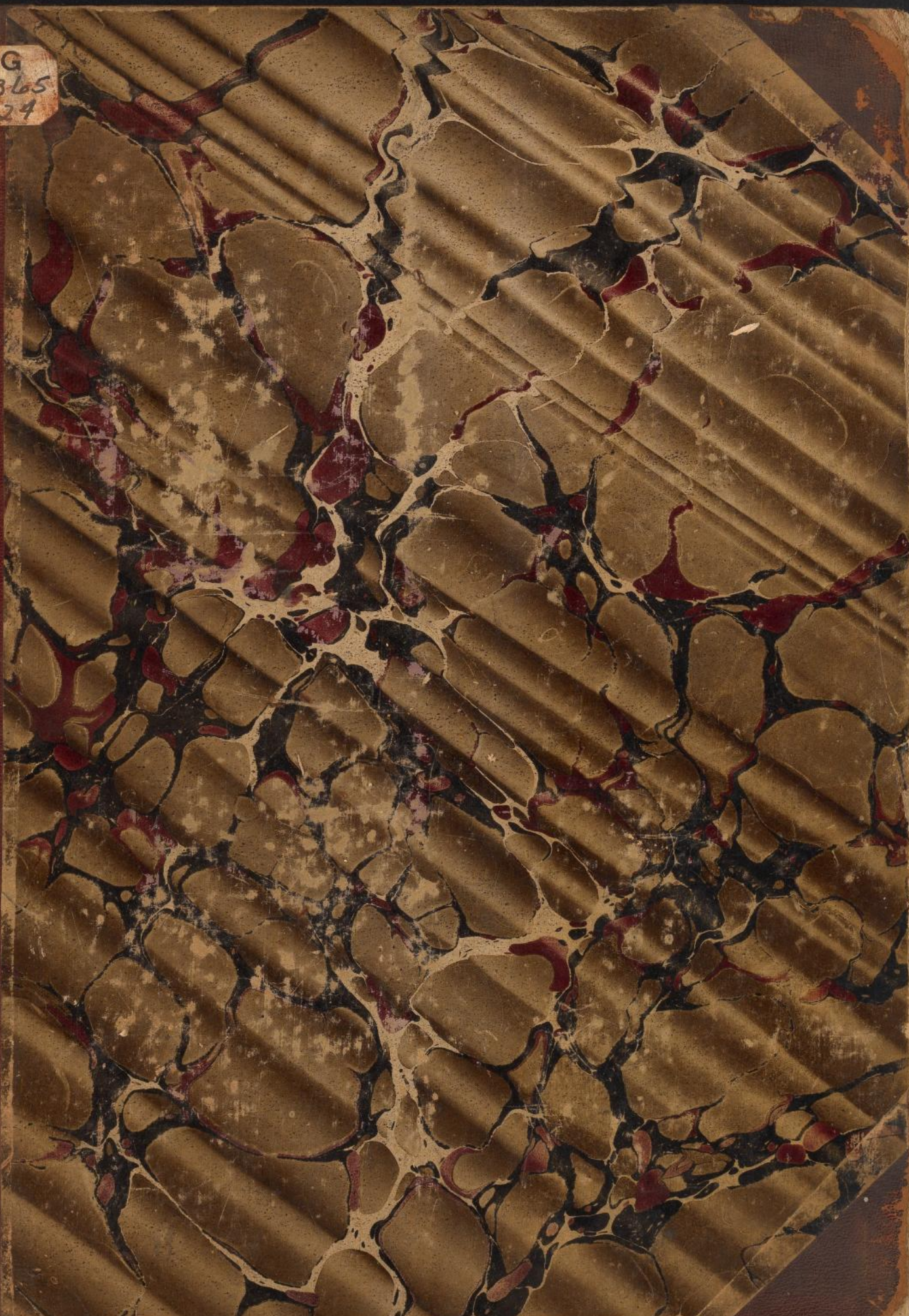


159-10000-0001-125W

KG  
11365  
524





KG-11365.524











KG 1136 5:524





Oct. 20, 1894.

Copied from Record Book #71:  
Page 217.

Looked at region of planetary nebula near star -27°:  
13151.

18	37
<u>21</u>	<u>35</u>
2	58

-28.0 W. obs.

Sky is so hazy that the 9.6 is faintly seen and the 9.7 only by glimpses: nothing is seen of planetary nebula and faint stars adjacent.

Z 331, P. II. 220, Plot. R. W. obs.

26	$\sqrt{2}$	+17.9
<u>22</u>	<u>45</u>	
-4	7	
7	53	

Position angle = 70° : distance = 12" :  
mag. 5.5 and 6.5.



Oct. 20. 1894.

Index to right.

~~332.4~~~~88.5~~~~329.7~~Circle found to be maxing:  
not clamped thoroughly:  
observations rejected.

327.7

95.0

327.9

89.0

fainter star dis.

127.3

$$\begin{array}{r} 121.1 \\ 248.4 \\ \hline 111.6 \end{array}$$
~~0.6~~

-1.38

Index to left.

59.9

177.8

58.0

180.0

117.9

122.0

239.9

$$\begin{array}{r} 122.0 \\ 239.9 \\ \hline 117.9 \end{array}$$
~~0.8~~

-1.19

54.2

179.5

62.0

176.4

125.3

114.4

239.7

$$\begin{array}{r} 114.4 \\ 239.7 \\ \hline 125.3 \end{array}$$
~~0.8~~

-1.16

Index to right.

334.9

80.2

325.7

92.7

111.3

127.0

238.3

$$\begin{array}{r} 127.0 \\ 238.3 \\ \hline 121.7 \end{array}$$
~~0.8~~

-1.16



Oct. 20, 1894.

8	59	24	326.5	127.5	
			94.0		
			332.1	115.4	<del>0.7</del>
			87.5	242.9	
				<u>117.1</u>	-1.26

Index to left.

9	1	48	241.0	117.0	
			358.0	128.7	<del>0.7</del>
			236.5	245.7	
			5.2	<u>114.3</u>	-1.32

Telescope is not yet fixed so that emergent pencils are still eccentric with respect to edge-piece: when the double image is run way up to photometer tube, a part of the pencils are cut off, so that it is not safe to use the prism as far up the tube as that: it is however considered pretty safe to use it on close stars to-night.

 $\angle < 30^\circ$ . 39 Lani's B.

H. St.

27	
<u>3</u>	38 + 8.7
23	20
-4	14
7	46

Position angle =  $300^\circ$  : distance =  $25''$  :  
mag. 6.0 and 9.2.

Oct. 20, 1894.

Index to right and below.

9	23	14	220.5	< faint star dis.	
			17.3	156.8	
			220.2	156.8	
			17.0	313.6	<del>1.4</del>
			<del>11.0</del>	<u>46.4</u>	-3.44

Index to left and above.

9	27	0	311.2	156.8	
			108.0	158.2	
			310.9	315.0	<del>1.5</del>
			109.1	<u>45.0</u>	3.51

9	29	22	310.2	156.8	
			107.0	157.9	
			310.0	314.7	<del>1.5</del>
			107.9	<u>45.3</u>	3.49

Index to right and below.

9	31	58	40.0	155.7	
			195.7	159.2	
			38.9	314.9	<del>1.5</del>
			198.1	<u>45.1</u>	3.50

9	34	57	40.3	156.4	
			196.7	155.9	
			40.2	312.3	<del>1.4</del>
			196.1	<u>47.7</u>	-3.52



Oct. 20, 1894.

Index to left and above.

9	38	17	130.0	156.5	
	<del>184</del>	<del>48</del>	286.5		
			130.2	<u>155.7</u>	<del>1.4</del>
9	30	48	285.9	312.2	
				<u>47.8</u>	- 2.37

There is a fainter companion to this star in  
 position angle = 70 : distance = 18" : mag. = 10.0 :  
 will measure this with principal star.

Index above.

9	52	24	40.6	< fainter star dis.	
			192.7		
			41.6	152.1	
			196.6	<u>155.0</u>	- 1.1
				307.1	

Index below.

9	56	54	129.5	158.5	
			288.0		
			135.2	<u>145.7</u>	- 1.0
			280.9	304.2	
10	0	16	136.9	143.6	
			280.5		
			131.0	<u>155.9</u>	- 0.8
			286.9	299.5	

Oct. 20. 1894.

Index above.

10 3 44

$$\begin{array}{r}
 222.8 \\
 16.8 \\
 225.0 \\
 13.3 \\
 \hline
 154.0 \\
 148.3 \\
 \hline
 302.3
 \end{array}
 \quad -0.9$$

10 6 45

$$\begin{array}{r}
 225.0 \\
 14.1 \\
 220.4 \\
 18.0 \\
 \hline
 149.1 \\
 157.6 \\
 \hline
 306.7
 \end{array}
 \quad -1.1$$

Index below.

10 9 31

$$\begin{array}{r}
 310.3 \\
 108.5 \\
 317.0 \\
 112.5 \\
 101.3 \\
 \hline
 158.2 \\
 144.3 \\
 \hline
 302.5
 \end{array}
 \quad -1.0$$

 $\Sigma 627$ 

L. ob.

2A

~~X~~ ✓ 4 + 3.4 $\frac{0}{4}$  $\frac{30}{24}$ 

4

24

Position angle =  $268^\circ$ : distance =  $20''$ :  
 mag. 6.5 and 7.0



Oct. 20. 1894.

Index to right and below. ~~\*~~ B.

66.3 &lt; fainter star dis.

10 21 53

168.8

102.5

74.8

88.2

163.0

190.7

179.3~~1.8~~

-0.20

Index above. A.

343.1

10 24 58

76.7

93.6

339.0

105.0

84.0

198.6

~~1.6~~

-0.35

161.4

339.3

102.9

10 27 2

82.2

343.9

92.1

76.0

195.0

~~1.7~~165.0

-0.29

Index below. B.

347.0

85.6

10 30 37

72.6

353.3

72.7

66.0

158.3

~~2.4~~

-0.41

~~201.7~~~~1.6~~

353.4

71.8

10 33 13

65.2

346.0

26.7

72.7

154.5~~2.4~~Wrong image  
probably  
disappeared.

-0.41

~~201.5~~~~1.6~~

Oct. 20, 1894.

Index above. A.

343.8

78.8

95.0

337.2

106.9

84.1

201.9

158.1

~~16~~  
-0.42

Mean = -0.34

Examined Mr. Reed's selection of polar star again to see about a star between  $\beta$  Draconis and  $\delta$  Draconis:  $\gamma$  Uphi is much better than  $\gamma$  Ursae Min., and divides the interval well between  $\beta$  and  $\delta$  Draconis, and would well replace  $\gamma$  Ursae Min.

Phot. I. put on large telescope: seems to work fairly well.



Preliminary results of zero of Phot. I when the 9:  
Cato's Eye is just closed.

014

014

Oct. 21. 22<sup>h</sup>

013

013

014

014

014

015

013

013

014

014

015

014

015

013

014

015

014

014

20179

0.1395

mean. is therefore 0.1395

Oct 22, 1894.

7 0 0 Cloudy.

7 30 0 Still cloudy.

7 45 0 Still cloudy with no prospect of clearing



Posted to here.

Oct. 27. 1894.

Location of Plan. Neb. near  
C.D. M., 131V-1, H. obs.  
Quar bar micrometer,

18	37	-28.0
<u>21</u>	<u>50</u>	
3	13	

18	38	-27.1
<u>21</u>	<u>53</u>	
3	15	

Position zero  $299.7^\circ + 45.0^\circ = 344.7^\circ$

22<sup>m</sup>. 2<sup>m</sup>. 8.5<sup>s</sup>

16.0

47.5

~~54.9~~

Nebula

Star

Star

Nebula.

3<sup>m</sup>. 34.2<sup>s</sup>

42.2

4<sup>m</sup>. 16.3

23.4

52.4<sup>s</sup>

5<sup>m</sup>. 1.0

35.3

40.2

Oct. 27, 1894.

22 <sup>h</sup> .	6 <sup>m</sup> .	12.4 <sup>s</sup> .
		21.0
		56.5
	7 <sup>m</sup> .	4.9

22 <sup>h</sup> .	8 <sup>m</sup> .	33.08.
		41.2
	9 <sup>m</sup>	14.6
		21.5

X U. 12.

22 <sup>h</sup> .	10 <sup>m</sup> .	95.7 <sup>s</sup>
		43.0
	11 <sup>m</sup> .	21.0
		26.8

22 <sup>h</sup> .	12 <sup>m</sup> .	20.5 <sup>s</sup> .
		29.0
	13 <sup>m</sup> .	9.0
	14 <sup>m</sup> .	

Order increasing in transits nebula, star,  
star, nebula both in southern half.

Transits very difficult.

Comp. star is 9.6 mag. star closely adjacent.



Oct. 27, 1894.

Selection of sequence of faint polar stars.

25	18
22	40
<u>-2</u>	<u>38</u>
9	22

Nearest of some of sequence ~~not~~ with Phot. I. Comparison star = Polaris.

Star #1: 1.00

0.96

0.91

0.96

1.15

$$\begin{array}{r} 4.92^{\wedge} \\ 0.996^{\wedge} \end{array}$$

Star #2:

1.07

1.02

0.90

0.80

1.03

$$\begin{array}{r} 4.22^{\wedge} \\ 0.96^{\wedge} \end{array}$$

Star #4:

0.65

0.78

0.62

0.55

0.59

$$\begin{array}{r} 3.19^{\wedge} \\ 0.632^{\wedge} \end{array}$$

$$\begin{array}{r} 11.11^{\wedge} \\ + 2.15^{\wedge} \\ \hline 13.26 = \text{mag.} \end{array}$$

$$\begin{array}{r} 11.12^{\wedge} \\ + 2.15^{\wedge} \\ \hline 13.27 = \text{mag.} \end{array}$$

$$\begin{array}{r} 12.02^{\wedge} \\ + 2.15^{\wedge} \\ \hline 14.17 = \text{mag.} \end{array}$$

Oct. 27, 1894.

Star #6:

0.44

0.50

0.53

0.48

0.45

 $\frac{2.40}{0.420}$  $\frac{12.69}{2.15} = 5.90$ 

Star #3:

0.85

0.86

0.85

0.83

0.81

 $\frac{11.48}{2.15} = 5.34$  $\frac{13.63}{2.15} = 6.34$ 

meast. difficult. Emergent pencils  
troublesome. Images also not quite  
alike.

Reap. Jup. III. Plot. R. L. ob.

Coam rec:

Compared with first satellite preceding before reap. of III  
Lat. I. equal

B. + C. 11.82.

10 2 11.0

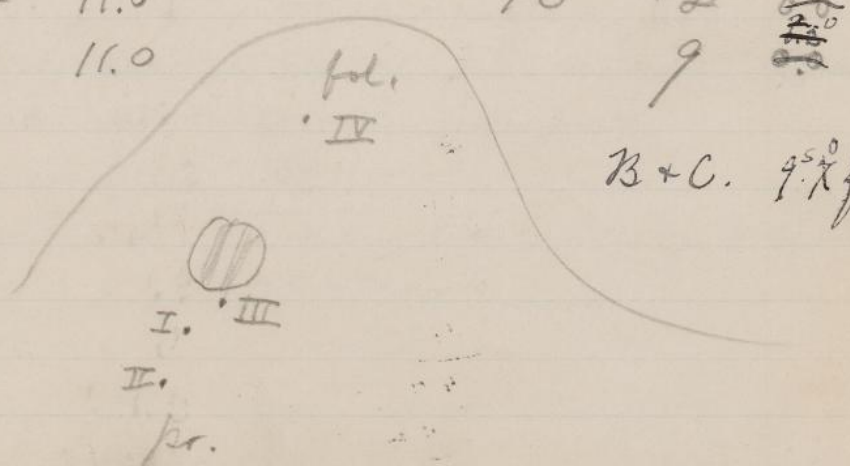
9 11.0

B. 394.

10 2 11.0

9 11.0

B + C. 9.5° fast.





Oct. 27, 1894.

Limit of Visibility.

10h

33m

43

63.0

12.0

277.7

34

02

75.0

69.4

10 34 13

234

62.9

13.9

44

76.8

13.0

52

40m.

1

seen,

2.

18

61.5

17.4

27

79.2

18.0

38

61.2

20.6

48

81.5

21.3

56

60.5

20.8

62

81.3

22.9

70

58.4

22.9

80

81.3

21.7

90

59.6

23.4

100

82.0

26.0

110

57.0

25.0

120

82.0

26.0

130

56.0

28.2

140

84.2

30.2

150

54.0

31.0

160

85.0

32.0

170

53.0

34.0

180

87.0

35.0

190

52.0

35.2

200

87.2

37.1

210

50.1

39.9

220

90.0

40.7

230

42m.

42

240

250

260

270

280

290

300

310

320

330

340

350

360

370

380

40m.

Oct. 27. 1894

	43		<del>1</del> 9 <del>17</del> 23 <del>32</del> 34 <del>42</del> 43 <del>51</del> 52 <del>59</del> 7 16 <del>24</del> 29 <del>37</del> 44 <del>55</del> 2 10 <del>18</del> 26 25 33 36 <del>41</del> 43 <del>58</del> 50 <del>55</del> 3	49.3 91.0 49.8 92.0 45.5 90.5 45.2 95.2 42.1 94.8 41.0 99.0 41.0 99.2 41.0 99.0 38.1 102.0 38.0 103.0 37.9 102.0	41.7 <del>42.0</del> 43.0 46.5 45.0 44.0 50.0 52.7 51.4 58.0 58.2 58.1 58.0 63.9 61.0 65.0 64.1 64.6	277.0 69.2 277.3 69.3 280.2 70.0 280.1 70.0 280.9 70.2
10	43	30				
10	44	4	44			
10	44	42	45 45			
10	45	14				
10	45	46				

Moved wires a little in field.

	46		12 <del>20</del> 22 32 <del>40</del> 46 <del>54</del> 54 <del>57</del> 3 10 18	32.0 105.1 33.1 104.9 35.0 107.0 34.0	73.1 71.8 72.4 72.0 71.3 71.6	275.1 68.8 281.3 70.3
10	46	28				
10	47	6				



Oct. 27. 189K.

		18	26	105.3			
		28	26	32.0	77.0	282.7	
10	47	48	48	109.0		70.7	
		48	56	32.7	76.3		
		58	6	109.0	76.6		
	48	9	17	31.0		280.2	
10	48	28	28	106.2	75.2	70.0	
		34	42	32.2	78.6		
		41	44	110.8	76.9		
		53	49	29.9		289.4	
10	49	4	12	113.2	83.3	72.4	
		16	24	32.0	82.3		
		26	34	114.3	82.8		
		38	46	32.0		294.0	
10	49	47	54	114.0	82.0	73.5	
		57	5	34.0	80.0		
	50	4	12	114.0	81.0		
		11	14	30.0	86.0	291.1	
10	50	24	32	116.0	1.	72.8	
		33	41	32.0	81.1		
		47	54	113.1	83.6		
		56	6	30.0	84.6	293.6	
10	51	6	14	114.9		73.4	
		14	22	31.4	86.0		
		25	33	117.4	85.3		
		37	45	32.5		296.1	
10	51	46	54	116.8	84.3	74.0	
		6	14	34.9	77.0		
	52	17	23	111.9	80.6		

Oct. 27, 1894,

	52		<del>35</del> <sup>27</sup>	35.0	80.0	296.0
10	52	44	<del>48</del> <sup>40</sup>	115.0		74.0
			<del>58</del> <sup>50</sup>	32.0 4.	<u>82.0</u>	
	53		<del>1</del> <sup>13</sup>	114.0	81.0	
			<del>21</del>	<u>32.0</u>		293.2
10	53	29	<del>28</del> <sup>20</sup>	114.2	82.2	73.3
			<del>10</del> <sup>35</sup>	34.0 5.	<u>79.0</u>	
			<del>55</del> <sup>47</sup>	113.0	80.6	
	55		<del>52</del> <sup>44</sup>	<u>34.2</u>		298.4
	<del>56</del>		<del>1</del> <sup>54</sup>	115.2	81.0	74.6
10	56	1	<del>10</del> <sup>5</sup>	34.8 6	<u>79.4</u>	
			<del>29</del> <sup>21</sup>	114.2	80.2	
			<del>38</del> <sup>30</sup>	32.0		296.8
10	56	42	<del>45</del> <sup>37</sup>	115.8	83.8	74.2
			<del>54</del> <sup>46</sup>	34.0 7.	<u>81.0</u>	
	<del>57</del>		<del>1</del> <sup>53</sup>	115.0	82.4	
	57		<del>10</del> <sup>2</sup>	34.1		295.1
10	57	12	<del>17</del> <sup>9</sup>	113.0	78.9	73.8
			<del>23</del> <sup>15</sup>	32.2 8.	<u>83.6</u>	
			<del>32</del> <sup>24</sup>	115.8	81.2	

B+C, 11+2,

11	16	9.7
-	17	9.7

B. 39K<sup>2.0</sup>

11	16	<del>13.0</del>
	17	<del>13.0</del>

B+C <sup>7.7</sup><sub>8.4</sub> fast

Boud 39K is <sup>2.0</sup><sub>1.2</sub> slow.



Oct. 29. 1894.

S tars near pole

W. obs.

7 0

cloudy.

7 30

cloudy.

 $\Sigma$  533 H.R. 72<sup>28</sup>  
~~4~~

16

34.0

2310

-5

6

6

54

Position angle =  $65^\circ$ ; distance =  $20''$ ;  
mag. = 5.8 and 7.6.

Index above.

8 34

53.3

119.8

58.1

115.0

&lt; brighter star dis.

66.5

56.9

123.4~~3.1~~ - 1/2

Stopped to fix photometer.

Oct. 29, 1894.

Index below.

151.2

205.2

142.5

213.0

54.0

$$\begin{array}{r} 70.5 \\ 124.5 \end{array}$$
~~3.1~~ -1.10

147.0

210.0

151.1

205.0

63.0

53.9

116.9

~~5.3~~ -1.26

Index above.

243.0

291.9

235.8

296.9

48.9

61.1

110.0

~~5.4~~ -1.42

237.1

299.0

242.8

289.1

61.9

46.3

108.2

~~5.5~~ -1.46

Index below.

330.5

25.0

~~318.7~~

322.0

29.8

54.5

67.8

122.3

~~3.1~~ \* -1.14

wrong



Oct. 29, 1894.

Stars near pole.

Star C seems to be a very little brighter than  
L but not much difference between them.

Star E seems to be a little fainter than star  
J.

Star E or star J could probably be used after #7  
but a star seems to be needed between #7 and  
them: sky is so hazy that one can not be  
selected with certainty.

Oct. 31, 1894.

7 0

Cloudy.

7 30

"

2 0

"

2 15

Clearer.

Stars near pole.

W. obs.

Tried for some time to examine and get estimates of comparison stars near pole but it is utterly impossible owing to clouds and bad seeing: clouds now growing worse.

 $\Sigma 753 : 26 \text{ am}$ 

5 30

+ 30.4

0 12

5 18

Position angle =  $270^\circ$ : distance =  $10''$ :  
mag = 5.6 and 8.2

clouds: stars invisible:

clouds:



Oct. 31. 1894.

cloudy everywhere.

51.2

clouds.

Worse than ever.

q

40

Nov. 1. 1894.

7	0	Stars near Pole. Good.
7	15	Cloudy.
7	30	"
4	0	"
4	30	"
9	0	"



Nov. 2. 1894.

Examined some stars of polar sequence  
with west equatorial: stars  $\kappa$  and  $\epsilon$  seen:  
star  $\kappa$  however not quite steadily seen: star  
 $\epsilon$  also seen by glimpses: the interval between stars  
 $\kappa$  and  $\epsilon$  looks smaller than with east equatorial  
on account of their faintness in the smaller in-  
strument: the interval is really quite large in east e-  
quatorial and there should be a star inserted between them.  
Stars near pole.

~~Interval between  $\gamma$  and star #1 all right.~~

~~[Star 0 $\frac{1}{2}$ ] 3" [Star 1]" #2 " "~~  
~~[ $\frac{8}{5}$ ] 3 [Star 0 $\frac{1}{2}$ ]~~  
~~[ $\frac{8}{5}$ ] 4.5 [Star 1]~~ W. obs.

[star 1] 3. [star 2]

[star 2] 5. [star 3].

star 3 to-night looks about equal to star 4:  
will provisionally take a new star 3 and call it  
3!

[star 2.] 4. [star 3'].

[star 3'] 2.5 [star 4].

[star 4] 4.5 [star 5].

[star 5] 3. [star 6].

[star 6] 4. [star 7].

[star 7] 3. [star 8].

I Rg more or less hazy in above estimates so that they are not considered perfectly reliable.

Nov. 2, 1894.

Dec.

B. + C, 1122.

16 K.V. 5

17 45.5

B+C = 46.2 fast.

B. 39K.

16 15 59.3

17 16 59.3

Disappearance of Jupiter I: Phot R: W. obs. Crain re-  
 order: compared with 1st of 2 satellites following Jup. = IV satellite

8 35 14 36

5.0

[other satellite being seen

2 59.0

(1. Satellite 2: and satel-

3.2

lite 3 being on heading

261.0

side of planet.]

$$\begin{array}{r} 106.0 \\ 102.2 \\ \hline 104.1 \end{array}$$

2.0

264.0

(2.

4.5

258.1

3.8

259.0

(3.

3.0

257.0

4.0

256.8

3.7

(4.

98.0

528.6

262.0

132.2

106.4

253.6

257.8 102.2

257.8

104.8

522.8

255.2

130.7

106.0

254.0

254.6 105.4

107.2

252.8

520.2

108.0

252.0

130.0

252.12 107.6





Nov. 2. 1894.

	<del>32</del>	266.7	86.3
	<del>39</del>	353.0	83.0
	<del>48</del>	270.0	82.5
	<del>55</del>	352.5	83.4
45	<del>40</del>	269.1	87.0
	<del>46</del>	356.1	85.6
	<del>51</del>	270.5	75.7
	<del>53</del>	346.2	70.0
#	<del>3</del>	276.2	76.8
	<del>18</del>	353.0	74.8
	<del>24</del>	278.2	64.7
	<del>31</del>	342.9	62.8
	<del>42</del>	280.1	52.9
46	<del>49</del>	332.0	38.0
<del>47</del>	<del>57</del>	295.0	32.1
	<del>15</del>	327.1	
	<del>24</del>	not seen later.	
	<del>38</del>		
	<del>23</del>		
	<del>51</del>		
	<del>36</del>		

limit of visibility.

47	<del>22</del>	291.0	41.0	1246.0
<del>48</del>	<del>46</del>	332.0		311.5
	<del>57</del>	291.8	39.4	
	<del>42</del>	331.2	40.2	
48	<del>17</del>			
<del>49</del>				

8 47 50

Jupiter low - being only a little above  
lowest small shutter.Seeing fairly steady for this low altitude  
but altitude being low, the images were some



Nov. 2, 1894.

what faint and a very little blurring so that settings were made with some difficulty & slowly.

Satellite IV was used as comparison satellite instead of satellite III II as Satellite IV was nearer the planet and consequently the images were not so much elongated.

B. + C. 1142.

9	6	4K.2
	7	4K.2

B. 394

9	5	59.3
	6	59.3

~~Err.~~ At above time, B 394 was 10.7 feet.  
 $B + C = 44.9$  feet

Stars near pole.

Considerably cloudy: pole star quite dim.

After ~~to~~ much trying it was found impossible to do anything farther in region near pole: sky considerably and steadily growing worse.

Nov. 2. 1894.

 $\Sigma 696 : 23 \text{ Orionis}$ 

W. obs.

5	16	+ 3.4
<u>1</u>	<u>30</u>	
3	46	

Position angle =  $240^\circ$ : distance =  $28''$   
 mag. 5.0 and 7.2.

Index below and to left.

292.9 &lt; brighter star dis.

334.0 41.1

295.2 31.8

327.0 72.9

~~4.4~~ - 2.41

Index to right and above.

23.0

59.5 36.5

14.2 29.9

64.1 66.4

~~4.0~~ - 2.01

17.8

65.0 27.2

21.0 38.1

59.1 65.3

~~4.0~~ = 2.04



Nov. 2. 1894.

Index to left and below

116.0

10 42 5

147.9 31.9

107.2 48.7

155.9 80.6

~~11.2~~

2.12

109.0

10 44 39

155.8 46.8

113.9 36.3

150.2 83.1

~~4.1~~

2.10

Index to right and above.

205.0

10 45 4

238.0 33.0

196.2 48.0

244.2 81.0

~~4.2~~

2.17

measurements made through clouds and haze.

Nov. 3. 1894.

Stars near pole.

W. obs.

[?]	4.	[6]
[6]	4.5	[star 0 1/2]
[star 0 1/2]	3.5	[star X]
[6]	3.	[star 0 1/2]
[star 0 1/2]	4.	[star 1]
[star 1]	3.5	[star 2]
[star 2]	4.	[star 3]
[star 3]	2.5	[star 4]
[star 4]	4.	[star 5]
[star 5]	3.	[star 6]
[star 6]	4.	[star 7]
[star 7]	3.	[star 8]

A new star substituted for old star 7 to-night  
which seems to be better.  
Star 7 1/2 abandoned.

Star 7.

0.48  
0.59  
0.70  
0.51  
0.47  
0.550<sup>^</sup>

Log 0.550 = 9.74036  

$$\begin{array}{r} 9.74036 \\ 48.70180 \\ 1.2982 \\ 11.10 \\ 12.40 \\ 2.15 \\ 14.55 = \text{mag.} \end{array}$$



Nov. 3. 1894.

Star 6. [L].

8 57

~~0.63~~ sun to be wrong.

0.67

Log. 0.720 = 9.85733

0.68

$$\begin{array}{r} 49.28665 \\ 5 \end{array}$$

0.68

$$\begin{array}{r} .71335 \\ 11.10 \end{array}$$

0.71

$$\begin{array}{r} 11.10 \\ 11.81 \end{array}$$

0.86

$$\begin{array}{r} 2.15 \\ 13.96 \end{array}$$

0.720<sup>^</sup>

$$\begin{array}{r} 13.96 \checkmark = \text{mag.} \end{array}$$

Star 4. [R].

9 4

0.98

Log 0.954 = 9.97955

0.98

$$\begin{array}{r} 49.89775 \\ 5 \end{array}$$

0.94

$$\begin{array}{r} .16225 \\ 11.10 \end{array}$$

0.90

$$\begin{array}{r} 11.10 \\ 11.20 \end{array}$$

0.97

$$\begin{array}{r} 2.15 \checkmark \\ 13.35 \end{array}$$

~~1.02~~ <sup>0.954<sup>^</sup></sup> sun to be wrong.

1.13

~~Star X again after rechecking on small telescope~~

1.10

1.11

Log 1.056 = 0.02366

0.93

$$\begin{array}{r} 0.11830 \\ 11.10 \end{array}$$

1.01

$$\begin{array}{r} 10.98 \\ 2.15 \end{array}$$

1.056<sup>^</sup> ..

$$\begin{array}{r} 13.13 \checkmark = \text{mag.} \end{array}$$

Star 1.

9 25

1.23

Log 1.240 = 0.09342

1.10

$$\begin{array}{r} 0.46710 \\ 5 \end{array}$$

1.24

$$\begin{array}{r} 11.10 \\ 10.63 \end{array}$$

1.30

$$\begin{array}{r} 2.15 \checkmark \\ 12.78 \end{array}$$

1.33

$$\begin{array}{r} 12.78 \checkmark = \text{mag.} \end{array}$$

1.240<sup>^</sup>

Nov. 3, 1894.

Star 3.

9 25

1.14  
1.17  
1.10  
1.11  
1.14  
1.132<sup>^</sup>

$$\begin{array}{r} \text{Log } 1.132 = 0.05385 \\ \hline 11.26925 \\ \hline 10.87 \\ \hline 2.15 \\ \hline 12.98^v = \text{mag.} \end{array}$$

Eye-piece found to be some out of focus  
with respect to small telescope; read-  
justed.

Star 5.

9 42

0.80  
1.01  
0.98  
0.91  
0.86  
0.912<sup>^</sup>

$$\begin{array}{r} \text{Log } 0.912 = 9.95999 \\ \hline 49.79995 \\ \hline 20005 \\ \hline 11.10 \\ \hline 11.30 \\ \hline 2.15^v \\ \hline 13.45 = \text{mag.} \end{array}$$

Star 8. [E].

9 49

0.56  
0.60  
0.54  
0.53  
0.56  
0.558<sup>^</sup>

$$\begin{array}{r} \text{Log } 0.558 = 9.74633 \\ \hline 48.73965 \\ \hline 126835 \\ \hline 11.10 \\ \hline 12.37 \\ \hline 2.15^v \\ \hline 14.52 = \text{mag.} \end{array}$$



Nov. 3. 1894.

Star 3 again.

9 53

1.25

1.24

1.17

1.17

1.11

---

 1.188<sup>h</sup>

$$\text{Log } 1.188 = 0.07482$$


---


$$11.10$$


---


$$10.73$$


---


$$2.15$$


---


$$12.88 = \text{mag.}$$

10 0

clouds.

Stopped by clouds.

10 35

Still cloudy.

Nov. 6, 1894.

Stars near pole.

W. obs.

Zero of instrument has apparently changed.

Star 3.  $Zero = -0.92$ ~~-0.86~~

-0.14

-0.28

-0.16

-0.16

~~-0.38~~~~-0.09~~-0.166 +0.75<sup>v</sup>

Star 6. [L. 6.]

-0.35

-0.35

-0.36

-0.37

~~-0.37~~-0.360 +0.56<sup>v</sup>

Star 4. [R. 4.]

-0.17

-0.17

-0.20

-0.14

~~-0.15~~-0.166 +0.75<sup>v</sup>

$$\text{Log } 0.75 = 9.87506$$

$$\begin{array}{r} 49.37530 \\ 0.62470 \end{array}$$

$$\begin{array}{r} 11.10 \\ 11.72 \end{array}$$

$$\begin{array}{r} 2.15 \\ 13.87 = \text{mag.} \end{array}$$

$$\text{Log } 0.56 = 9.74819$$

$$\begin{array}{r} 48.74095 \\ 1.25905 \end{array}$$

$$\begin{array}{r} 11.10 \\ 12.36 \end{array}$$

$$\begin{array}{r} 2.15 \\ 14.51 = \text{mag.} \end{array}$$

$$\text{Log } 0.75 = 9.87506$$

$$\begin{array}{r} 49.37530 \\ 0.62470 \end{array}$$

$$\begin{array}{r} 11.10 \\ 11.72 \end{array}$$

$$\begin{array}{r} 2.15 \\ 13.87 = \text{mag.} \end{array}$$



Nov. 6. 1894.

Star 2. [sh].

+0.05

+0.06

+0.08

+0.12

+0.06

+0.074 +0.99<sup>v</sup>

Star 1.

+0.10

+0.13

+0.15

+0.16

+0.08

+0.124 +1.04<sup>v</sup>

Star 5.

-0.29

-0.31

-0.32

-0.30

-0.25

-0.294 +0.63<sup>v</sup>

$$\text{Log } 0.99 = 9.99564$$

49.97820

0.02180

11.10

11.12

2.15

13.27 = magn.

$$\text{Log } 1.04 = 0.01703$$

0.08515

11.10

11.01

2.15

13.16 = magn.

$$\text{Log } 0.63 = 9.79934$$

48.99670

1.00330

11.10

12.10

2.15

14.25 = magn.

Comparisons difficult: images of stars in large telescope rather large & blurry: images of stars in small telescope small & pointed: background of sky in large telescope somewhat bright from moonlight & in small telescope dark.

Nov. 6, 1894.

 $\Sigma$  590

W. obs.

4

38

-9.0

 $\frac{1}{3}$  $\frac{5}{33}$ 

-8

27

Position angle =  $330^\circ$ : Distance =  $8''$ :  
 mag. = 6.1 and 6.6.

Obs. rather difficult.

Images blurry + unsteady.

1. 333.0 Index to right + below.

50.8

&lt; brighter dis.

324.0

77.8

56.8

92.8

- 0.18

170.6

~~2.2~~

325.5

Index to left + above.

55.8

90.3

318.1

103.4

61.5

193.7

166.3

- 0.26

322.0

62.0

100.0

324.2

90.8

55.0

190.8

169.2

- 0.20

226.8

Index to right + below.

323.2

96.4

232.2

98.7

330.9

195.1

164.9

- 0.29



Nov. 6. 1894.

10 10 12

229.0  
333.0  
238.6  
325.2

104.0

86.6

190.6

169.4

$$\begin{array}{r} 1.8 \\ -0.20 \end{array}$$

Index to left &amp; above. B.

10 12 30

234.6  
328.7  
244.2  
318.2

94.1

74.0

168.1

$$\begin{array}{r} 2.2 \\ -0.22 \end{array}$$
 $\Sigma$  696

5 16

1 38

3 38

8 22

W. obs.

+ 3.4

Position angle =  $35^\circ$ ; distance =  $28''$ ;  
mag. = 5.0 and 7.2

10 24 22

79.2  
123.2

83.0

119.9

36.9

80.9

22.0

$$\begin{array}{r} 4.0 \\ -2.17 \end{array}$$

Index to left &amp; below.

10 26 57

171.0  
213.6  
168.9  
212.7

42.6

43.8

86.4

4.0

-2.01

Index to right &amp; above.

Nov. 6, 1894.

10 29 0

170.2

212.0

170.8

211.0

+ 1.8

40.2

82.0

~~4.1~~  
 - 2.14

10 30 30

262.9

300.9

260.0

302.5

Index to left &amp; below.

38.0

+ 2.5

80.5

~~4.2~~  
 2.18

10 32 42

260.3

303.5

263.8

300.0

+ 3.2

36.2

79.4

~~4.2~~ 2.21

10 34 47

352.2

31.0

349.0

33.8

Index to right &amp; above.

38.8

44.8

83.6

~~4.1~~ - 2.09

Σ 14' 8 Orionis

W. obs.

5

26

- 0.4

 $\frac{2}{3}$ 
 $\frac{0}{26}$ 

8

34



Nov. 6. 1894.

Position angle =  $10^\circ$ : distance =  $50''$ :  
mag = 2.0 and 6.8

Index to right & above.

4.4 < brighter dis.

10 44 32

19.3

14.9

4.8

13.2

~~6.5~~

18.0

28.1

~~4.65~~

Index to left & below.

~~4.50~~

94.1

15.1

10 45 42

109.2

93.7

14.3

108.0

29.4

~~6.4~~

~~4.45~~

~~mean 4.52~~

95.0

12.8

10 46 20

107.8

94.0

13.3

107.3

26.1

~~6.4~~

4.71

Index to right & above.

~~4.66~~

184.0

14.4

10 49 37

198.4

185.0

12.8

197.8

27.2

~~6.6~~

4.62

Nov. 6. 1894.

10 50 54

184.8

198.0

184.7

199.0

13.2

$$\begin{array}{r} 14.8 \\ 27.5 \end{array}$$
~~6.6~~

459

Index to left + below.

10 52 47

274.8

288.4

274.8

288.6

13.6

$$\begin{array}{r} 13.8 \\ 27.4 \end{array}$$
~~6.6~~

460



Nov. 7. 1894.

Stars near pole.

Somewhat cloudy besides tales w/pc can not be made so reach stars easily.

$$\begin{array}{r} \sum 401 \\ 27 \\ 3 \quad 24 \\ \hline 23 \quad 50 \\ -3 \quad 34 \\ \hline 6 \quad 26 \end{array}$$

W. obs.  
+ 27.1

~~Position angle = 240°.~~

W. obs.

Position angle = 275°: Distance = 10":  
mag. = 5.5 and 6.7:

Index to left + above.

8 48 15

$$\begin{array}{r} 162.0 \\ 234.0 \\ 153.2 \\ 244.7 \end{array} \begin{array}{l} \text{brighter dis.} \\ 72.0 \\ 91.5 \\ 163.5 \end{array}$$

$$\underline{2.3} - 0.31$$

Index to right + below.

8 50 44

$$\begin{array}{r} 240.8 \\ 335.0 \\ 250.9 \\ 324.0 \end{array} \begin{array}{l} \\ 94.2 \\ 73.1 \\ 167.3 \end{array}$$

$$\underline{2.2} - 0.24$$

Nov. 7. 1894.

8	52	29	252.2		
			325.0	72.8	
			243.0	<u>92.7</u>	<del>2.3</del> - 0.27
			335.7	165.5	

Index to left + above.

8	54	43	333.2		
			62.6	89.4	
			339.4	<u>78.1</u>	<del>2.2</del> - 0.24
			57.5	167.5	

8	57	58	339.3		
			54.7	75.4	
			334.5	<u>87.5</u>	<del>2.3</del> - 0.32
			62.0	162.9	

Index to right + below.

8	59	29	61.0		
			154.3	93.3	
			70.2	<u>73.3</u>	<del>2.3</del> - 0.25
			143.5	166.6	



Nov. 7, 1894.

$$\Sigma 627$$

4

54

 $\frac{0}{4}$  $\frac{35}{19}$ 

7

41

W. v. l. s.

+ 3.4

Position angle =  $265^\circ$ ; distance =  $20''$ ;mag. =  $6.5 + 7.0$ ;

Index to right &amp; below. A.

67.9 &lt; brighter dis.

9 16 8

147.8

79.9

63.0

151.2

 $\frac{88.2}{168.1}$ ~~2.2~~ - 0.22

Index to left &amp; above. B.

151.0

91.1

242.1

76.8

759.2

 $\frac{167.9}{167.9}$ ~~2.2~~ - 0.23

236.0

9 20 14

159.1

74.9

234.0

 $\frac{86.4}{161.3}$ ~~2.1~~ - 0.36

153.2

161.3

239.6

9 23 10

Nov. 2. 1894.

Index to right &amp; below. A.

9	26	50	244.0	87.0	
			331.1		
			250.9	$\frac{74.1}{161.1}$	$\frac{2.4}{-} = 0.36$
			325.0		

9	29	4	249.8	73.7	
			323.5		
			242.5	$\frac{90.7}{164.4}$	$\frac{2.3}{-} = 0.29$
			333.2		

Index to left &amp; above. B.

9	30	14	332.7	88.0	
			60.7		
			339.5	$\frac{73.6}{161.6}$	$\frac{2.4}{-} = 0.35$
			53.1		
9	24	17			
5	24	17			
14	24	17			

Mean = -0.30

Images rather blurry.

Stars near pole.

W. obs.

Small telescope in focus.

Star 2. [h].

10	26	55	1.23
			1.18
			1.33
			11.35
			1.30
			$\frac{1.278}{1.278}^{\wedge}$

$$\begin{aligned} \log 1.278 &= 0.10653^{\wedge} \\ &\frac{0.53265^{\wedge}}{11.10} \\ &\frac{19.78}{11.10} \\ &\frac{2.65}{13.78} = \text{magn.} \\ &12.72^{\wedge} \end{aligned}$$



Nov. 7. 1894.

Star 4. [E<sub>k</sub>]

10 31 20

1.02  
0.96  
0.88  
0.82  
0.85  

---

0.906<sup>^</sup>

$$\text{Log } 0.906 = 9.95713^{\wedge}$$

$$\begin{array}{r} 49.78565^{\wedge} \\ 0.21435^{\wedge} \\ 11.10 \\ \hline 11.31 \\ 2.15 \\ \hline 13.46^{\wedge} = \text{magn.} \end{array}$$

Star 1.

10 25 58

1.15  
0.99  
1.14  
1.18  
1.14  

---

1.120<sup>^</sup>

$$\text{Log } 1.120 = 0.04922^{\wedge}$$

$$\begin{array}{r} 0.24610^{\wedge} \\ 11.10 \\ \hline 11.35 = 10.85 \\ 2.15 \\ \hline 13.50^{\wedge} = \text{magn.} \\ 13.00^{\wedge} \end{array}$$

Small telescope out of focus

Star 2 again.

10 39 49

0.91  
0.92  
0.77  
0.80  
0.82  

---

0.844<sup>^</sup>

$$\text{Log } 0.844 = 9.92634^{\wedge}$$

$$\begin{array}{r} 49.63170^{\wedge} \\ 0.36830 \\ 11.10 \\ \hline 11.47 \\ 2.15 \\ \hline 13.62^{\wedge} = \text{magn.} \end{array}$$

Star 4 again.

10 43 33

0.66  
0.69  
0.65  
0.67  
0.66  

---

0.666<sup>^</sup>

$$\text{Log } 0.666 = 9.82347^{\wedge}$$

$$\begin{array}{r} 49.11735^{\wedge} \\ 0.88265 \\ 11.10 \\ \hline 11.98 \\ 2.15 \\ \hline 14.13^{\wedge} = \text{magn.} \end{array}$$

Nov. 7, 1894.

Star 6. [L=2]

0.54

0.44

0.41

0.42

0.47

0.456<sup>n</sup>

$$\text{Log } 0.456 = 9.65896^{\wedge}$$

$$\begin{array}{r} 48.29480^{\wedge} \\ 5 \end{array}$$

$$1.70520$$

$$\hline 11.10$$

$$12.81$$

$$\hline 2.15$$

$$14.96^{\wedge} = \text{mag.}$$

Small telescope <sup>in</sup> of focus.

Star 6 again

0.53

0.48

0.50

0.52

0.51

0.508<sup>n</sup>

$$\text{Log } 0.508 = 9.70586^{\wedge}$$

$$\begin{array}{r} 48.52930^{\wedge} \\ 5 \end{array}$$

$$1.47070$$

$$\hline 11.10$$

$$12.57$$

$$\hline 2.15$$

$$14.72^{\wedge} = \text{mag.}$$



9,  
Nov. 10, 1894.

# Observation of Transit of Mercury

B.C.W. obs. (15 in.) (diaphan. bin.) { Power 270 } King obs. (4 in.) finder { Power 118 }

~~Sun partly visible for a little~~  
~~some little time~~  
~~a few min. before theoretical time~~  
~~but nothing, and not at all visible~~

Sun partly visible some little time before theoretical time but not at all visible to naked eye or in large telescope or either of the finders without any shade glasses from 22<sup>h</sup> 43<sup>m</sup> to 23<sup>h</sup> 15<sup>m</sup>. Lowest powers put on both large telescope and finder, but no sun visible, even without shade glasses.

Between 22<sup>h</sup> 30<sup>m</sup> and 22<sup>h</sup> 45<sup>m</sup>, sun seen <sup>considerably</sup> at intervals, but through clouds. It was seen sufficiently however to adjust position zero. Had it been as clear at the critical time, as it was between 22<sup>h</sup> 30<sup>m</sup> and 22<sup>h</sup> 45<sup>m</sup> at intervals, Mercury could have been seen on the disc of the sun, and a pretty fair contact obtained.

B. 394.

Fr. 3451

23 26 00.0  
23 27 00.0

23 25 52.5  
23 26 52.8

Nov. 10, 1894.

## Observation of Transit of Mercury.

W. obs. Waiter rec.

Fr. 34-51 used. Power

B 39 40  
<sup>3</sup> 55 00.0  
<sup>3</sup> 56 00.0

Fr. 3451  
<sup>3</sup> 55 37.0  
<sup>3</sup> 56 37.3

Fr.  
 19 32 00

Fr. 3451  
 4 57 42.0

4 10 KKA 4	11	24.5	Light between mer. & limb,
10 5A.3		38.0	" " " "
4 11 27 6.5		42.5	Int. Contact X
4 11 5A.6	12	38.5	Still on limb.
4 12 12.1 6.5		52.0	Ext. Contact. X
4 12 25.8	13	5.7	Contact passed.

Being rather  
 being, bad. Limbs of Mercury and  
 Sun boiling.



Nov, 10, 1894.

## Observation of Transit of Mercury

King obs. Waiter rec.

Th. 3451 used.

Read 394

4 09 43.6 = 4 10 23.0

10 53.5 = 11 34.5

11 04.2 = 43.8

Bad seeing, <sup>just begins false contact</sup> ~~false alarm~~.  
 1<sup>st</sup> possible time of internal contact.  
 Contact complete.

12 07.2 = 12 47.0 ext.

12 36.1 = 13 16.0

Contact supposed to have taken place  
 Contact surely passed.

The last two times are extremely doubtful  
 on account of very bad seeing.

For 3<sup>rd</sup> Contact the time is probably  
 the mean of 4 11 34.5 & 4 11 43.8  
 or 4 11 39.2

For 4<sup>th</sup> Contact the time 4 12 47.0 is prob.  
 too early, perhaps by 5<sup>s</sup>. It is estimated  
 that time should be 4 12 52<sup>s</sup>  
 with an estimated error of 10<sup>s</sup>

Over.

Nov. 10, 1894.

Chron. comp. for Observation  
of Transit of MercuryFr. 1327.  
19 58 00.0  
19 59 00.0Fr. 3451  
4 23 42.0  
4 24 42.0B 394  
4 25 00.0  
4 26 00.0Fr. 3451  
4 25 42.0  
4 26 42.3



Summary of Observations of Transit of Mercury  
Nov. 9-10, 1894.

Third Contact.

East. Time.	4 <sup>h</sup>	10 <sup>m</sup>	50 <sup>s</sup>	P. obs.
	11	2.2		Tr. "
	11	20.		Ed. "
	10	50.8		
	<del>11</del>	<del>4.2</del>		N. "
	10	52.2		Obs. "

Fourth Contact.

East. Time.	4 <sup>h</sup>	12 <sup>m</sup>	12.1	Tr. obs.
	12	<del>12.5</del>		N. "

Saturday November 10 1894

B 394

B & C 1182

22  
41 0.0

10 41 09.8

22 42 0.0

10 42 09.8

Transit of Mercury. S.C. Pickering observed  
W.B. Chyzer assisted.

Anticipating observations prevented by clouds

1<sup>st</sup> Contact not seen on account of clouds  
sun not visible to unaided eye.

2<sup>nd</sup> Contact not seen on account of clouds.

Sun not visible from 22<sup>h</sup>. 55<sup>m</sup> to 23<sup>h</sup>. 1<sup>m</sup> E.T.

Cloud off at about 10<sup>h</sup> after the 2<sup>nd</sup> afternoon

B 394

B & C 1182

3 50 0.0

3 50 11.3

3 51 0.0

3 51 11.2

Tried also lower power but decided to use high power  
with thin shade glass.

4: 8:00. Mercury seen but edge very unsteady true interference.

4: 8:30.0 seen. Bolding of edge nearly double diameter of  
mercury.

4: 9:00. seen. 4: 9:30.0 seen.



4:10:00 seen in leading edge.

4:10:30 suspected true interferences.

10:53.5 suspected.

11:13.8 Third contact apparently past.

11:27.6 <sup>[estimated]</sup> half cut. uncertain owing to leading  
not seen later owing to leading of edge.

Third contact estimated at  $4^h 11^m 10^s$  but susceptible  
and estimation of time.  
only owing to atmospheric disturbance of edge.  
Mercury half cut off at  $4^h 11^m 30^s$  estimated.

B 394

4 19 10.0

4 20 10.0

B 1182

4 19 11.3

4 20 11.3



Harvard College Observatory  
Cambridge Nov. 10, 1894

Professor E. C. Pickering, Director,  
Dear Sir; -

For today's transit of Mercury I used <sup>my "Hesperus"</sup> Caswell telescope (Hovan & Leach) of four (4) inch aperture with a power of one hundred and twenty (120) diameters - very roughly - the recorder being Miss Louisa Winlock, using my own watch compared at the Observatory just before ingress and soon after egress.

Before ingress a break in the clouds gave some hope: but nothing could be seen of the Sun when the time came. Long before egress, however, the Sun shone out, and I got good practice while showing the planet to ladies who required a different focus from that which I used - practice which materially helped me to recognize the planet when the difficulties of poor focus were exchanged for those of the atmosphere at <sup>a</sup> low altitudes.

As the time for contact approached, and the Sun neared the horizon, an instantaneous view of the limb reminded



use of the deflection limb of the Moon the brighter edges of the crater showing on a dark ground - but of course everything was "boiling".

At 4<sup>h</sup> 11<sup>m</sup> 10<sup>s</sup> I <sup>observed</sup> recorded "Planet now in the waves" referring to the undulations and breaks in the bright limb. At 11<sup>m</sup> 31<sup>s</sup> I <sup>observed</sup> recorded "Third contact".

These observations would appear to put the internal contact at egress between these limbs, although <sup>no</sup> actual tangency was observed. I might add that a "Not yet" was recorded at 10<sup>m</sup> 34<sup>s</sup> and that I saw no reason to have another remark recorded until the one mentioned at 11<sup>m</sup> 10<sup>s</sup>. So 4<sup>h</sup> 11<sup>m</sup> 20<sup>s</sup> is perhaps best to report.

The seeing at external contact was not sufficiently good to give value to the record of what I tried then to observe.

Respectfully,  
J. Rayner Edwards  
Am<sup>o</sup>.



Saturday November 10, 1894.

B 394	<sup>h</sup> 22	24	00	Chr. R 112	<sup>h</sup> 22	25	21 0
"	22	25	00	"	22	26	21 0

B 394 22 25 00

Chr R 112 Fast <sup>mm</sup> 1 21 0

1st contact not visible on account of clouds

2d " " " " " " "

3rd not visible from <sup>22.50</sup> 11:50 AM. Eastern time, to 23:10

Transit of Mercury. Attnall, Brewer. Davidson Rec.



Saturday, November 10, 1894.

B394 <sup>h</sup> 3 47 00 R112 Chr. <sup>h</sup> 3 48 29 5

" 3 48 00 " " 3 49 29 5

B394 3 48 00  
Chr R112 Fast <sup>m</sup> 1 29.5

Internal contacts

\* <sup>h</sup> <sup>m</sup> <sup>s</sup> Transit of Mercury Internal Contact  
4.12 23, 5 Sus. Church cuts off field

Observation made with considerable difficulty on account of low altitude and bad seeing;

B394 4 21 0.0 Chr R112 4 22 30.5

" 4 22 0.0 " 4 23 31.0

" 4 23 0.0 " 4 24 31.0

B394 <sup>h</sup> <sup>m</sup> <sup>sec</sup>  
3 47 00.0 = 1<sup>m</sup> 29.5<sup>sec</sup> fast  
4 21 00.0 = 1 30.5<sup>sec</sup>  
1.0

$\frac{2.5}{3.4} \div 1.0 = 0.74^{sec}$

1 29.5  
0.74

-1 30.25 = fast at time

<sup>h</sup> <sup>m</sup> <sup>sec</sup>  
4 12 23.00

-1 30.25

4<sup>th</sup> 1<sup>st</sup> m 52.8<sup>sec</sup> = time of 3d contact

Transit of Mercury

Attnwill, observer, Davidson, recorder.

4th contact could not be observed, as church roof cuts off most of the field.

Nov. 10, 1894. $\Sigma 533.$ 

W. obs.

$$\begin{array}{r}
 4 \\
 - \frac{0}{4} \\
 7
 \end{array}
 \quad
 \begin{array}{r}
 16 \\
 \frac{0}{16} \\
 4.4
 \end{array}$$

+ 34.0

Position angle =  $75^\circ$ . Distance =  $20''$ .  
 mag 6.0 and 7.5:

Index to right and below.

176.0 &lt; brighter dis.

242.0

66.0

181.2

60.9

242.1

126.9

-1.04

~~3.0~~

Index to left and above.

273.0

57.5

330.5

68.1

264.9

125.6

333.0

~~3.1~~ -1.07

270.0

65.1

335.1

62.1

269.0

127.2

331.1

~~3.0~~ -1.04



Nov. 10. 1894.

Index to right and below.

2.9	56.2	
59.1	66.0	
358.1	<u>122.2</u>	3.1
64.1		-6.4

356.0	65.5	
61.5	61.1	
0.0	<u>126.6</u>	3.1
61.1		-1.05

Index to left and above.

91.0	58.7	
149.7	63.7	
87.8	<u>122.4</u>	3.1
<del>152.4</del>		-6.4
151.5		

 $\Sigma 627.$ 

4	54
0	37
<u>-4</u>	<u>17</u>
7	43

W. obs.  
+ 3.4

Position angle =  $265^\circ$ : Distance = 20":  
mag. = 6.1 and 6.9:

Nov. 10. 1894.

Index above. A.

169.0 &lt; brighter dis.

253.0 8 4.0

168.0 8 7.9

255.9 17 1.9

2.2 - 0.15

Index above, below. B.

256.0

345.7 8 9.7

262.5 7 5.5

338.0 16 5.2

2.3 - 0.22

262.9

339.5 7 6.6

256.4 8 8.6

345.0 16 5.2

2.3 - 0.22 ✓~~Index above.~~

wrong image dis.

~~253.7 9 3.3~~~~347.0~~~~249.5 10 0.5~~~~350.0 19 3.8~~1.7

171.3

249.1 7 7.8

167.0 8 7.7

254.7 16 5.5

2.3 - 0.27 ✓



Nov. 10. 1894.

9 22 14

167.1  
251.2  
172.7  
250.4

84.1

77.7  
161.8

~~2.3~~ - 0.34 ✓

Index below.

B.

263.7  
339.2  
~~257.0~~  
255.1  
345.7

75.5

90.6  
166.1

~~2.3~~ - 0.26 ✓

Mean = - 0.26<sup>+</sup>

9 25 1

101 07

9 16 07

5

14 16.9

~~254.7~~

Σ 690:

5

16

$\frac{1}{-4}$

$\frac{10}{6}$

7

54

+ 3.4

W. dis.

Position angle = 30° : Distance = 30"  
mag. = 5.0 and 7.2

Index below.

8.7 < brighter dis.

54.0

45.3

10.3

40.4

50.7

85.7

~~4.8~~ - 2.03

9 37 52

Nov. 10. 18

Index above.

q 29 29

100.0

142.0

97.2

143.0

+2.0

+5.8

87.8

~~4.0~~  
-1.97

q 40 57

96.8

143.9

100.8

141.6

+7.1

+0.8

87.9

~~4.0~~  
1.77

Index below.

q 42 10

189.7

231.2

188.0

232.9

+1.5

+4.9

86.4 201

~~4.0~~

q 44 49

9.3

54.2

11.0

51.2

+4.9

+0.2

85.1 - 2.07

~~4.0~~

Index above.

q 46 21

100.1

141.0

98.0

142.4

+0.9

+4.4

85.3

-2.04

~~4.0~~



Nov. 10. 1894.

 $\Sigma$  7 4 7

5	29
$\frac{1}{-3}$	$\frac{43}{46}$
8	14

W. obs.  
-6.1

Position angle =  $220^\circ$ : Distance =  $30''$ :  
mag. = 5.4 and 6.5:

Index to right and above.

177.1 &lt; brighter dis.

246.5	69.4
177.5	$\frac{67.5}{136.9}$
245.0	

$$\frac{2.8}{-0.84}$$

Index to left and below.

266.8	68.5
335.3	$\frac{72.1}{140.6}$
265.0	
337.1	

$$\frac{2.8}{-0.76}$$

265.2	72.8
338.0	$\frac{70.0}{142.8}$
265.2	
335.2	

$$\frac{2.7}{-0.72}$$

Index to right and above.

358.0	65.9
63.9	$\frac{66.1}{132.0}$
359.1	
65.2	

$$\frac{2.9}{-0.94}$$

Nov. 10, 1894.

10 27 8

356.2

65.0

358.0

64.5

68.8

66.5

135.3

~~2.9~~

-0.27

Index to left and below.

10 31 24

85.8

153.9

86.0

157.0

68.1

71.0

139.1

-0.792.8

 $\Sigma$  855.1

6

2

 $-\frac{2}{3}$  $\frac{12}{50}$ 

8

10

W. abs.

+2.5

Position angle =  $120^\circ$ : Distance =  $28''$ :  
 mag. = 5.8 and 7.0:

Index to right and below.

10 37 43

181.9 &lt; brighter dis.

238.1

177.0

245.2

56.2

68.2

124.4

~~3.1~~

-1.10



Nov. 10. 1894.

Index to left and above.

268.9

334.7

265.0

330.0

65.8

$$\begin{array}{r} 65.0 \\ 130.8 \end{array}$$
~~3.0~~

996

272.2

330.0

266.5

333.5

57.8

$$\begin{array}{r} 67.0 \\ 124.8 \end{array}$$
~~3.1~~

109

Index to right and below.

357.0

65.0

3.4

58.0

68.0

$$\begin{array}{r} 54.6 \\ 122.6 \end{array}$$
~~3.1~~

114

5.0

56.5

359.0

66.0

51.5

$$\begin{array}{r} 67.0 \\ 118.5 \end{array}$$
~~3.2~~

123

Index to left and above.

86.7

152.1

92.9

147.8

65.4

$$\begin{array}{r} 54.9 \\ 120.3 \end{array}$$
~~3.2~~

119

Nov. 12, 1894. $\Sigma$  464: 3 Per.

3	46
<u>23</u>	<u>26</u>
-4	20
7	40

W. obs.  
+ 31.5

Abandoned.

 $\Sigma$  533: 36  $\nabla$  72.

4	16
<u>23</u>	<u>31</u>
-4	45
7	15

W. obs.  
+ 34.0

Position angle =  $70^\circ$ : Distance =  $18''$ :  
mag. = 6.2 and 7.8.

Index above.

87.9 &lt; brighter dis.

152.0

91.0

151.1

64.1

60.1

124.2

~~2.1~~ -1.10

Index below.

180.0

243.0

178.0

241.9

63.0

64.9

127.9

~~2.0~~ -1.02



Nov. 12, 1894.

8	2	35	177.0	66.0	
			243.0	53.8	<del>3.2</del>
			181.8	119.8	-1.20
			235.6		

Index above.

8	5	55	272.0	56.0	
			<del>327.4</del>	64.8	<del>3.2</del>
			328.6	120.8	-1.1A
			268.0		
			332.8		

8	7	11	268.3	65.6	
			332.9	62.0	<del>3.0</del>
			269.0	127.6	-1.03
			331.0		

Index below.

8	9	58	<del>359.2</del>	60.3	
			0.8	65.1	<del>3.1</del>
			61.1	125.4	-1.0A
			358.9		
			64.0		

Seeing quite bad: images quite blurry and rather indistinct at times.

Nov. 12, 1894.

 $\Sigma$  46' : 16 Cygnus.

W. obs.

+ 50.2

19

38

015

19

23

4

37

Preceding &amp; northern component the brighter.

Position angle =  $130^\circ$  : Distance = 35''  
mag. = 5.1 and 5.3

Index to right and above.

77.7 - brighter dix.

164.5

86.8

79.5

80.5

160.0

167.3

2.2

Index to left and below.

351.0

81.9

72.9

85.1

349.2

167.0

74.3

2.2

349.3

84.8

74.1

86.3

348.3

171.1

74.6

2.2



Nov. 12, 1894

Index to right and above.

342.6

79.0

96.4

344.0

94.1

1.8

78.1

190.5

169.5

343.8

77.5

93.7

341.0

101.3

1.7

82.3

195.0

165.0

Index to left and below.

69.3

99.8

169.1

72.5

96.7

1.7

169.2

196.5

163.5

Above measurements on this star rejected as observer is confident that wrong image was made to disappear part of the time: this was proved on last set by examination of telescope. Same star again.

Index to left and below. B. W. obs.

347.1

alt. dis. 86.5

73.6

349.7

81.5

71.2

168.0

-0.23

Nov. 12. 1894

Index to right and above. A

9	0	41	81.8	159.0	77.2	
			77.2		<u>87.2</u>	
			164.4		164.7 - 0.30	<del>2.3</del>

9	2	21	75.5	164.8	89.3	
			80.8		<u>80.2</u>	<del>2.2</del>
			161.0		169.5 - 0.20	

Index to left and below. B.

9	4	14	170.0	250.0	80.0	
			167.1		<u>86.7</u>	<del>2.3</del>
			253.8		166.7 - 0.25	

9	5	51	168.0	252.8	84.8	
			169.1		<u>82.0</u>	<del>2.3</del>
			251.1		166.8 - 0.25	

Index to right and above. A.

9	8	57	261.3	341.0	79.7	
			257.8		<u>86.5</u>	<del>2.3</del>
			344.3		166.2 - 0.26	

38 23 05  
9 04 09



Nov. 12, 1894.

 $\Sigma 2580:17$ . Cygni:

1 a

+ 2

W. obs.  
+ 33.5
$$\begin{array}{r} 25 \\ + \\ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ \hline \end{array}$$

Position angle =  $90^\circ$ : Distance =  $25''$ :  
mag. = 5.0 and 8.2

Index to right and below.

109.9 ← brighter dis.

132.0

106.1

135.9

$$\begin{array}{r} 22.1 \\ 29.8 \\ \hline 51.9 \end{array}$$
~~51.2~~

3.19

Index to left and above.

196.0

224.2

197.1

223.0

28.2

$$\begin{array}{r} 25.9 \\ 54.1 \end{array}$$
~~51.1~~

3.10

197.9

223.1

195.3

226.9

25.2

$$\begin{array}{r} 31.6 \\ 56.8 \end{array}$$
~~51.8~~

2.98

Index to right and below.

286.0

315.8

298.0

311.9

29.8

$$\begin{array}{r} 21.9 \\ 51.7 \end{array}$$
~~51.2~~

3.20

Nov. 12. 1894.

9    29    42  
 289.5  
 311.5  
 284.0  
 317.0  
 22.0  
33.0  
 55.0  
~~5.1~~ 3.06

Index to left and above.

9    31    73  
 14.8  
 46.2  
 20.0  
 42.0  
 31.4  
22.0  
 53.4  
 5.1    3.12

$\Sigma$  2637:  $\theta$  Sagittae. W. obs.  
 20    4    +20.5  
2.5    40  
 5    36

Position angle  $\approx 310^\circ$ : Distance  $\approx 10''$ ?  
 mag. = 6.0 and 8.5

Index to left and below.

10    0    39  
 100.0  
 142.1 < brighter des.  
 100.8  
 142.9  
 42.1  
42.1  
 84.2  
 4.1  
 2.07



Nov. 12, 1894.

Index to right and above.

190.0	62.0 ✓	
252.0	<u>42.0</u> ✓	3.6
190.0	104.0 ✓	1.56 ✓
232.0		

199.7	30.1 ✓	
229.8	<u>42.8</u> ✓	<del>4.4</del>
189.2	72.9 ✓	
232.0		2.48 ✓

Index to left and below.

280.7	42.1 ✓	
322.8	<u>43.3</u> ✓	<del>4.0</del>
278.0	85.4 ✓	2.04 ✓
321.3		

280.0	42.9 ✓	
322.9	<u>41.9</u> ✓	4.1
279.1	84.8 ✓	2.06 ✓
321.0		

Index to right and above.

9.8	38.3 ✓	2.19 ✓
48.1	<u>42.2</u> ✓	<del>4.2</del>
9.8	80.5 ✓	
52.0		

Images faint when equalized: seeing poor:  
images blurry.

Nov. 12, 1894.

 $\Sigma$  2998 194. Aquarii.

W. obs.

- 14.1

$$\begin{array}{r} 23 \\ 22 \\ \hline 2 \end{array} \quad \begin{array}{r} 12 \\ 0 \\ \hline 48 \end{array}$$

Position angle =  $330^\circ$ ; Distance =  $10''$ ;  
mag. = 5.2 and 7.5.

Index above.

187.9 = brighter des.

234.2

189.0

232.9

46.3

43.0

89.3

3.9

Index below.

281.0

319.5

275.1

323.0

38.5

47.9

86.4

4.0

279.0

325.0

282.0

318.0

46.0

36.0

82.0

4.1

Index above.

14.1

49.8

8.0

51.0

35.7

43.0

38.7

4.2



Nov. 12. 1894.

10	27	4	7.9	45.8	
			53.7		
			12.1	36.9	4.1
			49.0	82.7	

Index below.

10	29	35	1015		
			139.1	37.6	
			97.2	46.4	4.1
			143.6	84.0	

1.93	2.01
2.24	2.14
2.12	2.08
.28	.23
2.09	2.08
	2.00

$\Sigma$  2894 : P. XVII, 65 : W. obs.  
 22 13 +37.2

Abandoned.

 $\Sigma$  56 : 3 Puzosi.

21	32
2	25
<u>26</u>	<u>53</u>
4	

W. obs.  
+6.0Position angle =  $330^\circ$  ; Distance =  $35''$  ;

mag = 5.8 and 7.3 :

Nov. 12. 1894.

Index above.

10 44 41

177.2  
243.9  
185.1  
239.0

66.7  
53.9  
120.6

1.18 ~~3.2~~

Index below.

10 46 27

273.3  
327.1  
268.9  
331.0

53.8  
62.1  
115.9

1.28 ~~3.3~~

10 47 41

271.1  
330.7  
274.0  
329.0

59.6  
55.0  
114.6

1.31 ~~3.3~~

Index above.

10 49 1

5.8  
58.0  
~~358.8~~  
1.0  
62.8

52.2

61.8  
114.0

1.33

~~3.3~~

10 50 30

359.2  
65.0  
3.2  
56.7

65.8  
53.5  
119.3

1.21

~~3.2~~



Nov. 12, 1894.

Index below.

10 52 17

94.0

147.2

90.0

152.7

53.2

62.7

115.9

~~3.2~~

1.24

1.18

1.33

1.21

.72

1.24

1.24

1.31

1.24

.87

1.29

1.26

Nov. 15. 149K.

0 Ceti  
Phot. R.

Lobs.

$$\begin{array}{r} 26 \\ 2 \end{array} \quad \begin{array}{r} 25 \\ 2 \end{array} \quad - 2.5$$

Index above.

163.8 < comparison star dis.

241.4

77.6<sup>^</sup>

153.3

97.7<sup>^</sup>

251.0

175.3<sup>^</sup>

~~84.7~~

2.1<sup>^</sup>  
+ 0.09

Index below.

242.0

104.0<sup>^</sup>

346.0

85.5<sup>^</sup>

251.5

189.5<sup>^</sup>

337.0

170.5<sup>^</sup>

1.8<sup>^</sup>  
- 0.18

Clouds.

251.0

Clouds thick.

84.9<sup>^</sup>

335.9

103.0<sup>^</sup>

242.0

187.9<sup>^</sup>

345.0

172.1

1.9<sup>^</sup>  
- 0.15



Nov. 15, 1894.

Index above.

332.2

72.7

344.1

63.5

100.5<sup>^</sup>

$$\begin{array}{r} 79.4^{\wedge} \\ 179.9^{\wedge} \end{array}$$

$$\begin{array}{r} 2.0^{\wedge} \\ + 0.00 \end{array}$$

343.6

63.8

333.5

69.9

80.2<sup>^</sup>

$$\begin{array}{r} 96.4^{\wedge} \\ 176.6^{\wedge} \end{array}$$

$$\begin{array}{r} 2.1^{\wedge} \\ + 0.06 \end{array}$$

Index below.

61.0

162.9

71.8

155.0

101.9<sup>^</sup>

$$\begin{array}{r} 83.2^{\wedge} \\ 185.1^{\wedge} \\ 174.9 \end{array}$$

$$\begin{array}{r} 1.9^{\wedge} \\ - 0.09 \end{array}$$

Measurements made through clouds & not difficult - images seen at times to be varying relatively to each other.

Clouds thick & growing worse.

Nov. 16, 1894.

O Ceti

Phot. R.

W. obs.

$$\begin{array}{r} 21 \\ 2 \end{array}$$

4

-2.5

$$\begin{array}{r} 23 \\ -2 \end{array}$$

$$\begin{array}{r} 23 \\ 41 \end{array}$$

$$\begin{array}{r} 9 \end{array}$$

$$\begin{array}{r} 11 \end{array}$$

$$\begin{array}{r} 0 \\ 0 \end{array}$$

$$\begin{array}{r} 2.5 \\ 3 \end{array}$$

$$\begin{array}{r} 2 \end{array}$$

(9.0 mag.) in large telescope.

(9.0 mag.) in finder.

Index below.

7 33 6

$$\begin{array}{r} 74.2 \\ 160.0 \end{array}$$

&lt; comparison star dis. \*

$$\begin{array}{r} 64.8 \end{array}$$

$$\begin{array}{r} 167.4 \end{array}$$

$$\begin{array}{r} 85.8^{\wedge} \\ 102.6^{\wedge} \end{array}$$

$$\begin{array}{r} 188.4^{\wedge} \end{array}$$

$$\begin{array}{r} 171.6 \end{array}$$

$$\begin{array}{r} 1.8^{\wedge} \end{array}$$

$$\begin{array}{r} -0.16 \end{array}$$

Index above.

7 36 55

$$\begin{array}{r} 155.2 \\ 254.8 \end{array}$$

$$\begin{array}{r} 161.0 \end{array}$$

$$\begin{array}{r} 248.8 \end{array}$$

$$\begin{array}{r} 99.6^{\wedge} \\ 87.8^{\wedge} \end{array}$$

$$\begin{array}{r} 187.4^{\wedge} \end{array}$$

$$\begin{array}{r} 172.6 \end{array}$$

$$\begin{array}{r} 1.9^{\wedge} \end{array}$$

$$\begin{array}{r} -0.14 \end{array}$$

7 38 58

$$\begin{array}{r} 162.3 \\ 250.8 \end{array}$$

$$\begin{array}{r} 156.9 \end{array}$$

$$\begin{array}{r} 255.5 \end{array}$$

$$\begin{array}{r} 88.5^{\wedge} \\ 98.6^{\wedge} \end{array}$$

$$\begin{array}{r} 187.1^{\wedge} \end{array}$$

$$\begin{array}{r} 172.9 \end{array}$$

$$\begin{array}{r} 1.9^{\wedge} \end{array}$$

$$\begin{array}{r} -0.13 \end{array}$$



Nov. 16, 1894.

Index below.

246.5

345.0

251.7

338.5

98.5<sup>1</sup>86.8<sup>1</sup>185.3<sup>1</sup>

174.7

~~1.9<sup>1</sup>~~  
-0.10

252.7

337.8

245.8

345.2

85.1<sup>1</sup>99.4<sup>1</sup>184.5<sup>1</sup>175.5<sup>1</sup>~~1.9<sup>1</sup>~~  
-0.08

Index above.

~~335.1~~

333.3

76.0

343.8

69.0

102.7<sup>1</sup>85.2<sup>1</sup>187.9<sup>1</sup>172.1<sup>1</sup>~~1.9<sup>1</sup>~~  
-0.15

m.p.: 441

Phot. R. W. abs.

3

 $\frac{0}{3}$ 

31

 $\frac{13}{18}$ 

+62.8

Index below.

48.0, comparison star dis.

184.0

43.7

186.7

136.0<sup>1</sup>143.0<sup>1</sup>279.0<sup>1</sup>8.0<sup>1</sup>~~-0.2<sup>1</sup>~~

-2.17

Nov. 16, 1894.

Index above.

8 30 32

$$\begin{array}{r}
 313.7 \\
 97.8 \\
 318.1 \\
 95.0 \\
 \hline
 144.1^{\wedge} \\
 136.9^{\wedge} \\
 281.0^{\wedge} \\
 79.0 \\
 \hline
 -0.2^{\wedge} \\
 -2.22
 \end{array}$$

8 33 52

$$\begin{array}{r}
 317.0 \\
 93.5 \\
 313.0 \\
 98.0 \\
 \hline
 136.5^{\wedge} \\
 145.0^{\wedge} \\
 281.5^{\wedge} \\
 78.5 \\
 \hline
 -0.2^{\wedge} \\
 -2.24
 \end{array}$$

Index below.

8 36 40

$$\begin{array}{r}
 44.0 \\
 188.0 \\
 50.5 \\
 182.9 \\
 \hline
 144.0^{\wedge} \\
 132.4^{\wedge} \\
 276.4^{\wedge} \\
 53.6 \\
 \hline
 -0.1^{\wedge} \\
 -2.09
 \end{array}$$

Index above.

8 39 49

$$\begin{array}{r}
 50.8 \\
 182.8 \\
 44.9 \\
 158.7 \\
 \hline
 132.0^{\wedge} \\
 143.8^{\wedge} \\
 275.8^{\wedge} \\
 54.2 \\
 \hline
 -0.1^{\wedge} \\
 -2.07
 \end{array}$$

Index above.

8 44 20

$$\begin{array}{r}
 133.5 \\
 272.8 \\
 140.4 \\
 273.2 \\
 272.3 \\
 \hline
 144.3^{\wedge} \\
 131.9^{\wedge} \\
 276.2^{\wedge} \\
 53.5 \\
 \hline
 -0.1^{\wedge} \\
 -2.05
 \end{array}$$

8 34 02



Nov. 16, 1894.

24 U. Cephei: Phot. R.

W. obs.

$$\begin{array}{r} 0 \\ 1 \\ \hline 23 \end{array} \quad \begin{array}{r} 30 \\ 5 \\ \hline 25 \end{array}$$

81.7

U. Cephei compared with  
faint adjacent star. =  
+ 21° 26.

Index to right.

$$\begin{array}{r} 214.2 \\ 17.5 \\ \hline 217.0 \\ 15.0 \end{array} \quad \begin{array}{r} 163.3^{\wedge} \\ 158.0^{\wedge} \\ \hline 321.3^{\wedge} \end{array} \quad \begin{array}{l} \text{comparison star dis.} \\ -1.8^{\wedge} \end{array}$$

Index to left.

$$\begin{array}{r} 128.9 \\ 282.5 \\ 126.2 \\ \hline 285.7 \end{array} \quad \begin{array}{r} 153.6^{\wedge} \\ 159.5^{\wedge} \\ \hline 313.1^{\wedge} \end{array} \quad \begin{array}{l} -1.4^{\wedge} \end{array}$$

$$\begin{array}{r} 126.3 \\ 286.0 \\ 129.3 \\ \hline 283.5 \end{array} \quad \begin{array}{r} 159.7^{\wedge} \\ 154.2^{\wedge} \\ \hline 313.9^{\wedge} \end{array} \quad \begin{array}{l} -1.5^{\wedge} \end{array}$$

Index to right.

$$\begin{array}{r} \cancel{114.9} \\ 37.0 \\ 195.0 \\ 34.5 \\ \hline 198.0 \end{array} \quad \begin{array}{r} 158.0^{\wedge} \\ 163.5^{\wedge} \\ \hline 321.5^{\wedge} \end{array} \quad \begin{array}{l} -1.9^{\wedge} \end{array}$$

Nov. 16, 1894.

q	43	27	34.5	162.7 <sup>^</sup>	
			197.2	<u>158.1<sup>^</sup></u>	-1.8 <sup>^</sup>
			37.1	320.8 <sup>^</sup>	
			195.2		

Index to left.

q	46	42	128.6	154.4 <sup>^</sup>	
			283.0	<u>161.2<sup>^</sup></u>	-1.5 <sup>^</sup>
			125.6	315.6 <sup>^</sup>	
			286.8		

q	51	27	126.9	159.3 <sup>^</sup>	
			286.2	<u>152.1<sup>^</sup></u>	-1.3 <sup>^</sup>
			130.7	311.4 <sup>^</sup>	
			282.8		

Index to right.

q	55	34	216.9	158.2 <sup>^</sup>	
			15.1	<u>162.9<sup>^</sup></u>	-1.8 <sup>^</sup>
			214.2	321.1 <sup>^</sup>	
			17.1		

q	58	24	214.8	161.4 <sup>^</sup>	-1.8 <sup>^</sup>
			16.2	<u>157.8<sup>^</sup></u>	<del>-1.7</del>
			216.2	<u>319.2<sup>^</sup></u>	
			15.0	332.2 <sup>^</sup>	



Nov. 16, 1894.

Index to left.

~~104.1~~ wrong image dis.

10	2	1	128.0	156.1 <sup>^</sup>	-1.6 <sup>^</sup>
			284.1	160.4 <sup>^</sup>	
			126.1	<u>316.5<sup>^</sup></u>	
			286.5		

125.0

286.6

127.8

284.2

161.6<sup>^</sup>156.4<sup>^</sup>398.0<sup>^</sup>-1.7<sup>^</sup>

Index to right.

37.0

145.0

33.9

197.1

158.0<sup>^</sup>163.2<sup>^</sup>321.2<sup>^</sup>-1.8<sup>^</sup>

Observations difficult: images faint: moon bright and considerable fog.

D.M. +81:30 compared with faint comparison star =  $\alpha^{\circ} 26$ . W. obs.

Index above.

132.1 comparison star dis.

280.2

135.0

278.0

148.1<sup>^</sup>143.0<sup>^</sup>291.1<sup>^</sup>-0.5<sup>^</sup>

Nov. 16. 1894.

Index below.

10	22	21	43.8	144.2 <sup>^</sup>	-0.6 <sup>^</sup>
			188.0	148.9 <sup>^</sup>	
			42.0	<u>293.1<sup>^</sup></u>	
			190.9		

10	23	56	41.0	149.7 <sup>^</sup>	-0.7 <sup>^</sup>
			190.7	145.8 <sup>^</sup>	
			42.2	<u>295.5<sup>^</sup></u>	
			188.0		

Index above.

10	26	18	315.0	141.8 <sup>^</sup>	-0.5 <sup>^</sup>
			96.8	147.5 <sup>^</sup>	
			312.3	<u>289.3<sup>^</sup></u>	
			99.8		

10	28	48	312.5	147.0 <sup>^</sup>	-0.5 <sup>^</sup>
			99.5	141.8 <sup>^</sup>	
			315.2	<u>288.8<sup>^</sup></u>	
			97.0		

Index below.

10	32	6	225.8	140.2 <sup>^</sup>	-0.5 <sup>^</sup>
			6.0	150.1 <sup>^</sup>	
			221.0	<u>290.3<sup>^</sup></u>	
			11.1		



Nov. 16, 1894.

10	34	9	221.0	149.3 <sup>^</sup>	
			10.3	<u>141.4<sup>^</sup></u>	-0.5 <sup>^</sup>
			224.1	290.7 <sup>^</sup>	
			5.5		

Index above.

10	36	14	138.0	136.8 <sup>^</sup>	
			274.8	<u>144.8<sup>^</sup></u>	-0.2 <sup>^</sup>
			133.2	281.6 <sup>^</sup>	
			278.0		

10	38	28	132.8	145.4 <sup>^</sup>	
			278.2	<u>137.0<sup>^</sup></u>	-0.3 <sup>^</sup>
			136.2	282.4 <sup>^</sup>	
			273.3		

Index below.

			<del>4.0</del>	among image dis.	
			44.7	142.5 <sup>^</sup>	
10	42	21	187.2	<u>150.7<sup>^</sup></u>	-0.6 <sup>^</sup>
			40.5	293.2 <sup>^</sup>	
			191.2		

10	44	12	41.7	149.3 <sup>^</sup>	
			191.0	<u>141.0<sup>^</sup></u>	-0.5 <sup>^</sup>
			46.0	290.3 <sup>^</sup>	
			187.0		

Nov. 16, 1894.

Index above.

316.1

96.8

311.2

99.8

140.7<sup>1</sup>

$$\frac{148.6^{\wedge}}{289.3^{\wedge}}$$
-0.5<sup>^</sup>

Observations difficult: images  
faint: moon bright and considerable  
fog.

P 594 0.5 feet.

B. + C. 1122.

12 13 46.5

14 46.5

B. 594.

12 14<sup>2</sup> 59.514<sup>3</sup> 59.5B+C = 47<sup>s</sup> fact.

His. of Jup. I. Mendall Obs. Clymer. etc.  
Comp. with 1<sup>st</sup> sat. on following side =  
= Sat II.



Nov. 16, 1894

Nov. 16, 1894

12	29	39.0	156.2	99.8	827.5
		53.5	256.0		206.9
12	29	10.5	154.5		
14		22.5	260.8	106.3	
		44.0	157.0	103.0	
		52.0	259.0		821.5
30	9	0.0	153.0	102.0	205.4
		5.5	252.5	99.5	
		13.0	157.4	100.8	
37		20.5	258.1	100.7	825.7
		27.0	155.0	100.2	206.4
		34.0	255.2	100.4	
		41.0	158.7		
31	5	48.5	258.9	100.2	827.6
		56.0	155.8	98.4	206.9
		2.5	254.2	99.3	
32		11.0	156.8		
		19.0	256.5	99.7	819.3
		28.5	156.7		204.8
		36.0	249.3	92.6	
		44.5	158.1	96.2	
32	4	51.0	251.0	92.9	
		58.5	164.3	86.7	
		4.5	252.3	88.0	
		11.5	156.2	86.1	
		19.0	245.2	79.0	
		28.0	163.3	81.9	
		36.0	246.3	83.0	



Nov. 16, 1894.

12	32	55 <sup>^</sup>		42.5	166.0	80.3
12	33	3 <sup>^</sup>		49.5	243.5	<del>80.3</del> 77.5
		11 <sup>^</sup>		57.5	173.2	70.3
		17 <sup>^</sup>	34	4.5	237.1	63.9
		23 <sup>^</sup>		10.5	172.1	65.0
		30 <sup>^</sup>		17.0	237.2	65.1
		36 <sup>^</sup>		23.0	173.3	63.9
		43 <sup>^</sup>		29.5	232.5	59.2
		49 <sup>^</sup>		35.5	180.8	51.7
		55 <sup>^</sup>		42.5	231.5	50.7
34	3	3 <sup>^</sup>		49.5	185.2	46.3
	15	15 <sup>^</sup>	35	2.5	223.0	37.8
	37	37 <sup>^</sup>		24.5	196.5	26.5
	52	52 <sup>^</sup>	35	39.0	218.4	21.9

not seen later

			Sim. Vis.	10		
12	36	25.0	36	191.0	30.0	822.2
		35.5		22.60		205.6
12	35	48.5		191.2	27.8	
	37.	2.5		219.0	28.9	

Comps somewhat difficult on account  
of elongation of images.

B 394 0.5 fast.

B &amp; C 1182

12 51 46.7

52 46.6

B 394

12 51 59.5

12 51 59.5

B + C = 47.5 fast.

Nov. 19, 1894.

0 Ceti:	Phot. R:	W. obs.
$\frac{26}{2}$	4	-2.5
<u>23</u>	<u>30</u>	
-2	34	
9	26	

✓  $\frac{0}{0}$  1.5 (9.0 mag.) in finder.  
0 2. (9.0 mag.) in large telescope

Index above

118.4 comparison star dis.

200.1 8 1.7 ✓

108.8

209.8  $\frac{101.0}{182.7}$  ✓  
177.3

1.9 ✓  
-0.05

Index below.

200.2

99.8 ✓

300.0

$\frac{79.2}{179.0}$  ✓

~~2.0~~ ✓  
+0.02

210.8

290.0

209.8

79.1 ✓

288.9

$\frac{102.2}{181.3}$  ✓

2.0 ✓

199.8

178.7

-0.02

302.0



Nov. 19, 1894.

Index above.

~~287.9~~

292.0

26.2

300.0

22.0

94.2 ✓

82.0 ✓

176.2 ✓

2.1 ✓

+0.07

300.0

20.3

290.9

~~29.0~~

26.8

80.3 ✓

95.9 ✓

176.2 ✓

2.1 ✓

+0.07

Index below.

21.2

118.2

30.0

107.8

97.0 ✓

77.8 ✓

174.8 ✓

2.1 ✓

+0.10

Stars near pole.

W. v. l.

(89° 37)

2.5

(89° 35)

3.

(89° 29)

3.5 ~~3.5~~ #.

(89° 37)

3.5

(89° 35)

3.

(89° 29)

3.5

(89° 35)

in finder.

(89° 29)

in finder.

(89° 27)

in finder.

(89° 35)

in large telescope.

(89° 29)

in large telescope.

(89° 27)

in large telescope.

Measurements made with Phot. J: comparison  
 star = Polaris: small + large telescopes in  
 focus.

Nov. 19. 1894.

Star<sup>4</sup> h.

8 43 53

0.95

1.13

0.97

0.83

0.82

$$\begin{array}{l} 4.70^\wedge \\ 0.940^\wedge = \text{mean.} \end{array}$$

$$\begin{array}{r} 9.97373^\wedge \\ \sqrt{\phantom{0}} \\ 49.46565^\wedge \\ \sqrt{0} \\ 0.13435^\wedge \\ 11.10 \\ 2.15 \\ 13.32^\wedge \text{ mean.} \end{array}$$
Star<sup>6</sup> h.

8 46 49

0.60

0.62

0.58

0.75

0.56

$$\begin{array}{l} 3.11^\wedge \\ 0.622^\wedge = \text{mean.} \end{array}$$

$$\begin{array}{r} 9.79379^\wedge \\ \sqrt{\phantom{0}} \\ 44.96295^\wedge \\ \sqrt{0} \\ 1.03105^\wedge \\ 11.10 \\ 2.15 \\ 14.22^\wedge \text{ mean.} \end{array}$$
Star<sup>2</sup> h.

8 54 49

1.04

1.35

1.36

1.52

1.50

$$\begin{array}{l} 6.77^\wedge \\ 1.354^\wedge = \text{mean.} \end{array}$$

$$\begin{array}{r} 0.13162^\wedge \\ \sqrt{\phantom{0}} \\ 0.65210^\wedge \\ 11.10 \\ 10.88^\wedge \\ 2.15 \\ 12.59^\wedge \text{ mean.} \end{array}$$

Star 1.

9 1 30

1.55

1.68

1.78

1.76

1.65

$$\begin{array}{l} 3.42^\wedge \\ 1.644^\wedge = \text{mean.} \end{array}$$

$$\begin{array}{r} 0.22634^\wedge \\ \sqrt{\phantom{0}} \\ 1.13170^\wedge \\ 11.10 \\ 9.97^\wedge \\ 2.15 \\ 12.12^\wedge \text{ mean.} \end{array}$$



Nov. 19. 1894.

Star 2.

0.59

0.68

0.78

0.63

0.533.21<sup>^</sup>  
0.642<sup>^</sup>9.20754<sup>^</sup>49.03770<sup>^</sup>50.  
0.96230<sup>^</sup>

11.10

2.15

14.21<sup>^</sup> Magn.

Star 3d.

1.11

0.96

0.90

1.02

1.105.09<sup>^</sup>  
1.014<sup>^</sup> = mean.0.00775<sup>^</sup>0.03675<sup>^</sup>

11.10

11.06<sup>^</sup>

2.15

13.21<sup>^</sup> Magn.

Star 5.

0.92

0.81

1.00

0.84

0.86

4.43<sup>^</sup>  
0.846<sup>^</sup>9.94743<sup>^</sup>49.73715<sup>^</sup>

50.

0.26245<sup>^</sup>

11.10

2.15

13.51<sup>^</sup> mean.

Star 8.

0.49

0.63

0.43

0.45

0.402.40<sup>^</sup>  
0.420<sup>^</sup>9.64124<sup>^</sup>44.40620<sup>^</sup>

50.

1.59340<sup>^</sup>

11.10

2.15

14.24<sup>^</sup> Magn.

Nov. 19, 1894.

3 bar  $0\frac{1}{2}$ .

1.38

1.70

1.72

2.00

1.06

7.26<sup>^</sup>1.572<sup>^</sup> = mean.0.19645<sup>^</sup>0.94225<sup>^</sup>

6.10

10.12<sup>^</sup>

2.15

14.27<sup>^</sup> (mean).



Posted to here.Nov. 20. 1894.

$$\begin{array}{r}
 0 \text{ Ceti.} \\
 \begin{array}{r}
 26 \\
 2 \\
 \hline
 23 \\
 -2 \\
 \hline
 9
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 4 \\
 48 \\
 16 \\
 44
 \end{array}$$

$$\begin{array}{r}
 W. obs. \\
 -2.5
 \end{array}$$

cloudy.

Index below.

$$\begin{array}{r}
 204.0 \\
 293.1 \\
 200.5 \\
 300.4
 \end{array}$$

&lt; comparison star dis.

$$\begin{array}{r}
 86.1^{\wedge} \\
 99.9^{\wedge} \\
 \hline
 186.0^{\wedge} \\
 174.0
 \end{array}$$

$$\begin{array}{r}
 1.9^{\wedge} \\
 -0.11
 \end{array}$$

Index above.

$$\begin{array}{r}
 288.2 \\
 28.0 \\
 296.0 \\
 20.8
 \end{array}$$

$$\begin{array}{r}
 99.8^{\wedge} \\
 84.8^{\wedge} \\
 \hline
 184.6^{\wedge} \\
 175.4
 \end{array}$$

$$\begin{array}{r}
 1.9^{\wedge} \\
 -0.09
 \end{array}$$

$$299.0$$

clouds thick : stars invisible.

$$\begin{array}{r}
 17.6 \\
 290.0 \\
 28.7
 \end{array}$$

$$\begin{array}{r}
 78.6^{\wedge} \\
 98.7^{\wedge} \\
 \hline
 177.3^{\wedge}
 \end{array}$$

$$\begin{array}{r}
 2.1^{\wedge} \\
 +0.05
 \end{array}$$

Nov. 20, 1894.

Index below.

8	5	12	15.9		
			120.9	105.0 <sup>^</sup>	
			28.0	80.0 <sup>^</sup>	1.9 <sup>^</sup>
			108.0	<u>185.0<sup>^</sup></u>	-0.09
				175.0	

8	10	36	29.3		
			108.0	78.7 <sup>^</sup>	
			13.0	108.9 <sup>^</sup>	1.9 <sup>^</sup>
			121.9	<u>187.6<sup>^</sup></u>	-0.14
				172.4	

Index above.

8	16	14	107.0		
			212.2	105.2 <sup>^</sup>	
			118.7	84.0 <sup>^</sup>	1.8 <sup>^</sup>
			202.7	<u>189.2<sup>^</sup></u>	-0.17
				170.8	

Observations made through more or less clouds: and most of the time with difficulty: clouds part of the time quite thick.

✓	<u>0</u>	1	✓	(9.0 mag.) finder.
	<u>0</u>	1.5	✓	(9.0 mag.) telescope



Nov. 20. 1894.

o Ceti again: blue glass:  
Phot. R.

W. obs

Index above.

298.0 &lt; comparison star dis.

22.0 84.0<sup>^</sup>

292.5

$$\begin{array}{r} 102.8^{\wedge} \\ 186.8^{\wedge} \end{array}$$
1.9<sup>^</sup>

35.3

~~Index below.~~

287.8

29.9

292.8

102.1<sup>^</sup>

Star faint.

14.2

$$\begin{array}{r} 80.4^{\wedge} \\ 182.5^{\wedge} \end{array}$$
2.0<sup>^</sup>

Index below.

26.0

113.7

23.8

121.2

87.4<sup>^</sup>97.4<sup>^</sup>185.1<sup>^</sup>1.9<sup>^</sup>

19.5

123.1

28.7

109.0

103.6<sup>^</sup>80.3<sup>^</sup>183.9<sup>^</sup>1.9<sup>^</sup>

Nov. 20. 1894.

o Ceti: ~~blue~~ red glass: W. obs.  
 Phot. R.

Index below.

8	55	28	26.0	95.2 <sup>1</sup>	
			121.2	<u>100.6<sup>1</sup></u>	1.7 <sup>1</sup>
			17.1	195.8 <sup>1</sup>	
			117.7		

a	59	36	15.4	109.6 <sup>1</sup>	
			125.0	<u>88.6<sup>1</sup></u>	1.7 <sup>1</sup>
			22.2	198.2 <sup>1</sup>	
			110.8		

Index above.

9	4	45	115.1	82.9 <sup>1</sup>	
			2030	<u>105.2<sup>1</sup></u>	1.8 <sup>1</sup>
			105.9	193.1 <sup>1</sup>	
			211.1		

9	9	39	103.0	108.7 <sup>1</sup>	
			211.7	<u>86.3<sup>1</sup></u>	1.7 <sup>1</sup>
			115.0	195.0 <sup>1</sup>	
			201.3		



Double stars: Phot. 12. Nov. 20, 1894.

56' : 3 Pegasi:

21 32

25 45

-4 13

7 47

W. obs.  
+6.0

This star is  $\alpha^1$  probably  $\Sigma$  Arg. See note on p. 104.  
Position angle =  $250^\circ$ ; Distance =  $35''$ ;  
mag. 6.2 and 7.4.

~~Index above.~~

~~201.0~~ < south preceding + fainter dis.

~~299.0~~

~~202.4~~

~~296.0~~

~~201.5~~

~~Index below.~~

Index above.

201.5

297.8

204.9

297.9

< south preceding + fainter dis.

96.3<sup>^</sup>

93.0<sup>^</sup>

189.3<sup>^</sup>

1.8<sup>^</sup>

Index below.

291.8

26.9

259.9

25.0

95.1<sup>^</sup>

95.1<sup>^</sup>

190.2<sup>^</sup>

1.8<sup>^</sup>

Nov. 20, 1894.

9	51	11	290.2	98.5 <sup>^</sup>	
			28.7	<u>91.0<sup>^</sup></u>	1.8 <sup>^</sup>
			294.0	189.5 <sup>^</sup>	
			25.0		

Index above.

9	53	49	21.5	94.6 <sup>^</sup>	
			116.1	<u>96.7<sup>^</sup></u>	1.8 <sup>^</sup>
			20.2	191.3 <sup>^</sup>	
			116.9		

9	55	46	20.0	97.0 <sup>^</sup>	
			117.0	<u>89.0<sup>^</sup></u>	1.9 <sup>^</sup>
			24.0	186.0 <sup>^</sup>	
			113.0		

Index below.

9	58	0	113.9	93.1 <sup>^</sup>	
			207.0	<u>103.0<sup>^</sup></u>	1.7 <sup>^</sup>
			108.0	196.1 <sup>^</sup>	
			211.0		

A re-estimate would make mag. about 2.0 and 2.4 (as near as clouds will allow an estimate) and the distance about 30"; the def. circ. reads +5°.9; St.A. about right:

There is some doubt about this being the right star: the stars seem to be about the right distance apart (or perhaps a little less than nominal distance)



Nov. 20, 1894.

~~but they do not differ enough in mag.~~

12" : 4' Aquarius.

W. obs.

23

9

-9.8

~~2~~  
~~26~~

25

~~-3~~

16

8

44

Abandoned.

 ~~$\Sigma$  924 : 20 Sem.~~~~6~~~~25~~~~+17.9~~~~2~~~~31~~~~-3~~~~54~~~~8~~~~6~~ $\Sigma$  924 : 20 Sem.

W. obs.

6

25

~~-9.8~~

2

33

+17.9

~~-3~~

52

8

8

Position angle =  $310^\circ$  : Distance = 17" :  
mag. = 6.0 and 7.0

Nov. 20. 1894.

Index below and to left.

105.0 &lt; Janitor star dis.

10 33 30

207.0

108.6

205.0

102.0<sup>^</sup>96.4<sup>^</sup>198.4<sup>^</sup>161.6~~1.6~~<sup>^</sup>

-0.56

Index to right + above.

197.5

10 34 0

302.0

200.0

303.0

104.5<sup>^</sup>103.0<sup>^</sup>207.5<sup>^</sup>152.5~~1.5~~<sup>^</sup>

-0.53

10 35 24

200.2

296.5

198.9

300.2

96.3<sup>^</sup>101.3<sup>^</sup>197.6<sup>^</sup>162.4~~1.7~~<sup>^</sup>

-0.33

Index to left + below.

10 36 59

287.3

29.1

290.0

30.2

101.8<sup>^</sup>100.2<sup>^</sup>202.0<sup>^</sup>158.0\* ~~1.6~~<sup>^</sup>

-0.42

10 38 9

200.3

28.0

289.2

28.0

107.7<sup>^</sup>98.3<sup>^</sup>206.0<sup>^</sup>154.0~~0.77~~<sup>^</sup>

-0.50



Nov. 20. 1894.

Index to right + above.

13.3

120.2

15.9

119.1

106.9<sup>^</sup>103.2<sup>^</sup>210.1<sup>^</sup>149.91.4<sup>^</sup>

-0.529

Posted to here.

Nov. 22. 1894.

22

18

2350

1

32

22

18

2355

1

37

24  
0

9

147

22

22

-12.85

20<sup>d</sup>

22

18

25

-13° 7'

21

22

20

32

-12 15-0

22

22

51

-12 33

2435

+2

12

-12.6

-12 33

13

-12

46

22

22

51

-255

22

20

46

-12° 45'

94

55

39

3

117

20

40

60/200

13



Nov. 22. 1894.

$$\begin{array}{r} 22 \quad 23 \\ 25 \quad 0 \\ \hline 42 \quad 37 \end{array} = \frac{126}{1} - 11, \text{X}$$

Compared with comparison star: Polaris.  
 Stars near pole: nat. S. W. obs.  
 Star 2 h.

$$\begin{array}{r} 1.33 \\ 1.32 \\ 1.53 \\ 1.31 \\ 1.30 \\ \hline 6.79 \end{array} \quad 1.358^{\wedge} = \text{mean}$$

$$\begin{array}{r} \log 1.358 = 0.13290 \\ \hline 0.66450 \\ 11.10 \\ \hline 10.44 \\ 2.15 \\ \hline 12.59 = \text{mag.} \end{array}$$

Star 4 h.

$$\begin{array}{r} 1.00 \\ 0.97 \\ 1.03 \\ 1.11 \\ 1.18 \\ \hline 5.29 \end{array} \quad 1.058^{\wedge} = \text{mean}$$

$$\begin{array}{r} \log 1.058 = 0.02449 \\ \hline 0.12245 \\ 11.10 \\ \hline 10.98 \\ 2.15 \\ \hline 13.13 = \text{mag.} \end{array}$$

Star 6 l.

$$\begin{array}{r} 0.58 \\ 0.72 \\ 0.73 \\ 0.75 \\ 0.72 \\ \hline 3.50 \end{array} \quad 0.700^{\wedge} = \text{mean}$$

$$\begin{array}{r} \log 0.700 = 9.84510 \\ \hline 49.22550 \\ 0.77450 \\ 11.10 \\ \hline 2.15 \\ \hline 14.02 = \text{mag.} \end{array}$$

Nov. 22. 1894.

Star 7.

0.68

0.52

0.62

0.65

~~0.73~~ sun to be wrong.

0.64

 $\frac{3.11}{^{\wedge}}$  $0.622 = \text{mean}$ 

$$\log 0.622 = 9.79379$$

$$\begin{array}{r} 48.96895 \\ 1.03105 \\ 11.10 \\ 2.15 \\ \hline 14.28 = \text{mag.} \end{array}$$

Star 3d.

1.33

1.42

1.41

1.47

1.45

 $\frac{7.08}{^{\wedge}}$  $1.416 = \text{mean}$ 

$$\log 1.416 = 0.15106$$

$$\begin{array}{r} 0.75530 \\ 11.10 \\ 10.34 \\ 2.15 \\ \hline 12.49 = \text{mag.} \end{array}$$

Star 5.

1.07

1.13

0.96

0.96

1.04

 $\frac{5.16}{^{\wedge}}$  $1.032 = \text{mean.}$ 

$$\log 1.032 = 0.01368$$

$$\begin{array}{r} 0.06840 \\ 11.10 \\ 11.03 \\ 2.15 \\ \hline 13.18 = \text{mag.} \end{array}$$

Star 8E.

0.47

0.47

0.49

0.46

0.49

 $\frac{2.38}{^{\wedge}}$  $0.476 = \text{mean.}$ 

$$\log 0.476 = 9.67761$$

$$\begin{array}{r} 48.38805 \\ 1.61195 \\ 11.10 \\ 2.15 \\ \hline 14.86 = \text{mag.} \end{array}$$



Nov. 22. 1894.

Star 1.

1.39

1.79

1.67

1.35

1.42

7.62 $1.524 = \text{mean.}$ 

$$\log 1.524 = 0.18298$$

0.91490

11.10

10.19

2.15

12.34 = magn.

Star 0 1/2.

1.96

1.94

2.03

1.66

2.01

9.60 $1.920 = \text{mean.}$ 

$$\log 1.920 = 0.28330$$

141650

11.10

9.68

2.15

11.83 = magn.

W. obs.

Star 1 : Comparison star = S Wai Min.

3.92

3.80

4.18

3.89

~~3.52~~ seen to be wrong.

3.65

19.44 $3.888 = \text{mean.}$ 

$$\log 3.888 = 0.58973$$

294865

11.10

8.15

4.34

12.49 = magn.

Star 2 h.

3.72

3.44

3.43

3.22

3.21

17.02 $3.404 = \text{mean.}$ 

$$\log 3.404 = 0.53199$$

265995

11.10

8.44

4.34

12.78 = magn.

Nov. 22. 1897

Star 4 R.

10 10 3

2.97

2.82

2.84

2.80

2.81

14.24 $2.848 = \text{mean.}$ 

$$\log 2.848 = 0.45454$$

$$\begin{array}{r} 2.27270 \\ 11.10 \\ \hline 8.83 \\ 4.34 \\ \hline 13.17 = \text{mag.} \end{array}$$

Star 6 L.

10 13 49

1.94

1.72

1.63

1.68

1.97

8.94 $1.788 = \text{mean.}$ 

$$\log 1.788 = 0.25237$$

$$\begin{array}{r} 1.26185 \\ 11.10 \\ \hline 9.84 \\ 4.34 \\ \hline 14.18 = \text{mag.} \end{array}$$

Star 7.

10 17 14

1.39

1.12

1.51

1.54

2.11

7.67 $1.534 = \text{mean.}$ 

$$\log 1.534 = 0.18583$$

$$\begin{array}{r} 0.92915 \\ 11.10 \\ \hline 10.17 \\ 4.34 \\ \hline 14.51 = \text{mag.} \end{array}$$

Star 5.

10 26 35

2.20

2.43

2.39

2.27

2.29

11.58 $2.316 = \text{mean.}$ 

$$\log 2.316 = 0.36474$$

$$\begin{array}{r} 1.82370 \\ 11.10 \\ \hline 9.28 \\ 4.34 \\ \hline 13.62 = \text{mag.} \end{array}$$



Nov. 22, 1894.

Star 3 d.

3.14

3.22

3.19

3.10

3.08

 $\frac{15.73}{\wedge}$  $3.146 = \text{mean.}$ 

$$\log 3.146 = 0.49776$$

2.48880

11.10

8.61

4.34

12.95 = magn.

Star 8 e.

1.31

1.20

1.33

1.31

1.35

 $\frac{6.50}{\wedge}$  $1.300 = \text{mean.}$ 

$$\log 1.300 = 0.11394$$

0.56970

11.10

10.53

4.34

14.87 = magn.

Star 0  $\frac{1}{2}$ .

3.79

3.99

4.04

4.14

4.00

 $\frac{19.96}{\wedge}$  $3.992 = \text{mean.}$ 

$$\log 3.992 = 0.60119$$

3.00595

11.10

8.09

4.34

12.43 = magn.

Nov. 27. 1894.o Ceti:

W. obs.

2	4
<u>0</u>	<u>10</u>
1	54
10	6

-2.5

<u>0</u>	1.5	✓	(9.0 mag.)	Jinder. telescope.
<u>0</u>	2.0	✓	(9.0 mag.)	

Index below.

16.2	2 comparison star dis.
121.0	104.8 <sup>^</sup>
22.0	85.2 <sup>^</sup>
112.2	190.0 <sup>^</sup>
	168.0

 $1.8^{\wedge}$   
-0.38

Index above.

119.0	84.1 <sup>^</sup>
203.1	109.3 <sup>^</sup>
103.9	193.4 <sup>^</sup>
213.2	166.6

 $1.7^{\wedge}$   
\* -0.25

107.0	104.7 <sup>^</sup>
211.7	87.4 <sup>^</sup>
116.7	192.1 <sup>^</sup>
204.1	167.9

 $1.8^{\wedge}$   
-0.23



Nov. 27. 1894.

Index below.

206.8

293.0

196.2

303.0

86.2<sup>^</sup>106.8<sup>^</sup>193.0<sup>^</sup>

167.0

~~1.8<sup>^</sup>~~

-0.25

194.9

304.0

205.8

296.0

109.1<sup>^</sup>90.2<sup>^</sup>199.3<sup>^</sup>

160.7

~~1.70<sup>^</sup> (2)~~~~-0.37~~~~Index above.~~

206.7

291.5

197.7

302.0

84.8<sup>^</sup>104.3<sup>^</sup>189.1<sup>^</sup>

170.9

~~1.8<sup>^</sup>~~

-0.17

Index above.

286.4

30.5

296.9

22.5

104.1<sup>^</sup>85.6<sup>^</sup>189.7<sup>^</sup>

270.3

~~1.8<sup>^</sup>~~

-0.18

7 44 5

7 46 50

7 50 14

7 53 49

7 43 23

Nov. 27, 1894.

Comparison exp. = polaris: Phot 2: W. obs.  
Star 2 h.

1.20  
1.25  
1.34  
1.40  
1.41  

---

6.60^ 1.320^

$$\begin{array}{r} \text{Log } 1.320 = 0.12057 \\ \hline 0.60285 \\ 11.10 \\ \hline 10.50 \\ 2.15 \\ \hline 12.65 = \text{mag.} \end{array}$$

Star 4 h.

1.09  
1.09  
1.19  
1.23  
1.23  

---

5.83^ 1.166^

$$\begin{array}{r} \text{Log } 1.166 = 0.06670 \\ \hline 0.33350 \\ 11.10 \\ \hline 10.77 \\ 2.15 \\ \hline 12.92 = \text{mag.} \end{array}$$

Star 1.

1.47  
1.48  
1.42  
1.46  
1.50  

---

7.33^ 1.466^

$$\begin{array}{r} \text{Log } 1.466 = 0.16613 \\ \hline 0.83065 \\ 11.10 \\ \hline 10.27 \\ 2.15 \\ \hline 12.42 = \text{mag.} \end{array}$$

Star 6 h.

0.67  
0.75  
0.78  
0.71  
0.75  

---

3.66^ 0.732^

$$\begin{array}{r} \text{Log } 0.732 = 9.86451 \\ \hline 49.32255 \\ 0.67745 \\ 11.10 \\ \hline 2.15 \\ \hline 13.92 = \text{mag.} \end{array}$$



Nov. 27, 1894.

Star 7.

0.56

0.66

0.63

0.68

0.74

 $3.27^{\wedge} 0.654^{\wedge}$ 

$$\text{Log } 0.654 = 9.81558^5$$

$$\begin{array}{r} 49.07790 \\ 0.82210 \\ 11.10 \\ 2.15 \\ \hline 14.87^{\wedge} = \text{magn.} \end{array}$$

Star 3 d.

0.94

1.01

1.02

1.19

1.14

 $5.30^{\wedge} 1.060^{\wedge}$ 

$$\text{Log } 1.060 = 0.02531^5$$

$$\begin{array}{r} 0.12655 \\ 11.10 \\ 10.97 \\ 2.15 \\ \hline 13.12^{\wedge} = \text{magn.} \end{array}$$

Star 5.

0.81

0.82

0.78

0.73

0.80

 $3.94^{\wedge} 0.788^{\wedge}$ 

$$\text{Log } 0.788 = 9.89653^5$$

$$\begin{array}{r} 49.48265 \\ 0.51735 \\ 11.10 \\ 2.15 \\ \hline 13.77^{\wedge} = \text{magn.} \end{array}$$

Star 8 E.

0.50

0.46

0.48

0.40

0.47

 $2.31^{\wedge} 0.462^{\wedge}$ 

$$\text{Log } 0.462 = 9.66464^5$$

$$\begin{array}{r} 48.32320 \\ 1.67680 \\ 11.10 \\ 2.15 \\ \hline 14.93^{\wedge} = \text{magn.} \end{array}$$

Nov. 27. 1894.

Star 8 E: compared with S Ursae Min.

1.99

Phot. J.

W. obs

2.27

$$\text{Log } 2.150 = 0.33244$$

2.09

$$\begin{array}{r} 1.66220 \\ 11.10 \\ \hline 9.44 \end{array}$$

2.17

$$\begin{array}{r} 11.10 \\ 9.44 \\ \hline 4.34 \end{array}$$

2.23

$$\begin{array}{r} 4.34 \\ 13.78 \end{array}$$

$$\frac{10.75^{\wedge}}{2.150^{\wedge}}$$

13.78 = magn.

Star 3 d.

$$\text{Log } 4.390 = 0.64246$$

4.07

$$\begin{array}{r} 3.21230 \\ 11.10 \\ \hline 7.89 \end{array}$$

4.50

$$\begin{array}{r} 7.89 \\ 4.34 \\ \hline 12.23 \end{array}$$

4.55

$$\begin{array}{r} 4.34 \\ 12.23 \end{array}$$

4.68

12.23 = magn.

4.15

$$\frac{21.95^{\wedge}}{4.390^{\wedge}}$$

Star 5.

$$\text{Log } 3.116 = 0.49360$$

2.92

$$\begin{array}{r} 2.46800 \\ 11.10 \\ \hline 8.63 \end{array}$$

3.41

$$\begin{array}{r} 8.63 \\ 4.34 \\ \hline 12.97 \end{array}$$

3.20

$$\begin{array}{r} 4.34 \\ 12.97 \end{array}$$

2.98

12.97 = magn.

3.07

$$\frac{15.58^{\wedge}}{3.116^{\wedge}}$$

Star 6 l.

$$\text{Log } 1.530 = 0.18469$$

1.56

$$\begin{array}{r} 0.92345 \\ 11.10 \\ \hline 10.18 \end{array}$$

1.59

$$\begin{array}{r} 10.18 \\ 4.34 \\ \hline 14.52 \end{array}$$

1.68

$$\begin{array}{r} 4.34 \\ 14.52 \end{array}$$

1.32

14.52 = magn.

1.50

$$\frac{7.65^{\wedge}}{1.530^{\wedge}}$$



Nov. 22, 1894.

Star 7.

1.62

1.49

1.70

1.67

1.76

$$\frac{8.29^{\wedge}}{1.658^{\wedge}}$$

$$\begin{array}{r} \text{Log } 1.658 = 0.21958 \\ \hline 5 \\ 1,09790 \\ 11.10 \\ \hline 10.00 \\ 4.34 \\ \hline 14.34^{\wedge} = \text{mag.} \end{array}$$

Star 6 again. This measurement

1.77

1.93

1.90

1.95

1.83

$$\frac{9.38^{\wedge}}{1.876^{\wedge}}$$

$$\begin{array}{r} \text{Log } 1.876 = 0.27323 \\ \hline 5 \\ 1,36615 \\ 11.10 \\ \hline 9.73 \\ 4.34 \\ \hline 14.07^{\wedge} = \text{mag.} \end{array}$$

thought to be preferable to other in 6h: being taken with exceptional care.

Star 4 12.

2.36

2.42

2.52

2.94

2.81

$$\frac{13.05^{\wedge}}{2.610^{\wedge}}$$

$$\begin{array}{r} \text{Log } 2.610 = 0.41664 \\ \hline 5 \\ 2,08320 \\ 11.10 \\ \hline 9.02 \\ 4.34 \\ \hline 13.36^{\wedge} = \text{mag.} \end{array}$$

Star 2h.

3.88

4.03

3.94

4.15

3.94

$$\frac{19.94^{\wedge}}{3.988^{\wedge}}$$

$$\begin{array}{r} \text{Log } 3.988 = 0.60076 \\ \hline 5 \\ 3,00380 \\ 11.10 \\ \hline 8.10 \\ 4.34 \\ \hline 12.44^{\wedge} = \text{mag.} \end{array}$$

Nov. 27. 1894.

Star 1.

4.38

4.23

4.09

4.07

4.19

 $\frac{20.87^{\wedge}}{4.174^{\wedge}}$ 

$$\text{Log } 4.174 = 0.62055$$

$$\begin{array}{r} 3.10275 \\ 11.10 \\ \hline 8.00 \\ 4.34 \\ \hline 12.34^{\wedge} = \text{mag.} \end{array}$$

~~Star 0 $\frac{1}{2}$ .~~ wrong star.~~2.88~~~~2.99~~~~3.61~~~~3.63~~~~3.56~~Star 0 $\frac{1}{2}$  compared with S Ursa Min.

4.04

4.22

4.45

4.50

4.30

 $\frac{21.51^{\wedge}}{4.302^{\wedge}}$ 

$$\text{Log } 4.302 = 0.63367$$

$$\begin{array}{r} 3.16835 \\ 11.10 \\ \hline 7.93 \\ 4.34 \\ \hline 12.27^{\wedge} = \text{mag.} \end{array}$$

Star 0 $\frac{1}{2}$  compared with polaris.

1.66

~~1.59~~

1.85

1.74

1.71

1.71

sent to Keenung.

$$\text{Log } 1.710 = 0.23300$$

$$\begin{array}{r} 1.16500 \\ 11.10 \\ \hline 9.94 \\ 2.15 \\ \hline 12.09^{\wedge} = \text{mag.} \end{array}$$



Nov. 27, 1894.

8 Cygni:

Phot. D.

W. obs.

$$\begin{array}{r}
 20 \quad 8 \\
 \underline{-2} \quad 57 \\
 +6 \quad 49 \\
 \hline
 5 \quad 11
 \end{array}$$

+57.2

$$\begin{array}{r}
 9 \quad 1.2 \quad S \\
 \underline{S} \quad 4. \quad 2 \\
 \text{estimate } 13.4
 \end{array}$$

Star r.

0.58

0.62

0.66

0.73

0.78

$$\begin{array}{r}
 0.78 \\
 \hline
 3.37^{\wedge} \quad 0.674^{\wedge}
 \end{array}$$

$$\text{Log } 0.674 = 9.82866.$$

49.14330

0.85670

11.10

2.58

14.54 = magn.

Star t.

0.34

0.35

0.38

0.34

0.28

$$\begin{array}{r}
 0.28 \\
 \hline
 1.69^{\wedge} \quad 0.338^{\wedge}
 \end{array}$$

$$\text{Log } 0.338 = 9.52892.$$

47.64460

2.35540

11.10

2.58

16.04 = magn.

Nov. 27, 1894.

Star q.

$$\text{Log } 1.418 = 0.15168$$

1.32

$$\begin{array}{r} 5 \\ 0.75840 \end{array}$$

1.39

$$\begin{array}{r} 24150 \end{array}$$

1.49

$$\begin{array}{r} 11.10 \end{array}$$

1.41

$$\begin{array}{r} 10.34 \end{array}$$

1.48

$$\begin{array}{r} 2.58 \end{array}$$

$$12.92^{\wedge} = \text{mag.}$$

$$\begin{array}{r} 7.09^{\wedge} \end{array} \quad 1.418^{\wedge}$$

Star s.

$$\text{Log } 0.828 = 9.91803$$

0.89

$$\begin{array}{r} 5 \\ 49.59015 \end{array}$$

0.89

$$\begin{array}{r} 0.40985 \end{array}$$

0.83

$$\begin{array}{r} 11.10 \end{array}$$

0.77

$$\begin{array}{r} 2.58 \end{array}$$

$$14.09^{\wedge} = \text{mag.}$$

0.76

$$\begin{array}{r} 4.14^{\wedge} \end{array} \quad 0.828^{\wedge}$$

Star n.

$$\text{Log } 1.172 = 0.06893$$

1.18

$$\begin{array}{r} 5 \\ 0.34465 \end{array}$$

1.19

$$\begin{array}{r} 11.10 \end{array}$$

1.20

$$\begin{array}{r} 10.46 \end{array}$$

1.15

$$\begin{array}{r} 2.58 \end{array}$$

$$13.34^{\wedge} = \text{mag.}$$

1.14

$$\begin{array}{r} 5.86^{\wedge} \end{array} \quad 1.172^{\wedge}$$

1.25

seen to be wrong

Region getting rather low.

Comparison star used on observations  
with S Cygne above is  $\alpha$  Cephei  
(alpha Cephei)

Sky a little hazy at times during  
evening.



Posted to here.

Nov. 28. 1894.

Polar sequence: Phot. S.  
Comparison star Polaris.

W. obs.

~~Star 1.~~

~~1.61~~

~~1.64~~

~~1.63~~

~~1.76~~

~~1.76~~

pencils not coincident.

Star 2h.

~~1.40~~

~~1.57~~

Star 1 again: adjusted pencils.

1.43

1.61

1.60

1.59

1.68

7.91

1.582

Log 1.582 = 0.19921<sup>5</sup>

0.99605

11.10

10.10

2.15

12.25 = magn

Star 2h again.

1.39

1.47

1.44

1.54

1.34

7.18

1.436

Log 1.436 = 0.15715<sup>5</sup>

0.78575

11.10

10.31

2.15

12.46 = magn

Nov. 28. 1894.

Star 4 k

1.00

0.98

1.01

1.02

1.03

---

5.04

1.008

$$\text{Log } 1.008 = 0.00346$$

$$\begin{array}{r} 0.01730 \\ 11.10 \\ \hline 11.08 \\ 2.15 \\ \hline 13.23 = \text{mag.} \end{array}$$

Star 6 l.

0.58

0.74

0.65

0.68

0.59

---

3.24

0.648

$$\text{Log } 0.648 = 9.81158$$

$$\begin{array}{r} 49.05790 \\ 0.94210 \\ 11.10 \\ 2.15 \\ \hline 14.19 = \text{mag.} \end{array}$$

Star 7.

0.53

0.56

0.57

0.55

0.55

---

2.76

0.552

$$\text{Log } 0.552 = 9.74194$$

$$\begin{array}{r} 48.70970 \\ 1.29030 \\ 11.10 \\ 2.15 \\ \hline 14.54 = \text{mag.} \end{array}$$

Star 8 e.

0.43

0.44

0.46

0.44

0.43

---

2.20

0.440

$$\text{Log } 0.440 = 9.64345$$

$$\begin{array}{r} 48.21725 \\ 1.78275 \\ 11.10 \\ 2.15 \\ \hline 15.03 = \text{mag.} \end{array}$$



Nov. 28. 1894.

Star 3d.

1.22

1.24

1.24

1.33

1.34

---

 6.37 1.274

$$\text{Log } 1.274 = 0.10517$$

$$\begin{array}{r} 0.52585 \\ 11.10 \\ 10.57 \\ 2.15 \\ \hline 12.72 = \text{mag.} \end{array}$$

Star 5.

0.82

0.86

0.92

1.00

0.95

---

 4.55 0.910

$$\text{Log } 0.910 = 9.95904$$

$$\begin{array}{r} 49.79520 \\ 0.20480 \\ 11.10 \\ 2.15 \\ \hline 13.45 = \text{mag.} \end{array}$$

Star 0  $\frac{1}{2}$ .

1.68

1.89

2.02

1.97

1.94

---

 9.50 1.900

$$\text{Log } 1.900 = 0.27875$$

$$\begin{array}{r} 1.39375 \\ 11.10 \\ 9.71 \\ 2.15 \\ \hline 11.86 = \text{mag.} \end{array}$$

Comparison star 8 Ursa Min. W. obs.

Star 5.

2.80

2.93

3.09

3.17

3.21

---

 15.20 3.040

Phot. 2.

$$\text{Log } 3.040 = 0.48287$$

$$\begin{array}{r} 2.41435 \\ 11.10 \\ 8.69 \\ 4.34 \\ \hline 13.03 = \text{mag.} \end{array}$$

Nov. 28, 1894.

Star 3d.

$$\text{Log } 4.028 = 0.60509$$

4.04

3.99

4.06

3.98

~~4.07~~20.14

4.028

seen to be wrong.

$$\begin{array}{r} 3 \\ \hline 3.02545 \\ 11.10 \\ \hline 8.07 \\ 4.34 \\ \hline 12.41 = \text{mag.} \end{array}$$

Star 8E.

$$\text{Log } 1.548 = 0.18977$$

1.49

1.57

1.53

1.54

1.61

7.74

1.548

$$\begin{array}{r} 5 \\ \hline 0.94885 \\ 11.10 \\ \hline 10.15 \\ 4.34 \\ \hline 14.49 = \text{mag.} \end{array}$$

Star 7.

$$\text{Log } 1.888 = 0.27600$$

1.83

1.98

1.89

1.85

1.89

9.44

1.888

$$\begin{array}{r} 5 \\ \hline 1.38000 \\ 11.10 \\ \hline 9.72 \\ 4.34 \\ \hline 14.06 = \text{mag.} \end{array}$$

Star 6d.

$$\text{Log } 1.982 = 0.29710$$

1.85

2.05

2.15

1.95

1.91

9.91

1.982

$$\begin{array}{r} 5 \\ \hline 1.48550 \\ 11.10 \\ \hline 9.61 \\ 4.34 \\ \hline 13.95 = \text{mag.} \end{array}$$



Nov. 28, 1894.

Star 4 R.

3.76

3.75

3.99

3.68

3.84

19.02

3.804

$$\text{Log } 3.804 = 0.58024$$

$$\begin{array}{r} 2.90120 \\ 11.10 \\ \hline 8.20 \\ 4.34 \\ \hline 12.54 = \text{magn.} \end{array}$$

Star 2 h.

5.11

4.64

4.99

5.32

4.92

24.98

4.996

$$\text{Log } 4.996 = 0.69862$$

$$\begin{array}{r} 3.49310 \\ 11.10 \\ \hline 7.61 \\ 4.34 \\ \hline 11.95 = \text{magn.} \end{array}$$

Star 1.

5.62

5.72

5.68

5.71

5.72

28.45

5.690

$$\text{Log } 5.690 = 0.75511$$

$$\begin{array}{r} 3.77555 \\ 11.10 \\ \hline 7.32 \\ 4.34 \\ \hline 11.66 = \text{magn.} \end{array}$$

Star 1 again.

5.33

5.48

5.28

5.48

5.44

27.01

5.402

$$\text{Log } 5.402 = 0.73255$$

$$\begin{array}{r} 3.66275 \\ 11.10 \\ \hline 7.44 \\ 4.34 \\ \hline 11.78 = \text{magn.} \end{array}$$

Nov. 28. 1894.

Star 0  $\frac{1}{2}$ .

$$\text{Log } 4.282 = 0.63165$$

$$\begin{array}{r} 3.15825 \\ 11.10 \\ 7.94 \\ 4.34 \\ \hline 12.28 = \text{mag.} \end{array}$$

4.75

4.10

3.93

4.49

4.14

21.41

4.282

S Cygni: Phot. O:

W. obs.

20 23

$$\frac{20}{6}$$

$$\frac{8}{15}$$

+ 57.2

Comparison star = Alpha Cephei.

Star t.

$$\text{Log } 0.434 = 9.63749$$

$$\begin{array}{r} 48.18745 \\ 1.81255 \\ 11.10 \\ 2.58 \\ \hline 15.49 = \text{mag.} \end{array}$$

0.37

0.46

0.44

0.45

0.45

2.17

0.434

Star n.

0.93

0.95

0.81

0.76

0.77

4.22

0.844

$$\text{Log } 0.844 = 9.92634$$

$$\begin{array}{r} 49.63170 \\ 0.36830 \\ 11.10 \\ 2.58 \\ \hline 14.05 = \text{mag.} \end{array}$$



Nov. 28, 1894.

Star s.

0.67

0.69

0.75

0.74

0.74

---

3.59

0.718

$$\text{Log } 0.718 = 9.85612$$

49,28060

0.71940

11.10

2.58

---

14.40 = magn.

Star y.

1.14

1.18

1.22

1.50

1.36

---

6.40

1.280

$$\text{Log } 1.280 = 0.10721$$

0,53605

11.10

10.56

2.58

---

13.14 = magn.

~~Star y~~ the star measured as y last night  
was wrong star.

Star y.

0.80

0.88

0.92

0.99

0.90

---

4.49

0.898

$$\text{Log } 0.898 = 9.95328$$

49,76640

0.23360

11.10

10.87

2.58

---

13.45 = magn.

Star u.

1.84

1.88

1.93

1.81

1.56

---

9.02

1.804

$$\text{Log } 1.804 = 0.25624$$

1,28120

11.10

9.82

2.58

---

12.40 = magn.

Nov. 28. 1894.

Star U again.

$$\text{Log } 1.536 = 0.18639$$

1.56

1.48

1.54

1.59

1.51

---

 7.68

This measurement considered the  
better the two in star U.

$$\begin{array}{r} 0.93195 \\ 11.10 \\ \hline 10.17 \\ 2.58 \\ \hline 12.75 = \text{mag.} \end{array}$$

Star n.

$$\text{Log } 1.660 = 0.22011$$

1.48

1.70

1.84

1.65

1.63

---

 8.30 1.660

$$\begin{array}{r} 1.10055 \\ 11.10 \\ \hline 10.00 \\ 2.58 \\ \hline 12.58 = \text{mag.} \end{array}$$

There is not much difference in brightness  
between n and U; n estimated 1.5 to  
2 grades brighter than U.

Star m.

$$\text{Log } 2.398 = 0.37985$$

2.48

2.42

2.51

2.31

2.27

---

 11.99 2.398

$$\begin{array}{r} 1.89925 \\ 11.10 \\ \hline 9.20 \\ 2.58 \\ \hline 11.78 = \text{mag.} \end{array}$$



Nov. 28, 1894.

Star 1.

2.78

2.97

2.89

2.94

~~3.06~~

2.96

14.54

2.908

0 Ceti:

2	4
3	10
1	6

Phot R:

W. obs.  
-2.5

$$\log 2.908 = 0.46359$$

$$\begin{array}{r} 2.31795 \\ 11.10 \\ \hline 8.78 \\ 2.58 \\ \hline 11.36 = \text{mag.} \end{array}$$

$$\begin{array}{r} 0 \\ 0 \end{array}$$

$$\begin{array}{r} 1.5 \\ 2 \end{array}$$

$$\begin{array}{l} (9.0 \text{ mag}) \\ (9.0 \text{ mag}) \end{array}$$
Linder.  
telescope

Index to right + above.

See  
end

303.9	18.1	28.2	28.1
101.9	14.2	14.1	14.1

comparison star dis. 106.7

212.8	106.7
117.8	190.7
144.2	169.9
201.8	-0.19

1.8

Index to left + below.

14.0	109.10
123.0	83.4
26.9	192.4
110.3	167.6

$$\begin{array}{r} 1.8 \\ -0.24 \end{array}$$

Nov. 28. 1894.

10 34 29

27.1  
112.9  
14.2  
125.5

85.8<sup>^</sup>  
111.3<sup>^</sup>  
197.1<sup>^</sup>  
162.9

~~1.7<sup>^</sup>~~

-0.32

Index to right &amp; above.

10 38 22

103.9  
213.5  
116.0  
204.0

109.6<sup>^</sup>  
88.0<sup>^</sup>  
197.6<sup>^</sup>  
162.4

~~1.7<sup>^</sup>~~

-0.33

10 40 59

119.0  
199.0  
104.5  
213.1

80.0<sup>^</sup>  
108.6<sup>^</sup>  
188.6<sup>^</sup>  
171.4

~~1.8<sup>^</sup>~~

-0.16

Index to left &amp; below.

10 46 9

10 37 05

206.2  
291.0  
194.8  
304.9

84.8<sup>^</sup>  
110.1<sup>^</sup>  
194.9<sup>^</sup>  
165.1

~~1.7<sup>^</sup>~~

-0.28

First set rejected: images not well in focus



Posted to here.

Dec. 1, 1894.

0 Ceti.

G. obs.

$$\begin{array}{r}
 2 \quad K. \\
 0 \quad \sqrt{0} \\
 \hline
 -1 \quad 1 K \\
 10 \quad 46
 \end{array}
 \quad -2.5$$

Sky not perfectly clear.

Polar sequence: comparison star =  
Polaris: W. obs.  
Phot 3.

Star 1.

1.12

1.35

1.08

1.14

1.01

Reject this set: dew on objective  
glass

0 Ceti. Phot. R.

W. obs.

$$\begin{array}{r}
 2 \quad 4 \\
 2 \quad 10 \\
 \hline
 0 \quad 6
 \end{array}$$

-2.5

$$\begin{array}{r}
 0 \quad 2 \quad (9.0 \text{ mag.}) \\
 0 \quad 2.5 \quad (9.0 \text{ mag.})
 \end{array}$$

finder.  
telescope.

Dec. 1. 1894.

Tried heating object glass carefully but still heavily fogged: so tried electric: images faint.

Index above.

294.0

27.8

285.7

32.2

comparison marches.

93.8<sup>^</sup>

$$\begin{array}{r} 106.5^{\wedge} \\ 200.3^{\wedge} \\ \hline 159.7 \end{array}$$

$$\begin{array}{r} 1.6^{\wedge} \\ -0.38 \end{array}$$

Index below.

12.7

124.5

24.0

114.3

111.8<sup>^</sup>90.3<sup>^</sup>202.1<sup>^</sup>

157.9

$$\begin{array}{r} 1.70^{\wedge} \\ -0.42 \end{array}$$

24.0

115.0

10.0

129.0

91.0<sup>^</sup>117.0<sup>^</sup>208.0<sup>^</sup>

152.0

$$\begin{array}{r} 1.5^{\wedge} \\ -0.52 \end{array}$$

Index above.

104.2

214.0

116.2

204.1

109.8<sup>^</sup>87.9<sup>^</sup>197.7<sup>^</sup>

162.3

$$\begin{array}{r} 1.7^{\wedge} \\ -0.34 \end{array}$$



Dec. 1. 1894.

9 46 40

~~117.1~~~~201.4~~

115.0

203.2

105.9

213.9

~~83.9~~88.2<sup>^</sup>108.0<sup>^</sup>196.2<sup>^</sup>

163.8

~~117~~<sup>1</sup>

-0.31

Index below.

191.2

307.0

205.8

295.8

115.8<sup>^</sup>98.0<sup>^</sup>205.8<sup>1</sup>

157.2

~~115~~<sup>1</sup>

-0.49

9 52 46  

---

9 40 49

$\Sigma 1801$  y Arcturus: Phot. R: W. obs.  
 1 47 +18.7  
 3 10  
 1 23

Position angle =  $20^\circ$ : Distance = 8":  
 mag. = 4.2 and 4.4.

Index to left and above.

192.5

307.2

209.1

293.5

&lt; fainter star dis.

114.7<sup>^</sup>84.4<sup>^</sup>199.1<sup>1</sup>

160.9

~~1.6~~<sup>^</sup>

-0.36

10 16 31

Dec. 1, 1894.

Index to right and below.

10	14	18	245.2	79.8 <sup>^</sup>	
			15.0		
			283.3	<u>111.6<sup>^</sup></u>	<del>1.8<sup>^</sup></del>
			34.9	<u>191.4<sup>^</sup></u>	
				<u>168.6</u>	- 0.22

10	19	32	243.9	107.9 <sup>^</sup>	
			31.8		
			294.0	<u>80.7<sup>^</sup></u>	<del>1.8<sup>^</sup></del>
			14.7	<u>158.6<sup>^</sup></u>	
				<u>171.4</u>	- 0.16

Index to left and above.

10	20	57	25.0	87.2 <sup>^</sup>	
			112.2		
			13.2	<u>110.6<sup>^</sup></u>	<del>1.7<sup>^</sup></del>
			123.8	<u>197.8<sup>^</sup></u>	
				<u>182.2</u>	- 0.34

10	22	15	13.0	108.8 <sup>^</sup>	
			121.8		
			26.0	<u>79.7<sup>^</sup></u>	<del>1.8<sup>^</sup></del>
			105.7	<u>188.5<sup>^</sup></u>	
				<u>171.0</u>	- 0.16

Index to right and below.

10	23	43	118.0	82.8 <sup>^</sup>	
			200.8		
			102.2	<u>115.2<sup>^</sup></u>	<del>1.7<sup>^</sup></del>
			217.4	<u>198.0<sup>^</sup></u>	
				<u>162.0</u>	- 0.34



Dec. 1. 1894.  
 $\Sigma 90 : 77$  Piscium:

W. obs.  
 $+ 4.2$

$$\begin{array}{r} 0 \\ 3 \\ \hline 2 \end{array} \quad \begin{array}{r} 59 \\ 29 \\ \hline 30 \end{array}$$

Position angle =  $95^\circ$ : Distance =  $30''$ :  
 mag. = 6.3 and 6.8.

Index to right.

100.1 < fainter dis.  
 $\begin{array}{r} 215.0 \\ 101.0 \\ 211.8 \end{array} \quad \begin{array}{r} 114.9^{\wedge} \\ 110.8^{\wedge} \\ \hline 225.7^{\wedge} \\ 134.3 \end{array}$

$$\begin{array}{r} 1.1^{\wedge} \\ \hline 0.59 \end{array}$$

Index to left.

195.0  
 $\begin{array}{r} 303.5 \\ 196.1 \\ 301.9 \end{array} \quad \begin{array}{r} 108.5^{\wedge} \\ 105.8^{\wedge} \\ \hline 214.3^{\wedge} \\ 145.7 \end{array}$

$$\begin{array}{r} 1.3^{\wedge} \\ \hline 0.66 \end{array}$$

198.5  
 $\begin{array}{r} 305.9 \\ 196.2 \\ 302.6 \end{array} \quad \begin{array}{r} 107.4^{\wedge} \\ 106.4^{\wedge} \\ \hline 213.8^{\wedge} \\ 146.2 \end{array}$

$$\begin{array}{r} 1.4^{\wedge} \\ \hline 0.65 \end{array}$$

Index to right.

279.9  
 $\begin{array}{r} 35.2 \\ 286.0 \\ 32.5 \end{array} \quad \begin{array}{r} 115.3^{\wedge} \\ 106.5^{\wedge} \\ \hline 221.8^{\wedge} \\ 138.2 \end{array}$

$$\begin{array}{r} 1.2^{\wedge} \\ \hline 0.81 \end{array}$$

Dec. 1, 1894.

10 39 44

283.9

35.1

280.1

37.8

111.2<sup>^</sup>117.7<sup>^</sup>228.9<sup>^</sup>

131.1

1.0<sup>^</sup>

0.96

Index to left.

12.8

124.3

14.1

123.1

111.5<sup>^</sup>109.0<sup>^</sup>220.5<sup>^</sup>139.5<sup>^</sup>1.2<sup>^</sup>

0.75

10 41 25

226.58

10 37 50

5

10.6



Dec. 3. 1894.

Polar sequence: phot 3: comparison star = polaris.  
W. obs.

Star 1.

1.23

1.12

1.18

1.08

1.10

5.71<sup>^</sup> 1.142<sup>^</sup>

$$\begin{array}{r} \text{Log } 1.142 = 0.05767^{\wedge} \\ \hline 5 \\ 0.28835 \\ \hline 11.10 \\ 10.81 \\ \hline 2.15 \\ 12.96^{\wedge} = \text{mag.} \end{array}$$

Star 2h.

1.06

1.11

1.06

1.02

1.01

5.26<sup>^</sup> 1.052<sup>^</sup>

$$\begin{array}{r} \text{Log } 1.052 = 0.02202^{\wedge} \\ \hline 5 \\ 0.11010 \\ \hline 11.10 \\ 10.99 \\ \hline 2.15 \\ 13.14^{\wedge} = \text{mag.} \end{array}$$

Star 4h

0.81

0.91

0.91

0.87

0.91

4.41<sup>^</sup> 0.882<sup>^</sup>

$$\begin{array}{r} \text{Log } 0.882 = 9.94547^{\wedge} \\ \hline 5 \\ 49.72735 \\ 0.27265 \\ \hline 11.10 \\ 2.15 \\ \hline 13.52^{\wedge} = \text{mag.} \end{array}$$

Star 6h.

0.66

0.68

0.66

0.71

0.75

3.46<sup>^</sup> 0.692<sup>^</sup>

$$\begin{array}{r} \text{Log } 0.692 = 9.84011^{\wedge} \\ \hline 5 \\ 49.20055 \\ 0.79945^{\wedge} \\ \hline 11.10 \\ 2.15 \\ \hline 14.05^{\wedge} = \text{mag.} \end{array}$$

Dec. 3. 1894.

Star 7.

0.65

0.60

~~0.58~~

0.59

0.65

0.59

 $\frac{3.08^{\wedge}}{0.616^{\wedge}}$ 

$$\text{Log } 0.616 = 9.78958^{\wedge}$$

48.94790

1.05210

11.10

2.15

 $14.30^{\wedge} = \text{mag.}$ 

Star 3d.

1.04

1.08

1.03

1.13

1.17

 $\frac{5.45^{\wedge}}{1.090^{\wedge}}$ 

$$\text{Log } 1.090 = 0.03743^{\wedge}$$

0.18715

11.10

10.91

2.15

 $13.06^{\wedge} = \text{mag.}$ 

Star 5.

0.74

0.69

0.71

0.73

0.68

 $\frac{3.55^{\wedge}}{0.710^{\wedge}}$ 

$$\text{Log } 0.710 = 9.85126^{\wedge}$$

49.25630

0.74370

11.10

2.15

 $13.99^{\wedge} = \text{mag.}$ 

Star 8E.

0.43

0.44

0.52

0.47

0.49

 $\frac{2.35^{\wedge}}{0.470^{\wedge}}$ 

$$\text{Log } 0.470 = 9.67210^{\wedge}$$

48.36050

1.63950

11.10

2.15

 $14.89^{\wedge} = \text{mag.}$



Dec. 3. 1894.

Star O  $\frac{1}{2}$ .

1.08

1.28

1.22

1.24

1.17

5.991.198<sup>h</sup>

Comparison star = S Ursae Minoris.

Star 8 E.

1.10

1.16

1.20

1.11

1.12

5.691.138<sup>h</sup>

Star 3d.

2.32

2.42

2.44

2.58

2.53

12.292.458<sup>h</sup>

Star 5.

1.77

1.77

1.77

1.83

1.77

8.911.782<sup>h</sup>

$$\text{Log } 1.198 = 0.07846^{\wedge}$$

0.39230

11.10

10.71

2.15

12.86<sup>h</sup> = magn.

$$\text{Log } 1.138 = 0.05614^{\wedge}$$

0.28070

11.10

10.82

4.34<sup>h</sup>15.16<sup>h</sup> = magn.

$$\text{Log } 2.458 = 0.39058^{\wedge}$$

1.95290

11.10

9.15

4.34

13.49<sup>h</sup> = magn.

$$\text{Log } 1.782 = 0.25091^{\wedge}$$

1.25455

11.10

9.85

4.34<sup>h</sup>14.19<sup>h</sup> = magn.

Dec. 3. 1894.

Star 61.

$$\text{Log } 1.610 = 0.20683^{\wedge}$$

1.52

1.59

1.64

1.62

1.68

$$\frac{8.05^{\wedge}}{1.610^{\wedge}}$$

1.03415

11.10

10.07

4.34

14.41<sup>^</sup> = magn.

Star 412.

$$\text{Log } 2.340 = 0.36922^{\wedge}$$

2.12

2.39

2.52

2.28

2.39

$$\frac{11.70^{\wedge}}{2.340^{\wedge}}$$

1.84610

11.10

9.25

4.34

13.59<sup>^</sup> = magn.

Star 7.

$$\text{Log } 1.708 = 0.23249^{\wedge}$$

1.71

1.68

1.74

1.68

1.73

$$\frac{8.54^{\wedge}}{1.708^{\wedge}}$$

1.16245

11.10

9.94

4.34

14.28<sup>^</sup> = magn.

Star 212.

$$\text{Log } 3.392 = 0.53046^{\wedge}$$

3.54

3.33

3.50

3.35

3.24

$$\frac{16.96^{\wedge}}{3.392^{\wedge}}$$

2.65230

11.10

8.45

4.34

12.79<sup>^</sup> = magn.



Dec. 3. 1894.

Star 1.

3.54

3.61

3.67

3.65

3.59

 $\frac{18.06^{\wedge}}{3.612^{\wedge}}$ 

$$\text{Log } 3.612 = 0.55775^{\wedge}$$

$$\begin{array}{r} 2.78875 \\ 11.10 \\ 8.31 \\ 4.34 \\ \hline 12.65^{\wedge} = \text{mag.} \end{array}$$

Star 0 1/2.

3.50

3.74

3.99

~~3.98~~

3.68

3.67

 $\frac{18.58^{\wedge}}{3.716^{\wedge}}$ 

$$\text{Log } 3.716 = 0.57008^{\wedge}$$

$$\begin{array}{r} 2.85040 \\ 11.10 \\ 8.25 \\ 4.34 \\ \hline 12.59^{\wedge} = \text{mag.} \end{array}$$

Slyoni: P hat. S.

W. obs.

20

8

+ 57.2

$$\frac{22}{6}$$

$$\frac{25}{17}$$

Star t: comparison star: alpha cephei

0.49

0.54

0.57

0.58

0.58

 $\frac{2.76^{\wedge}}{0.552^{\wedge}}$ 

$$\text{Log } 0.552 = 9.74194^{\wedge}$$

$$\begin{array}{r} 48.70970 \\ 1.29030 \\ 11.10 \\ 2.58 \\ \hline 14.97^{\wedge} = \text{mag.} \end{array}$$

Dec. 3, 1894.

Star S.

0.71

0.76

0.81

0.81

0.81

 $\frac{0.81}{3.90^{\wedge}} \quad 0.780^{\wedge}$ 

$$\text{Log } 0.780 = 9.89209^{\wedge}$$

49,46045

0,53955

11.10

2.58

 $\frac{2.58}{14.22^{\wedge}} = \text{mag.}$ 

Star n.

0.69

0.74

0.75

0.74

0.70

 $\frac{0.70}{3.62^{\wedge}} \quad 0.724^{\wedge}$ 

$$\text{Log } 0.724 = 9.85974^{\wedge}$$

49,29870

0,70130

11.10

2.58

 $\frac{2.58}{14.38^{\wedge}} = \text{mag.}$ 

Star p.

1.00

0.98

1.02

1.07

 $\frac{1.11}{5.18^{\wedge}} \quad 1.036^{\wedge}$ 

$$\text{Log } 1.036 = 0.01536^{\wedge}$$

0,07680

11.10

11.02

2.58

 $\frac{2.58}{13.60^{\wedge}} = \text{mag.}$ 

Star q.

0.91

0.89

0.88

0.88

0.87

 $\frac{0.87}{4.43^{\wedge}} \quad 0.886^{\wedge}$ 

$$\text{Log } 0.886 = 9.94743^{\wedge}$$

49,73715

0,26285

11.10

2.58

 $\frac{2.58}{13.94^{\wedge}} = \text{mag.}$



Dec. 3, 1894.

Star 0.

$$\text{Log } 1.592 = 0.20194^{\wedge}$$

1.51

1.66

1.68

1.56

1.55

$$\frac{7.96^{\wedge}}{1.592^{\wedge}}$$

$$\begin{array}{r} 1.00970 \\ 11.10 \end{array}$$

10.09

2.58

$$12.67^{\wedge} = \text{mag.}$$

Star m.

$$\text{Log } 2.576 = 0.41095^{\wedge}$$

2.43

2.66

2.53

2.58

2.68

$$\frac{12.88^{\wedge}}{2.576^{\wedge}}$$

$$\begin{array}{r} 2.05475 \\ 11.10 \end{array}$$

9.05

2.58

$$11.63^{\wedge} = \text{mag.}$$

Star n.

$$\text{Log } 1.668 = 0.22220^{\wedge}$$

1.58

1.72

1.46

1.82

1.76

$$\frac{8.34^{\wedge}}{1.668^{\wedge}}$$

$$\begin{array}{r} 1.11100 \\ 11.10 \end{array}$$

9.99

2.58

$$12.57^{\wedge} = \text{mag.}$$

Star l.

~~Star~~ star to be wrong.

3.81

3.23

3.60

3.40

3.29

$$\frac{17.33^{\wedge}}{3.466^{\wedge}}$$

$$\text{Log } 3.466 = 0.53983^{\wedge}$$

$$\begin{array}{r} 2.69915 \\ 11.10 \end{array}$$

8.40

2.58

$$10.98^{\wedge} = \text{mag.}$$

Dec. 3, 1894.

0 Ceti: Phot. R:

W. obs.

2	4
3	22
1	18

- 2.5

10/0

3.

(9.0 mag.)

finder.

3.5

(9.0 mag.)

telescope.

Index below.

206.0

295.9

194.7

306.9

- comparison star dis.

89.9<sup>^</sup>112.2<sup>^</sup>202.1<sup>^</sup>

157.9

1.6<sup>^</sup>

- 0.42

Index above.

286.0

33.7

293.0

25.7

107.7<sup>^</sup>92.7<sup>^</sup>200.4<sup>^</sup>

159.6

1.6<sup>^</sup>

- 0.39

296.0

26.1

281.2

~~34.5~~

33.8

90.1<sup>^</sup>112.6<sup>^</sup>202.7<sup>^</sup>

157.3

1.6<sup>^</sup>

- 0.43



Dec. 3, 1894.

Index below:

10 39 43

$$\begin{array}{r} 12.0 \\ 125.1 \\ 23.8 \\ 115.0 \end{array}$$

$$\begin{array}{r} 113.1^{\wedge} \\ 91.2^{\wedge} \\ \hline 204.3^{\wedge} \\ 155.0 \end{array}$$

$$\begin{array}{r} 1.5^{\wedge} \\ -0.47 \end{array}$$

10 43 17

$$\begin{array}{r} 22.2 \\ 111.2 \\ 12.1 \\ 125.1 \end{array}$$

$$\begin{array}{r} 89.0^{\wedge} \\ 113.0^{\wedge} \\ \hline 202.0^{\wedge} \\ 158.0 \end{array}$$

$$\begin{array}{r} 1.6^{\wedge} \\ -0.42 \end{array}$$

Index above.

$$\begin{array}{r} 10 \quad 46 \quad 40 \\ \hline 10 \quad 37 \quad 13 \end{array}$$

$$\begin{array}{r} 104.0 \\ 215.9 \\ 115.0 \\ 206.9 \end{array}$$

$$\begin{array}{r} 111.9^{\wedge} \\ 91.9^{\wedge} \\ \hline 203.8^{\wedge} \\ 156.2 \end{array}$$

$$\begin{array}{r} 1.5^{\wedge} \\ -0.45 \end{array}$$

Dec. 4. 1894.O Ceti:

Phot. R:

W. obs.

$$\begin{array}{r}
 2 \quad 4 \\
 \frac{0}{-1} \quad \frac{50}{14} \\
 10 \quad 46
 \end{array}$$

- 2.5

$$\begin{array}{r}
 0 \\
 10
 \end{array}$$

3.5

4.

(9.0 mag.)

(9.0 mag.)

finder.

telescope

Index below.

28.7<sub>2</sub> comparison star dis.

112.1

14.0

124.0

110.0<sup>^</sup>193.4<sup>^</sup>

166.6

1.7<sup>^</sup>

- 0.23

Index above.

104.0

216.7

115.0

205.0

112.7<sup>^</sup>90.0<sup>^</sup>202.7<sup>^</sup>

157.3

1.6<sup>^</sup>

- 0.43

114.5

204.0

104.0

215.2

89.5<sup>^</sup>111.2<sup>^</sup>200.7<sup>^</sup>

159.3

1.6<sup>^</sup>

- 0.39



Dec. 4, 1894.

Index below.

194.2	112.8 <sup>^</sup>	
307.0	<u>91.5<sup>^</sup></u>	<del>1.5<sup>^</sup></del>
205.5	204.3 <sup>^</sup>	- 0.46
297.0	155.7	

206.0	89.9 <sup>^</sup>	
295.9	<u>110.8<sup>^</sup></u>	<del>1.6<sup>^</sup></del>
193.3	200.7 <sup>^</sup>	- 0.39
304.1	159.3	

Index above.

282.8	111.0 <sup>^</sup>	
33.8	<u>90.0<sup>^</sup></u>	<del>1.6<sup>^</sup></del>
295.2	201.0 <sup>^</sup>	- 0.40
25.2	159.0	

S. Ursa Majoris.

W. obs.

12	34	+ 61.7
<u>1</u>	<u>34</u>	
11	0	

Region low, but variable thought to  
be certainly identified.

0: 2: 8: 8: 2: 12:  
in large red spots: too faint for finder:

Dec. 4, 1894.

estimate 12.0 :

5. Urae Majoris.

W: obs.

0: 1: var: var. 4: 4:  
 in large telescope: too faint for finder:  
 estimate 11.0

5. Cassiope.

W: obs.

0 19  
 $\frac{2}{2}$   $\frac{35}{16}$

+ 55.9

p: 2: var: var: 3: q:  
 estimate 12.0

5. Boöris.

W: obs.

14 16  
 $\frac{2}{-11}$   $\frac{50}{16}$   
 0 44

+ 54.6

Region too low to be identified with cer-  
 tainty.



Dec. 4. 1894.

S: Cygni: Phot. S:

W: obs.

20

8

+57.2

2130

6

52

Star t: comparison star = alpha Cygni.

0.49

$$\text{Log } 0.486 = 9.68664^{\wedge}$$

0.50

48.43320

0.50

1.56680

0.46

11.10

0.482.58

15.25 = magn.

2.43^ 0.486^

Star s.

$$\text{Log } 0.704 = 9.84757^{\wedge}$$

0.64

49.23785

0.73

0.76215

0.65

11.10

~~0.82~~ seen to be wrong.2.58

14.44 = magn.

0.73

0.77

3.52^ 0.704^

Star r.

$$\text{Log } 0.788 = 9.89653^{\wedge}$$

0.77

49.48265

0.84

0.51735

0.78

11.10

0.78

2.58

14.20 = magn.

0.77

3.94^ 0.788^

Dec. 4. 1894.

Star g.

0.87

0.91

0.93

0.87

0.81

 $\frac{4.39^{\wedge}}{0.878^{\wedge}}$ 

$$\log 0.878 = 9.94349^{\wedge}$$

49.71745

0.28255

11.10

2.58

 $\frac{13.96^{\wedge}}{13.96^{\wedge} = \text{mag.}}$ 

Star p.

1.02

1.08

1.08

1.03

1.06

 $\frac{5.27^{\wedge}}{1.054^{\wedge}}$ 

$$\log 1.054 = 0.02284^{\wedge}$$

0.11420

11.10

10.99

2.58

 $\frac{13.57^{\wedge}}{13.57^{\wedge} = \text{mag.}}$ 

Star o.

1.44

1.47

1.46

1.29

1.45

 $\frac{7.11^{\wedge}}{1.422^{\wedge}}$ 

$$\log 1.422 = 0.15290^{\wedge}$$

0.76450

11.10

10.34

2.58

 $\frac{12.92^{\wedge}}{12.92^{\wedge} = \text{mag.}}$ 

Star m.

1.47

1.59

1.64

1.60

1.59

 $\frac{7.89^{\wedge}}{1.578^{\wedge}}$ 

$$\log 1.578 = 0.19811^{\wedge}$$

0.99055

11.10

10.11

2.58

 $\frac{12.69^{\wedge}}{12.69^{\wedge} = \text{mag.}}$



Dec. 4. 1894.

Star m.

$$\text{Log } 2.262 = 0.354449^{\wedge}$$

2.25

2.36

2.19

2.31

2.20

$$\frac{2.20}{11.31^{\wedge}} \quad 2.262^{\wedge}$$

$$\frac{177245}{11.10}$$

$$\frac{9.33}{2.58}$$

$$11.91^{\wedge} = \text{mag.}$$

Star l.

$$\text{Log } 2.896 = 0.46180^{\wedge}$$

2.60

2.87

3.00

3.04

2.97

$$\frac{2.97}{14.48^{\wedge}} \quad 2.896^{\wedge}$$

$$\frac{2.30900}{11.10}$$

$$\frac{8.79}{2.58}$$

$$11.37^{\wedge} = \text{mag.}$$

Measurements somewhat difficult on account of moon light + somewhat low altitude.

q 1.5 8 : 8 3 2

Estimate 13.8:

Moon now nearly setting

8 Bootis

$$\frac{14}{-3} \\ 10$$

$$\frac{16}{55} \\ 11$$

$$+ 54.6$$

Abandoned too low,

Dec. 5, 1894.

+62°: 596: Phot: R:

W: vls

$$\begin{array}{r}
 3 \\
 0 \\
 -2 \\
 9
 \end{array}
 \qquad
 \begin{array}{r}
 29 \\
 42 \\
 47 \\
 13
 \end{array}$$

+62.2

Index above.

274.0 &lt; comparison star dis.

$$\begin{array}{r}
 46.9 \\
 268.0 \\
 52.5
 \end{array}$$

$$\begin{array}{r}
 132.9^{\wedge} \\
 144.5^{\wedge} \\
 277.4^{\wedge} \\
 52.6
 \end{array}$$

$$\begin{array}{r}
 -0.1^{\wedge} \\
 -2.2
 \end{array}$$

Index below.

$$\begin{array}{r}
 176.2 \\
 323.5 \\
 185.7 \\
 312.0
 \end{array}$$

$$\begin{array}{r}
 147.3^{\wedge} \\
 126.3^{\wedge} \\
 273.6^{\wedge} \\
 56.4
 \end{array}$$

$$\begin{array}{r}
 0.0^{\wedge} \\
 -2.0/
 \end{array}$$

$$\begin{array}{r}
 188.0 \\
 313.5 \\
 176.3 \\
 322.7
 \end{array}$$

$$\begin{array}{r}
 125.5^{\wedge} \\
 146.4^{\wedge} \\
 271.9^{\wedge} \\
 55.1
 \end{array}$$

$$\begin{array}{r}
 0.0^{\wedge} \\
 -1.96
 \end{array}$$

Index above.

$$\begin{array}{r}
 267.0 \\
 52.1
 \end{array}$$

$$\begin{array}{r}
 145.1^{\wedge} \\
 132.5^{\wedge} \\
 277.6^{\wedge}
 \end{array}$$

$$\begin{array}{r}
 -0.1^{\wedge}
 \end{array}$$

$$\begin{array}{r}
 273.2
 \end{array}$$

$$\begin{array}{r}
 52.4
 \end{array}$$

$$\begin{array}{r}
 -2.2
 \end{array}$$



Dec. 5, 1894

8	4	28	276.0	128.0 <sup>^</sup>	
			44.0		
			268.0	<u>143.9<sup>^</sup></u>	
			51.9	271.9 <sup>^</sup>	<del>0.0<sup>^</sup></del>
				<u>55.1</u>	-1.96

Index below.

8	7	24	177.0	146.0 <sup>^</sup>	
			323.0		<del>-0.1<sup>^</sup></del>
			184.2	<u>132.0<sup>^</sup></u>	
			516.2	278.0 <sup>^</sup>	<del>-2.13</del>
				<u>52.0</u>	<del>-2.14</del>
					mean = -2.06

+62°: 596 with same comparison stars as above thro' blue glass. W. obs.

Index below.

8	19	37	189.6	< comparison star dis.	
			312.0		
			182.0	122.4 <sup>^</sup>	
			317.8	<u>135.8<sup>^</sup></u>	0.4 <sup>^</sup>
				258.2 <sup>^</sup>	

Index above.

8	22	26	<del>227.8</del>		
			274.3	130.7 <sup>^</sup>	
			45.0		
			277.2	<u>123.9<sup>^</sup></u>	0.5 <sup>^</sup>
			41.1	254.6 <sup>^</sup>	

Dec. 5, 1894.

8	24	25	277.6	125.4 <sup>^</sup>	0.4 <sup>^</sup>
			43.0	<u>133.5</u>	
			272.5	258.9 <sup>^</sup>	
			46.0		

Index below.

8	28	3	2.5	132.5 <sup>^</sup>	0.5 <sup>^</sup>
			135.0	<u>122.8</u>	
			8.0	255.3 <sup>^</sup>	
			130.8		

8	29	30	7.0	123.0 <sup>^</sup>	0.4 <sup>^</sup>
			130.0	<u>133.3</u>	
			2.5	256.3 <sup>^</sup>	
			135.8		

Index above.

8	32	34	274.0	134.6 <sup>^</sup>	0.2 <sup>^</sup>
			48.6	<u>130.7</u>	
			273.3	265.3 <sup>^</sup>	
			44.0		

Last set again.

8	36	49	276.7	125.2 <sup>^</sup>	0.4 <sup>^</sup>
			41.9	<u>131.1</u>	
			273.2	256.3 <sup>^</sup>	
			44.3		



Dec. 5. 1894.

Observations rather difficult on account of high altitude of star and inconvenient position of body as well as from fact that eye is more distant than usual from eye piece so that one has to be particularly careful about emergent pencils.

The Stars too faint and difficult to be compared thro' orange glass.

Both variable and comparison star totally invisible thro' red glass.

Nova Aurigae: Phot. R: W. obs.  
 5 23 +32.0  
 2 3  
 -3 20  
 8 4.0

Index below.

25.0 < comparison star dis.  
 114.0 89.0<sup>1</sup>  
~~27.1~~  
 17.1 103.8<sup>1</sup>  
 120.9 192.8<sup>1</sup>  
 167.2 - 0.24

~~1.8<sup>1</sup>~~

Dec. 5, 1894.

Index above.

9 5 16

109.3

96.7<sup>^</sup>

206.0

114.8

87.1<sup>^</sup>

201.9

183.8<sup>^</sup>

176.2

~~1.9<sup>^</sup>~~

-0.07

9 7 42

115.9

86.6<sup>8</sup>

202.7

107.0

100.9<sup>^</sup>

207.9

187.5<sup>7</sup>

172.3

~~1.9<sup>^</sup>~~

-0.14

Index below.

9 10 20

197.7

104.3<sup>^</sup>

302.0

202.8

92.7<sup>^</sup>

295.5

197.0<sup>^</sup>

163.0

~~1.7<sup>^</sup>~~

-0.32

9 12 48

206.1

88.9<sup>^</sup>

295.0

198.5

101.2<sup>^</sup>

299.7

190.1<sup>^</sup>

169.9

~~1.8<sup>^</sup>~~

-0.19

Index above.

9 15 41

289.0

102.0<sup>^</sup>

31.0

294.8

88.9<sup>^</sup>190.9<sup>^</sup>

23.7

169.1

~~1.8<sup>^</sup>~~

-0.20

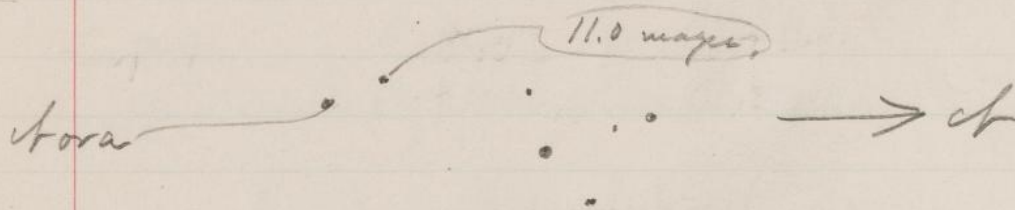
Inva



Dec. 5, 1894.

nova 2 (11.0 mag.)

nova 3 (11.0 mag.)

finder.  
telescope.Observations somewhat difficult in moon  
light.Southern following and fainter star of  
the two assumed to be the 11.0 mag.U Ceti:

Phot. R:

W. obs.

2

4

-2.5

 $\frac{2}{0}$  $\frac{54}{50}$ 

Index below.

27.0

112.0

12.0

127.4

8 5.0<sup>1</sup> $\frac{115.4^1}{200.4^1}$ 

159.6

~~1.6~~<sup>1</sup>

-0.39

Dec. 5. 1894.

Index above.

9	52	27	104.1	111.1 <sup>^</sup>	
			215.2	89.0 <sup>^</sup>	<del>1.6</del> <sup>^</sup>
			115.0	<u>200.1<sup>^</sup></u>	-0.38
			204.0	159.9	

9	54	5	116.2	85.0 <sup>^</sup>	
			201.2	109.2 <sup>^</sup>	<del>1.7</del> <sup>^</sup>
			<del>105.8</del>	<u>194.2<sup>^</sup></u>	-0.27
			215.0	165.8	

Index below.

9	56	35	193.2	112.8 <sup>^</sup>	
			306.0	91.4 <sup>^</sup>	<del>1.5</del> <sup>^</sup>
			206.0	<u>204.2<sup>^</sup></u>	-0.46
			297.4	155.8	

9	58	23	205.0	88.0 <sup>^</sup>	
			<del>293.1</del>	112.6 <sup>^</sup>	<del>1.6</del> <sup>^</sup>
			<del>294.4</del>	<u>200.6<sup>^</sup></u>	-0.39
			194.1	159.3	
			306.7		

Index above.

10	0	48	284.1	107.0 <sup>^</sup>	
			31.1	90.5 <sup>^</sup>	<del>1.7</del> <sup>^</sup>
			294.0	<u>197.5<sup>^</sup></u>	-0.33
			24.5	162.5	



Dec. 5, 1894.

0 Ceti. 3.5. (9.0 mag.)  
0 Ceti. 4. (9.0 mag.)

finder.  
Telescope

U. Cephei: Phot. R: W: obs.  
 0 30 + 81.7  
 $\frac{3}{2}$   $\frac{25}{55}$

U. Cephei compared with D.M: 81° 26.

Index above.

347.1<sup>1</sup> comparison star dis.

151.0

1639<sup>1</sup>

350.8

-1.8<sup>1</sup>

148.0

 $\frac{157.2}{321.1}$ <sup>1</sup>

Index below.

83.2

151.8<sup>1</sup>

235.0

80.5

 $\frac{159.5}{311.3}$ <sup>1</sup>-1.3<sup>1</sup>

240.0

79.0

161.9<sup>1</sup>

240.9

82.0

 $\frac{155.0}{316.9}$ <sup>1</sup>-1.6<sup>1</sup>

237.0

Dec. 5, 1894.

Index above.

10	32	44	171.3	155.9 <sup>^</sup>	
			327.2		
			168.4	<u>162.7<sup>^</sup></u>	
			331.1	318.6 <sup>^</sup>	-1.7 <sup>^</sup>

10	33	54	169.0	162.5 <sup>^</sup>	
			331.5		
			172.4	<u>153.6<sup>^</sup></u>	
			326.0	316.1 <sup>^</sup>	-1.6 <sup>^</sup>

Index below.

10	35	35	264.9	150.4 <sup>^</sup>	
			55.3		
			260.0	<u>159.7<sup>^</sup></u>	
			59.7	310.1 <sup>^</sup>	-1.3 <sup>^</sup>

10	37	44	260.0	159.3 <sup>^</sup>	
			59.3		
			262.7	<u>153.3<sup>^</sup></u>	
			56.0	312.6 <sup>^</sup>	-1.4 <sup>^</sup>

Index above.

10	39	34	351.8	156.2 <sup>^</sup>	
			148.0		
			347.9	<u>163.1<sup>^</sup></u>	
			151.0	319.3 <sup>^</sup>	-1.7 <sup>^</sup>



Dec. 5. 1894

10	41	8	348.1	162.7 <sup>^</sup>	
			150.8	155.8 <sup>^</sup>	-1.7 <sup>^</sup>
			352.1	<u>318.5<sup>^</sup></u>	
			147.9		

Index below.

10	42	36	87.2	152.3 <sup>^</sup>	
			236.5	159.7 <sup>^</sup>	
			79.8	<u>312.0<sup>^</sup></u>	-1.4 <sup>^</sup>
			239.5		

10	44	11	79.0	161.2 <sup>^</sup>	
			240.2	153.7 <sup>^</sup>	
			83.4	<u>314.9<sup>^</sup></u>	-1.5 <sup>^</sup>
			237.1		

Index above.

10	46	0	171.8	156.0 <sup>^</sup>	
			327.8	161.9 <sup>^</sup>	
			169.1	<u>317.9<sup>^</sup></u>	-1.7 <sup>^</sup>
			331.0		

D.M. 810:30 compared with D.M. 810:26  
 Phot. R. W. obs

Index above.

10	49	23	264.7	149.1 <sup>^</sup>	
			53.8	142.0 <sup>^</sup>	
			269.0	<u>291.1<sup>^</sup></u>	-0.5 <sup>^</sup>
			51.0		

Dec. 5, 1894.

Index below.

10	50	53	359.1	140.8 <sup>^</sup>	
			139.9		
			354.9	<u>148.4<sup>^</sup></u>	-0.5 <sup>^</sup>
			173.3	289.2 <sup>^</sup>	

10	52	51	355.1	147.8 <sup>^</sup>	
			142.9		
			358.7	<u>142.2<sup>^</sup></u>	-0.5 <sup>^</sup>
			140.9	290.0 <sup>^</sup>	

Index above.

10	54	23	88.0	143.0 <sup>^</sup>	
			231.0	<u>147.7<sup>^</sup></u>	
			86.1	290.7 <sup>^</sup>	-0.5 <sup>^</sup>
			233.8		

10	56	4	86.0	148.0 <sup>^</sup>	
			234.0		
			87.1	<u>145.7<sup>^</sup></u>	-0.6 <sup>^</sup>
			232.8	293.7 <sup>^</sup>	

Index below.

10	58	51	177.3	144.2 <sup>^</sup>	
			321.5		
			175.4	<u>147.8<sup>^</sup></u>	
			323.2	292.0 <sup>^</sup>	-0.6 <sup>^</sup>



Dec. 6, 1894.0 Ceti :

Phot. R :

W. obs.

$$\begin{array}{r}
 2 \quad 4 \\
 \underline{0} \quad 45 \\
 -1 \quad 19 \\
 10 \quad 41
 \end{array}$$

-2.5

Index above.

256.2

$$\begin{array}{r}
 0 \quad 3. \\
 \underline{0} \quad 4.
 \end{array}$$

9.0 mag.9.0 mag.finder.  
telescope.

256.2 &lt; comparison star dis.

9.0

266.2

357.2

112.8<sup>^</sup>91.0<sup>^</sup>203.8<sup>^</sup>

156.2

~~1.5<sup>^</sup>~~

-0.45

Index below.

353.4

87.0

243.0

99.9

93.6<sup>^</sup>116.9<sup>^</sup>210.5<sup>^</sup>

149.5

~~1.4<sup>^</sup>~~

-0.58

345.2

99.3

353.2

87.4

114.1<sup>^</sup>94.2<sup>^</sup>208.3<sup>^</sup>

151.7

~~1.5<sup>^</sup>~~

-0.54

Dec. 6, 1894.

Index above.

86.3

176.0

76.2

187.9

89.7<sup>^</sup>111.7<sup>^</sup>

208.4

158.6

1.6<sup>^</sup>

-0.41

75.0

186.2

85.5

177.0

111.2<sup>^</sup>91.5<sup>^</sup>202.7<sup>^</sup>

157.3

1.6<sup>^</sup>

-0.43

Index below.

173.7

265.7

163.9

~~278.0~~

276.2

92.0<sup>^</sup>112.3<sup>^</sup>204.3<sup>^</sup>

155.7

1.5<sup>^</sup>

-0.46

 $\Sigma$  730

5

25

1

17

-4

8

7

52

+17.0



Dec. 10. 1894.

His. Jap. II. Phot R. M. Obs. Chym. are.  
 Compared with 2<sup>nd</sup> sat. preceding = Sat IV.

∴ at 12 11 34.5 by B. & C. it was 2<sup>m</sup> 27.4 fast.

		12	11	34.5	169.7	101.8	881.5
				50.0	271.5		220.4
12	9	26	12	2.0	169.0	1	102.3
				10.0	271.3		102.0
				19.5	171.1		892.0
				28.0	275.8		223.0
10	4			35.5	172.0	2	101.1
				43.0	273.1		102.9
				51.0	172.1		877.3
							219.3
10	40		13	1.0	271.9	3	99.8
				9.5	169.2		94.9
				29.5	264.1		97.4
				44.5	178.1		890.3
				53.0	269.0		222.6
							90.9
11	29		14	2.5	174.2		94.8
				10.5	269.0		92.8
				40.0	172.9		885.1
				47.0	270.8	5	97.9
							221.3
12	26		15	1.5	172.9		95.6
				7.5	268.5		96.8
				18.0	175.0		883.5
				29.0	267.5		220.9
							92.5
13	4			37.0	173.0	6	95.0
				45.0	268.0		93.8

Dec. 6, 1894

		12	15	52.5	176.0	87.1	880.0
							220.0
12	13	42	16	3.0	263.1	7	
				19.0	174.9	<u>91.1</u>	
				28.5	266.0	89.1	
				42.0	175.1		881.6
						89.6	220.4
14	27			58.0	264.7		
				59.5	176.0	8	
						<u>89.8</u>	
			17	8.0	265.8	89.7	
				16.5	174.8		882.6
						91.6	220.6
15	16			25.5	266.4		
			18	6.0	176.2	9	
				14.5	265.2	<u>89.0</u>	
						90.3	
				22.0	176.0		890.8
						94.1	222.7
16	8			29.5	270.1		
				40.0	175.3	10	
						<u>94.1</u>	
				54.0	269.4	94.1	
			19	3.0	170.2		875.8
						96.2	219.0
				11.0	266.5		
16	48			19.5	172.3	11	
						<u>94.5</u>	
				31.5	266.8	95.4	
				39.0	177.3		885.3
				53.0	265.2	87.9	221.3
17	29		20	3.5	173.8	12	
						<u>95.2</u>	
				12.0	269.0	91.6	
				21.5	175.0		
				29.0	269.7	94.7	



6  
Dec, ~~26~~, 1894,

12	18	6	12	20	38.0	177.0	13	888.7
					46.0	267.0	<u>90.0</u>	222.2
					56.0	174.0	92.4	
							89.1	873.6
18	42		21	15.5	263.1	14		218.4
				15.5	177.0			
				23.5	259.5		<u>82.5</u>	
							85.8	
19	4			22.0	178.0	82.3		
	11			39.1	260.3	79.3		
	20			47.5	181.0	73.1		
	26			54.0	254.1	73.3		
	35		22	3.0	180.8	75.6		
	44			11.5	256.4	71.4		
	54			22.5	185.0	66.7		
20	2			29.5	251.7	63.7		
	9			37.0	188.0	64.3		
	17			45.0	252.3	68.2		
	24			51.5	184.1	65.9		
	32		23	0.5	250.0	60.0		
	40			8.0	190.0	54.8		
	48			16.0	244.8	52.1		
	54			22.5	192.7	53.5		
21	4			32.0	246.2	50.1		
	13			41.0	196.1	45.3		
	22			50.5	241.4	40.3		
	38		24	6.0	201.1	37.9		
	52			19.5	238.0	32.8		
22	7			35.0	205.2	30.8		
	20			48.5	236.0			

Last observation somewhat doubtful. Set. very faint and possibly not seen at all.

Dec. 6, 1894.

not seen later

Sim. Vis.

12	25	17.0	207.7	889.0
		32.0	237.9	222.2
12	23	44.5	206.0	30.2
	26	6.0	237.4	31.4
				30.8

Observations made through some light cloud, but observations considered good and that cloud produced not detriment. Images pretty well defined.

True East. J.	Boe 1102	7.1327
12 53 0.96 = 12	55 29.0	6 12 1.0
or 2 <sup>nd</sup> 20.0 feet	56 28.9	6 13 1.0
12		
2 2 18.3		7 19 1.0
2 3 18.2		7 20 1.0

Prod. 1327. is 27.7 slow.



Posted to here.

#

Dec. 10, 1894.

0 Ceti :

Phot. R :

W. obs.

2 4

-2.5

$\frac{1}{-1}$

4

10

56

2 35

cloudy

thickly clouded: no stars visible.

Index below.

174.1

comparisan standar

267.1

93.0

169.0

105.0

274.0

198.0

1.7

Index above.

256.0

Observations considered as of little value as they were very diff. through clouds cloudy.

2 0

8 15

Worse.

8 30

Thickly cloudy

Dec. 13, 1894.

0 Ceti:

Phot. R:

W. obs.

2

4

-2.5

$\frac{1}{-0}$

$\frac{10}{54}$

11

6

0

4

(9.0 mag.)

finder.

0

5

(9.0 mag.)

telescope.

blonds.

Index above.

72.2

188.9

80.1

180.2

comparison star dis.

116.7

$\frac{100.1}{216.8}$  ✓

143.2

1.3 ✓

-0.71

Index below.

169.5

272.0

163.1

276.8

102.5 ✓

$\frac{113.7}{216.2}$  ✓

143.8

1.3 ✓

-0.70

164.9

276.0

168.3

272.4

111.1 ✓

$\frac{104.1}{215.2}$  ✓

144.8

1.3 ✓

-0.68



Dec. 13, 1894.

Index above.

258.0

106.8<sup>✓</sup>

4.8

255.0

111.0<sup>✓</sup>217.8<sup>✓</sup>

6.0

142.2

~~1.3~~<sup>✓</sup>

- 0.73

74.6

112.4<sup>✓</sup>

187.0

79.0

105.8<sup>✓</sup>~~183.0~~  
186.2218.2<sup>✓</sup>

141.2

~~1.3~~<sup>✓</sup>

- 0.75

Index below.

170.0

102.0<sup>✓</sup>

272.0

113.5<sup>✓</sup>

163.7

215.5<sup>✓</sup>

277.2

144.5

~~1.3~~<sup>✓</sup>

- 0.69

U. Cephei

Phot. R:

W:ds.

0

30

+81.7

 $\frac{1}{1}$  $\frac{52}{22}$ 

Abandoned.

Dec. 13. 1894.

a. s. c.

Suspected variable following  $15^h 47^m - 6$   
 about  $0^m.5$  ~~and~~ and about  $0^s.5$  south.

2.

$$\frac{1}{0}$$

$$\frac{30}{30}$$

-30.5

2 h. 9 m.

$$\frac{0}{1} \quad \frac{42}{27}$$

Suspected variable probably by simply  
 wrong identification at Rhodanese.

$\Sigma 1002: 19 \pm$  Synclis: Char. R: W. obs.

7

13

+55.5

$$\frac{3}{-4}$$

$$\frac{5}{8}$$

7

52

Position angles  $300^\circ$ ; Distance =  $15''$ ;  
 mag = 5.5 and 6.5



Dec. 13, 1894.

Index to right.

255.0, fainter dis.

8.8 113.8

252.9

3.9

$$\begin{array}{r} 111.0 \\ 224.8 \end{array}$$
~~1.1~~  
-0.87

Index to left.

344.7

108.0

92.7

341.5

117.3

98.8

225.3

$$\begin{array}{r} 134.7 \end{array}$$
~~1.1~~  
-0.88

~~343.8~~  
~~164.7~~

112.2

96.0

118.8

341.0

231.0

$$\begin{array}{r} 129.0 \end{array}$$
~~1.0~~  
-1.00

Index to right.

70.4

117.8

188.2

74.3

113.4

187.7

231.2

$$\begin{array}{r} 128.8 \end{array}$$
~~1.0~~  
-1.00

75.5

107.6

183.1

79.0

105.6

184.6

213.2

$$\begin{array}{r} 146.8 \end{array}$$
~~0.64~~  
-0.64
clouds  
rather  
thick.upward  
thick.

Dec. 13, 1894.

Index to left.

168.8

106.2

275.0

166.2

277.5

111.3

217.5

142.5~~1.2~~  
0.72

Σ 1183

Phot. R:

W: obs.

8

0

-8.9

12  
-445  
15

7

45

Position angle =  $330^\circ$ ; Distance = 30";  
mag = 5.5 and 2.5.

Index to left and above.

155.2

283.9

159.0

280.0

&lt; fainter dis.

128.7

121.0

249.7

110.3~~0.10~~  
-1.41

Index to right and below.

250.2

10.5

244.5

16.2

120.3

131.7

252.0

10.80~~0.15~~  
-1.66



Dec. 13. 1894

10	11	29	244.8	132.1		
			16.9	122.3		
			248.7	<u>254.4</u>	<u>0.5</u>	lelands
			11.0	<u>105.6</u>	-1.52	thick.

Index to left and above.

10	15	48	336.7	125.5		
			102.2	134.3		
			333.0	<u>259.8</u>	<u>4.3</u>	
			<del>98.3</del>	<u>100.2</u>	-165	
			107.3			

10	18	0	335.2	130.1		
			105.3	128.5		
			334.3	<u>258.6</u>	<u>0.4</u>	upends
			102.8	<u>101.4</u>	-162	thick.

Index to right and below.

Scan in  
winter.

10	30	35	68.2	125.8		
			194.0	129.0		
			67.1	<u>254.8</u>	<u>4.5</u>	
			196.7	<u>105.2</u>	-159	

 $\Sigma$  1245: P VIII: 108: Phot. Q: Wicks.

8	29	+7.1
$\frac{4}{-4}$	$\frac{20}{9}$	
7	51	

Dec. 13, 1894

Position angle =  $30^\circ$  ; distance =  $10''$  ;  
mag. = 7.0 and 8.2.

Index to right and above.

74.0

190.3

73.0

187.0

< ~~same~~ fainter dis.

196.3

114.0

230.3

129.7

1.0

-0.99

Index to left and below.

165.0

278.9

161.4

279.2

113.9

117.8

231.7

128.3

1.0

-1.02

160.9

280.7

162.5

279.1

119.8

116.6

236.4

123.6

0.9

-1.11

Index to right and above.

250.4

9.2

249.3

11.1

118.8

121.8

240.6

119.4

0.8

-1.21

faint  
thick



Dec. 13, 1894.

10 49 15

250.2	120.2	
10.4		
250.7	119.4	0.8
10.1	<u>239.6</u>	
	<u>120.4</u>	-1.1A

Index to left and below.

10 51 27

343.1	118.6	
101.7		
341.2	118.9	0.9
100.1	<u>237.5</u>	
	<u>122.5</u>	-1.1A

Measurements made through clouds and  
mostly with much difficulty.

B & C 1182

14	32	2.5
14	33	2.5

B 394

14	29	0.0
14	30	0.0

Error of B 394. = 0.0 Of B+C. =  $3^m 2.5^s$  fast

Dis. of Jap. II. Shot. R. W. Abs. Clymer Rec.  
Comp with northern of 2 fainter of two satellites  
preceding Jap. = Sat IV.

Dec. 13, 1894

14 <sup>h</sup> 41 <sup>m</sup> 7 <sup>s</sup>	14	43	44.5	81.0		522.1
		44	4.0	179.8	98.8	130.5
			16.0	83.3		
			32.5	178.0	<u>94.7</u>	
			54.5	85.2	96.8	526.0
42 20						131.5
		45	13.5	178.0	92.8	
			32.0	83.8		
			46.0	179.0	<u>95.2</u>	
					94.0	521.5
43 41		46	10.0	81.4		130.4
			25.5	179.3	97.9	
			58.0	82.3		
		47	17.5	178.5	<u>96.2</u>	
					97.0	
46 10.		48	52.0	85.0		524.7
		49	2.0	176.0	91.0	131.2
			19.5	88.0		
			35.0	175.7	<u>87.7</u>	
					89.4	
48 24		51	1.5	84.8	93.0	524.3
			17.5	177.8		131.1
			34.0	85.7		
			49.5	176.0	<u>90.3</u>	
					91.6	
50 59		53	36.5	86.5		521.9
			53.5	175.2	88.7	130.5
		54	10.0	83.2	<u>93.8</u>	
			25.0	177.0	91.2	



Dec. 13, 1894

14 <sup>h</sup> 51 <sup>m</sup> 55 <sup>s</sup>	54	39.5	84.9	90.1	520.4
		48.0	175.0		130.1
	55	1.0	83.5	<u>93.5</u>	
		18.0	177.0	91.8	
52 56		46.0	86.9		523.5
		53.0	176.0	89.1	130.9
	56	1.0	85.7	<u>89.2</u>	
		11.0	174.9	89.2	
		24.0	85.0		518.2
53 34		31.5	175.8	90.8	129.6
		40.5	84.4	<u>88.6</u>	
		48.0	173.0	89.7	
	56	57.5	87.1	85.8	
54 3	57	5.0	172.9	87.8	
11		13.0	85.1	87.7	
20		21.5	172.8	85.1	
26		28.0	87.7	82.4	
34		36.5	170.1	81.1	
42		43.5	89.0	80.0	
49		51.0	169.0	77.9	
56		58.5	91.1	76.8	
55 4	58	6.0	167.9	74.8	
10		12.5	93.1	72.1	
20		21.5	165.2	67.8	
26		28.5	97.4	63.8	
34		36.5	161.2	62.0	
42		43.5	99.2		

Dec 13, 1894

14 <sup>h</sup> 55 <sup>m</sup> 50 <sup>s</sup>			52.5	161.3	62.1
56	00 <sup>s</sup>	59	1.5	107.7	59.4
8			10.0	158.5	56.8
16			17.5	102.0	56.5
24			26.5	158.4	56.4
32			34.5	108.2	50.2
40			42.0	153.9	45.7
48			50.0	110.2	43.7
54			56.0	149.8	39.6
57	4	15 00	6.0	114.3	35.5
18			20.0	147.0	32.7

not seen later.

Sim. of Vis.

15	01	0.5	116.1	33.1	526.2
		12.0	149.2		131.6
14 <sup>h</sup> 58 <sup>m</sup> 18 <sup>s</sup>		25.0	116.2		
		41.5	147.7	$\frac{28.5}{30.8}$	

Seeing good images somewhat elongated.  
 Satellite pretty close to limb of planet.

B+C 1182

p 394

15	21	2.5
15	22	2.6

15	18	0.0
15	19	0.0

Error of B+C. = 3<sup>m</sup> 2<sup>s</sup> 5<sup>th</sup> part.



Dec. 15, 1894.

X Cygni:      Phot. R:      W: obs.

$$\begin{array}{r} 19 \\ \underline{215} \\ 4 \end{array} \quad \begin{array}{r} 47 \\ \underline{23} \\ 36 \end{array} \quad +32.7$$

$$\begin{array}{r} 19 \\ \underline{1} \\ 5 \end{array} \quad \begin{array}{r} 37 \\ \underline{37} \\ 0 \end{array} \quad +32.1$$

$$\begin{array}{r} 19 \\ \underline{1} \\ 6 \end{array} \quad \begin{array}{r} 41 \\ \underline{41} \end{array} \quad +33.4$$

Same comparison star used as in book 67: pp. 108-9.

Index to left and above.

$$\begin{array}{r} 44.0 \text{ comparison star dis.} \\ 218.0 \\ 45.0 \\ 218.0 \end{array} \quad \begin{array}{r} 174.0^{\wedge} \\ \underline{173.0^{\wedge}} \\ 347.0^{\wedge} \\ 130 \end{array} \quad \begin{array}{r} -4.2^{\wedge} \\ -6.23^{\wedge} \end{array}$$

Index to right and below.

$$\begin{array}{r} 135.0 \\ 308.0 \\ 135.0 \\ 307.5 \end{array} \quad \begin{array}{r} 173.0^{\wedge} \\ \underline{172.5^{\wedge}} \\ 345.5^{\wedge} \\ 145 \end{array} \quad \begin{array}{r} -4.0^{\wedge} \\ -5.99^{\wedge} \end{array}$$

Dec. 15, 1894.

8	13	47	135.0	172.7 <sup>^</sup>	
			307.7	<u>173.2<sup>^</sup></u>	<del>-4.1<sup>^</sup></del>
			134.8	345.9 <sup>^</sup>	-6.05
			308.0	<u>14.1</u>	

Index to left and above.

8	17	19	224.7	173.3 <sup>^</sup>	
			38.0	<u>172.5<sup>^</sup></u>	<del>-4.0<sup>^</sup></del>
			225.0	345.8 <sup>^</sup>	-6.04
			37.5	<u>14.2</u>	

8	19	27	225.2	172.5 <sup>^</sup>	
			37.7	<u>173.0<sup>^</sup></u>	<del>-4.0<sup>^</sup></del>
			225.0	345.5 <sup>^</sup>	-5.99 <sup>x</sup>
			38.0	<u>14.5</u>	

Index to right and below.

8	22	28	314.3	173.9 <sup>^</sup>	
			128.2	<u>173.0<sup>^</sup></u>	<del>-4.2<sup>^</sup></del>
			315.0	346.9 <sup>^</sup>	-6.21 <sup>x</sup>
			128.0	<u>13.1</u>	

Citi:

Phot. R:

W: obs

2	4
<u>2</u>	<u>20</u>
0	16

-2.5



Dec. 15, 1894.

Index to right and above.

83.9  $\angle$  comparison star dis.

179.4

95.5<sup>^</sup>

72.0

116.0<sup>^</sup>

188.0

211.5<sup>^</sup>  
148.51.4<sup>^</sup>  
-0.60

Index to left and below.

162.0

120.7<sup>^</sup>

282.7

98.3<sup>^</sup>

172.7

219.0<sup>^</sup>  
141.01.2<sup>^</sup>  
-0.75

271.0

173.1

97.6<sup>^</sup>

270.7

116.5<sup>^</sup>

164.0

214.1<sup>^</sup>

280.5

145.9

1.2<sup>^</sup>  
-0.66

Index to right and above.

253.0

115.0<sup>^</sup>

8.0

101.1<sup>^</sup>

261.0

216.1<sup>^</sup>

2.1

143.9

1.3<sup>^</sup>  
-0.70

261.2

99.0<sup>^</sup>~~259.7~~

0.2

252.1

117.9<sup>^</sup>

10.0

216.9<sup>^</sup>

143.1

1.3<sup>^</sup>  
0.71

Dec. 15. 1894.

Index to left and below.

8	<del>51</del>	51
8	<del>47</del>	<del>27</del>

342.9

99.0

350.0

~~90.1~~

92.8

116.1<sup>^</sup>100.8<sup>^</sup>~~98.1~~216.9<sup>^</sup>

143.1

1.3<sup>^</sup>

- 0.71

0

5

(9.0 mag.)

0

6

(9.0 mag.)

finder.  
telescope.

M. P. 441:

Phot. R:

W: obs.

3

31

+62.8

2

58

-0

33

11

27

Abandoned.

U. Cephei:

Phot. R:

W: obs.

compared with 81°: 26

0

30

+81.7

3

0

2

30

Index to right and above.

142.6

300.0

139.1

303.3

comparison star dis.

157.4<sup>^</sup>164.2<sup>^</sup>321.6<sup>^</sup>- 1.9<sup>^</sup>

9 28 50



Dec. 15, 1894.

~~Index to left.~~

$$\begin{array}{r}
 139.3 \\
 303.5 \\
 141.8 \\
 302.0 \\
 \hline
 164.2^{\wedge} \\
 160.2^{\wedge} \\
 324.4^{\wedge}
 \end{array}
 \quad -2.0^{\wedge}$$

Index to left and below.

$$\begin{array}{r}
 233.8 \\
 29.2 \\
 230.8 \\
 33.2 \\
 \hline
 155.4^{\wedge} \\
 162.4^{\wedge} \\
 317.8^{\wedge}
 \end{array}
 \quad -1.6^{\wedge}$$

~~Index~~

$$\begin{array}{r}
 229.3 \\
 33.0 \\
 233.7 \\
 29.3 \\
 \hline
 163.7^{\wedge} \\
 155.6^{\wedge} \\
 319.3^{\wedge}
 \end{array}
 \quad -1.7^{\wedge}$$

Index to right and above.

$$\begin{array}{r}
 322.0 \\
 121.3 \\
 318.0 \\
 124.3 \\
 \hline
 159.3^{\wedge} \\
 166.3^{\wedge} \\
 325.6^{\wedge}
 \end{array}
 \quad -2.1^{\wedge}$$

$$\begin{array}{r}
 319.0 \\
 124.7 \\
 322.0 \\
 120.3 \\
 \hline
 165.7^{\wedge} \\
 158.3^{\wedge} \\
 324.0^{\wedge}
 \end{array}
 \quad -2.0^{\wedge}$$

Dec. 15, 1894.

Index to left and below.

9	44	44	53.4	155.4 <sup>^</sup>	
			208.8	163.4 <sup>^</sup>	
			49.8	<u>318.8<sup>^</sup></u>	-1.7 <sup>^</sup>
			213.2		

9	47	9	49.1	164.5 <sup>^</sup>	
			213.6	157.3 <sup>^</sup>	
			53.2	<u>321.8<sup>^</sup></u>	-1.9 <sup>^</sup>
			210.5		

Index to right and above.

9	50	5	321.7	159.3 <sup>^</sup>	
			121.0	166.2 <sup>^</sup>	
			318.0	<u>325.5<sup>^</sup></u>	-2.1 <sup>^</sup>
			124.2		

9	52	10	318.4	166.4 <sup>^</sup>	
			124.8	160.6 <sup>^</sup>	
			321.2	<u>327.0<sup>^</sup></u>	-2.2 <sup>^</sup>
			121.8		

Index to left and below.

9	56	11	53.3	156.7 <sup>^</sup>	
			210.0	163.1 <sup>^</sup>	
			50.1	<u>319.8<sup>^</sup></u>	-1.8 <sup>^</sup>
			213.2		



Dec. 15, 1894.

9	58	25	49.7	163.3 <sup>^</sup>	
			213.0		
			53.0	<u>157.1<sup>^</sup></u>	
			210.1	320.4 <sup>^</sup>	-1.8 <sup>^</sup>

81°: 30 compared with 81°: 26  
 Phot. R:

W. obs.

Index to right &amp; below:

10	3	37	149.9	81°: 26 dis.	
			293.9	144.0 <sup>^</sup>	
			145.8	<u>151.1<sup>^</sup></u>	
			296.9	295.1 <sup>^</sup>	-0.7 <sup>^</sup>

Index to left and above.

10	5	9	236.2	150.1 <sup>^</sup>	
			26.3		
			239.2	<u>143.9<sup>^</sup></u>	
			23.1	294.0 <sup>^</sup>	-0.6 <sup>^</sup>

10	6	45	239.0	145.1 <sup>^</sup>	
			24.1		
			236.3	<u>150.6<sup>^</sup></u>	
			26.9	295.7 <sup>^</sup>	-0.7 <sup>^</sup>

Dec. 15. 1894.

Index to right and below.

325.9

150.1<sup>^</sup>

116.0

329.0

143.9<sup>^</sup>-0.6<sup>^</sup>

142.9

294.0<sup>^</sup>

329.9

143.0<sup>^</sup>

112.9

326.9

149.4<sup>^</sup>-0.6<sup>^</sup>

116.3

292.4<sup>^</sup>

Index to left and above.

56.4

~~206.8~~148.6<sup>^</sup>

205.0

59.2

143.8<sup>^</sup>

203.0

292.4<sup>^</sup>-0.6<sup>^</sup>

M.P: 441 : Phot. R:

W. obs.

3

31

+62.8

 $\frac{4}{0}$  $\frac{10}{39}$ 

Index to left and below.

241.0

&lt; comparison star des.

-2.06

22.0

141.0<sup>^</sup>

244.1

134.4<sup>^</sup>

84.6

18.5

275.4<sup>^</sup>-0.1<sup>^</sup>



Dec. 15, 1894.

Index to right and above.

10	42	39	332.3	136.7 <sup>^</sup>	-2.13
			109.0	<u>141.0<sup>^</sup></u>	-0.1 <sup>^</sup>
			330.0	277.7 <sup>^</sup>	
			111.0	82.3	

10	44	1	330.0	139.9 <sup>^</sup>	-2.10
			109.9	<u>136.9<sup>^</sup></u>	-0.1 <sup>^</sup>
			333.9	276.8 <sup>^</sup>	
			110.8	83.2	

Index to left and below.

10	48	12	64.3	134.5 <sup>^</sup>	-2.02
			198.8	<u>139.5<sup>^</sup></u>	0.0 <sup>^</sup>
			61.3	274.0 <sup>^</sup>	
			200.8	86.0	

10	50	22	61.5	141.1 <sup>^</sup>	-2.04
			202.6	<u>133.4<sup>^</sup></u>	0.0 <sup>^</sup>
			65.7	274.5 <sup>^</sup>	
			199.1	85.5 <sup>-</sup>	

Index to right and above.

10	52	21	152.9	135.3 <sup>^</sup>	-1.98
			288.2	<u>137.3<sup>^</sup></u>	0.0 <sup>^</sup>
			152.7	272.6 <sup>^</sup>	
			290.0	87.4	

Dec. 17, 1894.

Measurements of faint comparison stars.

R: Draconis: Phot D:

W: obs.

16

26

+ 67.4

 $\frac{1}{8}$  $\frac{25}{59}$ 

Star g.

1.26

1.30

1.39

1.21

 $\frac{1.42}{6.58}$ 

1.316

$$\text{Log } 1.316 = 0.11926$$

0.59630

11.10

10.50

2.82

13.32 = magn.

Star r.

1.19

1.05

1.16

1.21

 $\frac{1.26}{5.87}$ 

1.174

$$\text{Log } 1.174 = 0.06967$$

0.34835

11.10

10.75

2.82

13.57 = magn.

Star t.

0.90

0.79

0.80

0.82

 $\frac{0.80}{4.11}$ 

0.822

$$\text{Log } 0.822 = 9.91487$$

49.57435

0.42565

11.10

11.53

2.82

14.35 = magn.



Dec. 17, 1894.

Star u.

$$\text{Log } 0.844 = 9.92634$$

0.85

0.81

0.86

0.88

0.82

4.22

0.844

49.63170

0.36830

11.10

11.47

2.82

14.29 = magn.

Star v.

$$\text{Log } 0.540 = 9.73239$$

0.45

0.58

0.53

0.57

0.57

2.70

0.540

This is v on chart

but now w in Circum.

polar Book and in pamph.

Let "Var. stars of long

Period"

48.66195

1.33805

11.10

12.44

2.82

15.26 = magn.

Star w.

$$\text{Log } 0.554 = 9.74351$$

0.57

0.54

0.56

0.54

0.56

2.77

0.554

This is w on chart

but now x in Cir. Book

and Pamphlet "Var.

Stars of long period"

48.71755

1.28245

11.10

12.38

2.82

15.20 = magn.

Star s.

$$\text{Log } 0.980 = 9.99123$$

1.00

0.92

1.00

1.01

0.97

4.90

0.980

49.95615

0.04385

11.10

11.14

2.82

13.96 = magn.

194

Dec. 17, 1894.

Star p.

~~1.96~~ probably affected by clouds.~~2.03~~~~1.86~~

1.99

2.06

1.94

1.91

1.92

---

9.82

1.964

Star o.

2.02

2.54

2.32

2.27

2.22

---

11.37

2.274

Star m.

3.71

3.94

3.75

3.50

3.59

---

18.49

3.698

clouds.

$$\text{Log } 1.964 = 0.29314$$

$$\begin{array}{r} 1.46570 \\ 11.10 \\ \hline 9.63 \\ 2.82 \\ \hline 12.45 = \text{mag.} \end{array}$$

$$\text{Log } 2.274 = 0.35679$$

$$\begin{array}{r} 1.78395 \\ 11.10 \\ \hline 9.32 \\ 2.82 \\ \hline 12.14 = \text{mag.} \end{array}$$

$$\text{Log } 3.698 = 0.56797$$

$$\begin{array}{r} 2.83985 \\ 11.10 \\ \hline 8.26 \\ 2.82 \\ \hline 11.08 = \text{mag.} \end{array}$$

m 1 var; var. 4 0.  
Estimate = 10.8.



Dec. 17, 1894.

Comparison star used in above measurements =  $\eta$  Draconis.

Measurements of faint comparison stars.

S: Cephei:      Phot 3:      W: obs.

21	32	
$\frac{2}{5}$	$\frac{37}{0}$	+72.3

blonds.

Star p.

1.58

1.70

1.76

1.68

1.75

---

8.77

1.754

Star m.

2.12

2.04

1.90

1.85

2.01

---

9.92

1.984

Log 1.754 = 0.24403

5
1.22015
11.10
9.88
3.37
13.25 magn.

Log 1.984 = 0.29754

5
1.48770
11.10
9.61
3.37
12.98 magn.

Dec. 17, 1894.

Star K.

$$\text{Log } 4.276 = 0.63104$$

4.32

4.29

4.31

4.25

4.21

21.38

4.276

$$\begin{array}{r} 5 \\ 3.15520 \\ 11.10 \\ 7.94 \\ 3.37 \\ 11.31 = \text{mag.} \end{array}$$

Star L.

$$\text{Log } 4.274 = 0.63083$$

4.07

4.39

4.21

4.50

4.20

21.37

4.274

$$\begin{array}{r} 5 \\ 3.15415 \\ 11.10 \\ 7.95 \\ 3.37 \\ 11.32 = \text{mag.} \end{array}$$

Star g.

$$\text{Log } 1.598 = 0.20358$$

1.59

1.51

1.61

1.72

1.56

7.99

1.598

$$\begin{array}{r} 5 \\ 1.01790 \\ 11.10 \\ 10.08 \\ 3.37 \\ 13.45 = \text{mag.} \end{array}$$

Star n.

$$\text{Log } 0.850 = 9.92942$$

0.84

0.86

0.86

0.85

0.84

4.25

0.850

$$\begin{array}{r} 5 \\ 49.64710 \\ 0.35290 \\ 11.10 \\ 11.46 \\ 3.37 \\ 14.83 = \text{mag.} \end{array}$$



Dec. 17, 1894.

Star s.

$$\text{Log } 0.676 = 9.82995$$

0.72

49.14975

0.64

0.85025

0.66

11.10

0.72

11.95

0.64

3.37

3.38 0.676

15.32 = magn.

Star t.

$$\text{Log } 0.618 = 9.79099$$

0.64

48.95495

0.60

1.04505

0.64

11.10

0.58

12.15

0.63

3.37

3.09 0.618

15.52 = magn.

Star o.

$$\text{Log } 1.588 = 0.20085$$

1.63

1.00425

1.49

11.10

1.58

10.10

1.57

3.37

1.67

13.47 = magn.

7.94 1.588

Star m.

$$\text{Log } 2.884 = 0.46000$$

3.14

2.30000

2.97

11.10

2.72

8.80

2.71

3.37

2.76

12.17 = magn.

2.88 14.42 2.884

Star l estimated to-night as some 2 or 3 grades brighter than star K:

Dec. 17, 1894.

 $\overline{var.} = 1$  in large telescope. $\overline{var} = 1$  in finder.

Estimate = 10.7.

Comparison star used in above measurements =  $\gamma$  Cephei.0 Ceti : Phot. R:

W. obs

$$\begin{array}{r} 2 \quad 4 \\ \frac{4}{2} \quad \frac{24}{20} \end{array} \quad -2.5$$

to bands.

Index to right and above.

$$\begin{array}{r} 91.6 \\ 183.2 \\ 78.8 \\ 182.2 \end{array} \quad \begin{array}{r} \angle \text{comparison star dis.} \\ 91.6^{\wedge} \\ 103.4^{\wedge} \\ 195.0^{\wedge} \end{array} \quad \begin{array}{r} 260.1 \\ 12.5 \\ 266.4 \\ 2.3 \end{array} \quad \begin{array}{r} 112.4^{\wedge} \\ 95.9^{\wedge} \\ 208.3^{\wedge} \\ 1.5^{\wedge} \end{array}$$

Index to left and below.

$$\begin{array}{r} 169.2 \\ 285.0 \\ 179.0 \\ 276.7 \end{array} \quad \begin{array}{r} 115.8^{\wedge} \\ 97.7^{\wedge} \\ 213.5^{\wedge} \end{array} \quad \begin{array}{r} 1.4^{\wedge} \end{array}$$



Dec. 17, 1894.

177.0

99.1<sup>^</sup>

276.1

117.2<sup>^</sup>

168.8

216.3<sup>^</sup>1.3<sup>^</sup>

286.0

Index to right and above.

257.1

117.6<sup>^</sup>

14.7

271.1

94.9<sup>^</sup>

6.0

212.5<sup>^</sup>1.4<sup>^</sup>

267.8

97.2<sup>^</sup>

5.0

260.8

112.2<sup>^</sup>

13.0

209.4<sup>^</sup>1.4<sup>^</sup>

Index to left and below.

352.7

105.3<sup>^</sup>

98.0

345.4

119.8<sup>^</sup>

105.2

225.1<sup>^</sup>1.1<sup>^</sup>

346.5

120.9<sup>^</sup>

107.4

357.5

98.5<sup>^</sup>

96.0

219.4<sup>^</sup>1.2<sup>^</sup>

Observations made through clouds: images seen  
to vary relatively at times.

Mr. Wendell thinks better reject above on 0 etc.

Dec. 17, 1894

0	6	(9.0 mag.)	telescope.
10	5	(9.0 mag.)	finder.

1 Ceti again. Alt. R. H. ob.  
Index to left and below.

359.1 - comparison star dis.

94.0

94.9<sup>^</sup>

344.0

121.5<sup>^</sup>

105.5

216.4<sup>^</sup>

143.6

1.3<sup>^</sup>  
- 0.70

Index to right and above.

78.5

114.6<sup>^</sup>

193.1

88.2

97.3<sup>^</sup>

185.5

211.9<sup>^</sup>

148.1

1.4<sup>^</sup>  
- 0.61

88.0

96.1<sup>^</sup>

~~184.1~~

114.1<sup>^</sup>

79.8

210.3<sup>^</sup>

193.9

149.8

1.4<sup>^</sup>  
- 0.58

Index to left and below.

165.8

119.1<sup>^</sup>

284.9

174.5

103.7<sup>^</sup>

278.2

222.8<sup>^</sup>

137.2

1.2<sup>^</sup>  
- 0.83



Dec. 17, 1894.

11 10 58

175.0

102.8<sup>^</sup>

277.8

166.7

119.6<sup>^</sup>

286.3

222.4<sup>^</sup>

137.6

~~1.2~~<sup>^</sup>  
- 0.80

Index to right and above.

257.4

114.1<sup>^</sup>

11.5

265.2

99.8<sup>^</sup>

5.0

213.9<sup>^</sup>

146.1

~~1.3~~<sup>^</sup>  
- 0.6511 12 41  

---

11 08 41

Dec. 18, 1894.

$\chi$  Lyræ:

W. obs.

19

41

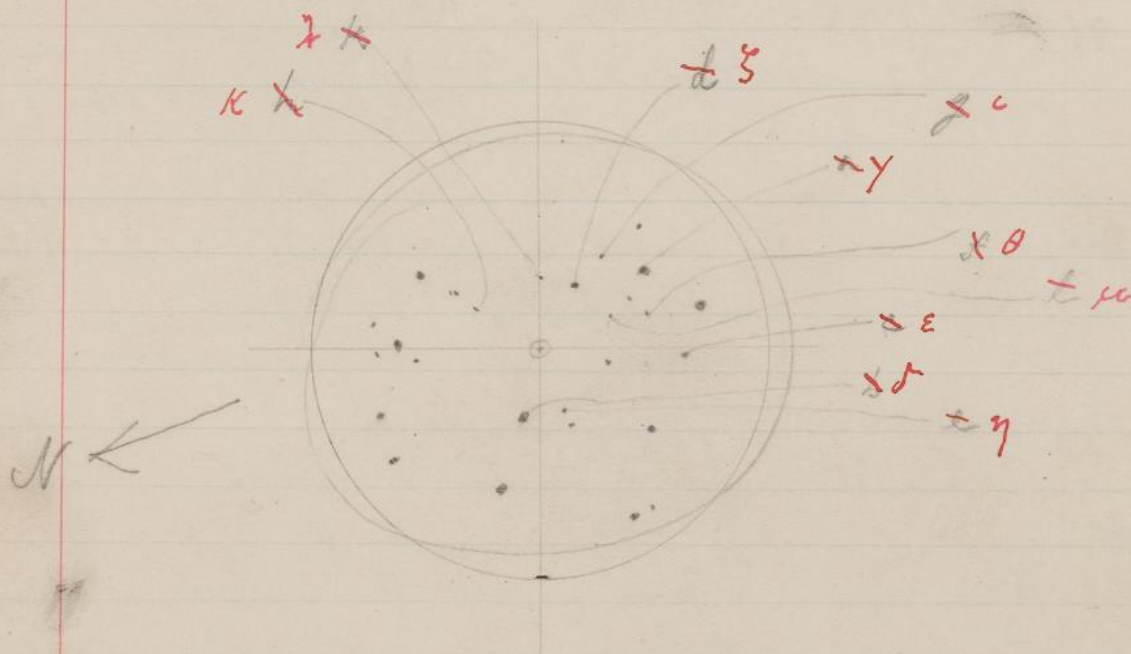
+ 33.4

$\frac{1}{5}$

$\frac{20}{39}$

Selection of faint comparison stars for  $\chi$  Lyræ.  
Provisional notation.

W. obs.





Dec. 18, 1894.

Relative estimates of faint comparison stars for  $\chi$   
 Cygni as indicated on page 202. W: obs.

<del>a</del> $\gamma$	5	<del>b</del> $\delta$
<del>b</del> $\delta$	4	<del>c</del> $\epsilon$
<del>c</del> $\epsilon$	4	<del>d</del> $\zeta$
<del>d</del> $\zeta$	3	<del>e</del> $\eta$
<del>e</del> $\eta$	4	<del>f</del> $\theta$
<del>f</del> $\theta$	5	<del>g</del> $\iota$
<del>g</del> $\iota$	5	<del>h</del> $\kappa$
<del>h</del> $\kappa$	3	<del>k</del> $\lambda$

The letters in red are  
 final notation.

Measurements of faint comparison stars for  $\chi$  Cygni with Star 52. W: obs.

0.60
0.59
0.65
0.63
0.62
<hr/> 3.09

0.618

same stars + notation as  
 Log 0.618 = 9.79099 before.

$$\begin{array}{r} 48.95495 \\ 1.04505 \\ 11.10 \\ 2.31 \\ \hline 14.46 = \text{mag.} \end{array}$$

Star h.

0.69
0.74
0.75
0.74
0.73
<hr/> 3.65

0.730

$$\begin{array}{r} \text{Log } 0.730 = 9.86332 \\ 49.31660 \\ 0.68340 \\ 11.10 \\ 2.31 \\ \hline 14.09 = \text{mag.} \end{array}$$

Dec. 18. 1894.

Star g.

0.84

0.85

0.85

0.87

0.81

4.25 0.850

$$\text{Log } 0.850 = 9.92942$$

49.64710

0.35290

11.10

2.31

13.76 = magn.

Star d.

1.41

1.57

1.54

1.59

1.55

7.66 1.532

$$\text{Log } 1.532 = 0.18526$$

0.92630

11.10

10.17

2.31

12.48 = magn.

Star f.

1.02

1.13

1.22

1.23

1.17

5.77 1.154

$$\text{Log } 1.154 = 0.06221$$

0.31105

11.10

10.79

2.31

13.10 = magn.

Star e.

0.94

1.07

1.08

1.08

1.15

5.32 1.064

$$\text{Log } 1.064 = 0.02694$$

0.13470

11.10

10.97

2.31

13.28 = magn.



Dec. 18, 1894.

Star c.

1.53

1.58

1.69

1.75

1.67

8.22

1.644

$$\text{Log } 1.644 = 0.21590$$

1.07950

11.10

10.02

2.31

12.33 = mag.

Star b.

2.12

2.13

2.22

2.16

2.07

10.70

2.140

$$\text{Log } 2.140 = 0.33041$$

1.65205

11.10

9.45

2.31

11.76 = mag.

Star a.

2.44

2.59

2.57

2.72

2.77

13.09

2.618

$$\text{Log } 2.618 = 0.41797$$

2.08985

11.10

9.01

2.31

11.32 = mag.

Comparison star used in previous measurements  
for  $\chi$  Cygni was  $\gamma$  Cygni. (gamma Cygni)

Dec. 18, 1894.



Dec. 18. 1894.

B. + C. 1142.

A 34 30.6

35 30.7

B+C. 1<sup>m</sup> 29<sup>s</sup> 36 30.7

Disappearance of Jupiter I; Phot R. W. obs.  
 from recorder: comp with 1st satellite following = Satellite II

A X 43 43.5

44 5.5

2.5

41

45

3.5

27.5

50

46

7.5

20.5

34

55

47

21.5

40

55.5

48

38

49

14

~~37~~

51

13.5

42

55

51

7

35.5

B. 394.

A 36 0.0

37 0.0

38 0.0

99.8 266.5 549.8

6.3 137.4

180.0 317.4

87.0 275.0 1

93.4 2.0

88.9 273.5 549.8

2.4 137.5

87.6 273.2 2 180.0

88.2 0.8 317.5

86.3 274.0 546.5

0.3 136.6

91.8 270.2 180.0

89.0 2.0 316.6

90.3 271.5 552.0

2.1 138.0

82.3 277.9 180.0

86.3 0.2 318.0

78.1 278.4 1264.9

356.5 316.2

76.0 277.0

77.0 353.0

276.3

76.7 353.0

Dec. 18, 1894

8 53 21	<sup>A</sup> 9	52	17.5 25.5 26.5 55	271.0 $\frac{84.0}{80.4}$ 355.0 279.0 79.2 358.2	1255.3 6313.8 924.5 231.1 790.0
8 54 26		53	6.5 19.5	$\frac{85.1}{82.2}$ 276.1 1.2	7321.1
8 55 40		54	49 4 19.5 31.5 50	278.0 79.0 357.0 250.0 $\frac{75.0}{77.0}$ 355.0 279.0	1270.0 317.5 A 1271.0 317.8
8 56 35		55	1.5 10.5 23.5 32.5 41 48 58	74.1 353.1 $\frac{69.1}{71.6}$ 284.9 354.0 66.4 283.2 349.6 $\frac{69.0}{67.7}$ 280.0 249.0	9 1261.8 <del>1261.8</del> 315.4 1.0
8 57 14		<u>56</u>	9.5 18 28.5 37.5 45 55	59.2 288.8 348.0 $\frac{70.4}{65.0}$ 281.0 352.0 279.0	1270.1 317.5 11 1277.7 314.4
8 57 54			7.5 15 25 35	$\frac{69.6}{73.2}$ 276.7 346.3 60.3 287.5 347.8	12 1267.5 316.9
8 58 31		57	44.5	$\frac{65.8}{63.0}$ 283.2	
8 59 10					



Dec. 18, 1897.

5.3		$\frac{2}{4}$	$\frac{57}{58}$	54	349.0	13
3.8			$\frac{58}{59}$	2	289.0	1274.8
45	8 59 44			9.5	61.0 350.0	318.7
1.1				$\frac{17.5}{12.5} \times$	285.8	14
0.0				27.5	$\frac{64.2}{62.6}$ 350.0	
7.5	9 00 17			34	282.0	1269.1
				45	69.8 351.8	317.3
				52	$\frac{61.0}{65.4}$ 284.8	15
		59		0	345.8	
				10	284.9	1269.1
1.0	9 00 54			21.5	64.3 349.2	317.3
7.8				29	$\frac{61.0}{62.6}$ 287.0	16
				35.5	348.0	
61.8	9 1 23			42.5	57.8 290.0	1267.8
61.8				49.5	347.8	317.0
65.4				56.5	$\frac{68.0}{62.9}$ 281.0	17
0				4.5	349.0	
		9	0	13.5	61.0 284.0	1263.7
70.1	9 1 54			19.5	345.0	315.9
175				26.5	$\frac{66.7}{63.8}$ 284.0	18
11				33.5	350.7	
				41	51.4 294.1	1274.7
57.7	9 2 22			49	346.1	318.7
14.4				55	$\frac{55.5}{53.4}$ 289.2	19
2				3	344.7	
				11.5	60.8 290.2	1283.2
5	9 2 56			21	351.0	320.8
67.5				30	$\frac{58.0}{57.4}$ 292.0	20
16.9				40	350.0	

Dec. 18. 1894.

9	3	20	9 <sup>h</sup>	1 <sup>m</sup> 50 <sup>m</sup>		279.0	76.8	
		34		<del>2) 11</del>	4.5	355.8	74.8	
		41		2)	11	281.0	70.0	
		48			15.5	351.0	68.3	
		58			27.5	282.7	67.3	
4	6				35.5	350.0	67.8	
		16			46	282.2	70.9	
		25			55	353.1	71.0	
		40		3)	10.5	282.1	66.9	
		50			12.0	349.0	66.3	
		56			26	282.7	67.3	
5	7				37	350.0	66.0	
		18			47.5	284.0	58.5	
		28		4)	55.5	342.3	52.3	
		36			6	290.2	51.8	
		42			12	342.0	58.0	
		50			20.5	284.0	55.8	
6	00				30.5	339.8	50.6	
		12			42	289.2	51.9	
		26			55.5	341.1		
				5)				

lim. of visibility

9	9	55	9	6	49	49.8	295.2	1278.7
				7	8		346.0	319.7
					35		295.0	
				8	34	42.5	337.5	
						46.2		



Dec. 18, 1894.

Satellite very close to limb of Jupiter and when  
last seen was practically on lim. of visible edge  
of Jupiter's edge disc so that observer is not  
positive whether it finally disappeared by eclipse or  
occultation: seeing poor throughout eclipse:  
disturbance building so that observer had to make  
settings slowly and with difficulty.

B. + C. 1142.

9	17	29.7
	14	29.7

B 394 = 0.2 fast.

B. 394.

9	19	0.0
	20	0.0

B + C. 1<sup>m</sup> 30<sup>s</sup> slow.

Dec. 18, 1894.

S Cephei:

Phot. I.

W: obs.

$$\begin{array}{r} 21 \\ 3 \\ \hline 6 \end{array} \quad \begin{array}{r} 37 \\ 53 \\ \hline 16 \end{array}$$

+78.3

~~Star 12.~~~~4.80~~~~4.93~~~~4.72~~~~4.74~~

5.02

this set effected by clouds  
measurements abandoned.

~~Star~~~~.~~~~.~~~~.~~~~.~~~~.~~~~Star~~~~.~~

0 Ceti:

$$\begin{array}{r} 2 \\ 4 \\ 2 \end{array} \quad \begin{array}{r} 4 \\ 27 \\ \hline 23 \end{array}$$

-2.5



Dec. 19, 1894.

X Cygni: Phot. d: W: obs

19

41

+33.4

 $\frac{1}{5}$  $\frac{27}{46}$ 

Relative estimate of faint comparison stars for X Cygni: same provisional notation used as last night and in diagram on page 202.

<del>a</del> $\gamma$	4	<del>b</del> $\delta$
<del>b</del> $\delta$	4	<del>c</del> $\epsilon$
<del>c</del> $\epsilon$	3	<del>d</del> $\zeta$
<del>d</del> $\zeta$	4.5	<del>e</del> $\eta$
<del>e</del> $\eta$	3	<del>f</del> $\theta$
<del>f</del> $\theta$	5	<del>g</del> $\iota$
<del>g</del> $\iota$	5	<del>h</del> $\kappa$
<del>h</del> $\kappa$	3.5	<del>i</del> $\lambda$

W: obs.

The letters in red are  
provisional notation.

Measurements with Phot. d. of faint comparison stars for X Cygni: same provisional notation as above.

Star l.

W: obs.

0.46

0.41

0.45

0.41

0.45

2.18 0.436.

Log 0.436 = 9.63949.

48,19745
1,80255
11.10
12.90
2.31
15.21 = mag

Dec. 19, 1894

Star k.

0.57

0.61

0.64

0.64

0.64

3.10 0.620

$$\text{Log } 0.620 = 9.79239$$

$$\begin{array}{r} 48.96195 \\ 1.03805 \\ \hline 11.10 \end{array}$$

$$\begin{array}{r} 12.14 \\ 2.31 \\ \hline 14.45 = \text{mag.} \end{array}$$

Star h.

0.71

0.77

0.74

0.71

0.73

3.66 0.732

$$\text{Log } 0.732 = 9.86451$$

$$\begin{array}{r} 49.32255 \\ 0.67745 \\ \hline 11.10 \end{array}$$

$$\begin{array}{r} 11.78 \\ 2.31 \\ \hline 14.09 = \text{mag.} \end{array}$$

Star g.

0.81

0.93

0.92

0.94

0.95

4.55 0.910

$$\text{Log } 0.910 = 9.95904$$

$$\begin{array}{r} 49.79520 \\ 0.20480 \\ \hline 11.10 \end{array}$$

$$\begin{array}{r} 11.30 \\ 2.31 \\ \hline 13.61 = \text{mag.} \end{array}$$

Star d.

1.51

1.66

1.60

1.55

1.55

7.87 1.574

$$\text{Log } 1.574 = 0.19700$$

$$\begin{array}{r} 0.98500 \\ 11.10 \\ \hline 10.12 \end{array}$$

$$\begin{array}{r} 10.12 \\ 2.31 \\ \hline 12.43 = \text{mag.} \end{array}$$



Dec. 19. 1894.

Star f.

$$\text{Log } 1.232 = 0.09061$$

1.14

1.23

1.26

1.27

1.26

---

 6.16 1.232

---

 0.45305

11.10

10.65

2.31

12.96 = magn

Star e.

$$\text{Log } 1.618 = 0.20898$$

1.57

1.65

1.61

1.65

1.61

---

 8.09 1.618

---

 1.04490

11.10

10.06

2.31

12.37 = magn

Star e.

$$\text{Log } 1.216 = 0.08493$$

1.22

1.24

1.21

1.20

1.21

---

 6.08 1.216

---

 0.42465

11.10

10.68

2.31

12.99 = magn

Star b.

$$\text{Log } 2.142 = 0.33082$$

2.12

2.22

2.20

2.11

2.06

---

 10.71 2.142

---

 1.65410

11.10

9.45

2.31

11.76 = magn

Dec. 19, 1894.

Star a.

2.92

2.91

2.87

3.02

2.70

14.42

Log 2.884 = comparison star used in  
 this and preceding meas-  
 urements on X Cygni is  
 Y Cygni (gamma  
 Cygni.)

mean time = 7<sup>h</sup> 57<sup>m</sup> 59<sup>s</sup>

Measurements of faint comparison stars for  
 R: Draconis with Phot. C: W: obs.

16

26

+67.4

250

10

24

Star t.

0.81

0.79

0.73

0.69

0.71

3.73 0.746

Log 0.746 = 9.87274

49.36370

0.63630

11.10

11.74

3.27

15.01 = magn.

Star r.

1.09

1.23

1.13

1.14

1.09

5.68 1.136

Log 1.136 = 0.05538

0.2769011.10

10.82

3.27

14.09 = magn.



Dec. 19, 1894.

Star p

1.90  
1.98  
1.78  
1.74  
1.78

9.18 1.836

Log 1.836 = 0.26387

5  
1,31935  
11.10  
9.78  
3.27  
13.05 = mag

Star s. q.

1.36  
1.24  
1.33  
1.35  
1.17

5 1.290  
Star s. u.

Log 1.290 = 0.11059

5  
0,55295  
11.10  
10.55  
3.27  
13.82 = mag

0.86  
0.72  
0.78  
0.78  
0.74

3.88 0.776

Log 0.776 = 9.88986

5  
49,44930  
0,55070  
11.10  
11.65  
3.27  
14.92 = mag

Star u.

0.70  
0.70  
0.69  
0.66  
0.67

3.42 0.684

Log 0.684 = 9.83506

5  
49,17530  
0,82470  
11.10  
11.92  
3.27  
15.19 = mag

Dec. 19, 1894.

Star W.

$$\text{Log } 0.664 = 9.82217$$

0.60  
0.76  
0.65  
0.83  
0.68  
0.96

0.67

0.70

---

 3.32 0.664

---

 49.11085

0.88915

---

 11.10

11.99

3.27

---

 15.26 = margin.

Star S.

$$\text{Log } 1.118 = 0.04844$$

1.11

1.15

1.11

1.09

1.13

---

 5.59 1.118

---

 0.24220

---

 11.10

10.86

---

 3.27

---

 14.13 = Margin.

Star O.

$$\text{Log } 2.538 = 0.40449$$

2.27

2.57

2.51

2.71

2.63

---

 12.69 2.538

---

 2.02245

---

 11.10

9.08

---

 3.27

---

 12.35 = margin.

Star M.

$$\text{Log } 4.316 = 0.63568$$

4.44

4.42

4.30

4.23

4.19

---

 21.58 4.316

---

 3.17540

---

 11.10

7.92

---

 3.27

---

 11.19 = margin.



Dec. 19, 1894.

Comparison star used in measurements on  
 faint comparison stars for  $\beta$  Draconis =  $\zeta$  Dra-  
 conis (Zeta Draconis)

$\beta$  Cephei : Phot. J:

W. obs.

21

37

+78.3

$$\frac{4}{6}$$

$$\frac{4}{27}$$

Star R.

$$\text{Log } 5.282 = 0.72280$$

5.34

5.03

5.31

5.31

5.42

$$\frac{26.41}{5.282}$$

Star L.

$$\text{Log } 5.242 = 0.71950$$

5.31

5.19

5.31

5.38

5.02

$$\frac{26.21}{5.242}$$

Star M.

2.67

3.00

2.91

3.05

3.22

many star.

Dec. 19, 1894.

Star p.

~~2.17~~~~2.05~~~~2.01~~~~1.98~~~~2.13~~

many star.

Star m.

2.75

2.93

3.09

3.00

3.04

14.81

2.962

$$\text{Log } 2.962 = 0.47159$$

$$\begin{array}{r} 5 \\ 235795 \end{array}$$

$$\begin{array}{r} 11.10 \\ 8.74 \end{array}$$

$$\begin{array}{r} 3.37 \end{array}$$

$$12.11 = \text{mag.}$$

Star p.

1.93

2.10

2.14

2.17

2.15

10.49

2.098

$$\text{Log } 2.098 = 0.32181$$

$$\begin{array}{r} 5 \\ 160905 \end{array}$$

$$\begin{array}{r} 11.10 \\ 9.49 \end{array}$$

$$\begin{array}{r} 3.37 \end{array}$$

$$12.86 = \text{mag.}$$

Star q.

1.67

1.90

2.05

2.02

1.92

9.56

1.912

$$\text{Log } 1.912 = 0.28149$$

$$\begin{array}{r} 5 \\ 140745 \end{array}$$

$$\begin{array}{r} 11.10 \\ 9.69 \end{array}$$

$$\begin{array}{r} 3.37 \end{array}$$

$$13.06 = \text{mag.}$$



Dec. 19. 1894.

Star r.

10 42 3  
 1.01  
 1.02  
 1.04  
 1.08  
 1.04

5.19 1.038  
 Star s.

10 44 48  
~~0.98~~  
~~1.06~~  
~~0.97~~  
~~0.94~~  
~~0.91~~

Star t.

10 48 H  
~~0.82~~  
~~0.65~~  
 0.71  
 0.72  
 0.64  
 0.69

3.41 0.682

Star s.

10 56 35  
 0.78  
 0.90  
 0.94  
 0.97  
 0.97

4.56 0.912

$$\text{Log } 1.038 = 0.01620$$

$$\begin{array}{r} 0.08100 \\ 11.10 \\ \hline 11.02 \\ 3.37 \\ \hline 14.39 = \text{margin} \end{array}$$

$$\text{Log } 0.682 = 9.83378$$

$$\begin{array}{r} 49.16890 \\ 0.83110 \\ 11.10 \\ \hline 11.93 \\ 3.37 \\ \hline 15.30 = \text{margin} \end{array}$$

$$\text{Log } 0.912 = 9.95999$$

$$\begin{array}{r} 49.79995 \\ 0.20005 \\ 11.10 \\ \hline 11.30 \\ 3.37 \\ \hline 14.67 = \text{margin} \end{array}$$

Dec. 19, 1894.

Star 0.

2.25

2.20

2.28

2.40

2.44

11.57 2.314

Star m.

3.59

3.64

3.50

3.45

3.61

17.79 3.558

$$\text{Log } 2.314 = 0.36436$$

$$\begin{array}{r} 5 \\ 1,82180 \end{array}$$

$$\begin{array}{r} 11.10 \\ 9.25 \end{array}$$

$$\begin{array}{r} 3.37 \\ 12.65 = \text{mag.} \end{array}$$

$$\begin{array}{r} 5 \\ 2,45605 \end{array}$$

$$\begin{array}{r} 11.10 \\ 8.34 \end{array}$$

$$\begin{array}{r} 3.37 \\ 11.71 = \text{mag.} \end{array}$$

$$\begin{array}{r} 5 \\ 11.71 = \text{mag.} \end{array}$$

Comparison star used in measurements  
on  $\delta$  Cephei &  $\gamma$  Cephei (gamma cephei)



Posted to here.









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