nova seen

7 44 (Star 10) 5 Nova, Nova 2 (Star 14)

Star 13 pretty certainly seen. Nova is probably as much as 4 or 5 grades brighter than star 13.

At times star which I will call 15 seems to be visible, but if really seen it is a little fainter than star 13, so that Nova would probably be as much as 6 grades brighter than it. It is however not absolutely certain that there is such a star.

8 26 (10) 6 Nova by Mr. Reed.

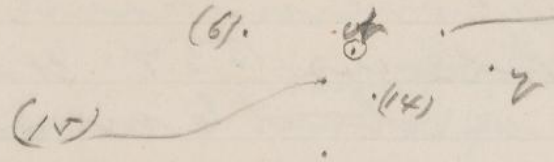
Nova 2 (14) " " "

Nova 5 (13) " " "

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1892phae.prj...515w

Apr. 13, 1892



NK

This diagram belongs to my estimate on previous page.

D.M. Hedgi June +19°

Series 94.

Position 6	49		+19.9
10	47		
+3	52		

19 14	5.10	1552	
	5.12	~~1554~~	
	5.19	15.41 5.14	6.67 mags.
	2.94	5 1554	
	3.40		
	3.64	~~3.33~~	4.32
	9.9 8		
	3.04	1558	
	3.32		
	350	9.86	4.27
		~~3.29~~ ~~1558~~	

There seems to be an error in the D.M. at this point. Just what it is, is impossible to say. There should be a 9.8 ~~not 9.5~~ according to the D.M. in range of a star of about this brightness ~~a star~~ but there is only one. This is assumed to be

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1892phae.proj..515W

Apr. 13, 1892.

15ˢ 5ᵐ 8ˢ in the above measure, which accordingly follows 15ˢ 5ᵐ 4ˢ 31 sec. by transit and is ~~about~~ some 6 mins. north of it.

2.71		1565	
3.00			
3.08	8.79	~~3~~	3.21
	~~2.93~~		
2.77		1582	
2.90			
3.09	8.76		3.79
	~~2.92~~		
3.46		1592	
3.67			
3.59	10.72		4.64
	~~3.57~~	~~1600~~	
4.10		1600	
4.22			
4.35	12.67		5.49
	~~4.22~~		
2.90		1603	
3.10			
3.12	9.12		3.95
	~~3.04~~	1600	
2.70		1604	
2.97			
2.88	8.55		3.70
	~~2.85~~		

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1892phae.prj..515w

Apr. 13, 1892.

	~~2.67~~ Wrong scale interferes.		
16 11	3.17		
	3.20	9.85	
	3.48	~~3.28~~	4.26
16 14	3.12		
	3.03		
	3.17	9.32 ~~9.11~~	.4.03
16 17	2.60		
	2.89		
	3.00	8.49 ~~2.83~~	3.68
16 21	2.50		
	2.62		
	2.70	7.82 ~~2.61~~	3.39
16 26	3.42		
	3.40		
	3.43	10.25 ~~3.42~~	4.44
16 33	2.85		
	3.38		
	2.97	9.20 ~~3.07~~	3.98
16 36	2.47		
	2.50		
	2.52	7.49	3.24
		7 ~~2.50~~	

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1892phae.proj..515W

Apr. 13, 1892

1638	2.22		
	2.22		
	2.26	6.70 ~~2.23~~	2.90
1642	2.90		
	2.93		
	3.02	8.85 ~~2.95~~	3.83
1648	2.97		
	3.09		
	2.90	8.96 ~~2.99~~	3.88
1659	4.91		
	4.78		
	4.83	14.52 ~~4.84~~	6.29
1663	2.81		
	3.00		
	2.83	8.64 ~~2.88~~	3.74
1669	2.38		
	2.61		
	2.70	7.69 ~~2.56~~	3.33
1670	2.20	This star follows	
	2.51	1669 4sec. 1'north.	
	2.77	7.48 ~~2.49~~	3.24

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1892phae.prpj..515W

Apr. 13, 1892.

1671	4.00		
	3.98		
	4.07	12.05	5.22
		~~4.07~~	
1678	4.21		
	4.33		
	4.20	12.74	5.52
		~~4.25~~	
1682	3.00		
	3.20		
	3.22	9.42	4.08
		~~3.14~~	
1684	4.12		
	4.18		
	4.39	12.69	5.49
		~~4.23~~	

1684 is double. It has a faint companion, very slightly following 0.3' north. Probably the 2 were seen as one both by the D. M and M. P. which accounts for its being called 8.5 by the D. M. The brighter component which was measured does not seem quite as bright as 8.5

1687	2.24		
	2.40		
	2.28	6.92	3.00
		~~2.31~~	~~2.99~~

Star rather faint.

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Apr. 13, 1892.

1690	2.40		
	2.61		
	2.38	7.39 ~~2.46~~	3.19
1700	2.79		
	2.79		
	2.75	8.33 ~~2.78~~	3.61
1703	2.50		
	2.82		
	3.10	8.42 ~~2.80~~	3.64
1708	3.42		
	3.71		
	3.79	10.92 ~~3.64~~	4.73
1726	3.11	2.80	
	3.17	3.02	
	3.08	3.04	8.86 ~~2.95~~ 3.84
1739	3.52		
	3.58		
	3.79	10.89 ~~3.63~~	4.71
1743	5.60		
	5.33		
	5.80	16.73 ~~5.58~~	7.24

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Apr. 13, 1892.

1777

3.70
4.20
4.25 12.15 5.26
~~4.05~~

10 55

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1892phae.proj..515W

Apr. 16, 1892 — Ph. obs.

Transits of both images of star in Phot R. to determine
10 6 15 angular separation of
47 same. W. obs.
32 revs.

10 20 42
21 14
32 revs.

This gives separation of about 4', the star being on the Equator.

Copeland's Nova — Ph. obs.

5 23 +30.2
10 25
+5 2

8 45 (Star 14) 2.5 Nova
Nova 3.5 (Star 13)

Observation thought to be pretty good
Sky a little hazy at time of Estimate.

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1892phae.proj..515w

Apr. 16, 1892

9 19 Nova seen again fairly well (Star 14) 2.5 Novae, Nova 3.5 (Star 13)

9 46 (Star 14) 2.5 Nova, Nova 3.5 (Star 13)
Sky now fairly clear.

Absolute estimate 14.6

Examination of comparison stars for R. Leonis Minor. H. obs.

9	23	+ 35.8
12	3	
+2	40	

9	40	+ 34.8
12	14	
+2	34	

Variable runs up to 6.1 at maximum. Probably it would be well to find one brighter star. D.M. +35° 2015 magn 5.7 would be a very good one for this purpose. Interval between a and β is not bad but seems a trifle large Possibly D.M. +35° 2034 could be inserted with advantage.

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1892phae.proj..515W

Apr. 16, 1892

Star a seems full as bright and perhaps a little brighter than star 3 The D.M. makes it a half a magn. brighter. Star e' seems a little brighter than d in finder and the D.M. makes it the same way. The interval from c' to d being a little large it would seem as if e' ought to be inserted between c' and d. g² is certainly brighter than f as the D.M. indicates. As the interval between f' and f is rather large g² could be very well inserted between them.

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1892phae.proj..515W

Apr. 18, 1892

Copeland's Nova. At. obs.

5	23	+ 30.2
10	3	
+4	40	

8 12 Nova certainly seen.
Sky somewhat cloudy. Star 14 seems to be as much as 3 grades brighter than Nova, possibly 3½ grades. Star 13 not certainly seen. Observation difficult on account of clouds.

8 25 Absolute est. 14.7

Sky now more cloudy.

Phot. R put on; turned on Venus to examine emergent limits, but sky so cloudy withall that observation could not be made very satisfactory.

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1892phae.proj..515W

Apr. 19, 1892

Copeland's Nova. H. obs.

5 23 +30.2
9 22
+3 57

7 24 Twilight still too strong.

7 31 Twilight still too strong // th magn seen with considerable difficulty.

8 4 (Star 14) 3.5 Nova.
Nova 3 (Star 13)

8 16 (14) = Nova, Nova 3 (13) by Mrs Reed.

Relative estimates of Nova and comparison stars. H. obs.

8 33 (Star 14) 6 (Star 13) In large tel.
(Star 10) 5 (Star 14) " " "
(Star 8) 3.5 (Star 10) " " "
(Star 6) 4 (Star 8) " " "
4 2 (Star 6) " " "
4 2.5 4 " " "
(Star 5) 2.5 4 " " "

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1892phae.proj..515W

Apr. 19, 1892.

y 2 (Star 7) In large tub
w 4 x " " "

Ring micrometer eye piece no. 1 put on
u 3.5 w In large tub
t 5 u " " "
s 6 t " " "
r 2.5 s " " "
(Star 3) 2 w " " "
q 3 r " " "
p 4.5 q " finder
p 5 q " large tub
o 3.5 p " finder
o 4.5 p " large tub
n 4 o " " "
n 3.5 o " finder
m 5.5 n " large tub
m 5 n " finder
l 5.5 m " large tub
l 5.5 m " finder
k 6 l " large tub
k 5.5 l " finder
h 4.5 k " large tub
h 4.5 k " finder
g 5 h " large tub
g 20 g 4 h " finder

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1892phae.proj..515W

Apr. 19, 1892.

Comparison of stars a and m (comp. stars for Nova Aurigae) with Plut R. Ob. obs.

9 54

Index to right

56.3 ^	339.8	< S obs.
	36.1	
56.2 ^	337.0	
3.4 ✓ 112.5 ^	33.2	
57.2 ^	336.8	
	34.0	
56.6 ^	338.8	
3.3 ✓ 113.8 ^	35.4	

Index to left.

	250.0	250.0	
49.2	299.2	300.8	50.8 ^
	250.8	249.2	53.6 ^
46.4	297.2	302.8	104.4 ^
95.6			3. ✓
	248.6	251.4	
48.6	297.2	302.8	51.4 ^
50.4	248.5	251.5	49.6 ^
10 10 98.0	298.1	301.1	101.0 ^
			3.6 ✓

Observations quite difficult; region getting low

In last 2 series settings accidently read wrong way with reference to graduations. Changed to correct readings above.

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1892phae.proj..515W

20

Aug ~~19~~ 1892.

Obs.

Transits to sun's Dec. +20° 70K (Set.)
to +20° 713 (Inlet.)

3h 6m +21.A

9	7
+5	1.1
9	23
+5	27

Position zero 305.1
45.0
350.1

Troubled greatly by twilight.

	h	m	sec	
7	40	~~19~~ 9	58	2.0 70K
			58	11.9 70K
		10	1	15.5 713
			1	39.0 713
			4	57.8
			5	6.0
			8	9.2
			8	34.9
			9	4.9
			9	16.5
			12	20.0
			12	42.3

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1892phae.proj..515W

Apr. 20, 1892.

h.	m.	sec.
10	13	40.6
	13	49.0
	16	52.6
	17	18.0
	17	58.0
	18	13.5
	21	16.6
	21	33.5
	22	43.6
	22	56.2
	25	59.9
	26	21.0
	~~26~~	~~57.5~~
	27	53.0
	28	1.4
	31	5.6
8 24	31	30.5

Order in preceding transits lettered star, lettered star, unlettered star, unlettered star. Lettered star in northern half, unlettered star in southern half. Region rather low, observations difficult in the last set. Dm. +20° 707 = Let. *

" +20° 713 = Unlet. *

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Apr. 20, 1892

Copeland's Nova. Obs.

5	23		+ 30.2
10	36		
+ 5	13		

8 44 (Star 14) 4 (Nova, Nova 2.5 (Star 13)

8 v6 (14) v Nova, Nova = (13) by Mr. Reed.

Relative estimates of Nova and comparison stars.

9 2 (Star 14) 5.5 (Star 13) In large tel.
(Star 10) 4.5 (Star 14) " " "
(Star 8) 3.5 (Star 10) " " "
(Star 6) 4.5 (Star 8) " " "
y 2 (Star 6) " " "
(Star 5) 3 y " " "
y 2.5 (Star 7) " " "
y 2 y " " "

No. 1 Fring micrometer eye-piece put on.

w 4 x In large tel.
w 4 w " " "
t 5.5 w " " "
r 6.5 t " " "
r 3 r " " "
(Star 3) 2.5 w " " "

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1892phae.proj..515W

Apr. 20, 1892.

g	4 p	In large tel.
p	5 g	" " "
~~k~~	4 g	" finder.
o	4 ~~k~~	" "
o	5 p	" large tel
m	4 o	" " "
m	3 o	" finder.
m	5 m	" large tel.
m	5 m	" finder.
l	6 m	" "
l	6 m	" large tel.
k	5.5 l	" " "
k	5 l	" finder.
k	4.5 k	" large tel.
k	4 k	" finder.
g	4.5 k	" large tel
g	4.5 k	" finder.

g 45

Until Ruy micrometer eye piece was put on, the Mars micrometer eye piece was used.

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Apr. 20, 1892

Examination of comparison stars for χ Virginis Ph. obs.

11	58	+9.5
12	14	
+0	16	

It would be well to put in a brighter ~~star~~ star at the beginning. Interval between stars ~~a~~ good, possibly a little large. Sequence in general seems quite good.

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Posted to Lens.

Apr. 23. 1892.

Copeland's Nova. Gr. obs.

5 23 +30.2
9 30

+4 7

Twilight too strong. Cannot find region.

7 30 Star y invisible.

7 40 Star y invisible except once in a while by glimpses. Star α too faint to measure.

7 45 α still too ft. to measure.

Comparison of α and α Ok. obs.

7 55 57.5 ^ 110.9 ^ 164.4 2 S dis. Prism to right
54.9 ^ 113.0 +1.1 3.4
112.4 ^ 167.9

53.9 ^ 113.0
55.1 ^ 166.9 +1.1 3.4
109.0 ^ 112.9
166.0

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1892phae.proj..515w

Apr. 23, 1892

	51.8	24.0	Prism to left
		75.8	
	54.2	22.6	~~+,-~~
	106.0	76.8	3,-
	54.4	24.6	
		79.0	~~+,-~~
	51.2	25.8	3,-
8 10	105.6	77.0	

Comparisons of x and y Ob. obs.

8 15	41.0	118.0	Prism to right
		159.0	< S dis.
	4.1 - 41.0	119.0	
	~~2.+~~ 82.0	160.0	

Observations stopped by upper of small shutters interfering. Shutter could not be moved so observations abandoned.

5	
6	50
5	23
12	13

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Oct. 23, 1892

R. Aurigae. M. obs.

5	3	+53.0
11	28	
+6	25	

9 14 R Aurigae R, R 29 in large tel,
Too faint for finder
Est. 12.8

S. Cassiop. M. obs

1	10	+72.1
11	43	
+10	33	

Shutter interferes.

R. Camelop.

14	40	+84.1
11	48	
−2	52	

R Camelop = 12 in large tel.
Too faint for finder.
9 40 est 12.6

Bright auroral arch in north;
highest point of arch under the pole;
hight of arch 1/3 that of the pole star
Auroral white.

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1892phae.proj..515w

Apr. 23, 1892

Copeland's Nova. M. obs.

	5	23	+30.2
	12	6	
	+6	43	

9 58 (Star 14) 5 Nova, Nova / (Star 13)

Region low: observation very difficult. Nova ~~thought to be~~ certainly seen, but not with perfect steadiness. Star 13 thought to be certainly seen at intervals.

10 10 Nova looked for by Mr. Reed. Star 14 seen, but neither Nova & nor star 13 certainly seen. Region getting into the aurora band, and still lower. Observation abandoned.

T. Mrs. May. M. obs.

12	33	+60.4
12	40	
+0	7	
13	6	
+0	33	

10 1.5 T, T 3 ps in large tel. Too faint for finder.

10 55 Est 11.2

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1892phae.proj..515W

Apr. 23, 1891

		S. Cygni.	A. obs.
20	8		+5?2
37	20		
+17	12		

Stars seen; stars to seen at intervals S. Cygni not seen
11 9 probably fainter than 1.9.

S Cassiop could not be taken because small shutter interfers

Auroral arch at about the same height as before, but
11 15 much more brilliant. The elevation of the arch is somewhat broken by brilliant streamers and irregularities of light.

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1892phae.proj..515w

Posted to here.

Sunday April 24 1892

Nova Aurigae

W. Tr. Reed observer.

h m
8 20 variable Invisible
star No. 14 was seen.
The shutter (which could not be
moved) cut off about one third of
the diameter of object glass.

Nova R.A. $5^h\ 25^m.0$

$6^h\ 37^m$

5 25
6 37
12 62
2

10:00 Nova Aurigae

(Star 14) 4 V var. near horizon

Star 13 not seen.

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1892phae.proj..515w

Apr. 25 1892.

Comparison stars for Copeland's Nova. Mt. obs.

n			
	5	23	+30.2
	9	40	
	+4	17	

7 20 Sky still too bright to see comparison stars

7 38

g	5 h	In	large tel
g	4 h	"	finder
h	5 k	"	large tel.
h	4.5 k	"	finder
k	5 l	"	large tel.
k	4.5 l	"	finder
l	6.5 m	"	large tel
l	5.5 m	"	finder
m	4 m	"	"
m	5 n	"	large tel
n	3.5 o	"	" "
n	3.5 o	"	finder
o	4.5 k	"	"
o	4.5 k	"	large tel.

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1892phae.proj..535w

Apr. 25, 1892

k 5 g In large tub.
k 5 g " finder
g 3 h " large tub
g (Star 3) 3 w " " "
h 3.5 z " " "
z 7 t " " "
t 5 m " " "
m 4.5 w " " "
Mars micrometer eye-piece put on.
w 5 x In large tub.
x 2.5 y " " "
y 2 (Star 7) " " "
y (Star 5) 3 y " " "
y 2 (Star 6) " " "
y (Star 6) 4 (Star 8) " " "
(Star 8) 3 (Star 10) " " "
(Star 10) 4.5 (Star 14) " " "
8 20 (Star 14) 6 (Star 13) " " "

Relative Est. of Nova

8 28 (Star 14) 5 Nova, Nova 1 (Star 13) M. obs.

~~Nova 4 star 1~~

8 34 (Star 14) 4 Nova by Mr. Reed.

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1892phae.proj..515w

Apr. 25, 1892.

Comparisons of stars s and n, with Rhot R.

			Ob. obs.	
8	41		45.7	Index to right
		56.1 ^	101.8	
		59.0 ^	46.0	
		~~+.3~~ 3.3 ✓ 115.1 ^	105.0	
			44.0	
		60.0 ^	104.0	
		59.1 ^	45.8	
		~~+.2~~ 3.2 ✓ 119.1 ^	104.9	
			149.9	Index to left
		48.9 ^	190.8	
		48.1 ^	140.9	
		~~+.7~~ 3.7 ✓ 97.0 ^	189.0	
			142.2	
		47.1 ^	189.3	
		49.7 ^	141.2	
8	55	~~+.7~~ 3.7 ✓ 96.8 ^	190.9	

Seeing bad; images rather poor, stars faint; night rather hazy.

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1902phae.proj - 515W

Apr. 25, 1892.

Aurora arch seen in north at 8h 25m.
9 30 It is still visible at the present time and brighter than before. Altitude of center of arch is ½ that of the pole star, but there seems to be diffused auroral light extending up at least ½ way to pole

S. Cassiopeiæ

1	10	+72.1
12	6	
+10	56	

Seeing poor. Identification rather difficult but S. Cassiop thought to be identified & seen.
S = 4
9/10 7 Est 14.7

Variable in auroral light which makes observation difficult.

Aurora now becoming more
10 10 brilliant, double arch, the upper arch being half way to the pole with streamers.

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1892phae.proj..515W

Apr. 25, 1892

Comparison stars for R. Comae.
Obs.

11	5 2	+ 20.14
12	5 3	
+ 1	1	
12	58	
+ 1	6	
13	2	
+ 1	10	
11	40	
13	5	
+ 1	25	

Interval from a' to a looks a little large, although it is not bad
Interval from c to d' looks decidedly large. ~~Probably d' should come after which would make the interval bad not.~~ Probably d' should come elsewhere as it is fainter than d. Star k is the ~~Star~~ same as d', Star k is a little fainter than h and so might follow h.

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1892phae.proj..515w

Apr. 27 to 28, 92.

Aurora very brilliant at about 10h 30m. Convoluted, wavy and corruscating, with streamers.

11 20 Aurora more quiet. Simply a bright arch.

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1892phae.proj..515W

Posted to here.

Apr. 24, 1892

Comparison of stars a and y Phut. R. Ob. hr.

5 23 +30.2
9 49
+4 26

8 7 163.4 Prism to right

37.9^ 201.3
43.8^ 161.0
2.2 4.1 v 81.7 204.9
81.8^

43.9^ 161.7
205.6
38.0^ 163.2
2.1 4.1 v 81.9^ 201.2

253.5 Prism to left

35.8^ 289.3
39.2^ 252.2
2.3 4.3 v 75.0^ 291.4

41.2^ 251.1
292.3
38.5^ 252.5
8 40 2.2 4.2 v 79.7^ 291.0

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1892phae.proj..515w

Apr. 26, 1892.

Cobelands Nova. Ht. obs.

8 44 (Stars 14) 5 Nova, Nova 1 (Star 13)

8 45. Rather bright aurora at present time. Double arch the upper one being 1/3 the way up to the pole. Lower arch about 1/2 the height of the upper.

8 57 (14) 4 Nova. Nova 0 (13) by mm. Read.

Comparisons of stars a and μ.

Phot. R. Ht. obs

9 6

	56.6 ^	155.4 Princeton right
		212.0
	54.3 ^	154.6
~~1.4~~ 3.4 v	110.9 ^	208.9
	~~55.7~~	155.7
	54.3 ^	210.0
		154.7
	55.2 ^	
~~1.4~~ 3.4 v	109.3 ^	209.9

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1892phae.proj..515w

Apr. 26, 1892.

	51.8	244.0	Prism to left.
		295.8	
	53.0	244.9	
~~1.5~~	3.5 ✓ 104.8	297.9	
	53.3	244.9	
		298.2	
	53.2	244.9	
9 22	~~1.5~~ 3.5 ✓ 106.5	298.1	

Regions too low and stars too faint to compare n and ay.

Relative estimates on 3 additional comparisons stars for Nova. Ap. Obs.

9 28 n 2 (3)
(3) 2 n
y 2.5 (7)
(7) 3.5 (8)
~~(n)~~ n 4 (5)
(5) 3 y

The photometric comparisons of 2 and y above were rather difficult, from faintness, but settings were taken slowly and result considered good.

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1892phae.proj..515w

Apr. 26, 1892.

10 0 Auroral arch now broken. Scattered patches of auroral light, here and there at about the altitude of the arch. Slight traces of streamers but faint.

Examinations of comparison stars for R. Comti. Nr. obs.

12	8	−20.0
12	35	
+0	27	

Interval between d and e is perhaps a trifle large, although it is not bad; & interval thought to be about ½ a magn.

11 0 More or less diffusion auroral light in north throughout region below pole. It is however chiefly confined to a low auroral arch.

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1892phae.proj..515w

Apr 27, 1892

7 20 Considerably cloudy

Nova Aurigae.

5	23	+30.2
9	55	
+4	32	

8 33 Sky considerably cloudy, but clouds thin in places. Nova carefully looked for through gaps in cloud, but not seen. Star 14 glimpsed, star 13 not seen, ~~Sky~~ more More or less light cloud in region when Nova was actually looked for, which probably accounts for its not being seen

8 54 Still cloudy and growing worse

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1892phae.proj..515w

Apr. 30, 1892

7 40 Some Cloudy N. obs.

8 · Nova Aurigae

5 23 +30.2
10 28
+5 5

8 0 Star 14 thought to be seen by glimmers at times. Neither Nova nor star 13 seen. Sky some cloudy; field rather bright from moonlight and the remaining twilight.

Star 7 almost totally invisible in photometer; impossible to equalize it.

Relative estimates of additional comparison stars.

8 9 m 2.8 (star 3)
(star 7) 2.5 (star 8)
m 3 (star 5)

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1892phae.proj..515W

Apr. 30, 1892

Comparisons of s and y

Plant. R. Obs.

8 2.7

40.2^ 173.8 Sunday to night
214.0

37.0^ 175.0
212.0

~~2.3~~ K.3✓ 77.2^

174.0

39.2^ 213.2

39.5^ 173.5

~~2.2~~ K.2✓ 78.7^ 213.0

263.0 Sunday to left.

39.0^ 302.0

43.1^ 260.0

~~2.1~~ K.1✓ 82.0^ 303.1

40.5^ 264.2
304.7

39.0^ 263.2

8 42 ~~2.2~~ K.2✓ 79.5^ 302.2

Measrs. made with difficulty. Sky pretty clear at time of measrs. It is utterly impossible to do anything with s and y

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1892phae.proj..515w

Apr. 30, 1892.

9 7 Nova looked for again.
Stars 14 seen; neither Nova nor star 13 certainly seen. Sky pretty clear. Moonlight. Region also getting rather low.

Examinations of region of R Lyncis with reference to photometric means,

6e	49	+55.0
12	24	
+5	35	

A 13th magn. precedes R. Lyncis, 30sec. 1.5' north. A 10.8 magn precedes R. Lyncis 9sec 4.2 min north. A 9.1 magn. follows R. Lyncis 3/4 of the square 14 mins. north.

There are some faint stars between 9th magn and variable which could perhaps be used for intermediate steps, ~~but they are not particularly well situated.~~

~~Examination of re~~

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Apr. 30, 1892.

Examinations of Region for R. Aurigæ

Obs.

5⁻	3	+53.0
12	53	
+7	50	

Can 8.6 precedes variable ½ the square 7½ min. south. A 10.1 precedes the 8.6 13 sec, 1½ min. south. A 13.2 precedes the 8.6 20 sec. 4½ min. south.

Examinations of Comparison stars for χ Y. Virginis

12	29	−4.0
13	9	
+0	40	

1st star seems to cover max. brightness of variable well. Sequence seems to be very good in general, except possibly in last 3 stars. These should also be examined with the 6 inch.

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1892phae.proj..515w

Posted to here.

May 4, 1892

At. obs.

Relative estimates of several comp. stars for Nova Aurigæ

5	2 3	+	30. 2
10	31		
+5	8		

8 12 m.l (Star 1), (Star 1) 3 m
t 4 (Star 2), (Star 2) 2 m
~~t 1 (Star 4), (Star 4) 3 m~~
~~t 1 (Star 9), (Star 9) 3 m~~
t 1 (Star 4), (Star 4) 3 m
(Star 5) 1 (Star 9), (Star 9) 2 y
m 2 (Star 3)
(Star 7) 3 (Star 8)

8 35 m 3. 5 (Star 5)

Stars 11 and 12 not seen; field rather bright,
Looked for Nova Aurigae. At. obs. Nova not certainly seen. Star 14 seen at intervals. Star 13 not certainly seen

8 47 Photometer put on. It is impossible to do anything in the way of a comparison of stars x and y. y is practically at limit of visibility in photo when at full brightness

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1892phae.proj..515w

May 4, 1892.

Aorg not seen by Mr. Reed.
Star 14 seen. Star 13 not seen.

Circumpolar Variables
S. Cassiop.

1	1.0	+72.1
12	43	
+11	33	

Observation very difficult. Variable thing but to be seen and about equal
10 6 to star y. Est 14.9
Mark gives some trouble.

R. Aurigæ.

5	3	+53.0
18	11	
+8	8	

[illegible] 2.5 R, R 1.5 g in large tel.
Too faint for finder.
10 19 Est. 12.7

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1892phae.proj..515w

May 4, 1892

T. Urs. Maj.

12	33	+60.4
13	23	
+0	50	

m 2.5 f, f 3 m in large tel.
Rather too faint for finder.

10 39 Est 10.4

S. Cygni

20	8	+57.1
37	44	
+17	36	
37	52	
+17	44	
38	2	
+17	54	

S not seen probably fainter than
11 11 14.8

Some light cloud about.

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1892phae.proj..515W

May 7, 1891

Relative estimates for comparison stars near Nova Aurigae. Obs. A.

5	2 3	+ 30.2
10	3 0	
+5	7	
11	3	
+5	4 0	

8 4 m 2 (Star 1), (Star 1) 3 m
t 3.5 (Star 2), (Star 2) 2.5 m
t 1.5 (Star 4), (Star 4) 2 m
(Star 5) 2 (Star 9), (Star 9) 2.5 m

Nova not seen; star 13 not seen; star 14 seen with difficulty. Clouds coming. Sky too bright to measure x and y.

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1892phae.proj..515w

May 13, 1892

~~Comparison~~ Relative estimates of comp. stars for Nova Aurigae At. obs.

5	23	+30.2
12	10	
+6	47	
12	20	
+6	57	

8 41 m 1.5 (star 1), (star 1) 2 m
t 4.5 (star 2), (~~star~~ star 2) 2.5 m
t 1 (Star 4) (Star ~~4~~) 2 m
(Star 5) 1.5 (Star 9), (Star 9) 2 y

Nova Aurigae.

Stars 8 and 10 seen. Star 14 seen at intervals but with difficulty. Neither Nova nor Star 13 seen

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1892phae.proj..515w

May 13, 1892

~~12~~		S. Cassiop.	Pt. obs.
1	10		+72.1
12	40		
11	30		

Stars x seen, star y thought to be seen also but variable not certainly seen. ~~Clouds~~ Probably fainter than 14.9

9 14 Clouds

Clouds came rather suddenly, but sky seemed to pretty clear at time of estimate

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1892phae.proj..515W

May 14, 1892

Circumpolar Variables Ot. obs.

R. Aurigae

	5	3	+5 3.0
	11	28	
	+6	25	

Sky still too bright to see variable.

7 50 Beginning cloudy.

7 55 Sky now a little clearer.

5	3	
12	17	
+7	14	

8 35 Clouds again

γ 2 R, R 2 n in large tub.
Too faint for finder.

8 44 Est 12.8
Observation made with difficulty on account of clouds. ~~Probably~~ and after considerable trial. Probably observation should not have full weight.

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1892phae.proj..515w

May 14, 1892

R. Lyncis

6	47	+55.0
12	42	
+5	53	

Clouds.

T. Urs. Maj.

12	33	+60.4
12	42	
+0	9	

k 1.5 S, S 3 l in large tel.
Too cloudy + faint for finder

9 2 Est 9.3
Observations made with difficulty.
Variable, coming up in brightness.

S. Cygni

20	8	+57.2
36	56	
+1 00	48	

9 7 Cloudy everywhere, and graining worse.

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1892phae.proj..515W

May 16. 1892.

Examination of Comp. Stars for V Virginis.

13	23	−2.3
13	4 V	
	+ 22	

Selection seems very good, except perhaps the sequence of stars c and d, which should be looked at with the 6 inch.

11 15 Low Auroral arch in north.

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1892phae.proj..515W

May 17, 1892

Some visitors early part of evening.

Looked for suspected comet telegraphed from Ann Arbor as seen at Marion Ohio. Comet not found. Quite likely the unknown party may have seen Presepe.

Circumpolar Variables

S. Cephei

21	37	+78.3
13	28	
−8	9	
13	36	
−8	1	

S = 0 in large tel
Too faint for finder

9 39 Est 12.7

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1892phae.proj..515W

May 17, 1892

δ. Cygni

20 8 +57.2
13 43
−6 25

Star 2 seen; star 1 seen at intervals variable not seen; probably fainter than 14.9

R. Draconis

16 26 +67.4
14 6
−2 20

~~R 1.5 2 1.5 R, R~~
9 1.5 R, R 3 2 in large tel.
Too faint for finder
10 17 Est. 12.4

R. Camelop.

14 40 +84.1
14 22
− 0 18
f 2.5 R, R 2 g in finder
f 3.5 R, R 2 g in large tel
10 35 Est 10.5

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1892phae.proj..515W

May 17, 1892

T. Cassiop.

24	18	+55.9
8		
14	43	
+14	25	
−9	3	

$\frac{1}{4}$ = 8 p. in large tub.
11 5 Est 12.1
Too faint for finder

Several Comp. Stars for T. Virginis examined with 6 inch. Selection seems to need no change.

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1892phae.proj..515w

May 18, 1892

Ladies from the Annex here the early part of evening.

Examination of Comp. Stars for Var. Obs.

β Virginis

12 2[illegible] +12 +7.6

12 1[illegible]

+9

All the north east quadrant of the heavens filled with bright Aurorial light and streamers.

Aurora still brilliant, covering pretty
9 4 much all the sky north of the zenith and a little to southward same

g is a trifle fainter than f, but possibly could be omitted. o is a little fainter than n, though not very much; but apparently to omit it would injure the sequence. r is a trifle fainter than g, though not very much; possibly a little less

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1892phae.proj..515w

May 18, 1892.

than 2 can be substituted when series is continued. Otherwise selection seems quite good.

9 48 Much irregular bright auroral light in patches and streamers all through the northern half of the sky and extending south to the equator.

Examination of comp. stars for M. Virginis

12	40	+ 4.4
13	58	
+1	18	

Probably star a can be abandoned, as star b seems to cover the variable well at max.

12	43	+ 7.3
14	9	
+1	26	

Examined interval between b and c with 6 inch. Interval hammer seems very good

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1892phae.proj..515w

May 18, 1892.

~~Interval between 9 and 10 not over 3~~
~~spots~~ Star ν has a rather close companion. Perhaps a better star could be selected, in fact star ν Serpentis quite as bright as ν, so that perhaps ν could be abandoned with ~~but a change~~ advantage and no measurements made. ν is however rather far from the variable for so faint a star

For a distance from horizon up to 1/3 the height of the pole star (below pole) there is no auroral light and sky is comparatively dark. There is however now a very low auroral band a little above the horizon. The rest of the northern sky and even to below the equator is quite well filled with bright auroral light flashing and coruscating. Auroral light rather more abundant north of the zenith however.

10 48

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1892phae.proj..515W

Chicago Oct. 18, 1892.

Comet a 1892 (Swift) Tr. obs.

23 20 +30.1
16 √−0
−6 30

16 √√
−6 2√

−6 9 +31.1
17 1√
23 2K

Place of ☉

Pos. Zero. 0.9
4√−0
Setting 4√.9

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1892phae.proj - .515w

May 14. 1892.

17 h 2 26.0 *
h 3 14.0 *
h 3 v.9 ≡
h h 39.v ≡

h v 18.h
h 6 6.2
h 6 h8.7
h 7 31.7

h8 17.1
h9 h.2
h9 h7.7
v 0 30.6

v 1 31.0
v 2 18.1
v 3 1.8
v 3 hh.v

v h 3h.v
v v 21.v
v 6 6.0
v 6 h8.3

Star in Southern half.
Comet " northern "

Comp. Star = 2 m. + 31° 4906 (9.0 K)

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May 18, 1892.

14h ~

Sky in region of comet seems now moderately clear of auroral light, although there may be some faint diffused light. Moon up.

The comet is seen with some difficulty with the naked eye. It is probably about a 5th mag. star.

No tail visible to naked eye.

Not much of any tail visible either in large telescope or finder. In both the latter there is some elongation of the coma on the preceding side.

There is, however, a faint tail visible in the field glass, which can be traced for some 1° but no structural detail is easily visible. In fact the tail as seen in field glass is rather faint.

Possibly the moon and some aurora may interfere more one would suppose, at first thought. The aurora is rather brilliant in north flashing and coruscating and, at times, overlapping the region.

236			394		
1d	2d	43.5"	1h	22	0.0
	29	43.7		23	0.0

∴ B. 236 was 1m 32.0 fast.

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1892phae.proj..515w

Posted to Lens.

May 23, 1892

Examination of comp. stars for variables Ht. obs.

V. Virginis

13	23	$-2^{\circ}.3$
12	60	
	-63	

Interval from 1 to ~~m~~ n, looks rather large; besides n has a faint and rather close companion.

10 30 Cloudy with no prospect of clearing.

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1892phae.proj..515W

May 24, 1892.

Examinations of comp. stars for S. Virginis At. obs.

13	24	−5.5
12	10	
−1	14	

Star p seems fully as bright as o in large tel, if anything a trifle brighter Star t is a little brighter than s.

Examinations of comp. stars for R. Hydrae. At. obs.

13	29	−22.9
15	13	
+1	44	

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1892phae.proj..515w

May 24. 1892.

Comet a 1892 (Swift) Gr. Obs.

23	3r	+34.0
17	r0	
−r	4r	

Pos. Zero. 10.4

Setting 4r.0 / rr.4

1d	7	1r.r *
	7d	14.2 *
	10	2.6 ∈
	10	26.4 ∈
	11	23.1
	12	22.3
	14	11.4
	14	34.4
	1r	2r.4
	16	2r.r
	1d	14.9
	1d	34.0

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1892phae.proj..515W

May 24. 1892.

18	19	43.3
	20	42.8
	22	3[illegible].0
	22	[illegible]
	23	[illegible]
	24	[illegible]
	26	41.7
	27	2.[illegible]

Both in northern half.

Sky a little hazy and now growing worse. The nucleus of comet is visible to naked eye but ~~seems to~~ it is rather faint. A faint and small tail is visible in field glass. A small tail is visible in finder but nothing marked. The diffused light of the tail is somewhat conspicuous in large telescope, but there is no particular structural detail visible.

Nucleus pretty well defined.

Comet about [illegible] mags.

No tail seen tonight with naked eye. It would seem as if the tail must be rather faint at the present time, however must or little

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1892phae.proj - 515w

May 24. 1892.
of structural detail there may be.

	B. 236.		B. 39 K.		
1 h	√4	√1.2	1 K	29	0.0
	√9	√1.K		30	0.0

∴ B.236 was 0ˢ √9.2 fast.

Comp. Star = 2 Ur. + 3 K° 4979 (7.2 K)

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1892phae.proj..515W

May 26, 1892

Comp. stars for R. Hydrae. Ob. obs.

13	24	− 22.8
12	28	
−0	56	

13	11
12	56
−0	15

Some Clouds

8 38 Now somewhat clearer

13	11
13	22
+0	11

Probably it would be better to abandon this as sky is too hazy in this region for satisfactory comparisons.

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1892phae.proj..515w

May 26, 1892

Examination of comp. stars for R. Bootis.

14	38	+27.7
13	41	
−0	57	

Altitude high and observations rather difficult, but it would seem as if there should be more than one star between c and f

R. Hydrae

13	11	−22.8
14	53	
+1	42	

Sky somewhat hazy and region a little low, but interval from e to f seems a little large.

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1892phae.proj..515W

May 27, 1892

Comp. stars for R. Boötis

At obs.

14	38	+27.7
12	37	
−2	1	

Examination of comp. stars for R Hydrae

At obs.

13	29	−22.9
14	17	
+0	48	

Star b has a faint companion; perhaps a better star can found.

Examination of comp. stars for δ Virginis

13	24	−5.5
15	6	
+1	42	

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1892phae.proj..515W

May 28, 1892

H. obs.

Looked at star in twilight to ~~set~~ possibly replace stars in comparisons stars for R Hydrae.

13	11	−22.8
12	50	
−0	21	

Circumpolar Variables

S. Cassiop.

1	22	+72.1
13	30	
+12	8	

Abandoned until later.

R Aurigae

5	4	+53.0
13	33	
+8	29	

Twilight rather strong in this vicinity.
R Aurigae quite faint
2.5 R, R 1.5 t in large tel.
Too faint for finder
9 15 Est 13.5
A very careful examination made of R Aurigae (our)

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1892phae.proj..515W

May 28, 1892

Allowing for a little moonlight and somewhat low altitude, it certainly seems fainter than usual at minimum. Relative estimate made with much care. Absolute estimate also carefully made.

R Draconis.

16	26	+67.4
14	13	
+2	13	

= 1.5 R, R 2.5 t in large tel.
Too faint for finder.
9 44 Est. 13.4

S. Cygni

20	8	+57.1
14	37	
−5	31	

Stars steadily seen. Star t seen at intervals, S Cygni not seen probably fainter than
10 1 14.9

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1892phae.proj..515w

May 28, 1892

δ. Cephei

21	37	+78.3
14	49	
−6	48	
14	52	
−6	45	

δ = 0 in large tel.
Too faint for finder
10 13 Est. 12.7

T. Cassiop

0	18	+55.9
15	16	
+14	58	

p 2.5 δ, δ 2.5 q in large tel.
Too faint for finder
10 42 Est 11.3

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1892phae.proj..515W

June 6. 1892.

S Virginis

13	27	-6.7
13	16	
	-17	
13	51	
	+24	

No good star readily found to substitute for star f which has another star .2 mins. preceding 1 min south. Star f seems very good as it is

Exam. of Comp. Stars for R. Cam. Vem. H. obs.

~~14~~	~~37~~	
13	43	+37.3
14	~~+5~~	
	+22	

Star b is certainly brighter than star a. ~~Star~~ Star b is fully as bright as 6.^th mags. and perhaps a little brighter whereas the variable only comes up to 7.5 so that it really can't wanted, Something is also wrong with star a. It is too bright for the position indicated and decidedly

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June 1, 1892.

brighter than the star preceding it.

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1892phae.proj..515W

June 2. 1892.

Examination of Comps. Stars for
S Librae.

Sky now rather clear.

15	4	
13	35	-19.2
-1	-29	

Interval between a and c too large

Star b is fully as bright as star c, and, if anything, a little brighter.

11 40 Some Aurora light in north. ~~Two~~ Two small vertical bands noticed about 9h 20m below pole but they were of short duration.

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1892phae.proj..515w

June 6. 1892.

Students here this evening.

After students had gone, too cloudy for work.

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1892phae.proj..515W

June 7. 1892.

Examinations of comp. stars for R Herculis

~~13 17~~ At. obs.

16 2 -17.5-
13 15
-2 47

Some cloud and haze

Star g seems a little brighter than f. Star k seems a little fainter than as it should be, but k is a little close to g as seen in finder although it is not very bad. Interval between m and n seems a trifle large in large tel, k is not too close to g in large tel. Otherwise selections seem very good.

Somewhat troubled by clouds and haze during examination Sky now becoming more cloudy.

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1892phae.proj..515w

June 10, 1892

7 50 Somewhat cloudy. Ht. obs.

S. Cassiop.

1	10	+72.1
14	44	
+13	34	

Too much cloud and moonlight to see any faint stars.

R. Draconis

16	26	+67.4
15	37	
−0	49	

Too cloudy.

Too cloudy to continue.

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1892phae.proj..515W

June 11, 1892

N. obs.

S. Serpentis.

15	19	+16.0
14	20	
−0	59	

Star b seems a little brighter than c, and interval from a to c is rather large. Star d is a little fainter than b. Interval from b to d seems alright so that if another star were substituted for c and called b, and b called c, it would make it alright. Interval from e to f seems a little large.

Interval from l to m is pretty small and interval from k to l is rather small also.

Examination of Comp. stars for R. Coronae

15	42	+25.9
15	59	
+0	17	

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June 11, 1892

There is scarcely any difference between g and r and the interval from g to t is very good, so that r could be abandoned, r is however a very little fainter than g probably.

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June 13, 1892

Examination of comp. stars for
R Coronae Obs.

Some light cloud but selection seems to be, as near as can be determined, very good.

Too much cloud about circumpolar region for estimates of circumpolar variables.

Examination of comp. stars for
α Herculis,

16	16	+19.5
15	40	
+1	36	

Selection pretty good, as nearly as can be determined. Considerable cloud and haze.

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1892phae.proj..515w

June 15, 1892

H. obs.

Reexamination of comp. stars for U. Herculis.

16 16 +19.5

Selection seems to be very good.

Examination of comp. stars for T Herculis.

18 4 +30.4
15 47
-2 17.

18 4
16 4
-2 0

Interval between b and c looks a little large although it is not very bad. Star d is rather a bad star and ought to be changed. It has a rather close companion, especially for the four inch. Star a is not quite bright enough for first star; there should be one brighter preceding it.

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June 15, 1892

Comet A 1892 Swift Ak. obs.

~~0 46~~

0	22	+42.4
16	23	
+16	1	

0	28
16	36
+16	8

Position Zero 37.0
45.0
82.0

h	m	sec.	
16	52	11.6	Comet
	53	4.0	Comet
	54	14.8	Star
	54	59.5	Star
	55	48.3	
	56	41.0	
	57	51.2	
	58	35.4	
	59	38.5	
17	0	33.0	
	1	41.4	
	2	28.0	

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June 15, 1892

h	m	sec
17	3	11.0
	4	5.6
	5	13.6
	5	59.3
	6	41.4
	7	35.4
	8	44.0
	9	28.5

Both in southern half

Nucleus pretty well defined. and rather small. Coma some 4' in diameter, but rather sharply defined for a distance of 2.5 to 3'.

Comp. - Star = Δα, + 42° Δδ (9.1 B)

	B. 236.		B. 394.	
17	24	10.0	11 34	0.0
	29	10.0	35	0.0

∴ B 236 was 0.5 to 7.2 slow.

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1892phae.proj..515W

June 20. 1892.

	δ Cassiop		G. Obs.
	1	10	+ 72.1
	14	18	
	+ 13	8	

8 43 δ Cassiop not seen.
Probably fainter than Star X.
" " " 14.5

δ Cygni

	20	8	77.1
	14	37	
	~~15~~ 5	37	

More or less cloud throughout the sky.

8 55 δ Cygni not seen.
Probably fainter than star R
" " " 14.5

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1892phae.proj..515W

June. 20, 1892

S. Cephei

21	37	+75.3
14	49	
6	48	

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1892phae.proj..515W

June 21, 1892

δ Leasing W. Hs.

δ 15

1	10	+72.1
14	38	
+13	28	

Clouds

15	ow
+13	70

Sky still too bright & too much cloud.
There is so much cloud in this region that it is impossible to locate δ Leasing if visible with certainty.
δ is near the stars t, u, W, but these comp. stars are practically invisible & cannot be located with any certainty & the same is true of the Var. Star S is however, & can & the var. must be ± 2 or 3 mags. Equuleus a little fainter than that

δ Cygni

20	+	+57.2
15	36	
4	32	
15	42	
19	34	

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June 21, 1892

Comp. star seen. Var not seen prob. fainter than 14.8.

Exam. of Comp. Stars for T Scorpii. H. obs.

16 v −2.1
16 40
+3 v

Comp. stars partly examined, but clouds prevent finishing N series. Star c seems a little fainter than at first supposed however be reexamined on another night as the atmospheric conditions are not the best.

1892phae.proj..515w

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1892phae.proj..515W

June 22. 1892.

Comps. Stars for T Scorpii.

Fr. obs.

16 v −24.1
15 3v
−33

Star d' is reddish and so a very little brtr. than b in large tel. but it is no brtr. in finder and as it is so far distant from Var., it could well be omitted.

Star f' is right between two rather close stars, one considerably brtr than itself and is badly located. A good star to substitute for it is the one I have marked f' on chart.

Star d is decidedly brtr. than f and is not really needed, as the interval from g' to f is none too large.

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1892phae.proj..515w

June 24. 1892.

& Boötes.

11	11	32.3
16	15	
+5	4	

Sat Corr.

M. Corr.		
15	14	+30.4
16	16	
	+5	4
16	20	
+1	2	
16.	31	
+1	13	

Lieuts Pratt and Harlow from West Point here this evening. Showed them about stars in Equatorial, ~~each divided~~ - the latter divided by all of us.

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July 6. 1892.

Circumpolar Variables Sr. obs.

R. Aurigae

√ 4 +√3.0

1√ 36

+10 32

Too low & sky too bright.

R. Lyncis

6 49 +√5.0

1√ 48

+8 √9

1√ √1

+9 2

8 4√ 2 3 R, R 2,√ e in large tel.
Sky too bri. for finder
Est 8.4

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July 6. 1892.

R. Nro. Maj.

10 3 r
16 v
+ v 33

+ 69.3

9 0 2 2 r R; R 3 D in large tel.
~~Too fr. for finder~~
Est. 11.4

D. Nro. Maj.

12 33
16 21
+3 48

+ 60.4

9 20 d 3 T, T 2 e in finder
Same in large tel.
Est. 7.9

S. Nro. Maj.

9 29 m 3 8, 8 1 w in large tel.
Too f. for finder
Est. 11.2

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July 6, 1892.

S. Bortis

14	16	+54.5
16	49	
+2	33	
16	√3	
+2	37	

9 44 0 2 δ1 δ2 ρ in large tel.
Too Fr. for finder
Eov. 13.2

R. Camelop.

14	40	+84.1
17	√	
+2	2√	

10 4 R = b in large tel.
Same in finder
Cor. 8.5

Clouds.

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July 6. 1792.

R. Ursa. Min.

16	34	72.9
17	39	
+1	5	

10 26 ℓ 3 R, R 1 ℓ in long tel.
d 2.5 R, R 2 ℓ in finder
Csh. 9.3

R. Draconis

16	26	+67.4
17	48	
+1	22	

10 40 q 2.5 R, R 1 r in long tel.
Too ft. for finder
Csh. 12.4

S. Cygni

20	8	+√7.2
18	0	
−2	8	
18	√	
−2	3	

10 55 Star is seen. Star ℓ glimpsed at intervals. S. Cygni not seen prob. fainter than 14.8

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1892phae.proj..515W

July 6. 1892.

ξ T. Cephei

21 4

17 14

2 50

+69.0

11 4

C ✓ T, T 2 h in Lindenau.
C ✓ T, T 3 d in large tel.
Est. 6.6.

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1892phae.proj..515w

July 7, 1892

Clouds.

S. Persei

2	8	+√7.2
16	√8	
+14	√0	

More clouds
Too low & clouds also.

S. Cephei

21	37	+78.3
16	21	
−√	16	
16	2√	
−√	12	

9 21 ≥ 2 S, S 3 s in large tel.
Too Yr. for finder
Obs. 13.8

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July 7. 1892.

R. Cassiop

23	√1		+49.8
16	4√		
-7	6		

Clouds

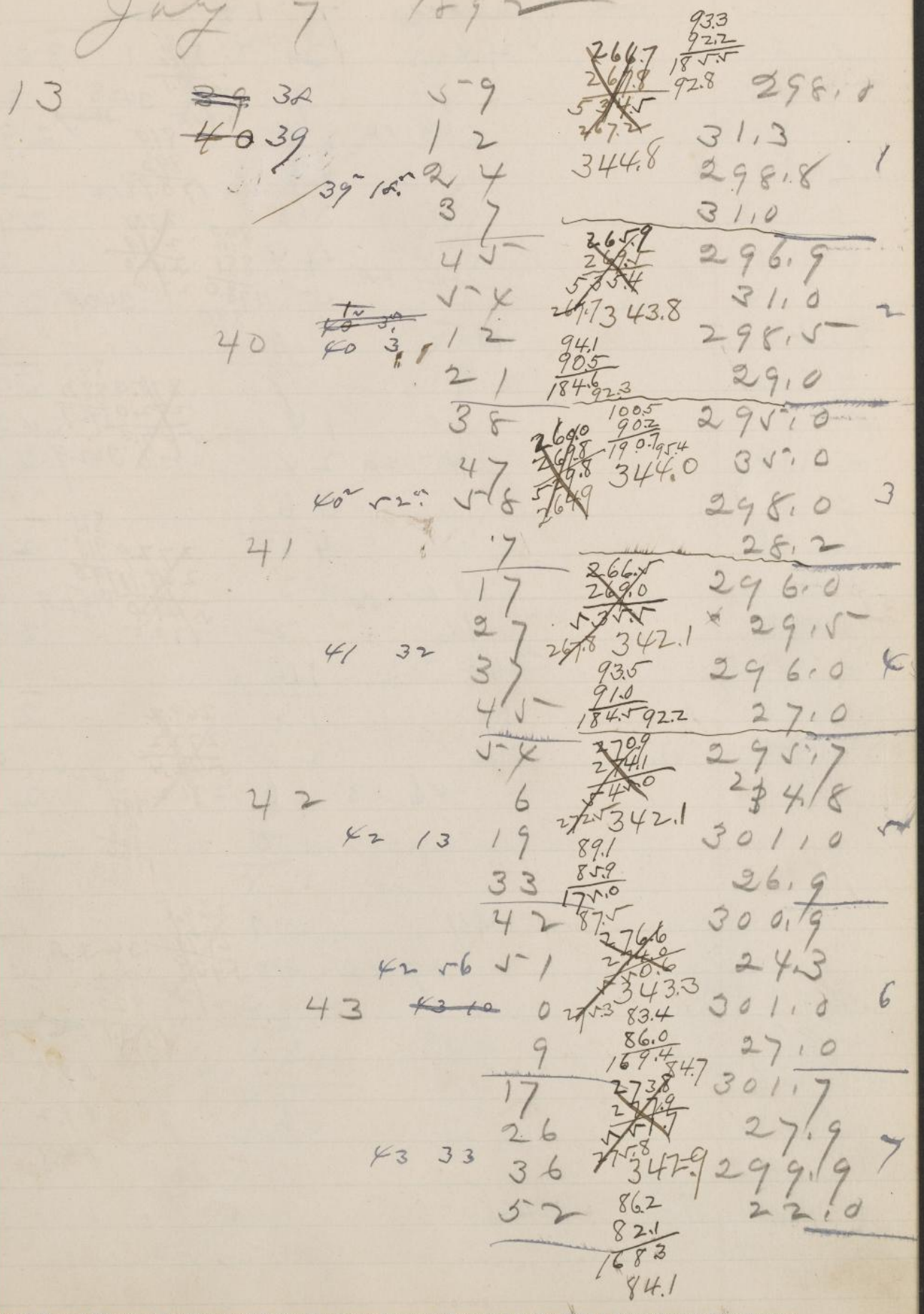
10	4	Still cloudy.
10	14	Tried R. Cassiop again but clouds too thick.
10	√0	Still cloudy.

Dis. Sup. I. Fr. Obs. Power n.c.
Comp. with Sat. II.

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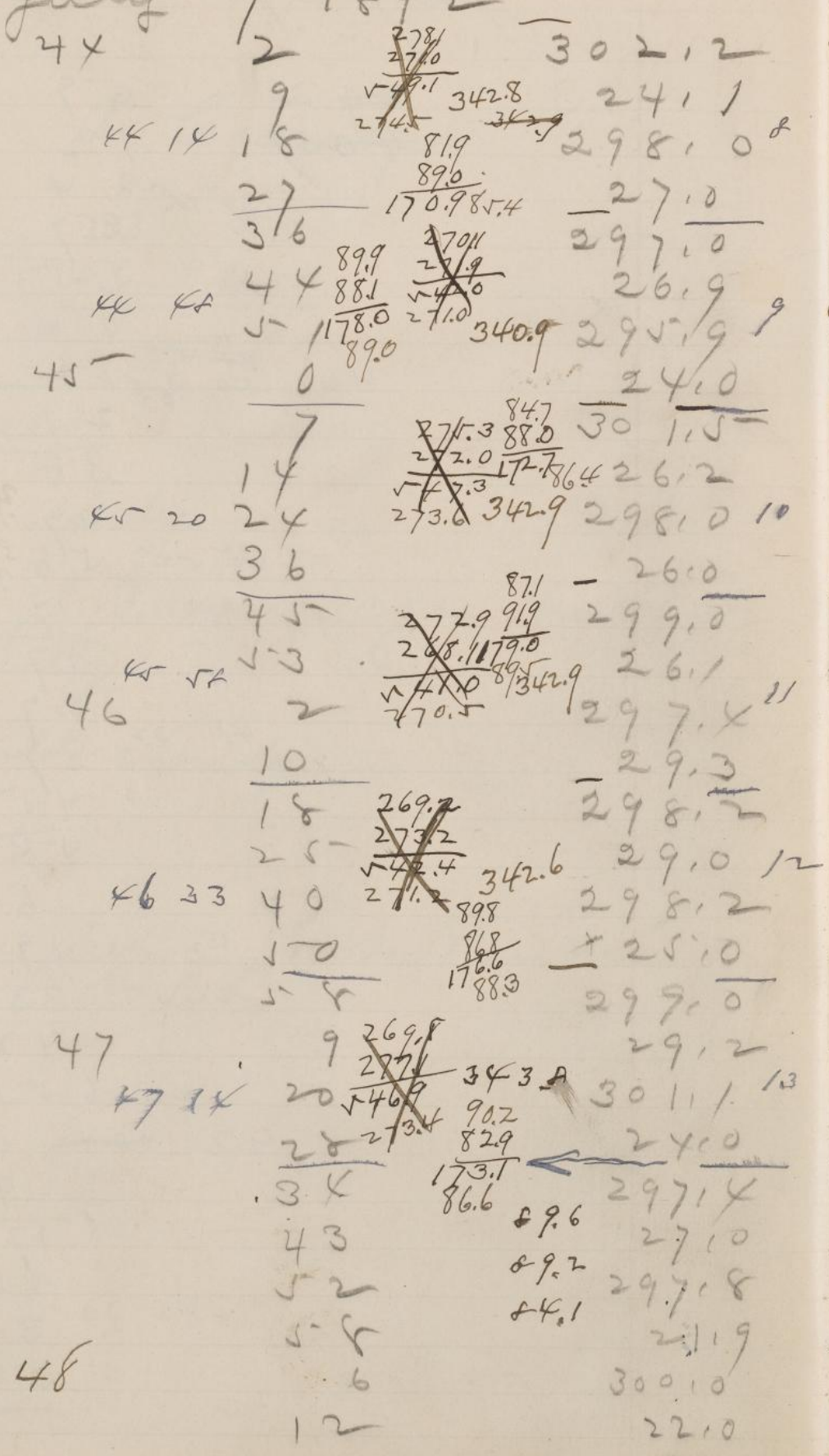
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July 7 1892



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July 7 1892

48	21	302,2
	28	24,5
	36	303-0
	41	23.9
	49	303,0
	57	24.9
49	5-	310,0
	12	128
	19	313.7
	24	15.2
	30	311,2
	37	11,0
	43	313.3
	49	10,0
	55	311,1
50	05 ~~9~~	11.9
	20	320,8
	30	316,0 ~~296,0~~

Not seen later.

Hunt 8 Vir.

52	6	31.0 28.8 19.8 24.6 3428	328,5
5246	39		359,5
	59		327.3
53	29		356,1

Seeing pretty good. Electric light began to fail at about

1892phae.proj..515W

July 7 1892

One end of eclipse.

B. 394		B. + C. 1142.		
14	17	0.0	14	15	15.5
	18	0.0		16	15.5

∴ B + C. 1142 is 1m ~~15~~ slow.

Bond 394 was 6.5 fast. which should also be taken account of also.

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1892phae.proj..515w

Posted to Lere.

July 11, 1892.

Circumpolar Variables W. Obs.

R, Cassiop

23 ⩵1 +49.7
16 37
−7 14

9 8 ~~R = t in large tel.~~
~~Same in finder.~~
R ⩵ R, R 2 k in large tel.
k 4 R, R = k in finder
Est 8.1

T. Cassiop

~~20~~ 18 +55.9
16 50
~~16 37~~
−7 28

9 42 T = p in large tel.
T or p for finder
Est. 11.5

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July 11, 1892

δ Cassiop

	1	10
	17	25
+	76	15
−	7	45

+72.1

10 0

Star n seen, Star x seen. Star y thought to be seen. Star. thought to be seen. but y so about one grade fainter than star y.

Csh. N.O

Obs. made with much difficulty and after long looking Moon which is two days past the full gives trouble Obs should be repeated as soon as moon is out of way. Final Obs, taken with second power ring micrometer eye piece.

δ Persei

	2	8
	17	42
−	8	26
	17	47
−	8	21

+57.2

(next page)

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1892phae.proj ..515w

July 11, 1892.

10 25 S = e in large tel.
e 2 S, S 2 f in finder
Esr. 9.2

T. Persei

d 2 T, J 2 e in finder
d 2 T, U 2 e in large tel.
Esr. 9.0

R. Aurigae

5 3
18 5
~~70~~ 58

+5 3.0

10 31 Too low.

Occultation of Mars.

B. 236.

18	25	39.0	
	26	39.1	

B. 39 ✓

10	√0	0.0
	√1	0.0

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July 11, 1892.

Immersion.

(Good.)	19	3	13.5	First Limb.	Immersion
(")		4	22.5	Second "	"
		1	9.0		

B. 236.			B. 394.		
19	9	K6.0	11	3K	0.0
	10	46.1		3V	0.0

∴ B 236 is 1^m V1.6V slow at first of above comps.

19	3	13.V	
	+1	V1.6	Chr. Cor.
19	V	V.1V	
7	3V	K3.9V	
11	29	21.2V	
	−1	V2.9	V
11	27	28.3V	= East. T. contact of 1st " limb of Mars at Immersion.
	+1	~~9.2~~ 8.8 V	by B. 394.
11	28	37.1V	= East. T. contact of second limb of Mars at Immersion, by B. 394.

B. 394 is 2.7 slow of East. time.

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July 11. 1892.
Emersion.

~~40 23.v~~

20 v 46.0 (Approx.) 1st " Limb bears.
6 v 2.0 (Pretty Good.) 2d " " "
1 6.0

B. 236. B. 394.

20	14	v6.v	12	39	0.0
	1v	v6.v		40	0.0

∴ B. 236 is 1m v1.2v slow.

20	v	46.0	v
	+1	v1.2	v Chr. Cor.
20	7	37.2	v
7	3v	43.9	v
12	31	v3.9	v
	−2	3.2	v
12	29	v0.7	v = East. T. resp. 1st " limb at Emersion.
	+1	v.2	v by B. 394.
12	30	v6.v	v = " T. " 2d " " " "
			by B. 394.

Corrected Eastern times of Phenomena.

11h	27m	31.0v	1st " limb bears at Emersion.
11	28	39.2v	2d " " " "
12	29	v3.4v	1st " " " Emersion.
12	30	v9.2v	2d " " " "

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1892phae.proj..515W

July 11. 1892.

R Aurigae.

2	3	+v 3,0
20	4v	
-4	14	

Moon too bright for satisfactory obs. Var. is faint but cannot be seen with sufficient certainty for est. Prob. as faint as star 0. Var. thought to be seen at intervals. Regrow rather low.

~~14~~
13 h 32m

Dis. Sup. II. Gr. obs. Power rec. Comp. with Lat. ~~III~~ II
Phot. R.

B. + C. 1142.			B. 394.		
13	44	2,5	13	49	0,0
	4v	2,5		v0	0,0

14	16	31.
~~=~~	4	12
14	24	43.
13	49	0
	3v	43.
13	44	2
14	19	41. App. Time Ecl.

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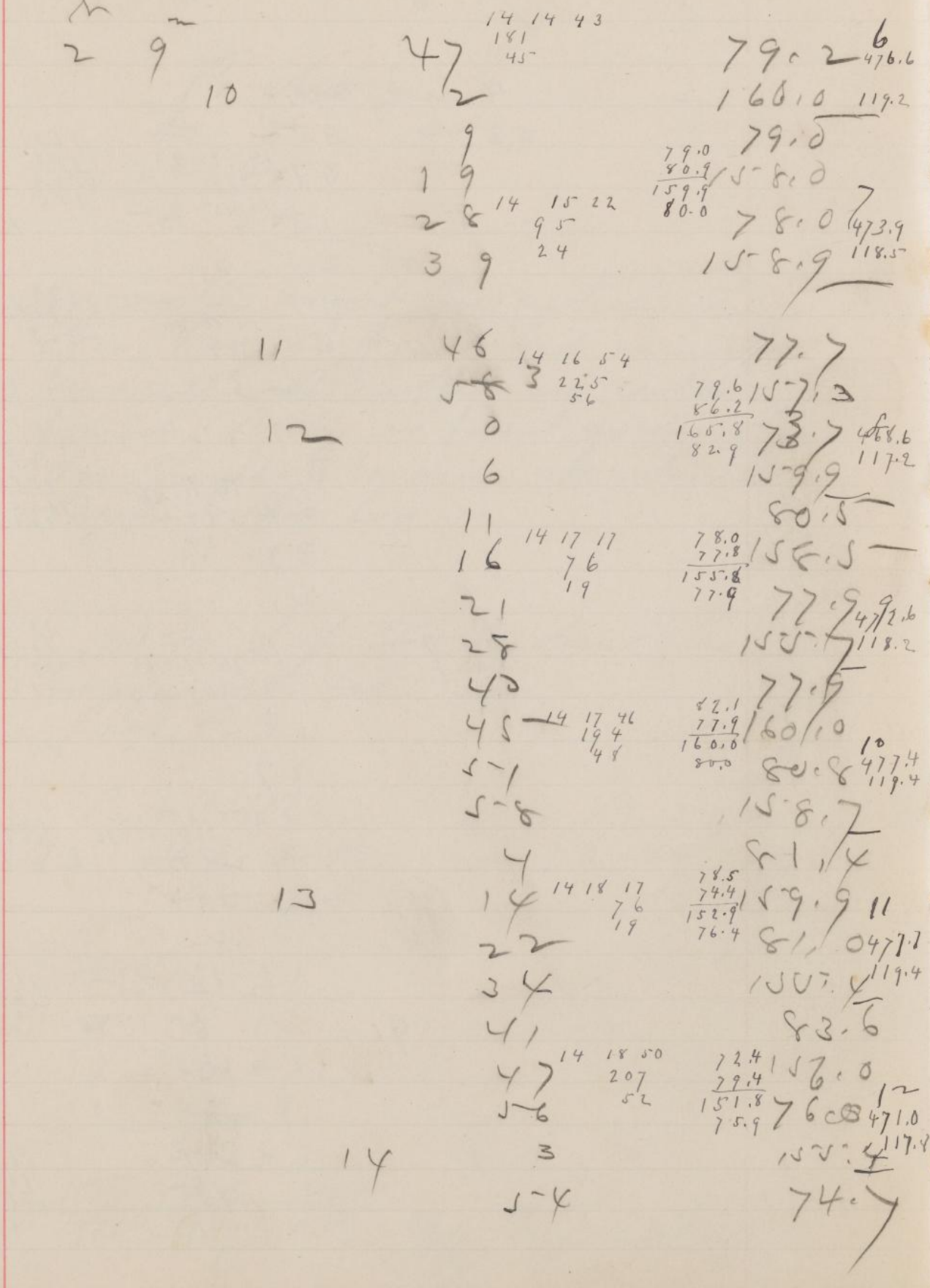
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July 11 1892

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July 11 1892



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July 15–11 1892

13	14	20	3	87.2	161.9	
		20		77.9		
8		5		165.1	78.813	
15–				82.6	472.1	118.0
23					156.7	
					77.5	
34	14	20	42	86.51	156.2	14
		178		88.10		
57		44		168.5	74.2	472.3
				84.2		114.1
16					162.2	
4					77.0	
12						
20	14	21	22		161.0	
		96		84.0		
28		24		82.2	76.7	
				166.2		165
36				83.1	158.9	473.6
						118.4
46	14	21	44		78.6	
55		21	53		158.0	
17 3		22	1		76.7	
14			12		158.1	
Light giving out. 25–			23		83.1	
41			39		158.0	
54			52		85.0	
18 1			59		155.0	
10		23	8		85.0	
19			17		150.0	
34			32		90.0	
43			41		146.3	
54			52		91.2	
19 6		24	4		144.0	
22			20		150.0	
33			31		135.7	
46			44		107.2	
56			56		131.8	

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1892phae.proj..515W

July 11 1892

2 20 9 14 25 7 114.2

~~2 2~~

Not seen later:

23 5 11.7 13.9 25.6 12.8 11 4.2

30 14 26 37 12 5.9

47 150 11 2 1 478.2

24 8 38 12 6.0 119.6

Seeing fairly good. but images a little out of shape and colored on account of clouds between ex. Sat. + comp. Sat. Electric light gone out while Sat. was disap. on account of which pairs comps. were made at that time. The comps. obtained however were good.

B. + C. 1(62).

1K 39 1.0

K10 1.0

B. 394

1K KK 0.0

KK 0.0

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1892phae.proj..515w

July 12. 1892.

Cloudy the early part of evening.

Revision of Comp. Stars for Var. Scale.

R Cygni

19	26	V.K
16	K V	
−2	K 1	

Star a is not needed as star b covers the var. at max. by fully half a mag. Otherwise the selection is pretty good.

Revision of Comp. Stars for

R. Delphini

20	15	+8.4
18	2	
−2	13	

11 3 Star a is not needed. ~~Stars a to b~~ It would be well to re-examine stars a to b inclusive often the more is one of the very obvious selection is pretty good.

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July 1st. 1892.

Some cloudy.

Ex Revision of Comp. Stars for Circumpolar Variables. Gr. obs.

R Delphini.

20	1v	+2.4
16	1v	
-4	0	

S. Cassiop

1	10	+72.1
16	45	
-8	2v	

S. Cassiop is certainly fainter than sta s & thought to be seen about half way between s & t. Or is however impossible to identify ns. with certainty posty on account of the adjacent faint Comp. stars complicated with poor seeing.

After the above record, eye piece to N. one put on again, the star taken for S is comp. star t. Not seen

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July 6, 1892.

~~With certainty~~ Star X seen at intervals, Star y suspected. Var. suspected at times. & if seen is about equal to Star y.

Esr. 14.0

R. Delphini

20	15	+8.4
17	10	
+3	√	

20	8	+100
17	14	
−2	√4	

Star L is wrongly identified & instead of being No. 4470 it should be 4446

Star k is not needed. ~~Star K is~~ There is very much difference between k & K but if anything K is a little brighter than k. & fills the interval between y & k better.

Selection otherwise seems very good.

The sky now some cloudy.

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1892phae.proj..515W

July 15, 1892

Comp. Stars for
S. Aquarii

20	46	+ 19.9
18	12	
− 2	34	

Sky more or less cloudy
Stars a & b are not needed.

More or less troubled by cloud some additional examination should be made on an subsequent night but as far as examined selection seems pretty good.

10 v5

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July 16. 1892.

Revision of Comps. Stars for Var. Stars

U Cygni.

~~9 0~~	20	17	+ EV. 3
	16	0	
8 55	− 4	17	

Rather fine light aurora band extending from a little above the eastern horizon to a little past the meridian & rising at right angles to meridian the plane of the band being about 15° South of Zenith.

9 17 Band gone. Low aurora in North somewhat irregular form & light with faint streamers to mak. Light of band under the pole star being about ½ the altitude of pole star.

Star m is brighter than star k besides it is one component of a moderately close double & ~~should~~ ought to be abandoned. Furthermore star n is not more than three greater fainter than star k so that star m is not needed

As Var. only comes up to 7.0 mag. star a is not needed.

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1892phae.proj..515W

July 16. 1892.
Selection otherwise seems very good.

9 vv Very beautifull aurora arch whose mak. height is about 3/4 that of the Polar star. Arch rather diffuse defined but with one or two additional partial arches lower down

Comp stars for
V. Cygni.

20	36	44.9
18	4	
−2	32	

10 32 Broad aurora arch in north breadth of arch about 25° in width in plane of meridian
Top of arch 7° above top of Polar star, bottom of arch 17° below pole star from bottom of arch the Northern horizon sky is comparatively free of aurora light except in North west where there is a peculiar shaped aurora in the dark space between the two by a dark cloud resting on horizon
See next page for figure.

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1892phae.proj..515w

July 16, 1892.



10 36

Immediately after the above figure was drawn the brilliant aurora flashing began, the arch before described extended pretty well up to zenith and somewhat changed somewhat in form but the finest aurora flashing that I ever witnessed, began. The flashing was with lightning like rapidity & very brilliant extending through most of the northern heavens & well over the sky to south of the equator.

Interval between stars k & l in Cong. Stars for γ Cygni is quite large. ~~[illegible]~~ D M +48° 3791 (9½ Mag) inserted between ~~[illegible]~~ k & l. Otherwise the selection seems very good.

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July 16, 1892

Aurora arches irregular aurora light & streamers all through Northern sky & extending 10° South of the Equator. More or less flashing going on below the Zenith.

Low down in the North the aurora assumes a deep rose tint.

~~R.~~

11 00 Rose tint now quite predominant all through Northern sky & to South of Zenith, flashing growing more intense again

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1892phae.proj . 515w

July 18. 1892.

Revision of Comp. Stars for ν Librae Str. obs.

15	4	−19.1
17	17	
+2	13	
17	23	
~~=~~	~~49~~	

Interval between 3 and a too large. ND. −18°
4034 (8.2 mag.) inserted between them.
Star + not needed. Star L has a distant companion but it is fainter, and distant enough not to make trouble. Otherwise selection is very good.

Revision of Comp. Stars for
ν Serpentis. Str. obs.

15	19	+16.0
17	57	
+2	38	

Revision of Comp. Stars for
~~47~~ ~~Ce~~ Herculis. Str. obs.

16	38	+39.1
14	14	
+1	40	

Selection is very good without alteration.

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July 15. 1892.

10 · 45 Too much haze for anything farther.
More cloud coming.

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July 20. 1892.

Revision of Comp. Stars for
T Herculis. 4. obs.

16	4	+30,4
16	32	
−1	32	

Interval between b & c rather large.

D.M +29° 3187 (8.2 Mag) inserted between them.

Star d has a rather close companion which gives trouble in finder.

D.M +31° 3196 (8.2 Mag) substituted for star d.

Rest of selection seems very good.

9 30 Low double aurora arch in North. The upper arch is about quarter way from horizon to pole star. The lower arch about half the altitude of the upper. Arches with brilliant streamers beginning to form.

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1892phae.proj..515W

July 20, 1892.

Revision of Comp. Stars for R. Scuti

18 39 1 −4.9

17 43

−0 +6

Star b is almost exactly same brightness as star a & b much farther from var. star a being quite near.

Star b is not needed.

Star g if anything is a grain brighter than star f, perhaps star f could be rejected. Or might be well to insert a star between f + k if a good one could be found.

Spot of selection very good.

Comet a 1891 (Swift) W. Obs.

0 √9 +4.9√

18 19

−6 40

18 23

6 40

2√ 3

2 4

1 3 √0.√

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1892phae.proj..515w

July. 20, 1892.

Comp. Star = B.M. +50° 2228 (7.1 Mag. A)

Pos. Zero. 98.4
45.0
Setting 143.4

18	38	6.0	≡
	40	.9	≡
	41	27.	*
	41	1.9	*
	42	.5.	
	44	.0	
	45	26.	
	45	1.1	
	47	2.1	
	48	11.7	
	49	32.6	
	49	8.0	
	50	7.1	
	52	7.1	
	53	28.0	
	53	3.4	

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July 20, 1892.

18 55 10,4
56 20,0
57 40,5
58 6,4

Sides in preceding transits Comet, comparison star, both in Northern half.

Comet is somewhat rapidly growing faint. Nucleus about 8.5 Mag. Small amount of nebulosity about Comet. Dia. of total nebulosity 4'. The nebulosity however fades off somewhat rapidly. Nucleus seems to be a little excentric with possibly faint trace of tail a few ' to following. No tail visible in finder. About only a diffused nebulosity about Nucleus. Total light impressed by Comet 8.6. Comet not seen in full glare.

Low auroral arch in north.

11 2 Alt. ½ that of Pole Star.

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1892phae.prpj .515w

July 20. 1892.

B. 236.			Bd. 103.		
19	1ʰ	20.0	11	1ʰ	0.0
	16	20.0		6	0.0

∴ B 236 was 2ᵐ 38.7ˢ slow.

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1892phae.proj..515W

July 21. 1892.

Reexamination of Comp. Stars
for R Scuti. H. obs.

9 15 Faint Auroral streamers a little E of
east below pole.

9 18 Streamers have disappeared

Star k is slightly reddish. Interval
between k & K looks to be all right
in finder & not too large. Interval
looks a little longer in large tel.
On account of the slightly red tinge
of star k but intervals do not vary,
& no star intermediate between k &
K can be readily found.
Interval between k & K is, large.
$\delta_{2000} - 6^\circ$ 4941 (75 Mag) inserted between them.
Rest of selection all right.

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1892phae.proj..515w

July 21, 1892.

2. Aquarii

20	44	−6.1
18	30	
−2	14	

As 2. Aquarii comes up about to the brightness of star a probably it would be well to fix — S.D 6° ∓606 (6.0 mag.) which is close at hand.

Star f is 3° away from Var. which is rather too far for an 8 mag. star. S.D −5° ∓396 (8.0 mag) substituted for star f this new star is near Var. & also near star g.

~~Sky~~ There is now so much light cloud & haze that probably several of the last stars will be examined on subsequent evening.

10 55

1892phae.proj..515W

July 23. 1892.

Revision of Comps. Stars for Var. Obs.

I Aquarii.

20	∈K	−6.2
16	30	
−K	1K	

Star o is a rather bad star, it has a brighter star rather near it & between it and the Var. The brighter star near it prejudices the fainter star. S.D.-5° 5397 (9.7 mag.) substituted for star O.

Otherwise selection is very good. Since writing the above it is found that star O on the chart does not correspond with star O on the list. The star on the list being a wrong identification in the S.D. There is scarcely any difference between star n & the true star ~~no~~ o on chart, so that star O is not really needed. The interval bet. n + p being all right.

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1892phae.proj..515w

July 23, 1892.

Circumpolar Variables U. Obs.

S. Cygni

20 8 +57.1
18 5

−2 3

s and t both seen. Var. not seen. Probably fainter than 15.0

S. Cassiop

1 10 +72.1
17 20

+17 10
6 10

10 8 S. Cassiop thought to be seen at intervals of about equal to steady.
Est. 15.1
Sky pretty clear, only slight dust haze in air on account of local fires.

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July 23, 1892.

Comet a 1892 (Brooks) Fr. obs.

25 1	2	+√0.7
18	49	
~~+76~~	13	
18	√2	
−~~76~~	10	

Clouds.

Pos. Zero	311.2	
	4√.0	
Setting	3√6.2	

19	14	49.0	≡
	15	37.4	≡
	18	24.8	*
	18	41.0	*
	19	48.4	
	20	36.8	
	23	24.0	
	23	39.5	
	24	53.8	
	25	42.4	
	28	29.5	
	28	44.8	

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1892phae.proj..515w

July 23, 1892

19	29	12.0
	30	41.0
	33	28.4
	33	43.0
	34	45.5
	35	33.8
	38	21.5
	38	35.7

Order in preceding transits comet, comp, star, star.
Comet in southern half inside square, star in Northern " outside "
Comp. Star = D.M. +50° 2384 (7.0 M)
General appearance + light of comet about the same as ~~on the~~ when last observed.

B. 236.

19	44	14.7
	45	14.7

Fr. 1327.

19	45	1.0
	46	1.0

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1892phae.proj..515W

July 23. 1892.

B+C. 1842. Fr. 1327.
11 11 44.5 19 44 1.0
12 44.4 49 1.0

B+b 1182 28m 59.9 slow. b. M. J.
15 29
13 30.9 " East. Time

12 0 13.1
2 12.
12 2 2V.
12 2
11 57 2V

(Comp. with Sat. II.) Dia. 7 Jupiter I. Pht. R. N. Pt. Image Pt. Comp. with Sat. on right 7 Dep. equal Sat. I.
~~Seeing pretty good. Images not quite round. and somewhat~~

11 [33] 23
37 11 47 28
52 225 56

[34]
5
11
22
34 11 48 12
45 156 39
55

35 8 11 49 3
26 118 30
36

105.8 189.9
105.4
211.2 29.7
105.6

975.0 192.0
243.8 297.4

164.6 192.2
105.7
210.3 296.8
105.2

975.3 190.3
243.8 296.0

107.6 189.0
104.0
211.8 296.8
105.9 191.8

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1892phae.proj..515w

July 23. 1892.

	48		971.4 / 242.8	295.8
[36]	9			189.7
~~[36]~~	19		103.3 / 98.4 / 201.7 / 100.8	301.0
	31	11 49 57 / 96 / 24		193.8
	37		968.7 / 242.2	292.2
	50			189.8
	57		103.2 / 100.2 / 203.4 / 101.7	303.0
[37]	17	11 50 40 / 29 / 7	968.6 / 242.2	192.8
	25			293.0
	33.			191.2
	39	11 51 20 / 189 / 47	101.6 / 104.2 / 205.8 / 102.9	292.8
	52		971.8	191.8
38			− 243.0	296.0
	14			192.2
	23	11 51 59 / 106 / 26	102.9 / 100.6 / 203.5 / 101.8	295.1
	31		977.5	194.8
	38		244.4	295.4
	49			189.9
39	57	11 52 40 / 27 / 7	107.0 / 98.9 / 205.9 / 103.0	296.9
	18		973.7 / 243.4	194.6
	23	Stopped to put on fresh battery cell		292.9
	30			193.9
41	39	41 m 24 s	101.0 / 101.3 / 202.3 / 101.2	294.9
42	9	11 54 57	974.3	192.1
	19		243.4	293.4
	14			193.5
	21		102.5 / 103.3 / 205.8 / 102.9	296.0
46	35	44 m 29 s / 11 58 2	981.2	194.2
	46		245.3	292.5

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1892phae.proj..515W

July 22, 1892

11	49	3				104.6 105.2 209.8 104.9	187.8	
		14	12	2	55		292.4	
		26	8 3 2 1			956.8 239.2	185.7 290.9	
		40						

Altered focus a little

√0		19				100.4 99.7 200.1 100.0	191.9	
		32	12	4	10		292.3	
		42	1 4 3 3 6			969.9 242.5	193.0 292.7	
~~√0~~		~~√0~~						
√1		15				95.0 91.2 192.2 96.1	195.0 290.0	
		26	12	5	15			
√9		√9	16 41	5		948.2 242.0	193.0 290.2	
√2								
		12	12	5	46		197.8	
		20			57		290.4	
		30		6	7		197.8	
~~√2~~		47			18		290.9	
[√3]		2			36		198.8	
		12			46		287.5	
		18			52		202.3	
		24			58		294.4	
		30		7	4		207.0	
		36			10		278.7	
		44			18		204.2	
		49			23		278.9	
		√5			29		211.0	
[√4]		1			35		278.0	
		7			41		210.0	
		12			46		276.0	
		18			52		212.3	

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1892phae.proj..515w

July 23, 1892.

23	12	7	57		276.0
29		8	3		212.0
34			8		278.2
41			15		217.8
49			23		267.2
55			29		225.8
4			38		264.8
10			44		228.0
21			55		257.0
29		9	3		230.0
~~66~~ 39			13		253.1

Not seen later

Sirius or Vis.

33				24.5		229.2
47				26.1		
				50.6		253.7
56	12	10	30	25.3		
59	226			968.4		229.7
67	56			242.1		253.8

Seeing pretty good. Images not quite round and somewhat colored on account of distance of Comp. Sat.

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July 23. 1892.

B. + C. 1162			Fr. 1327.		
12	1ᵛ	33.ᵛ	20	ᵛ2	1.0
	16	33.ᵛ		53	1.0

On July 23.ᵛ Fr. 1327 was 2ᵐ 13.ᵛ slow.

∴ B + C. 1162 was 29ᵐ 4.ᵛ slow.

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1892phae.proj..515W

July 25. 1892.

Revision of Comp. Stars for Var. Obs.

V Cygni.

Clouds.

20	Ez	+E6.0
16	1z	
−E.	30	

Cloudy in north, some cloud in other part of sky,

Faint auroral streamers in north running vertically.

Selection seems to be all right.

Circumpolar Variables U. Obs.

S. Cygni

20	8	+V7.2
17	48	
−2	20	

Comp. star 8 seen, star 6 seen. Var. not seen. prob. fainter than 15.0

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1892phae.proj..515W

July 25, 1892.

δ Cassiop

1	10
18	7
−7	3

+72.1

δ Cassiop not seen with absolute certainty but thought to be seen at times by indirect vision. Stars difficult. Sky pretty clear at time of obs. although stars not as brilliant as at some other times. Var. if seen is about equal to star.

Cyn. N.1

Clouds.

Now clearer again.

δ Cassiop

0	18
18	√7
~~−5~~ √	21
19	2
−√	16

+√5.9

10 46 α 3.5 2, 9 2 0 in large tel
Rather too fr. for finder
Cyn. 113

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1892phae.proj..515w

July 25, 1892

No gas throughout the Observatory
to night. Record made wholly by
aid of lanterns

Gradually increasing Aurora in North
during the evening. There is now quite
a bright auroral arch under pole
the Central + higher part of each
having 1/5 the altitude of Polaris

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1892phae.proj..515W

July 27, 1892

Clouds.

Still cloudy.

9 20 Now pretty clear.

Circumpolar Variables W. Obs.

δ Urs. Maj.

12 33 +60.4
18 √
+√ 32

9 37 e 1.√ 9, 9 3 1 in finder
e 2 9, 9 3 1 in large tel.
Est. 8.3

δ Urs. Maj.

12 34 +61.8
18 23
+√ 49

9 49 9 2 δ, δ 3 h in finder
9 2.√ δ, δ 2 h in large tel.
Est. 9.1

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July 27. 1892.

δ. Bootis

14	16	+√4.6
18	35	
+4	19	
18	39	
+4	23	

10 √ f 1.5 S, S 3.5 g in large tel.
Too F. for finder
Est. 13, √

R. Nes. Min

16	34	+12.9
18	~~47~~	
+2	17	

10 19 l 2 R, R 2.5 f in large tel.
l 1.5 R, R 1.5 f in finder
Est 9.6

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1892phae.proj..515W

July 27. 1892

R. Draconis

16	26	+67.3
19	13	
+2	47	

10 ~~40~~ 0 4 R, A ~~1.~~ ϕ in large tel
Too ϕ for finding
Est. 11.6

S. Cephei

21	37	+78.3
19	27	
-2	12	

Clouds

Too cloudy for anything further.

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1892phae.proj..515w

July 30, 1892.

Circumpolar Var. H. B.
R Urs. Maj.

10	34	+69.4
17	26	
+6	√2	

8 45 — D 3 R, R 1 t in large tb.
Doo fr. for finder
Est. 12.0

D. Cephei

21		
~~11~~	6	+68.0
17	42	
+1	36	

Abandoned for present.

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1892phae.proj..515w

July 30. 1892.

A. Camelop.

14	40	+84.1
17	✓6	
+3	16	

9 15 — a = 6 in large tel.
7 1 a, a 3 c in finder.
Est. 8.8

T. Cephei

21	6	+68.0
18	10	
−2	✓6	

c 4 9 9 3.5 d in finder
9 26 — c 4 5, 9 4 d in large tel.
Est. 6.5

S. Cephei

21	37	+78.3
18	23	
−3	14	

9 40 — q 2 s, s 3 r in large tel.
2 or 3 fr. for finder.
Est. 13.1

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1892phae.proj..515w

July 30. 1892.

R. Cassiop

23 ✓1 +48.8
18 36
-✓ 1✓

9 ✓4 R = m in finder
l 4 R, R 3m in large tel.
Est. 8.8

S. Persei

26 8 +57.2
18 48
-9 20

10 ✓ f 1 8, 8 3 9 in finder
f 1 8, 8 3 9 in large tel.
Est. 9.4

2. Persei

10 9 2 = l in finder
2 = l in large tel.
Est. 9.2

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1892phae.proj..515W

July 30, 1892.

R. Aurigæ

29	~~43~~	$+\sqrt{3.0}$
19	3	
−10	0	

10 20 0 3 R, R 2 p in large tel
Too ~~f~~ ft. for finder
Est. 12.3

Region rather low. Obs. difficult.

R. Lyncis

30	49	$+\sqrt{5.1}$
19	18	
−11	31	

10 38 1 4 R, R 1 9 in large tel
Region rather low for finder
Est. 9.3

S. Cygni

20	8	$+\sqrt{7.2}$
19	33	
0	35	

10 45 Star visible. ~~Star~~ S not certainly seen prob. fainter than 15.0

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1892phae.proj..515w

July 30. 1892.

Foggy at time of Eclipse.

Looked for
Nova Aurigæ through partial
clearing later.

W. obs.

	29 / 5	25	+ 30.4
14 0 ±	23	19	
	−6	6	

Faintest comps. star not certainly seen
– other faint comps. stars visible. Nova
not seen. Sky fairly clear in this
region, although not perfectly so.

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1892phae.proj..515W

Sept. 1. 1892.

Circumpolar Var. St. obs.

R Urs. Maj.

10 33 +69.3
12 4v
+2 12

R = 8 mi lar. tel.
Too ft. for finder.
Est. 11.2

4 v

T Urs. Maj.

12 33 +60.4
19 10
+6 37

3 1 1/2 h in finder.
4 1/2 h in lar. tel.
Est. 2.2

4 23

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Sept. 1. 1892.

δ Ursæ Majoris.

12 3F +61.2
19 2V
+6 V1

e = S, S III = F in binder.

δ Ko

e = S, S = f in lar. tel.
Est. 4.0

δ Boötis.

14 16 +VF.V
19 4V
+V 29

m 1, S, S 3.V 0 in lar. tel.
Too ph. for binder.
Est. 12.V

9 21

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1892phae.proj..515W

Sept. 1. 1892.

R Ceti. Mini.

16 34 +72.9
20 2v
+3 v1

g 2 R. R 3 h wi bar. tel.
g k2 Rather ft. for finder.
Est. 10.k

R Draconis.

16 26 +67.4
20 47
+4 21

g 2.v R, R 2.v h wi finder.
g v6 g 2.v R, R 2.v h wi bar. tel.
Est. 8.k

S Cygni.

20 8 +v7.2
21 2
+0 v4

S Cygni seen both with bar cutting off light of 8.9 mag. and without. Just faint.

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1892phae.proj .515w

Sept. 1. 1892.

10 1h — $\underline{\delta}$ 1.v S, $\underline{S}$ 1.v-t ni lar. tel.
Too ft. for finder.
Est. 14.0

γ Cephei.

21 v +6 0.0
21 21
+0 16

10 3v — c 5 γ, γ 3 $\underline{d}$ ni lar. tel.
c v γ, γ 2 $\underline{d}$ ni finder.
Est. 6.v

α Cephei.

21 37 +7 0.4
21 40
+0 3

10 49 — $\underline{o}$ 2.v S, $\underline{S}$ 2.v p ni lar. tel.
Too ft. for finder.
Est. 12.0

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1892phae.proj..515W

Sept. 1. 1892.

Brooks's New Comet. (Aug. 24.)

6h 0m + 32.0
22 1v
−7 4v

Comet found.

5m 21 +31.9
23 31

6 39
23 31
6 10 = R. A.

Comp Star = ν Vir. +31° 12v1 (7.5K)

Pos. Zero 32.2
4v.0
24 3.2

23 4y 32v
vv.0
4d 4.2
2v.0

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1892phae.proj..515w

Sept. 1. 1892.

23 E9 9.0
23.V
3V.V
V2.4

V0 E7.V

V1 1V.2
3 4.V
V0.6
V2 4.0

V2 E6.0
V3 4.6
2 1.1
3 4.1

VE 1V.1
3 4.0
V0.0
VV 7.0

Order = = * *
Both in southern half.

Comet ft. 0.V # diam. As tail, 12 mags. Nucleus ~~fairly~~ pretty well defined.

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1892phae.proj..515W

Sept. 1. 1892.

B 236 B 394.

0 ✓ 2 47 13 4 0.0

6 29.0 5 0.0

∴ B 236 was 1m 24.5s ✓ slow.

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1892phae.proj..515w

Sept. 2, 1892.

Circumpolar Var. Fr. Lo.
R. Leonis Minoris
1h 40m + 34°.1
18 37
+3 √7

7 50 R = 1 in finder
c 3.√ R, R = 2 in large tel.
Est 9.3

R Cassiop.

23 √1 +59.7
1h √6
−4 √√

8 10 n 1.√ R, R 2 0 in finder.
n 1 R, R 2.√ 0 in large tel.
Est. 9.3.

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1892phae.proj..515W

Sept. 2. 1892.

I Cassiop.

0 18 +v.v.9
19 17
- √ 1

8 35 L 3 I, I 3 m in large tel.
Rather too yr. for finder.
Est. 9.9

I Cassiop.

1 10 +72.1
19 44
- √ 26

8 √8 Var. susp. at times but cannot be certain of it. If it is visible it must be two grades fainter than star y. (which is seen) and as faint as 15.1. Moon gives trouble.

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1892phae.proj..515W

Sept. 2, 1892.

S Persei.

2 A +V 7.2

20 V

−6 3

9 20 e 2E S, S 2E f in finder.
e 2E S, S 2E f in large tel.
Est. 9.2

D. Persei

9 24 d 2 7, 2 2 e in large tel.
d 1.V 7, 7 1.V e in finder.
Est. 7.9

R Aurigæ

V 3 +V 3.0

20 30

−8 33

9 40 R 2 R, R 2 l in large tel.
200 to 1 for finder
Est. 10.4

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1892phae.proj..515W

Sept. 2. 1892.

Comet a 1892 (Swift) Fr. obs.

0	40	+√2.6
20	√3	
−3	47	

20	√8	
− 3	42	√2.8
0	40	

Comp. Star = B.M +52° 164 (8.7 A)

Pos. Zero 334.0
45.0
Setting 289.0

21	15	29.1	∈
	16	11.6	∈
	16	49.6	*
	17	17.1	*
	18	3.2	
	18	35.√	
	19	23.9	
	19	√1.0	

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1892phae.proj..515w

Sept. 2. 1892

21	20	37.0
	21	19.8
	21	7.✓
	22	25.0
	23	7.✓
	23	39.✓
	24	28.0
	24	✓5.0
	26	15.0
	26	47.4
	27	36.✓
	28	3.✓

Obs. Comet, Comet, Star. Star. Both in Northern Lobe.

Comet about 10.3 Mag. Nucleus fairly well defined ~~Not much~~ Total diam. 7 Nebulosity 1.5' The amount of nebulosity perceptable is probably effected by moon light.

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1892phae.proj..515W

Sept. 2. 1892.

Nova Aurigae.

√ 26 + 30.4
21 4√
-7 41
4 19
21 √1
7 3√

√ 29
22 0
-7 29
4 31

~~22 8~~

22 9
7 20
29 29

√ 23 +32.0
22 12
-7 11

√ 26
23 9
-6 29

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1892phae.proj..515w

Sept. 2. 1892.

Transits of light of Nova Aurigae
with Phot. R. No. obs.
Comp. with star ♌ (11th mag.)

13 0

21.7 < 5 dec.
122.2 100.5 ^ Index to right.
26.1 99.4 ^
145.9 200.3 ^ 1.6 ✓
159.7 − 0.39

Index to left.

169.9 104.2 ^
274.7
174.1 97.9 ^
272.0 202.7 ^ 1.6 ✓
157.3 − 0.42

174.6 97.9 ^
272.5
172.0 100.2 ^
272.2 194.1 ^ 1.7 ✓
161.9 − 0.34

Index to right.

260.0 99.6 ^
4.6

262.0 101.2 ^
3.2 200.8 ^ 1.6 ✓
159.2 − 0.40

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1892phae.proj..515W

Sept. 2. 1892.

26 V.2 9 V.6 ^
0.4
26 V.0 9 4.3 ^
2.3 193.9 ^ 17 V
166.1 - 0.26

Index to left.

172.3 102.7 ^
27 V.0
171.2 104.3 ^ 1.V V
207.0 ^

13 30
13 15.0 27 V.V ~~27 1.7~~ wrong. 153.0
- 0.52

13 33 ☉ 2 N, N 3 d^s
Est. 10.7
decidedly
Spectrum ∧ mon. Faint trace of
con. spec. at times suspected. but
not certain.

Brooks new ☄ (Aug. 24.) Gr. ds.

6 A + 31, V
0 KV
-V 23
6 37

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1892phae.proj..515w

Sept. 2. 1892

32.7

Comp. Star = 2 m. + 31° 126 (AK)

Pos. Zero 110.0

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1892phae.proj..515W

Sept. 2. 1892.

1 K7 KKK
K4 K.2
24.0
V0.0

K9 24.0
K2.9
V0 6.V
29.0

V1 27.V
K6.V
V2 10.V
31.4

Comet in northern half.
Star " southern "

B.236. B394.

2 K 27.2 1K V9 0.0
V 27.V 1V 0 0.0

∴ B.236 was 1m 41.V slow

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1892phae.proj..515W

Sept. 6. 1892.

Dur. Fredg. Zone. Fr. obs.
Lewis 9r. +19°

14	20	+19.9
14	vr	
+4	3r	
19	7	
+24	47	

7 14r 2830 2.r0
2.44
2.71 7.65 3.31

~~3.74~~ wrong

2853 2.90
3.23
3.00 9.13 3.95

Star rather bright. A fr. star pre. r 2m Rec.
south

2859 2.90
3.11
3.1r 9.16 3.97

2866 4.00
4.01
4.30 12.31 r.33

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1892phae.proj..515W

Sept. 6. 1892.

2893	~~2.22~~	2.22		
		2.28		
		2.25	6.75	2.92 ✓
2903		2.89		
		3.13		
		3.10	9.12	3.95
2908		2.90		
		3.10		
		3.01	9.01	3.90
2910		4.10		
		4.12		
		4.22	12.44	5.39
2920		2.28		
		2.57		
		2.59	7.44	3.22
2931		3.40		
		3.41		
		3.45	10.26	4.44
2933		4.48		
		4.39		
		4.34	13.21	5.72

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1892phae.proj : 515w

Sept. 6. 1892.

2934	3.59		
	3.91		
	3.99	11.49	4.97
2938	2.30		
	2.49		
	2.39	7.18	3.11
2941	2.30		
	2.50		
	2.42	7.22	3.13
2944	3.07		
	3.17		
	3.27	9.51	4.12
2950	2.90		
	3.08		
	3.00	8.98	3.89
2951			
~~2961~~	4.19		
	4.19		
	4.29	12.67	5.49
2953			
~~2963~~	2.89		
	2.99		
	3.01	8.89	3.85

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1892phae.proj..515W

Sept. 6. 1892.

2979			
~~2969~~	2.77		
	2.92		
	2.99	8.68	3.76
2965	2.38		
	2.57		
	2.69	7.64	3.31
2966	5.89		
	6.09		
	6.15	18.13	7.85
2971	2.41		
	2.79		
	2.72	7.92	3.43
2998	2.50		
	2.51		
	2.50	7.51	3.25
3063	4.10		
	4.19		
	3.97	12.26	5.31
3015	3.21		
	3.39		
	3.64	10.21	4.42

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1892phae.proj - 515w

Sept. 6, 1892.

3011	2.77		
	2.90		
	2.81	8.48	3.67

Star 3012 accidentally taken before 3011.

3020	2.45		
	2.75		
	3.00	8.20	3.55
3030	2.69		
	2.81		
	2.65	8.15	3.53
3033	4.93		
	4.50		
	4.49	13.32	5.77
3038	3.82		
	4.18		
	4.29	12.29	5.32
3041	3.00		
	3.29		
	3.12	9.41	4.07
3043	2.32		
	2.30		
	2.28	6.90	2.98

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1892phae.proj..515W

Sept. 6. 1892.

3046	4.32		
	4.42		
	4.20	12.94	5.60
3047	2.64		
	2.58		
	2.69	7.91	3.42
	~~2.84~~		
	~~4.02~~		
	~~4.60~~		
3052	2.28		
	2.70		
	2.70	7.68	~~3.32~~
3059	4.20		
	4.10		
	4.16	12.46	5.39
3060	2.41		
	2.60		
	2.52	7.53	3.26
3063	3.38		
	3.72		
	3.80	10.90	4.71

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Sept. 6. 1892.

3068	2.60		
	2.92		
	2.77	8.29	3.59
3076	4.79		
	4.80		
	4.90	14.49	6.27
3082	2.41		
	2.90		
	2.71	8.02	3.47
	~~2.10~~		
	~~2.30~~		
	~~2.21~~		
3088	~~1.79~~ wrong		
	2.37		
	2.70		
	2.42	7.29	3.16
3089	4.81		
	4.87		
	5.02	14.70	6.36
3092	~~4.89~~		
	~~4.70~~		
	~~4.76~~ 4.77		
	5.02	14.68	6.36

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1892phae.proj..515W

Sept. 6. 1892.

3094

3.90
4.19
4.30 12.39 5.86

10 2 3103

4.20
4.27
4.41 12.88 5.57

B + C. 1842.

10 34 29.5
3 29.5

B. 394

10 36 0.0
37 0.0

10 9 2.4
4 12.

11 7 1.
10 36 0.

31 1.
10 34 30.

11 4. Asp. limb ecl.

Dis. Asp. II,
Phb. R. N. Obs. Doris Rec.
Comp. with Ser. IV

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1892phae.proj..515W

Sept. 6. 1892.

10 V1	0		85.1		
	19V	10 52 48	180.0	94.9	
	24.0	65.0	86.2	94.1	
	31,5	16	180.3	189.0	
	V0.V		83.0	94.5	
V2	0.V	10 53 42	179.9	96.9	
	13,5	282.0	85.8	94.2	
	37.5	10.5	180.0	191.1	
	45.0		85.7	95.6	
	V9.0	10 54 37	178.7	93.0	
V3	10.0	260.5	87.7	92.2	
	26,5	5.1	179.9	185.2	
	37.5		87.9	92.6	
	V1.5	10 55 27	178.2	90.3	
V4	1.0	219.5	86.4	92.5	
	9.V	54.9	178.9	182.8	
	20.0		88.0	91.4	
	30,5	10 56 11	176.2	88.2	
	41.5	15 37.5	88.8	89.4	
~~V5~~	V3.5	38.9	178.2	177.6	
V5	12.5		87.8	88.8	
	38.5	10 57 14	177.0	89.2	
	V2.V	168.5	85.0	93.2	
V6	5.0	42.1	178.2	182.4	
	16.5		85.0	91.2	
	25.0	10 58 2	175.1	86.1	
	32.5	119.5	95.8	88.0	
	~~45.5~~	29.9	173.8	174.1	
V7	0.0		90.2	87.0	
	15.0		178.4	88.2	
				93.8	
				182.0	
				91.0	

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1892phae.proj..515W

Sept. 6. 1892.

	23,0	10 58 49	68.8 17.0	532.8 133.2	85.2	179.0
	30,0					
	42,0					
	47,5	10 59 34				
	8,5		246.5 1.6	522.4 130.6	75.2	175.1
+8	14,5					
	29,5			488.4 86.1 175.3 87.6	74.8	173.2
	42,5	11 00 32	59.4			
+9	9,5		239.0	519.1 129.8	77.1	174.0
	25,5					

Moed'ings in field.

11 [1]	6,0					
	14,5	11 3 12	38.6	91.5 93.3 184.8 92.4	76.5	178.0
11 [2]	3,5		154.5	527.6 131.9	74.9	178.2
	10,5					
	18,5					
	25,0			82.0 81.0 163.0 81.5	74.4	175.4
	32,5	11 4 1				
		11 4.0	28.5	528.6 132.2	76.0	152.0
	38,0					
	44,0	11 4 17				
	49,5		23			166.2
	+5,0		28			
[3]	0,0		33			166.0
	6,0		39			93.0
	11,5		45			171.9
	24,5		57			96.2
	31,0	5	4			167.2
	38,0		11			101.1
Assume.	43.0					160.5
	49,0		22			102.1
	+3,0		26			163.3

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1892phae.proj..515w

Sept. 6, 1892.

[4]	0.5	11	5	33	102.9
	6.0			39	160.7
	11.0			44	104.10
	16.5			49	155.2
	24.5			57	100.8
	31.0		6	4	158.0
	38.0			11	109.1
	41.5			15	154.2
	47.0			20	104.1
	51.0			24	154.5
	58.0			31	116.1
[5]	4.5			37	150.4
	10.5			43	118.2
	18.5			53	145.0
	26.5			59	126.1
	32.5		7	5	143.0
	41.5			15	124.8
	50.5			23	142.0

Uncertain later

Single Lines.

11	6	20.5				26.9 / 4.6 / 45.7 / 22.8	119.0
		33.5	11	8	9		145.9
		40.5			146.0 / 36.2		122.2
		50.5				526.1 / 132.0	141.0

B. + C. 1142.

11	5.5	23.0	
	5.6	23.0	

B. 394.

11	5.7	0.0	
	5.9	0.0	

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1892phae.proj..515W

Sept. 6. 1892.

Nova Aurigae. Gr. obs.

√ 23 +30.4

22 39

-6 44

Index to right.

A3.0 < 5 dis.

14.2.A 99.2^

AK.0 97.7^

141.7 197.5^ 1.7 ✓

162.5 - 0.33

12 √

Index to left.

173.7 102.0^

27√.7

173.0 100.2^

273.A 202.A^ 1.6 ✓

157.2 - 0.43

172.2 100.0^

2722

169.A 10K.2^

27K.0 20K.2^ 1.7 ✓

155.8 - 0.46

Index to right.

A3.A 101.K^

145.2

A6.A 95.2^

142.0 196.6^ 1.7 ✓

168.4 - 0.32

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1892phae.proj..515w

Sept. 6, 1892.

A 2.9	99.8		
(A 2.7			
A 3.7	99.5		
1A 3.2	199.3	1.6	
	160.7	−0.37	

Index to left.

171.2	102		
27.4			
170.9	102		
273.1	206.4	1.4	
	153.6	−0.50	

12 25
12 15.0

12 27 12 2 st. st 3 st
Est. 10.7
Spectrum normal.
Bright knot light. ~~Obs. a little~~

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1892phae.proj..515W

Posted to here.

Sept. 7, 1892.

B. & C. 1142.

11 49 14.5

11 52 14.5

B. 394.

11 52 0.0

~~53 0.0~~

52 0.0

12 23 6

4 12

12 31 18.

11 52 0

39 18.

11 49 18.

12 24 32. Mp. time each.

Drawg. of Jupiter I. Phot. R. Compare with remot

6.5

12h 11m 20.5 12 14 11 — 85.0 satellite on left

32.0 101.5 — 25.4 — 182.9 of Jupiter. -5d IV.

42.5 — 86.0 540.1 135.0 — 97.9 100.2 198.1 99.0

55.5 — 186.2 Ir. obs. Howe rec.

82.0

12 6.0 12 14 56 — 183.0 — 101.0 94.9 195.9 98.

15.0 42.0 10.5 — 86.1 532.1 133.0

25.5 — 181.0

33.0 — 86.2

46.5 12 15 37 — 181.0 — 94.8 88.0 182.8 91.4

54.5 205.5 — 88.2 531.6 132.9

13 16.5 51.4 — 176.2

26.0 — 88.1

1892phae.proj..515w

Sept 7, 1892

	34.0	12 16 24	183.1	95.0 99.4	194.4 97.2
	92.5	152.5 38.1	84.2	538.0 134.5	
	50.0		183.6		
	57.0		85.3		
12h	57.0	12 16 55	180.8	95.5 91.6	187.1 93.6
	11.5	36.0 9.0	86.2	530.1 132.5	
	22.5		177.8		
	29.5	12 17 25	86.0		
	35.8		180.4	94.4 95.0	189.4 94.7
	42.5	156.5 39.1	84.2	529.8 132.4	
	49.0		179.2		
	55.5		86.2		
15	57.5	12 17 55	179.5	93.3 92.8	186.1 93.0
	13.5	34.5 8.6	85.2	528.9 132.2	
	20.0		178.0		
	46.5		85.0		
	52.5	12 18 44	179.0	94.0 99.7	193.7 96.8
16	0.5	57.0 228.0 57.0	82.1	527.9 132.0	
	8.5		181.8		
17	50.0		87.2		
	56.5	12 20 57	177.4	90.2 93.6	183.8 91.9
18	21.5	278.0 9.5	84.0	526.2 131.6	
	30.0		177.6		
	41.5		87.8		
	49.0	12 21 53	180.0	92.2 87.0	181.2 90.6
19	11.0	265.0 6.2	88.2	533.2 133.3	
	43.5		177.2		
	57.5		89.9		

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1892phae.proj..515W

Sept 7, 1892

				86.9
				93.0
12h	20	5T5 12 22 55	176.8	179.9
		14.5 33.5 8.4	84.2 528.1 132.0	90.0
		22.0	177.2	
		41.5	90.1	89.6
		52.5 12 23 44 57.4	179.7	92.1
	21	4.0 229.5 57.4	88.0 537.9 134.5	181.7
		11.5	180.1	90.8
		22.5	90.2	85.0
		30.0 12 24 29	175.2	96.4
		54.5 170.0 42.5	85T6 533.0 133.2	181.4
				90.7
	22	3.0	182.0	
		13.0	85.0	92.2
		22.5 12 25 15	177.2	90.7
		33.5 111.5 27.9	88.0 528.9 132.2	182.9
		42.5	178.7	91.4
	23	7.0	89.4	90.6
		14.5 12 26 15	180.0	97.9
		40.0 111.5 27.9	83.1 533.5 133.4	188.5
		50.0	181.0	94.2
		58.5	84.1	100.8
	24	7.0 12 27 4	184.9	102.0
		27.5 69.8 17.4	81.0 533.0 133.2	202.8
		36.5	183.0	101.4
		42.5	84.1	95.6
		50.0 12 27 41	179.7	96.9
		58.5 214.0 53.8	84.1 528.9 132.2	192.5
				96.2
	[25]	3.0	181.0	
		8.0	90.7	

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1892phae.proj..515w

Sept 7 1892.

12h

[25]

13.0	12 28 3		181.2	
18.5	64.5		88.3	538.9 / 134.7
24.0	16.1		178.7	
30.0			88.6	
35.0	12 28 25		181.2	
41.0	152.0		88.0	536.6 / 134.2
45.0	38.0		179.4	
50.0	12 28 37		95.1	
56.0		43	177.3	
[26] 2.0		49	92.0	
8.0		55	178.0	
14.0		29 1	91.6	
18.0		5	173.7	
24.0		11	91.0	
29.0		16	172.2	
33.0		21	92.4	
39.0		26	175.2	
46.0		33	91.2	
52.0		39	173.2	
57.0		45	93.2	
[27] 3.0		50	170.8	
10.0		57	95.7	
15.0		30 2	169.3	
19.0		7	94.2	
27.0		14	168.8	
32.0		19	89.2	
37.0		24	165.3	

90.5 / 90.4 / 180.9 / 90.4

93.2 / 91.4 / 184.6 / 92.3

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1892phae.proj..515W

Sept. 7. 1892

	42.0	12 30 29	96.4
	47.5	35	165.0
	53.5	41	102.0
	57.0	46	159.5
[28]	4.5	51	104.0
	9.5	57	158.4
	15.5	31 3	107.0
	20.5	7	154.2
	27.0	14	108.9
	33.5	21	151.2
	40.0	27	116.2
	46.5	33	145.4
	53.0	40	118.8
[29]	1.5	49	145.8

Not seen later.

limit of vis.

	35.5		121.2
	53.0	12. 32. 39	145.7
30	5.5	52.5	120.8
	17.0	210.0	141.2

24.5
24.4
48.9
24.4

532.9
133.2

Sesiagar rather bad. on account of distance of comparison satellites. Satellites quite close to limb of Jupiter. Seeing somewhat unsteady

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1892phae.proj..515w

Sept. 7. 1892.

B. + C. 1142.

12 42 12.v
43 12.v

B. 394.

12 4v 0.0
46 0.0

Nova Aurigae. Fr. Ms.

v 23 +32.0
24 31
-4 v2

Index to right.

13 20

21.0 10K.9 ^
18v.9
23.0
123.9 100.9 ^
20v.4 ^ 1.v v
154 2 -0.49

Index to left.

170.2 101.v ^
271.7
171.0 101.2 ^
272.2 202.7 ^ 1.6 v
157 3 -0.43

171.3 101.3 ^
272.6
170.v 102.6 ^
273.1 203.9 ^ 1.v v
156.1 -0.46

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1892phae.proj..515W

Sept. 7. 1892.

Index to right.

	2.7		
12	3.0	100.3	
	3.9		
12	3.0	99.1	
		199.4	1.6
		160.6	-0.37
	3.3		
12	2.6	99.3	
	1.9		
12	2.0	100.1	
		199.4	1.6
		160.6	-0.37

Index to left.

	171.6		
	271.3	99.7	
	170.3		
272	2.0	101.7	
		201.4	1.6
		158.6	-0.41

13 42
13 31.0

Est 10.7

13 45 Spec. mono c.

13 49 N 2 A, A 3 S.

The above observation was accidentally omitted in the recording.

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1892phae.proj..515w

Sept. 2. 1892.

Dun. Bridge Iowa. Gr. Mn.
Lyrae 96. +19°

14	20	+19.9	
14	24		
28	44		

7 K0	2430	2.44	
		2.6	
		2.40	7.97 3.45
	28 43	3.10	
		2.9	
		3.06	9.11 3.94
	2479	2.94	
		3.0	
		3.20	9.20 3.98
	2466	4.2	
		4.06	
		4.03	12.34 5.34
	2493	2.27	
		2.3	
		2.20	6.82 2.95

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1892phae.proj..515w

Sept. 2, 1892.

2903	2.93		
	3.20		
	3.30	9.43	4.08
2904	2.42		
	3.01		
	3.12	8.95	3.88
2910	4.07		
	4.20		
	4.25	12.52	5.42
2920	2.35		
	2.40		
	2.60	7.35	3.18
2931	3.35		
	3.45		
	3.42	10.22	4.42
2933	4.50		
	4.47		
	4.36	13.33	5.77
2934	3.90		
	3.75		
	3.84	11.50	4.97

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1892phae.proj...515W

Sept. 4. 1892.

2932	2.K0		
	2.V-0		
	2.V-4	7.48	3.24
29K1	2.37		
	2.V-2		
	2.6-	7.51	3.25
29KK	3.2V-		
	3.00		
	3.30	9.55	4.13
29V-0	3.1V-		
	3.10		
	3.1-	9.37	4.06
29V-1			
~~2961~~	K.30		
	K.20		
	K.00	12.50	5.41
29V-3			
~~2963~~	3.0-		
	2.90		
	2.94	8.90	3.85
29V-9			
~~2969~~	2.9V-		
	3.00		
	2.64	8.63	3.74

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1892phae.proj..515W

Lyr. A. 1892.

2965	2.42		
	2.54		
	2.66	7.66	3.32
2966	6.02		
	6.20		
	6.02	18.30	7.92
2971	2.75		
	2.42		
	2.60	8.17	3.54
2994	2.30		
	2.55		
	2.60	7.45	3.22
3003	4.10		
	4.25		
	4.24	12.63	5.47
3012	3.40		
	3.60		
	3.55	10.55	4.57
3011	2.95		
	2.44		
	3.01	8.84	3.83

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1992phae.proj .515w

Sept. 2, 1992.

3020	2.2V		
	3.10		
	3.02	8.97	3.88
3030	2.77		
	3.1V		
	3.00	8.92	3.86
3033	4.41		
	4.62		
	4.3K	13.61	5.89
303A	4.10		
	4.3V		
	4.2K	12.73	5.51
30K1	3.1K		
	3.32		
	3.06	9.56	4.14
30K3	2.37		
	2.K2		
	2.KV	7.24	3.13
30K6	K.30		
	K.V1		
	K.12	12.93	5.59

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1892phae.proj..515W

Sept. 4. 1892.

3047	2.63		
	2.72		
	2.75	8.10	3.50
3052	2.50		
	2.71		
	2.74	7.99	3.46
3059	4.12		
	4.31		
	4.14	12.61	5.46
3060	2.72		
	2.51		
	2.64	7.91	3.42
3063	3.71		
	3.92		
	3.46	11.09	4.80
3064	2.50		
	3.02		
	2.75	8.27	3.58
3076	4.54		
	4.92		
	4.77	14.27	6.18

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1892phae.proj..515w

Sept. 2. 14 9 h.

30 Az 2.60
3.07
2.√2 8.2√ 3.57

30 Aa 2.K√−
2.√−√−
2.K0 7.40 3.20

30 Ag K.9√−
√.10
K.20 14.8√ 6.43

≠9 √√ 30 g z √.10
K.20
K.9√− 14.8√ 6.43

Nova Aurigae Sr. obs.

√ 23 +32.0
22 30
− 6 √3
√ 7

Index to right.

12 3

24.2
143.0 9A.2'
24.2
14√.9 101.1'
1993' ~~46~~ √
160.7 − 0.37

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1892phae.proj..515W

Sept. 8. 1892.

Index to left.

169.2 ~~76.8~~
27[illegible].0 10[illegible].8 ^

170.7
276.0 10[illegible].3 ^
2 11.1 ^ ~~7.7~~ v
148.9 -0.60

170.2 103.6 ^
273.4

170.7 104.1 ^
27[illegible].4 207.7 ^ ~~7.7~~ v
152.3 -0.53

Index to right.

[illegible].[illegible]
140.4 9[illegible].3 ^

143.2 92.0 ^
140.2 193.3 ^ ~~7.7~~ v
166.7 -0.25

141.0 101.4 ^
142.4

140.9 100.0 ^
140.9 201.4 ^ ~~7.6~~ v
158.6 -0.41

Index to left.

170.3 103.7 ^
274.0

169.8 10[illegible].0 ^
274.8 204.7 ^ ~~7.5~~ v
151.3 -0.55

12 30
12 16.5

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1892phae.proj..515w

Sept. 2. 1892.

12 41

~~12~~ 2 Sr. Sr 3 ~~S~~
Est. 10.6
Spec. nion;

~~Sr~~ Delayed at times by clouds.

D M. Hodge Tone. Sr. obs.

16 18 +20.0
19 24
3 6

~~309~~ ~~V. 29~~
V. 20
V. 10

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1892phae.proj..515W

~~3~~

Sept. 9. 1892.

3092	5.29				
	5.20				
	5.16	14.49	6.75		
7 46	3094			Lewis 97.	
	~~4~~	4.60			
		4.60			
		4.69	13.89	6.01	
	3103	4.31			
		4.42			
		4.30	13.03	5.64	
	3110	2.80			
		3.20			
		3.30	9.30	4.02	
	3121	3.19			
		3.29			
		3.10	9.58	4.15	
	3116	3.07			
		3.06			
		3.08	9.15	3.96	

3116 & 3121 accidentally taken in inverse order.

~~3135~~	4.92			
	4.82			
	4.99	14.73	6.38	
3140	4.60			
	4.78			
	4.62	13.80	5.97	

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Sept. 9. 1892.

3141	3.50		
	3.78		
	3.72	11.00	4.76
3143	2.80		
	3.19		
	3.29	9.28	4.02
3147	3.10		
	3.15		
	3.48	9.73	4.21
3154	4.59		
	4.30		
	4.95	13.84	5.99
3157	2.99		
	2.69		
	2.78	8.46	3.66
3158	2.98		
	2.92		
	3.20	9.10	3.94
3159	3.80		
	4.12		
	3.90	11.82	5.12

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1892phae.proj..515W

Sept. 9. 1892.

3162	2.39		
	2.48		
	2.49	Yl. & blk. of pair.	
		7.36	3.19
3163	3.00		
	3.06		
	3.40	9.46	4.09
3165	2.80		
	2.95		
	2.92	8.67	3.75
3173	2.77		
	2.92		
	2.61	8.30	3.59
3180	3.18		
	3.20		
	3.25	9.63	4.17
3185	3.07		
	3.13		
	3.11	9.31	4.03
3195	3.09		
	3.45		
	3.49	10.03	4.34

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1892phae.proj..515w

Sept. 9. 1892.

3202	3.58			
	3.39			
	3.72	10.69	4.62	
3203	2.42			
	2.72			
	2.98	8.12	3.51	
3211	3.35			
	3.00			
	3.17	9.52	4.12	
3213	2.41			
	2.40	7.26	3.14	
	2.45	Northern + brightest of three.		

The Dec. of the preceding star (No 3213) is in error. Poss is 2.5m north of 3211

3214	3.05			
	3.20			
	3.09	10.34	4.48	
3218	5.48			
	5.28			
	5.42	16.18	7.00	
3229	2.99			
	3.09			
	3.00	9.08	3.93	

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1892phae.proj..515W

Sept. 9. 1892

3237	2.89			
	2.95			
	2.93	8.77	3.80	
3240	3.60			
	3.80			
	3.93	3/11.33	5.06	
		~~3/7.0~~	~~1.63~~	
3245	2.49			
	2.88			
	2.90	8.27	3.58	
3249	2.60			
	2.68			
	2.65	7.93	3.43	
3255	2.92			
	3.23			
	3.36	9.51	4.12	
3264	5.01			
	4.91			
	5.27	15.19	6.52	
3265	2.40			
	2.45			
	2.52	7.37	3.19	

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1892phae.proj..515w

Sept. 9. 1892.

3273	2.42			
	2.61			
	2.72	7.75	3.36	
3280	3.71			
	3.85			
	3.80	11.36	4.92	
3279	2.52			
	2.82			
	2.90	8.24	3.57	

Nos 3279 & 3280 accidentally taken in inverse order.

3284	1.80			
	2.20			
	2.15	6.15	2.66	
3287	3.66			
	3.52			
	~~3.79~~ 3.61	10.79	4.67	
3291	3.82			
	4.11			
	4.20	12.13	5.25	
~~10~~ 9 v3	3293	4.52		
		4.39		
		4.34	13.25	5.74

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1892phae.proj..515W

Sept. 9. 1892.

Nova Aurigae. Gr. 6.

✓	23	+3m.0
23	✓	0
✓	33	
6	27	

Index to right.

12 40

42.1			
164.✓	102.4	^	
44.4			
144.1	99.3	^	
	201.7	^	1.6 ✓
	158.3		− 0.41

Index to left.

169.✓	102.6	^	
27	2.1		
171.3			
274.9	103.6	^	
	206.2	^	1.✓
	153.8		− 0.50
169.2	105.3	^	
274.✓			
171.0			
270.0	104.0	^	
	209.3	^	1.4 ✓
	150.7		− 0.56

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1892phae.proj..515w

Sept. 9. 1892.

Index to right.

42.0			
141.0	99.0		
43.4	101.0		
144.4	2000	1.6	
	1600	- 0.38	
41.4	102.2		
144.0			
42.0	94.0		
142.0	2002	1.6	
	1598	- 408	

Index to left.

170.1	104.7		
274.4			
171.0	102.8		
273.4	207	1.5	
	152.5	- 0.53	

13 1

12 50.5

R 1.5 dr. dr 3.5 V

13 3 Est. 10,6

Spec. mon.

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1892phae.proj..515W

Sept. 9, 1892.

Brooks's New Comet. (Aug. 24) Gr. obs.

6	24	+30.9
0	49	
−V	39	

0	V24
−V	30

Comet not found. Sky very bright from moonlight. Comet faint. Some fog.

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1892phae.proj..515w

Sept. 10. 1892.

S w. Grading Tow. Gr. obs.

Series 9a.

16 12 + 20.0

19 V

+2 E7

~~4.7 B~~

~~4.8 V~~

~~4.V~~ Wrong

7 36 3092 V.10

5.18

V.32 N.60 6.7V

3094 4.48

4.71

4.7V 13.94 6.04

3103 4.40

4.4V

4.E8 13.33 V.77

3110 2.90

2.87

2.91 8.68 3.76

3116 3.00

2.9V

2.90 8.85 3.83

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1892phae.proj..515W

Sept. 10; 1892.

3121	3.10		
	3.05		
	3.25	9.40	4.07
3135	4.90		
	5.02		
	4.95	14.87	6.44
3140	4.60		
	4.40		
	4.45	13.45	5.82
3141	3.40		
	3.80		
	3.75	10.95	4.74
3143	2.80		
	2.90		
	2.85	8.55	3.70
3147	3.00		
	3.30		
	3.07	9.37	4.06
3154	4.60		
	4.72		
	4.70	14.02	6.07

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1892phae.proj..515W

Sept. 10, 1892.

3157		2.80		
		2.98		
		2.90	8.68	3.76
3158		2.80		
		3.09		
		2.90	8.79	3.81
3159		3.75		
		3.85		
		3.90	11.50	4.97
3162		2.20		
		2.25		
		2.28	6.73	2.91
8 2	3163	3.03		
		3.11		
		3.08	9.22	3.99

Series 99. +19°

Moon now up new series.

8 4	3165	2.78		
		2.85		
		2.80	8.43	3.65
	3173	2.65		
		2.75		
		2.70	8.10	3.50

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1892phae.proj..515W

Sept. 10. 1892.

3180	2.90		
	2.95		
	3.08	8.93	3.87
3185	3.00		
	3.20		
	2.91	9.11	3.94
3195	3.20		
	3.10		
	3.12	9.42	4.08
3202	3.68		
	3.50		
	3.55	10.73	4.65
3203	2.50		
	2.40		
	2.61	7.51	3.25
3211	3.05		
	3.25		
	3.18	9.48	4.10
3213	2.35		
	2.55		
	2.50	7.40	3.20

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3214	3.00		
	3.40		
	3.2√	9.65	4.18
3218	√.60		
	√.√0		
	√.√√	16.45	7.12
3229	3.20		
	3.11		
	2.80	9.11	3.94
3237	2.82		
	2.92		
	2.7√	8.49	3.67
~~9~~ ~~30~~ 3240	3.6√		
	3.68		
	3.70	11.03	4.77

Becoming cloudy

Examination of comp stars for R. Regnaci

23 0 +8.6

21 9

-1 √1

~~Let~~

(over)

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Selections as far as examined seem very good. The atmospheric conditions however are very bad & a re-examination should be made on a subsequent night or a portion of the series.

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