KG1
11365
446

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KQ 11365.446

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For Determination of Prismatic Comparison.

D M No	1880	H.P. Magn.			M.P. Magn.
17	$0^h\ 4.1^m$	$+45^\circ\ 24'$	4.9		
			4408	-4.5^m $-23'$	8.6
(HP 17)	0 5.2	−16 8	4.9		
			$-15.^\circ3$	−3.0	+55 9.0
21	0 8.5	−19 36	4.6		
			−19.19	−0.2	+11 9.3

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algol 8

γ Cyg

δ Cemi

R Ceminis

S Libra

2-3
2-1

Observations with West Equatorial

1890-~~95~~ 1900

(R Bootes)

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1990phae.proj.4478

algol 8

γ Cyg

ν Tauri 10

R Canis Majoris 12°

S Librae 3

g - a
f - b
b - c
a - d
h - e
d - f
c - g
e - h

R Canis Majoris.

Amp. stars



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Observations of Variable Stars

by

Wm Maxwell Reed

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KA-11365.446

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LIBRARY
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July 16 1890

R Ursae Majoris

12h.0 V 5 E

d = V

V 5 4 h

~~d =~~

g = V

3d Intuition commences w. P. 116

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July 17 1890

C.S.T

T Cassiopeae

11.8 v 4-5 h — v 4-5 h

g 2 v — g 2 v

T Persei +58° 29'

12.5 g 1 v count identity ---- g + h — ~~h + v~~

c 4 v — c 4 v

~~12.5~~ v 1 h — ~~v 1 g~~

S Persei +58° 8'

12.8 c 3 v — c 3 v

v 2-3 d — v 2-3 e

~~12.8~~

R Aurigae

~~12.4~~

14.4 f 1 v — f 1 v

v 2 g — v 2 g

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July 18. 1890

T Ursae Majoris

10.5
x
x 3v
d 1 e
~~v 5-6 d~~
c 6 ~~x~~

x

f 3v
g 1 h
c 6 f

S Ursae Majoris

11.2
x 3v
d 4-5 e
b 1 a
g 5 x

x is h

m 3v
f 4-5 g
c 1 d
d 5 m

S Bootis

12.2
g 3v
c 3 a

v exceedingly faint to observe.
b is double c

h 3v
[c 3 a (?)

R Ursae Majoris

14.0
b 4-3 a
v 5 c
c 5 d
x 1 = v

c ? a ? b ?

v 5 ~~c~~ f
~~c 5 d~~
d 1 = v

R Draconis

14.4
ε 4v
a 5-6 b (?) cloudy
v 2 x

x

h 4v
v 2 d

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July 19 1890

T Cephei

13.0 ~~r1ε~~ ε is d
r2ε
g3-4 f

V 2 d

S Cephei

14.0 r5f

V 5 q

R Cassiopeiae xis q

14.2 ~~E~~ x3-4r (r exceedingly faint)

u 3-4 r

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July 21 1890

11.0 R Ursae Majoris

d 4-5 v
v 2 χ
p 5 γ
χ 4 α
α 1 ε
ε = δ
h 3 ζ
η = θ
L 5-6 K
χ 6 ζ
v 3 μ
π 5-0

g 4-5 v
v 2 α

T Ursae Majoris

13.3 v 5-6 d

v 6 X g

O Ceti

13.8 O about equal to $\frac{S}{\delta}$ = 4th magnitudes

Cloudy

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July 22 1890

T Ursae Majoris

10.7 V 5-6 d
χ 5 V

V 5-6 g ~~V 5 6 f~~
f 5 V

S Ursae Majoris

11.2 α 5-4 V
V 5 β

α 5-4 V
V 5 β

S Bootis (very faint)

11.9 g 3
α 5 V
V 4-5 β

h 3 V
α 5 V
V 4-5 β

R Canes Venatici (very faint)

12.4 β 5 V
V 3 α

β is g

g 5 V
V 3 α

R Ursae Minoris (Minoris)

~~12.6~~
12.6 V 7 d
α 5 V

V 7 e
α 5 V

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Wednesday July 23 1890

R Ursae Minoris

11.0

α 5-6 v
v 3 c

α 5-6 v
v 3 d

R Draconis

11.5

α 3 v
v 5 β

α is h'
β is i

η 3 v h' 3 v
v 5 0 v 5 i

S Cassiopeiae

13.2

Invisible.

Invisible

T Persei

~~13.6~~

~~v 3 d~~

14.3

v 1 α
v 2 β

v 1 q
v 2 β

S Persei.

~~α 1 = v~~

14.6

α 1 = v
v 5-6 β

α 1 = v
v 5-6 β

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Sunday July 27 1890

R Aurigae

14.0 v 5-6 d
α 2 v

v 5-6 d
α 2 v

R Cassiop.

14.8 v 2 d
v 4 y
β 2 v

v 2 d
v 4 y
β 2 v

R Aurigae

15.2 a 6 v
6 5 a
v 3 μ

belongs on Page 13, Aug. 4 '90,

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greatest inclination of the Moon

Friday August 1 1890

T (Cassini) (O) full moon.

14.5

g 3 v
v 2 h
h 5 i
e 2 f
f 7 g
b 1 c
a 2 b

g 3 v
v 2 h
h 5 k
e 2 f
f 7 g
b 1 c

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Saturday August 2 1890

S Ursae Majoris

9.4 v invisible (O) bright moon light
ℰ 5-6 d. h 5-6 f

S Bootis

10.4 v ~~two~~ faint to observe
~~c 6~~ c 6-7 d c 6-7 e

T Cephei

11.4 r 2 d, v 2 d ~~v 2 d~~
d 5 g ℰ m 5 n
h 5 e k 5 m l
l 7 i ~~l 7 m~~
v 2 x

S Cephei

12.9 ℰ 2-3 v l 2-3 v
~~r 5-6 f~~ ~~v 3 g~~
r 3 f v 3 g
d 3-4 ℰ d 3-4 e
c 7-8 d c 7-8 d
~~a 5-6 b~~ a 5 b
a 5 b

R Cassiopeiae

g 1 f k 1 h
13.6 h 7-8 v l 7-8 m
r invisible. Invisible

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Sunday August 3 1890

R Ursae Majoris

10.4 v 4 ε — v 4 h
d 2-3 v — g 2-3 v

S Ursae Majoris

11.4 v invisible — Invisible
a 2-3 b — c 2-3 d
b 7-8 c
d 2 ε, — f 2 g
ε 5 ε' — g 5 h

T Ursae Majoris

11.6 c 6-7 d
d 4 v — g 4 v
~~13.0~~ v = ε — v = h

S Bootis

~~12.0~~
12.1 c 4 d — c 4 e

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1890phae.proj..447R

Monday August 4 1890

T Cassiopeae ?

10.8 ~~r 3 4 8~~
l 6 m
~~p~~ 5 n

R Aurigae

15.2 a 6 r b 6 r
b 5 a a 5 b
r 3 μ

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Tuesday August 5 1890

R Ursae Majoris

9.3 r 2 E. V 2 h
d 3 V g 5 V
e 4 f
g 3-4 f-h
h 5 e

~~10 l~~ D

T Cassiop

~~G~~ 10.1 g 2 V g 2 V
V 5-6 h V 5-6 h

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Camb. Standard time

Wednesday August 6 1890

R Lyncis

11.5 g 2 v [very faint low in horizon.] h 2 v

S Cygni

12.0 v invisible

e 5 f	e 5 f
f 2 f' [Look up d]	
a 5 b	a 5 b
b 6 c	b 6 c

R Camelopardi

13.4 a 7 b [difference very great] a 7 b

b 6 c	b 6 c
c 3-4 d	c 3-4 d
d 4-5 e	d 4-5 e
e 6-7 f	e 6-7 f
f 5 g	f 5 g
g 4-5 h	g 4-5 h
v invisible	g Invisible

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Thursday August 7 1890

✓

V Cassiop

11.6 v 3a

b 5v

c 3b

d 4c cloudy.

L

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Wednesday August 13 1890

X Ophiuchi (6642)

13.0 m 2 V
V 5 n
n 5.0 (cloudy)

L

R R Cygni

13.5 v 5-6 v' possibly 7
14.5 v 3-2 m
P 2 v'
y 2 v
v 4 y
m = 1 P
P 5-6 y.

L

W Tauri

15.3 m 2 v
v 6 0

L

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Thursday August 14 1890

V Aquarii

11.1 b 2 v v is exceedingly faint.
c 6 v
d 6 c
ε 5 d
f 4 ε
g 4 f
h 6 g
i 3 h
j 6-7 i

L

R Piscis Australis

12.3 v 3 h (get powerful field glasses.) L

V Ceti

12.6 c 5 b
d 5-c
ε 3 d
f 5-ε
g 7 f
h 5 g
v invisible

L

U Ceti

13.5 b 5 v (v exceedingly faint)
c 6-7 b
d 5-6 c
~~ε 6-7 d ε 7 d~~
d 3 d'
d' 3 c
ε 6 d
f 5 ε

L

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Thursday Aug. 14 1890

R Lacertae (8153)

14.6 v 2 c
d 5-6 v
c' 2 v.
d 5 c'
ε 7 d
f 3 ε

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Friday August 15 1890

T Cassiopeae

~~12.0~~ 12.0

f 2 v
v 3 g
a 3 b
~~b 2 c~~
b 3 c
c 2-3 d
d 7 e
e 3-4 f
f 4-5 g
g 3 h
h 5-6 k
k 5 l
l 3 m
m 3 n
n 6 o
o 4 p

f 2 v
v 3 g
a
b 3 c
c 2-3 d
d 7 e
e 3-4 f
f 4-5 g
g 3 h
h 5-6 k
k 5 l
l 3 m
m 3 n
n 6 o
o 4 p

S Cassiopeae

13.0

v invisible
ε 4 f

f 4 g

[find chart for bright Cass. stars]

S Persei

13.2

ε 3 v
v 2-3 φ
a 5-6 b
b 6 c
c 7 d
d 3 c
ε 6 φ
φ 2 g

[see about f]
g 2 h

f 3 v
v 2-3 γ
a 5-6 δ
δ 6 c
c 7 e
e 3 f
f 6 γ
γ 2 h

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1890phae.proj..447R

Friday August 15 1890

T Persei

14.0 v 3 c
b 4 v

v 3 c
d 4 v

R Lyncis

14.4 y 3-4 v
v 2-3 k
c 6 d
d 6 e
e 4-5 f
f 4 g
g 3 h

[See about a and j] j 3 m 3-4 v
v 2-3 k
d 6 e
e 6 f
f 4-5 g
g 4 h
h 3 k

R Aurigae

15.2 v 2 d
γ 1 v
b 4-5 a
a 2-3 γ
a 4 v
γ 5 d
~~ε 5 d (of the picture book)~~
d 4 ε
ε 5 f
f 6 g

b 4 v
v 2 d
α 1 v (small chants)
[Look up d 7+f
The d used here is that of the Dm chants]
a 4-5 b
b 2-3 α
α 5 d
d 4 e
e 5 f
f 6 g

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Saturday
~~Sunday~~ August 16 1890

R Ursae Minoris

10.5

b 7 v	b 7 v
v 2 c	v 2 d
b 1-2 d	
a 4-5 b	a 4-5 b
b 6 c	b 6 d
c 6-7 d	d 6-7 e
ε is close double with 6 in	
d 5 ε′ For ε′ see D.M. comp. stem charts.	e 5
ε′ 3-4 f	
g ∓ 1 g′	k 1 h
f 5 g	g 5 k
g′ 4-5 h	h 4-5 l

R Draconis

11.8

v 3 ε	v 3 h ~~h 3 f~~
d 6 v	f 6 v.
a 5 b	a 5 c
b 5 c	c 5 e
c 4 d	e 4 f
d 7 ε	f 7 h
ε 2-3 f Where is g.?	h 2-3 k
b 3 h′	m 3 n
h′ 5 e	n 5 o

T Cephei

13.0

ε 4 v (Loss of a, b, c,] Reidentify by map.]	α 4 v
v 3 f	v 3 f
d 4 ε	d 4 α

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Saturday August 16 1890

S Cephei

13.8

~~f 2 r~~ ε 3 r
~~r 3 g~~ r 4 f
a 4 b
b 5 c
c 4-5 d
d 3 ε
ε 6-7 f
f 5-6 g
g 3 h
h 2 i
i 5 y

ℓ 3 r
r 4 g
a 4 b
b 5 c
c 4-5 d
d 3 ℓ
ℓ 6-7 ~~f~~ g
g ~~f~~ 5-6 ~~g~~ h
h 3 k
k 2 ℓ
~~ℓ 5~~

ν Cygni

14.7

r invisible
~~a 5 b~~ [Look w/ d]
a 4 b
b 4-5 c
ε 4 f'
f' 1 f
f 4-5 g
g 3 h

Invisible

a 4 b
b 4-5 c
f 4-5 h
h 3 k

W Tauri

15.5

r 3 m (Look w/ position of W)
m 2 r

L

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Monday August 18 1890

R Ursae Majoris

12'307 107'07

11.0 ε 2 v [Look up a, b, & c]

v 2-3 f
d 6 ε
ε 4 f
f 7 g
h 2 g
g 3 e
d 1-2 x
x 3 ε

h 2 v
v 2-3 d
g 6 h
h 4 d
d 7 n
~~n~~ 0 2 n
n 3 p
g 1-2 α
α 3 h

S Ursae Majoris

11.7 g 2 v (?) exceedingly faint]

a 2 b
b 4 ε' [of comp stars of T Ursae Majoris]
ε' 6 c

Foggy.

v 2 0
e 2 d
~~d 4 k~~ [illegible]

S Boötis

13.6 v 1-2 f
ε 3 v

v 1-2 g
f 3 v

T Cephei

14.0 ~~d 4 k~~ [Look up a, b, c,]
d 4 v
v = ε
v 4 f

d 4 v
v = α
v 4 f

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Wednesday August 20 1890

V Cassiopeae

8.7 v 1 d
ε 2 v
d 5 a'
b 5 a'
c 2 b
d 3 c

L

χ Ophiuchi

9.5 o = v
r 3 μ
l 2 v

L

V Aquarii

10.4 b 4 v
c 5 b
d 4 c
ε 3 d
f 2 ε

L

V Cuti

11.0 v invisible
c 2-3 b
d 4 c
ε 5 d
f 5-6 ε
g 7 f
h 4 g

L

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Wednesday August 20 1890

T Cassiopeae

11.8

d 5 v	d 5 v
v 2 ~~ε~~ ε	v 2 e
a 3 b	
b 3 c	b 3 c
c 4 d	c 4 d
d 6 ε	d 6 e
ε 2 f	e 2 f
f 5 g	f 5 g
g 4-5 h	g 4-5 h
h 4-5 i	h 4-5 k
i 3 j	k 3 l
j 3 k	l 3 m
~~k~~ k 2 l	m 2 n
l 3 l'	n 6 o
l' 3 m	

S Persei

12.8

g 2 v	h
v 2 h	~~k~~ ~~k~~ 2 v
a 3 b	v 2 ~~g~~ k
b 5 c	
c 5 d	c 5 e
d 2 ε	e 2 f
ε 6 φ	f 6 γ
φ 1 γ	γ 1 h
γ 3 h	h 3 ~~g~~ k

T Persei

13.2 cloudy + foggy

v 2 c	v 2 e
b 3 v	c 3 v

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Wednesday August 20 1890

R Aurigae

14.0 γ 2 v
v 3 d (d of # D'm amf. star charts) (clear) d 2 v
a 4 b v 3 d
~~b 3 c~~ a 4 b
b 3 γ γ is d of former records; b 3 d
γ 6 d d 6 d
d 2 ε d 2 e
ε 5 f e 5 f
f 5 g f 5 g
g 1 h g 1 h

R Lyncis

14.6 ζ 2 v (foggy) m 2 v
v 1-2 k v 1-2 n

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Sunday August 24 1890

R Scuti

9.6 c1v
v3p

β Lyrae

9.6 α1β
ε2β
β10

η Aquilae

9.7 η4β
δ4-6η
λ1η

107 Sagittae

9.7 6-4v
v1=g

δ Cephei

9.8 δ3γ
δ1d
ε3δ

ν Cephei

9.8 γ3v
v3c

g Herculis

10.0 v2c
c1v

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Sunday August 24 1890

α Herculis

10.2 v 4 ε
d 2 v

α W. H. Reed

R Ursae Majoris

10.5 ε 4 v
v 1 f

α 4 v
v 1 d

T Ursae Majoris

10.8 g 1 v
v 3 k

m X 1 v
v 3 X n

S Ursae Majoris

11.0 v Invisible
a 2 b
b out of comparison with c [possibly b & g c]
d = c !
d 3-4 ε
ε 6 f

Invisible D
c 2 d
f 3-4 g
g 6 k
D set

S Boötis

11.5 ε 1 v
v 4 f

f 1 v
v 4 g

R Camelopardi

v invisible

Invisible

11.9 a 2 b
b 5 c
c 3 d
d 2-3 ε
ε 6 f
f 4 g
g 2 α

a 2 b
b 5 c
c 3 d
d 2-3 ε
ε 6 f
f 4 g
g 2 α

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Sunday August 24 1890

R Ursae Minoris

12.2 e = v
v 6 d

d = v
v 6 e

R Draconis

12.4 v = d
v 7 ε

v = f
v 7 h

T Cephei

12.5 d 4-5 v
ε 1-2 v
v 3 f

d 4-5 v
α 1-2 v
v 3 f

S Cephei

13.3 S invisible [region hard to identify]

Invisible

13.9 U Ceti
~~14.4~~
f 3 d
d 6 c'
c' 3 d'
v invisible

W. Tauri

14.2 v = c
d 6 v
ε 5 d
f 3 ε
g 3 f
h 6 g

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1890phae.proj..447R

Sunday August 24 1890

T Orionis

14.5 v invisible [identification doubtful] L

S Orionis

14.8 v 3 h
f 2 v
c = 1 b
b 2 c
d 2-3 e
e 6-7 f
f 2 k
k 1-2 h
v 2 k
h 1-2 g
g 6-7 x

T Cassiopeiae

15.6 d 5 v
v 3 e

Faint trace of day-light. d 5 v.
v 3 e

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Monday August 25 1890

β Lyrae

12.7 K2p misty

p15

p35

L

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Wednesday August 27 1890

β Lyrae

10.4 β = θ
ξ 1 β
β 2 θ

γ Aquilae

10.9 β 2-3 η
η 3 ζ

10 Sagittae

11.0 ν 4 b
ν 2 c

g Herculis

11.2 g 3 c
ε 4 g

S Cephei

11.4 γ 3 S
S 5 ξ

η Cephei

11.4 γ 5 ν
ν 5 ξ

d Herculis

11.5 α 5 d
b 4 α

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1890phae.proj..447R

Wednesday August 27 1890

R Lyncis

15:4 K 2 v
v 4 l

n 2 v
v 4 0

R Aurigae

15:6 f 1 r
r 2 d

d 1 r
r 2 d

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1890phae.proj..447R

Thursday August 21 1890

δ Cephei δ Cephei

14.4 α 2-3ε

δ 1 ξ

hazy.

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1890phae.proj..447R

Friday August 29 1890

β Lyrae

10.7 γ 2 β
β 4-5 ξ

L

ζ Aquilae

10.8 γ 3 r
ε 2 ζ

L

10 Sagittae

10.9 ν 16
G 2 r

L

δ Cephei

11.0 γ 2 δ
δ 4-5 ξ

L

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1890phae.proj..447R

Thursday Sept 18 1890

8.8 R Scuti
K 2-3 v.
v 2 g

η Aquilae
8.8 β 2-3 η
η 3 ι

α Herculis
8.8 d = v
c 2-3 v

8.9 g Herculis
v = ε
v 1-2 c

8.9 β Lyrae
f 1-2 β

9.0 10 Sagittae
~~b 3 v~~
b 3-4 v
v 1-2 g

δ Cephei
9.0 χ 6 v
~~ε 2 v l~~
v 2 ξ
v 5 ε

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1890phae.proj..447R

Thursday Sept 18 1890

10.2 S Boötis

c 1v
b 4v
v 1-2 d
a 3 b
b = c
b 5 c
c 3 d
d 6 ε
ε 3 f
f 5 g

c 1v
b 4v
v 1-2 e
a 3 b
b
b 5 c
c 3 e
e 3 f
f 3 g
g 5 h

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1890phae.proj..447R

Friday Sept. 19 1890

R Scuti

8.8 K2-3v

v 2 g

10 Sagittæ

8.8 c iv

v 1 b

γ Aquilæ

β 5-3

γ 3 c

9.2 δ Cephei

f 3-4 v

v 4 ξ

β Lyræ

9.3 θ 3 γ θ 2 γ θ 2 β

θ 1 γ θ 1 β

ξ 4 γ ξ 4 β

γ 2 K β 2 K

R Canis

9.7 d 3 v d 3 v

v 2 e v 2 e

b 2 a a 3 b

a 3 γ b 3 d

γ 3 d. d 3 d

d 2 e d 3 e

e 5 f e 5 f

f 6 g f 6 g

g 2 h g 2 h

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Friday Sept 19 1890

S Persei

10.1 c 3 v
v 2 ~~d~~ ø
a 3 b
b 6 c
c 5-6 d
d 2 e
e 4 ø
ø 2 g
g 1 h

f 3 v
v 2 f
c 5-6 ~~d~~ e
e ~~d~~ 2 ~~a~~ f
f 4 a
a 2 h
h 1 k

T Persei

10.5 c 1 v
v 4 d

c 1 v
v 4 e

T Cassiop

10.7 d 1 v
v 6-7 e
a 2 b
b 2 c
c 3 d

d 1 v
v 6-7 e
b 2 e
e 3 d

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Saturday Sept. 20 1890

8.3 R Scuti
k 2 r
~~r 1 k~~
r 2 y
y 2 h

10 Sagittae
8.4 r 4 c
~~x 6 r~~
x 2 r

η Aquilae
8.5 μ = η
η 1 r

α Herculis
8.5 c 2 r
2 1 d

β Lyrae
8.5 ~~k = β~~
k = β
β 1 3
β 2 8

g Herculis
8.6 c 1 r
r 4 e

δ Ophei
c 2 8
8 4 r

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1890phae.proj..447R

Saturday Sept. 20 1890

8.8 T Cassiop

v 2 d	v 2 d
c 3 v	c 3 v
a 2-3 b	
b 3 c	b 3 c
c 1 d	c 1 d
d 7 c	d 7 e
e 1 f	e 1 f
f 4 h	f 4 h
h 4 c	h 4 k
c 4 j	k 4 l
j 4-5 k	l 4-5 m
d 6 m	m 6 0

S Persei

9.5 ε 2 v	f 2 v
v 1 φ Spot reported about here	v 1 γ
a 3 b	
b 4 c'	
c' 3 c	
c 4-5 d	c 4-5 e
d 4 ε	e 4 f
ε 5 φ	f 5 γ
φ 2 g	γ 2 h
g 1 h	h 1 k

T Persei

9.8 v 6 φ	v 6 γ
ε 1 v	f 1 v
d ≒ 3 v	e 3 v

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Saturday Sept 20 1890

R Ursae Minoris

10.2 & b-5 v

v 2 c

a 2 b

b 2 c'

~~c 4-5~~

c' 4-5 c

~~c a~~

c 3 d

d 3 c

c 4 f

f 4 g

g 2 g'

Look up h.

b-5 v

v 2 d

a 2 b

b 2 e

e 4-5 d

d 3 e

~~e d~~ 3 l 3 α

α 4 g

g 4 k

k ~~h~~ 2 h

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1890phae.proj..447R

Monday Sept 22 1890

R Scuti

9.8 K 3 V
V 2 h

10 F Sagittae

9.9 V 5 b
V 3 a c
X 4 V

γ Aquilae

9.9 δ 2 – 3 γ
γ 4 β

α Herculis

10.0 α 3 4 d
C 3 α

β Lyrae

10.1 ~~γ 2 β~~
γ 2 β
β 4 ξ

δ Cephei

10.2
γ = δ
6 c 6 – 7 δ

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1890phae.proj..447R

Monday Sept. 22 1890

R Draconis

10.8 v 5 d

b 5 v

v 1 c

a 5 b

b 6 c

c 4-5 d

d 5 e

Σ 2 f

W Tauri

14.6 b 3 v

v 2 a

v 5 f

c 5 v

v 1 e

L

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1890phae.proj..447R

Wednesday Sept. 24 1890

✓
10.0 R Scuti
K 3 r
r 2 h

✓
10 F Sagittae
10.0 b 3 r
r 1 m

✓
η Aquilae
10.1 η 2-3 ε
β 1 η

✓
α Herculis
10.1 α 5 d
d C 4 α

✓
β Lyrae
10.1 γ = 1 β

✓
g Herculis
10.2 ε 2 r
r 5 e

✓
S Aphei
10.3 S 1 ξ
S 2 E
γ b S

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1890phae.proj..447R

Wednesday Sept 24 1890

S Bootis

10.5 c=v

c' 5 v

v 5 d

a 5 b

~~b c'~~

c' 5 c

c 1 b

b 4 c

c 3 d

d 5 e

e 5 f

c=v

v 5. e

a

~~e 3 b~~

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1890phae.proj..447R

Sunday Oct 5 1890

β Lyrae

δ.3 β 1 ξ
ξ γ 4 β

δ Cephei

6.3 δ 2 ξ
δ 3 ε
γ 6 δ.

R Lyncis

8.7 a 7-8 x
d 5 ε
ε 4 f
f 3 g

R Canis

9.0 ε 2 ν
ν 5 f
a 6 b
b 5 γ
γ 4 d
d 3 ε
ε 7 f
f 6 g
g 2 h

S Persei

9.3 ε 5 ν
ν 2 χ φ
a 5 b
b 4 c
c 6 d
d 3 ε

L

L

a 7-8 c
f 4 g
g 3 h

e 2 v
v 5 f
a 6 b
b 5 χ d
d 4 d
d 3 e
e 7 f
f 6 g
g 2 h

ε 6 φ
φ 2 g
g 1 h

f 5 v
v 2 γ

f 6 γ
γ 2 h
h 1 k

c 6 e
e 3 f

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1890phae.proj..447R

Sunday Oct. 5 1890

T Persei

9.5 c 1 v
v 4-5 d

c 1 v
v 4-5 e

T Cassiop

d 1 v

9.8 a 3 b
b 1 c
c 2 d
d 7-8 e
e 2 b
b 4 g
g 5 h
h 4 i
i 5 j
j 3 k
k 4-5 l

d 1 v
b 1 c
c 2 d
d 7-8 e
e 2 f
f 4 g
g 5 h
h 4 k
k 5 l
l 3 m
m 4-5 n

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1890phae.proj..447R

Saturday Oct 11 1890

7.3 R Scuti
K 4-5 V
V = h

10 F Sagittae
7.3 b = v
c 3 v

η Aquilae
7.4 η 2 v
β 5 η

α Herculis
7.4 c 2 α
α 2 d

β Lyrae
7.5 β 2 θ
β 1 ξ
ξ 1 θ

g Herculis
7.6 g = e
g 5 c

S Cephei
7.6 γ 1 5
5 6 ξ

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Saturday Oct 11 1890

R Ursae Majoris

7.8 V 2-3 k — V 2-3 R
j invisible (wrong star letter)
d 4 e — g 4 h
e 5 f — h 5 l
f 7 g — l 7 n
g 1 h — n 10
h 3 i — o 3 p

T Ursae Majoris

8.2
c 6 d — e 6 g
d 3 e — g 3 h
e 7 E — h 7 k
V invisible — Invisible

S Bootis

8.4 v 1 c — v 1 c
v 5 d — v 5 e
b 5 v — b 5 v
a 4 b — a 4 b

R Aurigae — cloudy

8.9 E 2 v — e 2 v
v 4 f — v 4 f

cloudy

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1890phae.proj..447R

Saturday Oct 11 1890

10.4 R Camelopardi

10.3 V invisible

a 6-7 b	a 6-7 b
b 6-7 c	b 6-7 c
c 4 d	c 4 d
d 2 e	d 2 e
e 4-5 f	e 4-5 f
f 3-4 g	f 3-4 g
g 3-4 h	g 3-4 h

R Ursae Minoris

10.6

c 1 V	d 1 V
V 3 d } low power.	V 3 e
e 3 f	
f 4 g'	g 4 h
g' 4 g	h 4 k
g 6 h } high power.	k 6 l
a 2 b	a 2 b
b 4 c'	b 4 c
c' 4-5 c } Zone power.	c 4-5 d

R Draconis

11.2

V 4-5 c	V 4-5 h
d 1 V	f 1 V

11.4 T Cephei

V 4 h	j 4 K	V 4 k
f 6 V	K 5 l	f 6 V
h 2 i	ε 7 f	k 2 l
i 2 i'	f 2 g	l m 2 m
i' 6-7 j		m 6-7 n

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1890phae.proj..447R

Saturday Oct 11 1890

T Cephei (continued)

j 4 k	n 4 p
k 5 l	p 5 q
c 7 f	a 7 f
f 2 g	f 2 h
k 4 l	p 4 q
l 3 m	q 3 R
m 4 n	R 4 S

high power.

S Cephei

12.4

e 3 v	e 3 v
v 3 f	v 3 g
a 3 b	a 3 b
b 4 c	b 4 c
c 5 d	c 5 d

12.8 R Cassiopeiae

~~k 2 v~~	
v 1 k	v 1 0
j 3 v	n 3 v
f 3 g	h 3 k
g 5 h	k 5 l
h 4 i	l 4 m
i 6 j	m 4 & n
j 4 k	n & 4 0
k 5 l	0 5 p
l 4 m	p 4 q
m 2 n	q 2 R

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Saturday Oct 11 1890.

V Cassiopeiae

13.5 V invisible.

T Cassiopeiae

13.7 d 2 v

v 6-7-8 e Red + blue diffi. to comp.

a 3 b

b 2 c

c 4 d

d 8 e

e 2 f

f 4 g

g 3 h

h 3-4 i

i 4 j

j 3-4 k

d 2 v

v 6-7-8 e

b 2 c

c 4 d

d 8 e

e 2 f

f 4 g

g 3 h

h 3-4 k

k 4 l

l 3-4 m

S Cassiopeiae

14.0 V invisible

Invisible

σ Persei

14.1 v 1 φ

e 4 v

~~a 2 b~~ a 4 b

~~b 5 c~~ b 6 c

c 6-7 d

d 4 c

c 6 φ

φ 2 g

g 5 i

i 6-7 i

v 1 g

f 4 v

c 6-7 d e

e d 4 & f

f & 6 g

g 2 h

~~h 5 k~~

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1890phae.proj..447R

Saturday Oct 11 1890

τ Persei

14.5 C 2v
v 6 d

C 2.e
v 6.e

τ¹ Orionis

~~v 1 d~~
15.2 d 1 v
v 6 C high power.

L

v 2 C
d 6 v low power.

15.5 S Orionis

x 3-4 v
b-1 C
C 3-~~d~~
d 1 ε
~~ε 4 f~~
~~f 2 k~~
ε 5-k
k 1 f
f-3 g
g 1 h

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1890phae.proj..447R

Sunday Oct 12 1890

R Scuti

7.7 K 3v
v=4
b2y

10 Sagittae

7.8 b5v
v1-2m

γ Aquilae

7.8 γ2v
β6γ

α Herculis

~~7.6~~ αv4d
7.9 v1c
b2~~3~~v

β Lyrae

7.9 δ2β

g Herculis

8.0 v4c
ε1v

S Ophii

8.1 δ4γ
ζ3δ
δ1c

70
60
17
20
97
100

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1890phae.proj..447R

Sunday Oct 12 1890

δ Cassiop

8.2 δ 2 β Cass
δ α 1 γ Cass
γ Cnct. 2 α

S Bootis

v 1-2 c
~~x~~ 5 v
v 5 d

Hagen's notation of his Comp. Stars.

Cloudy

S Persei

ε 4 v
v 1 φ

T Persei

8.6 c 4-5 v
v 4-5 d

R Aurigæ

8.7 v 2 f
ε 3 v

R Tyncis

8.8 v invisible
a 4-5 b'
b' 4-5 c
b 1 g
c 5 d
d 3 ε

d 5 e
e 3 f
f 3 g

c 4-5 v
v 4-5 e

v 2 f
e 3 v

a 4-5 b
b 4-5 d

~~d 5 d e~~
~~x d 3 e f~~

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1890phae.proj..447R

Sunday Oct 12 1890

R Lyncis (continued)

f 4 g
g 5 h
h 6 i
i 3 j

g 4 h
h 5 k
k 6 l
l 3 m.

9.6 R Ursae Majoris

j' 3 v
v 4 k

β 3 v
v 4 R

9.8 T Ursae Majoris

c 6 d
d 5-e
e 6-7 e'
v invisible

e 6 g
g 5 h
h 6-7 k
v Invisible

S Ursae Majoris

10.2 c' 4 v
v 4 d
b 5-6 c'
a 3 b
d 1 c
~~e 3 3~~
c 3 e
d 2-3 e
e 6 f
f 3 g

v 4 v
v 4 ~~d~~ f
d 5-6 y
c 3 d

g ~~f~~ ~~f~~ 2-3 ~~g~~ k
k ~~g~~ 3 l

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Sunday Oct 12 1890

R Ursae Minoris

10.5	c 2r	d 2r
	r 1 d	r 1 e

R Draconis

10.6	d 5r	f 5r
	r 3 e	r 3 h

T Cephei

10.8	g 5r	h 5r
	r 2 h	r 2 k

S Cephei

11.0	e 5r	e 5r
	r 2 f	r 2 g

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1890phae.proj..447R

Monday Oct 13 1890

R Scuti

8.6 ~~8.6~~ v=h
~~v~~ r2g

10 Sagittae

8.7 ~~8.7~~ r2~~=~~g
r 6 d
b-6-7r

η Aquilae

8.7 ~~8.7~~ β2η
η2ε

α Herculis

8.8 ~~8.8~~ c3r
r2d

β Lyrae

8.8 β=γ

g Herculis

8.9 ε4r
r5c

δ Cephei

9.0 δ2γ
b6δ

1890phae.proj..447R

Monday Oct 13 1890

S Bootis

9.1	v=c	v=c
	~~c~~ 6v b	b 6 v
	v 5 d	v 5 e

R Canum Venaticorum

9.3	v invisible	Invisible
	a 7 b	a 7 b
	b 7 c	b 7 c
	c 3-4 d	c 3-4 d
	d 2 e	d 2 e
	e 6 f	e 6 f
	f 3 g	f 3 g
	g 4 h	g 4 h
	h 7 i	h 7 k

R Ursae Minoris

9.5	c 2 v	d 2 v
	v 1-2 d	v 1-2 e

R Draconis

9.6	v 6 e	v 6 h
	d 4 v	f 4 v

T Cephei

9.7	g 4 v	h 4 v
	v 4 h	v 4 k

S Cephei

9.7	e 7 v	e 7 v
	v 3 f	v 3 g

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Monday Oct 13 1890

9.8 R Cunigae

Σ 4v
v 2f

ε 4v
v 2f

10.0 S Persei

Σ 6v
v 2φ

f 6v
v 2f

10.2 T Persei

C 3-4v
v 4-5 d

C 3-4v
v 4-5 e

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1890phae.proj..447R

Wednesday Oct. 15 1890

8.4 S Boötis

v 1 c
~~b~~ 4 v b'
v 5 d

v 1 c
b 4 v
v 5 e

8.5 S Ursæ Majoris

v 5 d
c' 5 v

v 5 f
~~c~~ 5 v

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Saturday Oct 18 1890

10.1 R Draconis

d 4-5 V [hazy] + telescope won't work!

V 3-4 ε That is: out of balance in consequence of an experiment of Mr. Edmunds

a 3-4 b a 3-4 c d 4-5 V V 3-4 f

b 6 c

c 3 d

d 6 c

ε 5 f

c 6 e ~~a 3-4 c~~

e 3 f ~~c 6 e~~

f 6 h ~~e 3 f~~

h 5 k ~~f 5 k~~

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1890phae.proj..447R

Tuesday Oct 21 1890

7.6 R Scuti
v 3-4 m
v 5 c
g 3 v

10 7 Sagittæ
7.6 b 3v
v = g

ɣ Aquilæ
8 4 ɣ
7.7 ɣ 4-5 β

β Lyræ
β 2
7.7 δ 4 β

g Herculis
7.8 ε 1-2 v
v 5-c

δ Cephei
7.8 δ 6 δ
δ 2 ε
δ 4 c

~~7.8~~
S Boötis
8.0 v 4 d
e 1 v

v 4 e
e 1 v

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1890phae.proj..447R

Tuesday October 21 1890

Telescope objective cleaned.
A little dust left between the two lenses

R Draconis

9.9 d 5-r
v 1-2 ε

f 5-v
v 1-2 h

β Lyrae

10.1 g 3 β
β 3 ξ

X Cygni

11.2 m 3 r (see notation)
v 2-3 n
m 5 n
n 6 w
c 3 g c
ε 2 d
h 6 ε
d 2-g c
h 6 l [Z)
l 3 g
c 7 p
p 3 k
g -
q 1 = k
(Z) l 1 0
ε 2 f

What in the devil was I thinking I when I made this sequence?

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Thursday October 30 1890

It became cloudy before telescope was properly balanced.

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1890phae.proj..447R

Friday Oct. 31 1890

8.8 R Comae Berenic
v invisible

Moon
O

R Ursae Minoris

8.9 C 6 v
v = d

d 6 v
v = e

R Draconis

ε 2-3 v

h 2-3 v
v x = x k

9.0 v = f

T Cephei

9.2 h = v
v 5 i

k = v
v 5 l

S Cephei

9.3 ε 6 v
v 3-4 f

e 6 v
v 3-4 g

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Monday ~~Oct~~ November 3 1890

S Cephei

10.0 E 6v
v 2 ϕ (?)

e 6v
v 2 f (?)

T Cephei

4
5 79
1 22
3 57
1 39
3 45

10.1 C 3-4v
v 6 d

c 3-4v
v 6 d

R Canis Min

~~f 6v~~

10.3 f 6v
v 3 g

f 6v
v 3 g

difficult to compare: v red, g blue,

~~h 6 i~~
i 3 i'
i 6 j'
j' 2 k
k 6 l
l 6 m
m 5 n

bright power

k 3 l
l 6 m
m 2 n
n 6 o
o 6 p
p 5 q

M. Wendell's star near a is two feet from variable for an eye piece object.

χ Cygni

11.3 ~~n~~
m 3-4v
v = n

(S.C.C. Notation)
cloudy, Iron in Horizon.

S Cephei

~~i 5 k~~ i 5 S
~~j~~ S 5 q

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1890phae.proj..447R

Tuesday ~~October~~ November 4 1890

R Scuti

7.5 m-v

C 6-7 v

10 Sagittae

7.6 v 2 c

v 4 b

h 2 v

η Aquilae

7.7 η 5 ε

δ 2 η

α Herculis

7.7 c 5-6 α

ρ Lyrae

7.8 ~~β~~ θ 2 ρ

ξ 2 ρ

ρ 10

ξ 1 θ

7.9 g Herculis

ε 1 v

v 5 c

δ Cephei

8.0 δ 4 ξ

γ 1 δ

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1890phae.proj..447R

Tuesday November 4 1890

h. 2 T Cassiopeiae

v 3 ε
d 5 v

v 3 e
d 5 v

S Persei

8. 3 ε 5 v
v 1 ϕ

f 5 v
v 1 γ

T Persei

8. 4 c 2 v
v 6 d

c 2 v
v 6 e

R Aurigae

8. 5 f 4 v
v 3 g

f 4 v
v 3 g

R Lyncis

8. 6 v invisible
a 4 b
b 5 c

Invisible
a 4 b
b 5 c

R Ursae Minoris

8. 8 c 4-3 v
v 1-2 d
v 1 = d

cloudy.

d 4-3 v
v 1 = e

R Draconis

8. 9 v = 1 f
ε 4 v

cloudy.

v = 1 k
h 4 v

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1890phae.proj..447R

Tuesday November 4 1890

χ Cygni

~~m4v~~

9.7 m4-5v see Notation L.

w1=v ✓

(?) Persei 62.596

10.6 b-5-6 v

v2a L

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Wednesday November 5 1890

10 Sagittae

9.6 ~~9.6~~ b 1 v
v 5 g

L

β Lyrae

9.7 ~~9.7~~ β 3-4 hazy low

L

S Cephei

~~9.8~~ 9.8 ~~γ 4 δ~~
~~δ 5 ε~~

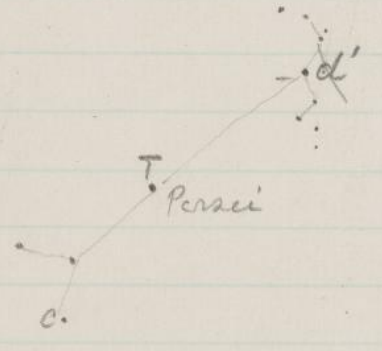
L

S & Persei

9.8 v 1-2 b
ε 6 v

v 1-2 g
b 6 v

T Persei



10.2 ~~d' 2 v~~
~~v 3 d~~
v 5 d

v 5 e

R Aurigae

f 4 v
10.4 v 4-5 g

f 4 v
v 4-5 g

R Ursae Minoris

~~c 4 d~~ c 4 v
10.9 ~~d = c~~ d = v
b 2 c'
c' 6 c

d 4 v
e = v
b 2 c
c 6 d

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1890phae.proj..447R

Wednesday November 5 1890

R Draconis

11.0 ε 5 v

f 1=v

v 5 h

h 5 v

k 1=v

v 5 m

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1890phae.proj..447R

Thursday November 6 1890

7.8 δ Cephei
δ 1 ε
ζ 3 δ

8.1 R Ursae Majoris
V invisible

δ Persei

8.2 ε 6 v
v 2 φ

T Persei

8.3 c 4 F v
v 4 d
~~v - d'~~ v 2 d'
d' 5 d
c 3 d'

R Aurigae

8.8 f 6 v
~~v 4 g~~ v 4-3 g

cloudy

Hazy. Low

f 6 v
v 2 f

c 4 v
v 4 e
v 2 d
d 5 e
c 3 d

f 6 v
v 4-3 g

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1890phae.proj..447R

Friday November 7 1890

S Cephei

9.8 g 3 r
l 4 s

R Aurigae

9.8 f 5-6 R
R 3 g

Clouds

χ Cygni

10.2 v 1 w
n 3-4 r

(see notation)
~~L. H.~~ L. H. [Low & hazy]

S Persei

10.3 ε 4 v
v 4 φ

f 4 v
v 4 f

T Persei

10.4 v 4 d'
c 2 v

v 4 d
c 2 v

T Cephei

10.5 h 3 v
v 2 i

~~k~~ k 3 v
v 2 d

S Cephei

10.8 v 2 f
ε 6 v

v 2 g
e 6 v

R Cassiop

11.0 v 2 i
h 4 v

v 2 m
l 4 v

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1890phae.proj..447R

November 10 1890 Monday

8.5 ζ Aquilae
ζ = ε
β 4 ζ

β Lyrae

8.6 θ 1 = β
ξ 3 β
β = 0
θ 1 = ξ

δ Cephei

8.7 ~~γ 4 δ~~
~~γ~~ γ 3 δ
δ 4 ε

R Ursae Majoris

9.2 R invisible

R Cygni

10.8 d 4 c
c 4-5 b.
b 4 a
a 4 χ
R 1 g
m 4 R

cloudy

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1890phae.proj..447R

Thursday Nov. 13 1890

η Aquilae

7.7 η 2 ε
β 2 γ

β Lyrae

7.8 β = v

ζ Aphei

7.9 ζ 2 δ
δ 1-2 c

S Doritis

δ.5 v 2 c
d 5 v

Lyra

v 2 f
d 5 v

δ.6 R Camelopardi

δ.7 v 2-3 j
i 2-3 v very faint.

v 2-3 m
l 2-3 v

R Ursae Minoris

δ.8 c 4 v
v 2 d
c 5 c
b 6 c'

d 4 v
v 2 e
c 5 d
b 6 c

R Draconis

δ.8 v 5 h
f 4 v

v 5 m
k 4 v

ζ Cygni

9.0
v invisible

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1890phae.proj..447R

Thursday Nov. 13 1890

?

T Cephei

9.2 h 4 v
v 2 i

= k 4 v
v 2 l

S Cephei

9.7 v 2 f
ε# 4 f'
~~f' 3 f~~ f' 5 f
~~ε 3 ε'~~ f' 4 v

v 2 g
e 4 f
f 5 g
f 4 v

R Cassiopeiae

9.8 h 2-3 v
v 2-3 i

l 2-3 v
v 2-3 m

T Cassiopeiae

10.2 v 3 ε
ε' 2 v
ε' 4 ε
d 5 ε'

v 3 l
l' 2 v
l' 4 l
d 5 l'

S Cassiopeiae

10.3 v invisible

R Aurigae

10.4 v 4 h
v = g

v 4 h
v = g

10.7 R Ursae Majoris

i 5 j'
j' 3 k

v invisible
j invisible

Enveloped

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1890phae.proj..447R

Thursday Nov. 13 1890

✓

χ Aygni (chi)

11.2 v invisible.

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1890phae.proj..447R

Friday November 14 1890

7.3 β Lyrae
γ 1β
δ Cephei
7.4 ε 3δ
δ 3γ
10 Sagittae
7.5 b 3γ
γ 2-3g

Cloudy

RS Cygni

Clear

b 2a
b 4a
c 5b
d 3c
ε 4-3d
f 5c
g 5f
g 3f
h 5g
(K?=) l 3-4h
m 4l
n 4m
o 4n
p 3o
q 3p S 4p R 3p
R 3q S 3R
T 4R T 4S
10.1 p 2γ
γ 3o

high power

Low power

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1890phae.proj..447R

Friday November 14 1890

R Cygni

a 4 x
10.7 ~~b 3 a~~ b 3 a
c 5 b
d 5 c
e 4 T
T 3 a
g 2 r
r 4 y

L

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1890phae.proj..447R

Tuesday November 18 1890

η Aquilae

7.6 ~~β 3 γ~~
γ 3 ε
β = γ

ζ Sagittae

7.7 ~~β~~ v 3-4 c
h 1 ~~β~~ v

β Lyrae

7.8 ~~β~~ 1 ξ
β 2 θ
γ ~~4 5~~ 5 β

δ Cephei

7.8 δ 4 v
c 2 δ

S Bootis

d 4 v
8.0 v 3 ε

R Camelopardi

i = v
8.2 ~~g 5 v~~ high power.
h 5 v

R Ursae Minoris

8.3 d 1 v
v 4 ε

k = v
h 5 v
e 1 v
v 4 β

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1890phae.proj..447R

Tuesday November 18 1890

R Draconis

8.5 h = r
r 3 h'

m X = r
r 3 X n

T Cephei.

8.6 h 4r
r 2 i

k 4r
r 2 l

S Cephei

8.7 f' 5r
r 1 f

f 5r
r 1 g

R Cassiopeiae

8.9 g 3r
r 3 h

k 3r
r 3 l

T Cassiopeiae

9.1 f 2r
r 1 g

f 2r
r 1 g

S Persei

9.2 ε 4r
r 2 g

f 4r
r 2 g

T Persei

c 1 r
9.3 r 4 d'

C 1 r
r 4 d

R Aurigae

9.3 g 3r
r = h

g 3r
r = h

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1890phae..proj..447R

Tuesday November 18 1890

9.4 R Lyncis
v invisible
Invisible

9.5 R Ursae Majoris
v invisible
Invisible

S Ursae Majoris
9.8 b 4v
v 2 c'
d 4v
v 2 f (?)

V Cygni

o	b	3	a
n	c	3	b
m	d	3	c
l	e	5	d

Taurus
11.1 minimal brightness
e

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1890phae.proj..447R

Wednesday November 19 1890

Taurus

8.6 normal brightness. L

V Cygni

k f 5 ε f
h g 4 f h
g h 4 g h
9.6 V 1 ε
f 5 V
K 3 h g
f l 4 K g
l m 3-4 l f

α Cygni

ε 3 d
f 1 ε
g 4 f
h 3 g
K 4 h
l 5 K
9.7 V 1 h
10.7 K 4 V

Taurus

10.8 Normal brightness L

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1890phae.proj..447R

Thursday November 20 1890

Taurus

8.0 normal lightness [Prof. Pickering] L

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1890phae.proj..447R

Friday November 21 1890

~~6.80~~ Taurus ~~normal b~~
6.5 normal brightness L

Taurus
8.5 normal brightness L

β Lyrae
8.6 γ = β L

δ Cephei
8.6 δ 4 8 L
δ 4 c
δ 3 5

9.7 Taurus
normal brightness L

Taurus
10.7 normal brightness L

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1890phae.proj..447R

Saturday November 22 1890

Taurus

12.5 Normal brightness.

L

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1890phae.proj..447R

Friday November 28 1890

8.1 Taurus ~~467~~
Normal brightness

L

δ Cephei

8.8 δ 1 2
δ 3 ξ

L

R Ursae Minoris

9.8 c 5 v
v = d

d 5 v
v = d

Taurus
Normal brightness

L

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1890phae.proj..447R

Tuesday Dec 2. 1890

Taurus

9.5 normal brightness

2

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1890phae.proj..447R

Thursday December 4 1890

7.5 Taurus normal brightness

β Lyrae

7.8 r 2 β

δ Cephei

7.9 l 3 δ

δ 3 r

δ Bootis

8.2 f 3 r

r 2 g

R Comae Berenices

8.4 f 3 r

r 2 g

R Ursae Minoris

8.5 c 6 r

r = d

R Draconis

8.6 r invisible

S Cygni

8.8 r Invisible

T Cephei

r = i

9.0 r 2-3 i

Z.

g 3 r

r 2 h

f 3 r

r 2 g

d 6 r

r = l

Invisible

Invisible

r = l

r 2-3 m

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1890phae.proj..447R

Thursday December 4 1890

S Aphei

9.2 v 2 g
f 4 v
~~v 2 d~~

v 2 h
g 4 v g

R Cassiopeiae

9.4 E 3 v
v 4 3 f

f 3 v
v 3 h

S Ursae Majoris

9.7 b 2 v
r 4 c

d 2 v
v 4 f

T Ursae Majoris

9.8 c 3-4 v
v 5 & x

e 3-4 v
v 5 f

R Ursae Majoris

10.0 v Invisible

Invisible

R Lyncis

10.1 v Invisible

Invisible

R Canicae

10.3 v Invisible

Invisible

S Persei

10.4 E 4 v
v 2 d

f 4 v
v 2 f

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1890phae.proj..447R

Thursday December 4 1890

T Persei

10.6 V = C

V = C

S Cassiopeiae

10.7 v Invisible

Invisible

T Cassiopeiae.

10.8 g 2 v
v 3 h

g 2 v
v 3 h

10.9 Taurus n
normal brightness

L

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1890phae.proj..447R

Tuesday December 9 1890

S Cephei

6.7 f 2 S
S 6 §

Taurus

6.7 normal brightness

S Persei

6.9 V 3 Ø
E 4 V

V 3 f
f 4 V

T Persei

7.0 C 3-4 V
V 2 d' (?)

C 3-4 V
V 2 d (?) C

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1890phae.proj..447R

Friday December 12 1890

Taurus

8.5 normal brightness L

R Ursae Minoris

9.4 d 2 V d 2 V
V 2-3 E V 2-3 e

R Draconis

9.6 h 5 V m 5 V
V 1 i V 1 n

T Cephei

9.9 V 3 d ~~~~ Slip of pen ? d 3 V
E = 1 V α = 1 V
perhaps & probably should read "d 3 V"
W. H. R. Dec. 16/90.

S Cephei

10.1 f 3 V g 3 V
V 2 g V 2 h

10.2 Taurus L
normal brightness

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1890phae.proj..447R

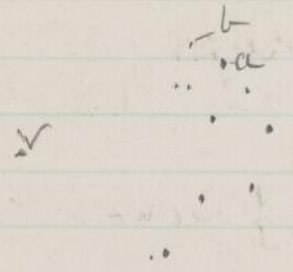
Saturday December 13 1890

Taurus

9.8 Normal brightness

a 3 r

r 4 b



R Aurigae

i 3 r

10.3 r 2 j

b 6 g

g 2-3 h

h 3 i'

i' 4 i

i 3 j

j 3 k

l 3 r

r 2 m

b 6 d

g ~~g~~ 2-3 ~~h~~ h

h 3 k

k 4 l

l 3 m

m 3 n

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1890phae.proj..447R

Monday December 15 1890

δ Aphei

9.7 c 2 s

s 6 v

[c 8.8] means 8.0 from y to c

Taurus

normal brightness

10.0 T Ursae Majoris

v invisible Invisible

S Ursae Majoris

10.2 v i c' v i y

b 4 v d 4 v

S Bootis

v invisible Z Invisible

R Draconis

10.7 i 3 v 0 3 v

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1890phae.proj..447R

Thursday December 18 1890

T Cassiopeiae

7.7 v=h C v = h

R Aurigae

9.0 j 3v n 3v

k 2-3K k 2-3 n

S Ursae Majoris

9.2 b-5v d 5v

v i c' v i f

c = ε

d 4c Very Windy

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1890phae.proj..447R

Friday December 19 1890

β Lyrae

7.4 4 3 = β
β 1 δ

δ Cephei

7.5 δ 4 ε
γ 5 δ

R Ursae Minoris

8.0 d 2 V
V 2 c
& b 4 c' wandelt stars not needed.
c' 4 C
c' 2 wandelt stars.

T Cephei

8.6 V = i
& V 4 i'
ε 1 d, difficult to compare
d 4 ε'
ε' 3 f We suggest stars more favourable
f = g
g 1 h
h 2-3 i
i 6 i'
i' 4 j
j 3 k

Z M L

m L

e 2 V
V 2 β
b 4 c
c 4 d
d 2 e

V = l
V 4 m
d 1 d
d 4 e
e 3 f
f = k
k 1 k
k 2-3 l
l 6 m
m 4 n
n 3 p

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1890phae.proj..447R

Friday December 19 1890

Ursae Majoris

d 3 ε
ε 6 ε'
ε' 6 f
f 3 g
g 6 h
v Invisible

g 3 h
h 3 k
k 6 l
l 3 m
m 6 m
Invisible

Taurus

10 d Normal brightness

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Saturday December 20 1890

Taurus

9.0 normal brightness L

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Monday December 29 1890

T. Cephei

8:4 E' IV e IV

V 6 f Conjunction to f is not laborious. V 6 f

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1890phae.proj..447R

Thursday January 8 1891

7.3 S. Cephei

δ 3 δ

δ 4 ε

Taurus

7.3 Normal brightness

R Ursae Minoris

7.5 d 2 v

v 3 ε

d 2 v

v 3 β

R Draconis

7.7 v invisible

Invisible

T Cephei

8.0 h 2 v

v 2 i

k 2 v

v 2 l

S Cephei

9.1 i 4 v

v 2 j

l 4 v

v 2 m

U Sculptorum R.A. 7h 56m + 21° 30'

11h 0m o = v

p 3 v

v 2 m v

V Sculptorum

11h 14m o 1 = v

v 2 m

p 3 v

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1890phae.proj..447R

Thursday Jan 8 1891

✓

* U Seminorum

$11^h\ 35^m$ v 2 m

v = 0

p 3 v ✓

U Seminorum

$12^h\ 0^m$ v = 0

p 3 v

v 2 m ✓

U Seminorum

12 38 v = 0

p 3 v

v 2 m

clock 4^m ~~slow~~ fast.

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1890phae.proj..447R

Friday January 9 1891

U^{Sc} Scuti

$11^h\ 10^m$ p 3v
v = 0
v 3m

L

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1890phae.proj..447R

Saturday Jan 10 1891

U Geminorum

7h 5m U=
V=0
V 2 m
p 3 V

Taurus

7h 7m normal brightness

R Ursae Minoris

7.4 V 1 Ew
d 2 V

S Cygni

7.6 Invisible

T Cephei

7.7 V 4 i
h = V

S Cephei

i 2 V
7.8 V 3 jw

R Cassiopeiae

8.0 V 1 E

T Cassiopeiae

8.2 i 2 V
V 1 f

L

P.

V 1 f
l 2 V

Invisible

V 4 l
k = V

l 2 V
V 3 m

V 1 f

k 2 V
V 1 l

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1890phae.proj..447R

Saturday January 10 1891

S Persei

8.4 ε 4v
v 3φ

f 4v
v 3f

T Persei

8.5 c 3v
v 2 d'

c 3v
v 2 d

R Camelopardi

8.7 v = K

v = h

S Ursae Majoris

12.0 d 3v
v 2 ε

f 3v
v 2 g

S Bootis

13.0 j 3v Limit of visibility

k 3v

R Canum

17.4 ~~v = d~~ v 2 d

C 2

L.

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1890phae.proj.447R

Monday January 12 1891

h m
7:25 V Seminorum
r 5 v
v 1 m
v = 0 L.

R Pegasi 8 2 9 0
8.9 Invisible L
not now used M 4 1 d χ (?)
u S 3 m not now med
not now used χ 3 S u
S β 4 α not now med
R γ 3 β S
χ (?) C 4 γ R

V Cati
8.9 c' 2 v. L

Taurus
annual brightness L.

S Cephei
9.0 c 3-4 S L
S 3-4 γ

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1890phae.proj..447R

Tuesday January 13 1891

σ Serpentarium

$10^h.0^m$ 02 v

v1 = m

Taurus

normal brightness

ζ Cephei

10.2 ζ 2

ζ 5

L

L

L

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1890phae.proj..447R

Tuesday January 20 1891

U Geminorum.

8.7 v Invisible.

Surely as faint as b, d, g.

T Cephei

g 5 v

8.8 v 1 g

cl 3-4 c'

c' 3 f

f 2 ~~h~~ g

g 6 h

h 3 i

i 3-4 i''

~~i' 3-4 j''~~

j' 4 j''

h g 5 v

v 1 k (?)

d 3-4 e

e 3 f

f 2 h

h 6 k

k 3 l

l 3-4 m

m 4 n

n 4 o

T Cassiop ✓

v 1 j

i' 3 v

v 1 l

k 3 v

R Lyncis ✓

a 3 b'

b' 3 c'

c' 3 c

bw is unentable.

a ~~2~~ 3 b'

b' 4 c'

c 3 c

v Invisible

a 3 b

~~b 4~~

Invisible

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1890phae.proj..447R

Monday January ~~27~~ 26 1891

δ Cephei

7.7 γ 4 S
S 2 ξ

R Cassiop ✓

7.9 v 3 c'

v 3 g

estimate of new system of notation following:

g 4 h
h 2 k
k 5 l
l 6 m
m 4 n
n 2-4 o

O.K.

old notation is following:

k 4 l
l 3 m
m 5 n Velocities n + very bright.
n 3 o for some reason doubtful.
o 4 p
p 3 q

o 4 p
p 3 q
q 5 R
R 3 S
S 4 T
T 3 u

T Cassiop ✓

V = 1'
V 4 K
~~l 2 m~~

V = l
V 4 m

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1890phae.proj..447R

Monday January 26 1891

S Cassiopeiae

~~X~~ new notation (Vsudellis charts)

B 3 C
l 2 f
f 4 g
k 2 l
l 2 m
m 5 n
n 3 o
o 4 p
V invisible

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1890phae.proj..447R

Friday January 30 1891

δ Cephei Notice

7.4 3 δ
δ 3 δ

δ Cassiop | The 3d notation is used in these observations

a 5 b
b & 2 c
c 6 d
d 3 e
e 3 f
f 5 g

R Ursae Majoris

a 3 b
d 3 c
e 5 f
f 3 g
g 6 h

R Cassiop

a 4 b
b 6 c
c 3 d

Faint
Normal brightness.

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1890phae.proj..447R

Friday January 30 1891

✓

S Persei C

9:6 f 3v

v 3g

✓

J Persei C

9:7 C3 ~~X~~ v

v 2d

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1890phae.proj..447R

Monday February 2 1891

3d Notation is hereafter used.

T Cassiop

8.3 l 3v
v 1 m

S Persei

8.4 f 3v
v 4 g

T Persei

c 3v
8.5 v 2 d

R Ursae Majoris

9.0 m $4v (very faint) [Old Notation. t 4v (Now in 3d Notation)
v 2 n v 2 u

T Ursae Majoris

9.2 * e=v
~~*2~~ v 2 f

S Ursae Majoris

9.4 h 4v
v 2 k

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Monday February 2 1891

9.7 + S Bootis
v Invisible.
f 5 g
g 3 h
~~h 7 k~~
h 5 k
k 6 l
l 5 m
m 4 n
a 5 b
b 4 c
c 4 d
d 2 ε
ε 7 f

R Camelopardi
10.7 v Invisible

x R Ursae Minoris
11.1 e = v
d 4 v
a 5 b
b 3 c
c 3 d
d 4 ε
ε 2 f
f 6 g
g 6 h
h 6 k
k 6 l

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1890phae.proj..447R

Wednesday February 4 1891

S Cephei

7.2 γ 2 S
δ 3 ξ

o Ceti

8.0 T 2 V
V 2 μ C

Argelander's Comp. Stars

a α Tauri
b α Arietis
c β Ceti
d β Tauri
e β Auriga
f α Ceti
g β Arietis
h γ Ceti
k α Piscium
l δ Ceti
m 73 ξ'' Ceti
n 65 ξ' Ceti
o μ Ceti
p λ Ceti
q ν Ceti
R 75 Ceti
S 71 "
T 70 "
U 69 "
V 63 "

α Tauri
β Arietis
γ Ceti
α Piscium
δ Ceti
73 ξ'' Ceti
65 ξ' Ceti
μ Ceti
λ Ceti
ν Ceti
75 Ceti

a 3 b
b 7 h
h 3 k
k 5 l
l 3 m
m 2 n
n 2 o
o 6 p
p 5 q
q 5 R
R 5 S

R (75) 3 (70) S
S T (70) 3 (69) U T

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1890phae.proj..447R

Wednesday February 5/4 1891

U Orionis

a 2 b
b 4 c
c 3 d
d 5 e
e 3 f
f 4 g
g 3 h
h 4 k
k 3 l
l 3 m
m 4 n m omitted
n 3 o n "
o 3 p
~~p 4 q~~
p 5 q
q 4 r
r 3 s

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1890phae.proj..447R

Thursday February 5 1891

7.3 Taurus
normal brightness

R Tyrrell
a 5b

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1890phae.proj..447R

~~March~~ Tuesday February 10 1891

δ Cephei

8.2 V 3 δ
δ 2 ξ

D.M. +62.5 96 6.m6

b 2 V
8.5 V 4 a

T Cassiop

l 3 V
8.7 V 3 m

Objective cleaned.

S Cassiop

10.4 V = g
V 3 ~~K~~R (old rotation)

V = t
V 3 u (3d Rotation)

S Persei

10.5 f 3 V
V 4 g

T Persei

10.6 C 4 V
V 3 d

R Aurigae

10.8 , O 3 V

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1890phae.proj..447R

Tuesday February 10 1891

11.2 T Ursae Majoris
+ e 2v
v 3 f

S Ursae Majoris
11.3 k 1v
v 3 l

R Ursae Minoris
12.0 e = v
d 3 v

12.0 Taurus Monmal brightness *

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1890phae.proj..447R

Wednesday February 11 1891

δ Cephei

7.2 b 2 δ
δ 3 ζ

T Cephei

7.4 h 2 r
r 4 k

S δ Cephei

k 3 r
7.7 r 2 l

R Cassiopeiae

f 2 r
8.0 r 2 g

R + S Tauri

~~a 4 b~~ a 5 b
~~b 4 c~~ b 3 c
c c 5 d
d 5 e
e 3 f
f 5 4 g
g 3 h
h 4 k
k 3 l
l 5 m
m 3 n
n 3 o
o 3 p

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1890phae.proj..447R

Wednesday February 11 1891

T Hydrae

b a 3 b
c b 5 c
e c 4 d
f d 3 e abandoned
e 3 f
f f 4 g
l g 4 h abandoned

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1890phae.proj.447R

Friday February 13 1891

Moon

Haze

O Ceti

Moon two near.

Taurus

8.0 normal brightness

T Cassiopeiae

8.2 l 4 v

v = m

S Persei

f 4 v

8.3 v 3 g

T Persei

c 3 d (c 3 v

8.4 d 3 v r 3 d ?)

T Ursae Majoris

[v 2 e]

8.6 v 1 e

d 4 v

S Ursae Majoris

8.7 e 3 v

R Ursae Minoris

d 3 v

v = e

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1890phae.proj..447R

Friday February 14[13] 1891

T Cephei

9.1 h2v
v4k

Moon
haze

R Cassiop

9.7X3 f=v
v3g

R Seminum.

~~a 4b~~
a5b
b5c
c4d
d4e
e3f
f4g
g3h
h3k
k3l
v invisible

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1890phae.proj.447R

Saturday February 14 1891

Algol

8h 20m δ Persei 2-3 v
v 2 α Trianguli
λ Tauri
} 2 v
8:32 v 1 }
Algol
δ 3 v
8:42 v 3 α Tri
λ Tauri
δ } 3 v
8:55 v 1 }
R Canis Majoris
d 1 v
9:14 v 3-4 c
Algol
9:16 δ 3 v
v 4 α Tri
λ Tauri
} 4 δ v
9:22 v = }

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1890phae.proj..447R

Saturday February 14 1891

ζ Geminorum morn

9.4 ζ 2 v
v 3 u

R Canis Majoris L

9:42 d 2v
v 4 e

λ Tauri

9:47 γ 4 v
v = ζ

Algol

9:53 δ 1 v
v 3 β Tri. In (Tri "Z") L
Triangle near ⊥ Orion.

R Canis Majoris

10:18 d 2v
v 3 e

λ Tauri

10:26 ζ 3 v
v 1 ζ

Algol

10.29 ζ = v
v 3 δ

Algol

10:37 i Aurigae 2 v
v 1 ζ

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Saturday February 14 1891

Algol

10:47 ∠ 2 v
v 2 } Persei

λ Tauri

10:53 γ 3 v
v 2 }

R Canis Majoris

10:57 d 4 v
v 2 e

Algol

11:6 a m γ And. 4 v
v 1 ∠ Aurigae
v 2 γ Persei

Algol

11:21 γ And 3 v
v 4 } γ Persei
v 2 } ∠ Aurigae

Algol

11:40 v 2 ∠ Aurigae
γ And. 3 v

R Canis Majoris

11:47 e 2 v
v = f

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Saturday February 14 1891.

Algol

12:8 c 5v
v 2 g Gmd.

R Canis Majoris

12:12 c 4v
v = f

T Virginis

a 4 b
b 3 a
c 5 d
d 4 e
e 4 f
f 3 g
g 3 h
h 2 k
k 4 m
m 5 n
n 4 o
o 4 p
p 4 q
q 3 R
R 4 S

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1890phae.proj..447R

Saturday February 14 1891

Algol

12;48 ~~3 4V~~
E

β Aurigae 4V
ε Persei 5V

R Canis Majoris

12;55 L=V
V 2 f
1

R Hydrae

a 3 b
b 3 c
c 3 d
d 4 e
e 5 f
f 3 g
g 3 h
h 4 k
k 3 l
l 5 m
m 4 n

a = γ Corvi
b = β "
c = γ Hydrae
d = π "
e = η Virginis
f = k "
g = λ "
h = 61
k = 57

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1890phae.proj..447R

Wednesday February 18 1891

T Cephei

Moon

9.3 h 2v
v 5 k

R Cassiopeiae

9.5 f 3v
v 2 g

T Cassiop

9.7 l 4v
v = m

S Persei

f 4v
9.8 v 3 g

T Persei

c 4v
9.8 v 2 d

T Ursae Majoris

9.9 e 3v
v 3 f

S Ursae Majoris

10.0 k 3 v
v 13 l

R Ursae Minoris

10.2 d k 3 v
v = k e

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1890phae.proj..447R

Thursday February 19 1891.

7.8 O Cati ✓

x 4v

v = t ✓

☾ Moon

R Leo Minoris

a 3b

~~b 6c~~

b 3c

c 3d

d 6e

e 3f

f 5g

RT Ursae Majoris ✓

9.5 e 3v

v 2f ✓

S Ursae Majoris

9.6 k 3v

v = l ✓

T Cassiop

l 4v

9.9 v = m ✓

S Persei

f 4v

10.0 v 3g ✓

T Persei

10.1 c 4v

v 3d ✓

T Cancri

nominal brightness

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1890phae.proj..447R

Thursday February 19 1891

† T + S Persei Moon

a 5 b
b 2 c
c 5 d
d 3 e
e 2 f
f 6 g
g 2 h
h 5 k
k 5 l
l 4 m
m 3 n

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1090phae.proj.:447R

Monday February 23 1891

8.1 R Cassiop ✓ Moon O
f 3 r
r 2 g

T Cassiop ✓
8.4 m 4 v
r = n Seeing very poor slim point.

S Persei ✓
8.7 f 4 r
r 3 g

T Persei ✓
8.8 c 2 v
v 3 d ✓

T Ursae Majoris
e 4 v
8.9 ~~f 2~~
v 2 f ✓

S Ursae Majoris
9.1 R 4 v
v = l ✓

R Ursae Minoris
9.2 v about = d Cloudy

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1890phae.proj..447R

Friday February 27 1891

T Cephei

8.6 f 1 v V very red +:. Troublesome L.
v 2 h

S Cephei

9.0 l 5 v (old notation) [0 3 v = h (3d Notation)] H
v = m very faint bothered w. moisture on eyepiece

R Cassiopeiae

9.2 f 3 v L
v 2 g

T Cassiop

9.4 m 4 v Chr. Reed thinks this should L H
v 3 l be m f, 3 v and the curve would so indicate.

S Cassiop

9.6 p = v H
v 5 g bothered w. moisture on eyepiece.

S Persei Moon O

9.8 f 3 v L
v 4 g

T Persei

10.0 C 3 v L
v 4 d

Taurus

10.1 normal brightness L

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1890phae.proj..447R

Friday February 27 1891

R Aurigae

10.2 V invisible Moon O

R Lyncis

h 3 V
10.4 V 2 i (old notation) K 3 V, V 2 l } 3d Notation H

R Ursae Majoris

m 4 V
10.6 V 1 n (old notation) t 4 V, V 1 u } 3d Notation H

T Ursae Majoris

10.8 e 3 V
V 1 f L1

S Ursae Majoris

11.1 k 5 V
V 3 l L1

S Bootis

11.2 V Invisible H

R Camelopardi

11.6 b 2 V
V 5 C L1

R Ursae Minoris

11.8 d 3 V
V = e L1

R Draconis

12.0 V Invisible L1

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1890phae.proj..447R

 Thursday March 5 1891

T Cephei 4

8.3 B e 4 V
V 2 f

R Cassiop 4

8.5 f 4 V
V 1 g

Dating from March 1 1891 the following will be a part of each observation:

The line connecting the two stars under comparison will be brought as nearly as possible parallel to that connecting my eyes and the variable the right hand star will be underscored.

T Cassiop

8.8 n 5 V
V 2 o

S Persei

9.10 f 2 V
V 4 g

T Persei

9.11 c 2 V
V 5 d

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1890phae.proj..447R

Thursday March 5 1891

9.6 S Ursae Majoris
v about = i old notation Cloudy
Probable error ± 2″ In haste

9.7 S Ursae Majoris (again)
h 4 v
v 2 i (old notation) clear.
m 4 v
v 2 h } 3d Notation
L

T Ursae Majoris
t 3 v
v 2 t
9.9 a 6 b clear (finder)
b 3 c
c 2 d
d 5 e
e 4 f
f 6 g
g 4 h
h 7 k
L

R Camelopardi
b 4 v
v 4 c
10.8 L

R Ursae Minoris
d = v
v 3 b
11.0

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1890phae.proj.447R

Saturday March 7 1891

T Cassiop C Z L

8.3 m 2v
O 2 v

S Cassiop

8.4 r 3 g
h 2 r

Seeing very poor, H.
Old notation.

S Persei L

8.5 f 3r
r 4 g

T Persei

8.6 c 2r
r 3 d

L.

R Aurigae L

8.7 Invisible

R Lyncis H

r 4 i (old notation)

8.9 h 3r

K 3r
r 4 l } New 3d Notation.

R Ursae Majoris

l 3r
9.1 r 2 m L

S Ursae Majoris L

9.3 & i 2r
r 4 j

n 2r
r 4 o } 3d Notation

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1890phae.proj..447R

Saturday March 7 1891

T Ursae Majoris

9.4 ≤ 2 v
v 3 f

S Bootis

9.5 v Invisible

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1890phae.proj..447R

Tuesday March 10 1891

S Canis Minoris

~~a 5 b~~ a 4 b
~~b 3 c~~ b 4 c
c 3 d
d 4 ~~e~~
e 5 f
f 3 ~~g~~
g 4 ~~h~~
~~h~~ 4 k
k 4 ~~l~~
l 4 m
m 3 n
n 3 o
o 3 p
p 4 q
q 3 R

9.9 ~~f~~ 4 v
~~f~~ v = ~~g~~
v 4 ~~h~~

R Canes

d a 3 b
e b 4 c
f c 3 d
g d 3 e
h e 5 f
~~f 4 g~~
l f 5 g

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1990phae.proj..447R

Wednesday March 11 1891

R Canum (continued from P142)

C 4

m g 4 h
n h 5 k
o K 3 l
p l 5 m
f 3 V
V 1 g

X Virginis

a 4 b
b 4 c
c 4 d
d 6 e

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1890phae.proj..447R

Saturday March 14 1891

T Cassiop

10.9 V about = 0 L Z

S Cassiop

11.0 V invisible Too cold to use H L

a & b
b 1 c
c 4 d
d 4 e
e 3 f
f 5 g
g 3 h
h 7 k
k 3 l
l 3 m
m 5 n
n 3 o
o 3 p

T Persei L

a 5 b
b 3 c
c 6 d
d 3 e
e 4 f
f 6 g
g 2 h
h 7 k
k 4 l

12.4 e 1 v
v 6 f

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1890phae.proj..447R

Saturday ~~August~~ March 14 1891

X R Canicae

a 5 b
b 4 c
c 5 d
d 4 e
e 6 f
f 6 g
g 4 h
~~h 4~~
i 4 k
i 5 m
n 4 o
v invisible

k 4 l
k 5 m

L1

X R Lyncis

a 3 b
~~b 7 c~~
b 4 c
c 4 d
d 5 e
e 5 f
f 5 g
g 4 h
h 3 k
k 5 l
l 3 m
m 5 n

L1

14.1 V 3 l k 2 V

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1890phae.proj..447R

Saturday March 14 1891

T Cassiop

a 5 b
b 3 c
c 3 d
d 6 e
e 4 f
f 4 g
g 4 ~~i~~ h

~~h i~~ 5 ~~i~~ k
h 5 k
k 5 l
l 5 m
m 2 n
n 6 o

L1

δ Cephei

16.3 γ 5 δ
δ 3 ε

L1

b.

S Cygni

16.7 f 3 r
r = g
~~s~~ r 3 h

a 6 b
b 5 c
~~c 4 d~~
~~d 3 e~~
c 4 d
d 3 e
e 5 f

L1

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Saturday March 14 1891

S Cygni (Continued)

f 2 g

g 4 h

h 4 k

k 3 l

l 4 m

L1

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1890phae.proj..447R

Monday March 16 1891

Taurus

normal brightness

R Ursae Majoris

8.7 f 5 v
v 1 g

T Ursae Majoris

8.9 f 2 v
v 4 g

S Ursae Majoris

9.1 h 5 v
v 2 0

S Bootis

9.2 v invisible

R Canum Venaticorum

9.3 b 4 v
v 2 c

R Ursae Minoris

9.4 d 1 v
v 3 e

R Draconis

9.6 l 5 v
v = m

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1090phae.proj.:447R

Monday March 16 1891

S Cygni

9.9 f 2 v
v = g
g

T Cephei

10.1 e 4 v
v 2 f
f

S Cephei
v Invisible

R Aurigae
v Invisible
a 4 b
b 4 c
c 5 d
d 5 e
e 5 f
f 5 g
g 3 h
l 4 k k 4 l
I describe spectra as made from violent
mind that I can not continue
h 2 l h 2 k

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1890phae.proj..447R

Tuesday March 17 1891

\+ S Cassiopeiae m

a 6 b (finder)
b 2 c L1
~~c 6 d~~
c 5 d
d 4 e
e 3 f
f 4 g
g 3 h
~~i k~~
h 7 k
k 3 l
l 1 m
m 5 n
n 4 o
o 3 p
V Invisible

\+ R Ursae Majoris m

a 3 b
b 3 c
c 2 d (Finder)
d 6 e "
e 5 f
f 1 g L1
h 4 k
k 5 l
f 2 m
m 3 n
o 5 p

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1890phae.proj..447R

Tuesday March 17 1891

R ✓ Ursae Majoris (continued from P150)

m

p 5 q
q 4 R
R 3 S
S 3 T
p 2 r
10.2 r 5 q ✓

x S Ursae Majoris m

a 5 b
b 3 c
c 1 d
d 3 e
e 7 f
f 5 g

g 3 h
h 6 k
k 4 l
l 4 m
m 4 n
10.7 r a little fainter than n Stars from light. n c
n 2 r ??

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1890phae.proj..447R

Wednesday March 25 1891

8.5 T Cassiop From O
c 6v Full.
r 20

S Cassiop
8.6 v Invisible

S Persei
8.7 f 2v
r 4g

T Persei
c 3v
8.8 r 3d

R Aurigae
8.9 v Invisible

R Tyneis
10.2 h 3v
r 1k

R Ursae Majoris
10.3 l 4v
r 2k

T Ursae Majoris
10.5 f 4v
r 2g

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1890phae.proj.447R

Wednesday March 25 1891

9.6 S Ursae Majoris 4 Moon Full

V 1 m
m 4 V

S Bootis 4

9.7 V Muscheln

R Camelopardi 4

9.8 b 5 V
V 2 e

R Ursae Minoris 4

9.9 d 2 V
V 3 e

R Draconis 4

10.2 K 1 V
V 3 l

S Cygni

d.
V 5 h

10.3 g 2 V 4

T Aphei

e 2 V

10.5 V 3 f

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1890phae.proj..447R

Wednesday March 25 & 91

S Aphei ✓

V Invisible

4 Moon
Full
O

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1890phae.proj..447R

Thursday March 26 1891

7.8 R Cassiop

K 2 V
V 6 L

Moon O
Full.

× R Draconis

a 5 b
b 3 c
c 5 d
d 6 e
e 3 f
f 3 g
g 6 h
h 3 k
k 4 l
l 5 m
m 4 n
n 5 o

L

L

× S Ursae Majoris

~~a 5 b~~
~~b~~ a 5 b
b 3 c
c 1 d
d 6 ~~f~~ e
~~f~~ e 6 f
f 5 g
g 3 h
h 7 k

L

Continued on P. 156.

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1890phae.proj.447R

Thursday March 26 1891

S Ursae Majoris (continued) from P. 155:

K 4 l
l 4 m
m 3 n
n 5 o

Moon Full

† T Ursae Majoris

a 6 b
b 3 c
c 1 d
d 5 e
e 5 f
f 4 g
g 3 h
h 8 k
k 6 l
l 3 m

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1890phae.proj..447R

Monday March 30 1891

T Cassiop L Z

8.6 v Invisible

S Cassiop L Z

8.7 04v

S Persei L Z

8.8 f 4 v
v 3 g

T Persei L Z

8.9 c 5 v
v 3 d

R Camelop

8.9 v Invisible

R Lyncis

9.0 v = h
g 6 v

R Ursae Majoris

9.3 h 4 v
v 3 k

T Ursae Majoris

9.1 4 g 4 v
v 2 h

S Ursae Majoris

9.5 n 5 v
v = 0

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1890phae.proj..447R

Monday March 30 1891

S Bootis L1

9.7 m 1 r
r 4 n

R Canicularis L1

9.8 b 6 r
r = e

R Ursae Minoris L1

9.9 d = r
r 4 e

R Draconis

10.0 h 4 r
r = k

S Cygni L1

10.1 r 2 g
f 4 r

T Cephei

10.2 ε 4 r
r 3 f

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1890phae.proj..447R

Wednesday April 8 1891

9.4 T Cassiop
v invisible Z C L

S Cassiop
9.7 v invisible with L
0 4 v with H

S Persei
e 3 v
9.9 v f L Z

T Persei
10.0 ~~e 4 v~~ C 3 v
~~v 3~~ v 4 cl

R Aurigae
10.1 v Invisible H

R Tyndaris
g 2 v
10.2 v 5 h L

R Ursae Majoris
g 6 v
10.4 v = h L

T Ursae Majoris
h 4 v
10.5 v 4 K

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1890phae.proj..447R

Wednesday April 8 1891

S Ursae Majoris

10.7 n 4 v
v = 0 H.

S Bootis

v = k
10.9 v 4 l H

R Canum Venaticorum

c 4 v
11.0 v 2 d 4

R Ursae Minoris

d = v
11.1 v 4 e 4

R Draconis +

g 3 v
11.2 v 4 h 4

S Cygni

11.3 g 3 v 4 Z C

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1890phae.proj..447R

Thursday April 9 1891

x R Lyncis

a 4 b
b 4 c
c 5 d
d 6 e
e 5 f
f 5 g
g 3 h
h 3 k
k 5 l
l 3 m
m 4 n
n 5 o
o 4 p

9,0 g 2 r

~~r 2 b~~ r 4 h

x R Draconis

a 6 b
b 3 c
c 4 d
d 6 e
e 4 f
f 4 g
g 6 h
~~h 5 k~~
h 4 k
~~k 6~~
k 5 l
l 3 m
m 3 n
n 4 o

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1890phae.proj..447R

Thursday April 9 1891

S Cygni

a 5 b
b 5 c
c 4 d
d 3 e.
e 4 f.
f 2 g.
~~g 4 K~~
~~K~~
g 4 h
~~h 5 K~~
K 4 l ✓

10 hs + 9/10

R Coronae Borealis 10

~~a 7 b.~~
~~b 6 c.~~
~~a 5 b~~ a 7 b
b 6 c
c 6 d
d 2 e.
e 3 f.
f 4 g.
g 4 h.
~~b~~ 2 d.
~~c~~ 5 ~~b~~

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1890phae.proj.447R

Thursday April 9 1891

~~10.4~~ 10.7

P. Ursae majoris ζ Ursae Majoris.

a 4 b
b 3 c
c 1 d
d 3 e
e 6 f
f 3 g
g 4 h.
h 6 k
k 3 l.
l 5 m.
m 4 n.
n 5 o
o 4 p

1 obs 9/10

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1890phae.proj..447R

Monday April 13 1891

S Cephei invisible Moon

8.5 T Cassiop
V about = 0

8.5 S Cassiop
k 3 V

8.6 S Persei
d 4 V
V 1 e

8.7 T Persei
e 3 V
V 5 d

8.7 R Lyncis
f 3 V
V 4 g

8.8 S Ursae Majoris
V 2 0
n 3 V

8.8 T Ursae Majoris
V 2 K
h 6 V

8.9 S Bootis
V 3 K
h 4 V

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1890phae.proj.447R

Monday April 13 1891

9. R Camelopardi
V = d
V 2 e
Mom

9. R Ursae minoris
d = V
e 4 V
C

9.1 R Draconis
f 4 V
g 1 V
V 6 h
C

9.2 S Cygni
g 4 V
V 1 h
C

X S Ursae majoris
a 4 b
b 3 c
c 2 d
d 5 e
e 6 f
f 2 g
g 4 h
h 7 K
K 3 l
l 4 m
m 5 n
n 4 o
o 3 p
p 5 q
H

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1890phae.proj..447R

Monday April 13 1891

† T Ursae majoris

~~a 4 b~~ a 5 b
b 4 C
C 2 d
d 5 e
e 4 f
f 5 g
g 3 h
h 7 K
K 5 l
l 3 m

Moon
☾ 4

Letters in sequence according to old notation

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1890phae.proj..447R

Thursday April 16 1891

R Cassiop. was looked for, but it was too close to the horizon to be seen on such a night as this. Moon D

Clouds interfered.

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1890phae.proj..447R

Tuesday April 21 1891

✓ T. Cassiopeiae Moon O
8. ~~h~~ 2 r invisible H Z

✓
8.3 S. Cassiopeiae
r invisible L

✓
8.3 ~~T. C~~ S Persei
r 3 f
r = e

✓
8.4 - T. Persei
r 5 d
C I r

✓
8.5 R. Aurigae
r invisible L

✓
R. Lyncis
8.6 e = r
d 5 r

~~R. Ursae M~~

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1890phae.proj..447R

Tuesday April 21 1891

8.8 ✓ Ursae Majoris Cloudy

K 1 r

r 6 l

8.9 ✓ S. Ursae Majoris Cloudy

m 3 r

r 4 K

9. ✓ S. Bootis Cloudy

r = h

f 4 r

R Lyrae

A x

a 4 r a 4 b

b 5 c

c 6 d

d 7 e

x e 5 f

f 4 g

g 5 h

h 4 K

K 6 l

l 1 m

m 5 n

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1890phae.proj..447R

Tuesday April 21 1891

10.. R. Ursae Majoris

d r 3 h
g 6 r

10.2 R Camelopardi

+ ~~d = r~~
e 4 r
r 3 b
b 0

a 3 b
b 6 c
c 5 d
d 2 e
e 6 f
f 5 g

8

+ 10.4 R. Ursae Minoris

r 1 d
c 4 r

a 5 b
b 5 c
c 5 d
d 4 e
e 3 f
f 6 g
g 6 h
h 5 K

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1890phae.proj..447R

Tuesday April 21 1891

10.8 R. Draconis

e 3 r

r 4 f

a 4 b

b 3 c

c 4 d

d 5 e

e 4 b

f 3 g

g 7 h

h 5 K

K 4 l

l 4 m

m 4 n

n 3 o

11.2 γ Cephei

r 3 e

d 3 r d 2 r

S. Bootis

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1890phae.proj..447R

172

Friday Apr 24 1891

9.3 R Aurigae

v invisible

L

Moon 0 14

a 6 b
b 5 c
c 7 d
d 6 e
e 6 f
f 4 g
g 4 h
h 7 k
k 6 l
l 5 m

h 2 k
k 6 l
l 5 m

R. Lyncis

10.1 R. Ursae Majoris

v 5 h
q 3 v

L

10.3 R Lyncis

v 2 e
d 6 v
a 5 b
b 5 c
c 6 d
d 6 e
e 6 f
f 4 g

L

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1890phae.proj..447R

Friday April 24 1891

g 3 h
h 6 K
K 3 h 3 K
K 5 l
l m
m 5 n

10.8 ✓ δ Bootis L
+
f 4 V
V 3 f

a 5 b
b 6 c
c 4 d
d 2 e
e 7 f
f 5 g
g 3 h

11.1 ✓ R Camelopardi L
+
V 4 f
e 4 V

a 5 b
b 6 c
c 5 d
d 2 e
e 6 f

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1890phae.proj..447R

Friday Apr. 24 (89

f 3 g

R Cennelofaedi Continued.

✓

11.3 R Ursae Minoris

V 5 e
V 1 d
c 4 V

a 5 b
b 3 c
c 6 d
d 5 e
e 3 b
b 4 g
g 4 h
h 5 K
K 4 l

✓

11.6 R. Draconis

V 4 b
V = e

a 5 b
b 6 c
c 3 d
d 6 e
e 4 f
f 5 g
g 7 h
h 2 K
K 6 l

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1890phae.proj..447R

l 4 m
m 4 n
n 5 o

✓

11.9 δ Cygni
x h 3 r
r 1 K

a 5 b
b 5 c
c 5 d
d 5 e
e 4 f
f 2 g
g 6 h
h 6 K
K 3 l

Δ 4

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1890phae.proj..447R

Saturday April 25 1891

R. Cassiopeiae

Moon
0

8.3 δ Cephei
V invisible
+

a 6 b
b 3 c
c 7 d
d 3 e
e 3 f
f 5 g
g 3 h
h 4 K
K 3 l
l 6 m
m 4 n
n 4 o
o 3 p

9.3 ζ Cephei
+

~~K 4 l~~
~~l 4 d~~
v 3 d
c 3 V

c 5 d
d 4 e
e 3 f
f 4 g
g 7 K
K 4 l

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1890phae.proj..447R

89 Saturday April 25 1891

l 5 m
m 4 n

Moon
O

S. Bootis

clouds.

V and W. Virginis.

a 4 b
b 3 c
c 3 d
d 6 e
e 6 f
f 4 g
g 4 h
h 4 k
k 6 l
l 6 m
m 4 n

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1890phae.proj..447R

Monday April 27 ~~91~~ 1891

~~R Dracon~~

Prism No. 4 was fluxed on object glass by bee's wax.

The resulting comparisons to the bright stars are designated by the name of the primary star with the subscript 'c' thus companion of b is b_c. of a is a_c etc.

R Draconis

m 4 a_c
a_c 2 m

b_c 1 0
m 4 b_c

0 = c_c
0 4 d_c
d_c 5 p

a_c 4 b_c
b_c 3 c_c
~~b_c~~
c_c 4 d_c
d_c 6 e_c

a = 0 = 0
b = 5 4
c = 11 7
d = 14 11
e = 20 16
f = 24 21
g = 29 24
h = 36
k = 38
l = 44
m = 48
n = 52
o = 57

(48
49

a_c = 51 = $\frac{52+50}{2}$
b_c = ~~51~~ 56 = $\frac{56+56}{2}$
c_c = 46

Mean $x - x_c$ = 49 grades.

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1890phae.proj.447R

Tuesday April 28, 1891

~~δ Cassiopeæ~~

9.8 R. Aurigæ
2 3 4c
A2 4 K

From this value $A - A_c = 42\frac{1}{2}$ or $34\frac{1}{2}$

To determine the distance of primary from companion in prism 4.

9	75	87	
	41 34	9 28	
	42	87	
	13 29	57 30	

Prism was so placed that ~~this~~ position angle of the two stars was 225° ~~& beam~~ Three transits between a star on the equator & its companion were then taken with results as seen above of 29^s 28^s 30^s with a mean of 29^s. The first transit which gave 34^s was made up on a wrong star.

The distance between the star and its companion would then be $29'' \sqrt{2} = 41''.006$

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1890phae.proj..447R

Wednesday April 29 1891

R. Cassiopeiae

~~T. Cassiopeiae~~

✓

8.3 S. Cassiopeiae

~~b~~ 3 b

b 3 v (?)

~~8.3~~ 8.4 S. Persei

v 3 e

d 3 v

✓

8.5 T. Persei

c 4 r

r 4 d

✓

8.6 ~~R.~~ R. Lyncis

r 4 e

d 5 r

✓

8.7 ~~R.~~ R. Ursae Majoris

~~r 6 b~~

~~g 6 b~~

g 2 r

✓

8.8 T. Ursae Majoris

~~r 2 k~~

~~K 4 r~~

K 4 r

r 2 l

~~Ho follow~~ These letters according to the small chart

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1990phae.proj..447R

Wednesday April 29, 1891

8.9 S. Ursae Majoris

r 3 m
2 4 r
~~l 2 a_c~~ l 3 a_c
a_2 2 m

9. S. Bootis

~~f~~ b = r
r 5 g

9. R. Camelopardi

e 5 r
r 2 f

9.1 R. Ursae Minoris

r 1 d
~~e~~ c 4 r

9.2 R. Draconis

r 4 e
d = r

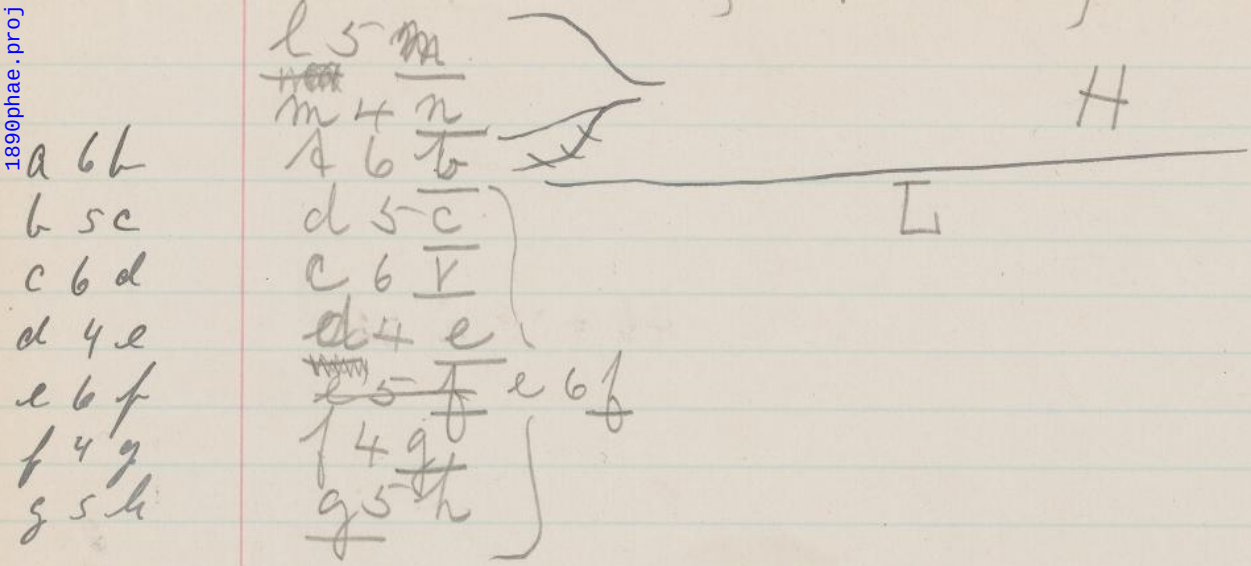
9.6 S. Cygni

~~K 3 r~~ l 3 r
r 2 m
h 5 ~~k~~
K 3 l

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1890phae.proj..447R

Wednesday April 29 1891



9.8 T. Cephei

9.8 S Cephei
v invisible

S Ursae Majoris

S. Bootis

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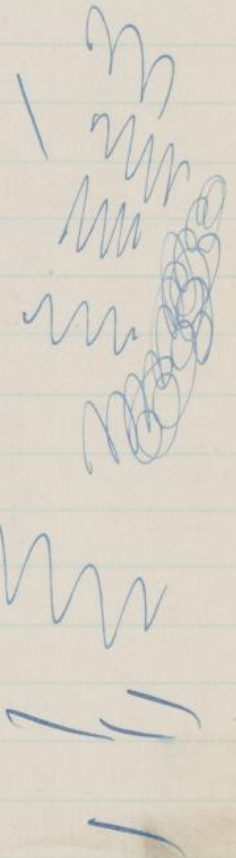
1990phae.proj..447R

K 3 l
l 5 m
m 3 n
~~q 2 a_c~~
~~b_1 a_c~~ ~~$b = a_c$~~
a_c 3 l
K 2 a_c
l 2 b_c
b_c 3 m
m 2 c_c
c_c = n

$a_c = 37 = 39 = 38$

38
43
48

R − a_c = 38
35
45



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1890phae.proj..447R

Thursday April 30. 1891

9.1 x S. Cassiopeiae

R 4 r
r = q
d_c 2 p
0 3 b_c
p = c_c
c_c 4 q

p 4 r ?
r = q
b_c 2 p ?
0 3 b_c ?

K 2 l
l 3 m
m 5 m
m 3 o
o 4 p
p 4 q
q 3 r
r 4 s
a 7 b
b 2 c
c 6 d
d 2 e
e 3 f
f 5 g
g 6 h
h 7 K

9.9 R. Lyncis

d 5 r
r 3 e

A 5 a_c

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1890phae.proj.447R

Thursday April 30 1891

X

~~a 1 g~~
~~c~~

a 5 b
b 3 c
c 4 d
d 7 e
e 4 b
f 4 g
g 4 h
h 4 K
~~K 6 b~~

? K m n ..... what idea do you mean to convey by
? m 3 l ~~Mostly~~ C these characters?
? l 4 n

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1890phae.proj..447R

Saturday May 2 1891

~~T. Ursae Majoris~~

~~R Camelopardi~~

R. Ursae Minoris

a 4 ~~b~~
~~a 3 b~~
b 5 c
c 4 d
d 4 e
e 2 f
f 6 g
g 4 h
h 5 K
K 4 l
l 4 m
m 3 n
n 4 o
o 2 b_c
$a_c = o$
~~b 3 o_c~~
~~o_c 3 k~~
o 1 o_c

R. Draconis

a_c 2 o
n 1 a_c
o = c_c
n 4 c_c
q 4 f_c
f_c 3 n

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1890phae.proj..447R

Thursday May 7" 1891

~~R. Cassiopeiae~~

~~P. Cassiopeiae~~

✓

8.2 S. Cassiopeiae

~~02p~~ v2p

04v

T. Persei

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1890phae.proj..447R

Wednesday May 13 1891

B.H.R.

Remind me to give you some instructions about recording. W.M.R.

R Aurigae

9.6 p 2 v
v 3 q

exceedingly faint. H C Z

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1890phae.proj..447R

Monday May 18 1891

S Ophiuchi

11.2 V=g (about)

L H C Z M

S Serpentis

6 Magnitude

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1890phae.proj..447R

Tuesday May 19 1891

~~T. Persei~~

~~R Aurigae~~

8.7 R. Ursae Majoris
d 3 h
q 4 V

V 3 h (probably misunderstood by Recorder) WMR

T. Ursa Majoris HMC

J. Bootis
~~d 2 e~~
8.9 d 2 V
V 1 e

~~R. Camelopardi~~

~~R. Ursae Minoris~~

9.2 R Draconis
a 3 V
b = V

~~S Cygni~~

T Cephei

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1890phae.proj..447R

Monday May 25 1891

S Cassiopeiae

9.8 K 3 v — L m C
v 3 l

T & S Persei

Too Cloudy ✗ Z

R Lyncis

10.2 d 3 v — C m L
v 4 e

R Ursae Majoris

10.4 v 5 g — m C L
g 5 h
~~h 5 v~~ ? Asleep ?

S Ursae Majoris

10.6 v 1 f — m C L
e 5 v

T Ursae Majoris

10.7 Invisible — H m C

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1890phae.proj..447R

Wednesday May 27 1891

9.6 ~~9.5~~ R. Lyncis L
d 4 v
v 4 e.

9.7 R. Ursae Majoris L
v 2 h
g 5 v

9.9 T. Ursae Majoris L
r minime

×

9.9 S. Ursae Majoris L
r = f
× r 49

~~S. Bootis~~

R. Camelopardi L
10.1 h 2 v

10.1 R. Ursae Minoris L
v 1 d
c 5 v

10.2 R Draconis L
r 4 c
r = b

S

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1890phae.proj..447R

10.3 S Cygni
v = 0 2.

10.4 T. Cephei
v 3 d
c 1 v

10.5 S. Cephei
v inverted

~~10. R. Cassiopeiae~~

~~R Draconis~~

~~T Aquarii~~

~~R. Leti~~ S. Herculis
11.8 v 9.5 magn.
v one brighter mv

12. ~~X~~ Ophiuchi
x v 4 x
3 v
v = 9 magn.

12.3 V Coronae
v 9 magn.

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1890phae.proj..447R

Wednesday May 27 1891

12.7 S. Aquilae
either 9th or 10th Magn.

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1890phae.proj.447R

8.8 S. Cassiopeiae
v 3 brighter than l

~~R Cassiopeiae~~

9.3 Hydra No. 6 new variable L
α 1 V
× 1 V

9.5 Aquila No 8 new variable L
α 3 V
V 4 B

9.6 Cygnus No 9 new variable L
V 3 α
B 3 V

9.9 Delphinus No 11 new variable L
V 2 α
B 4 V

10.1 ~~D M~~ No 12 new variable. L
α 4 V
V 2 B

10.2 Lyrae L
β 3 B

(y) γ Virginis
a 3 V a 3b
b 5 c

continued on P. 196

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1890phae.proj..447R

Thursday May 28 1891

W.M.R. 5/29/91

γ Virginis

C 4 d

d 3 e

e 3 f

f 6 g

g 3 h

h 5 K

K 3 l

l 2 m

m 5 n

continued from P. 195

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1890phae.proj.447R

Monday June 21 1891

R Hydrae

10.7 v 3 d

X Cygni

11.3 v 3 d
β 4 v

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~~Monday~~ Tuesday June 9 1891

8.8 ~~R. Cassiopeiae~~

9.1 S Cephei ✓
V = about 0

~~9.4~~
9.4 T Cephei ✓
C 6 r
r 6 d

9.5 S. Cygni ✓
0 3 r
p invisible

9.7 R Draconis ✓
~~r 3 d~~
~~0 1 r~~
C 2 r

9.8 R Ursae Minoris ✓
r 3 d
C 2 r

~~R Canis Majoris~~

10. S Bootis ✓
r 2 C
1.4 r

10.1 S Ursae Majoris ✓
e 4 r
r 3 f f

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1890phae.proj..447R

~~Monday~~ Tuesday June 9 1891

10.2 T Ursae Majoris
r nuvisible

R. Ursae Majoris
10.3 h 1 r

~~R. Lyncis~~

10.7 Hydra No 6 new variable
~~r 3 g~~

10.8 Aquila No 8 new variable
α 3 r
r 4 β

11. Cygnus No 9 new variable
~~β 3 r~~
r 2 g

11.1 Delphinus No 11 new variable
β 4 r
r 3 α

11.2 No 12 new variable
α 5 r
r = β

11.3 β Lyrae
β = γ

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1890phae.proj..447R

~~Monday~~ Tuesday June 9 1891

11.6

δ Virginis

a 5 r a 3 b

e 5 c b 5 e

c 3 d

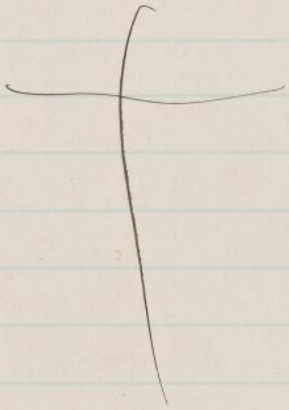
d 5 e

~~d 4 e~~

e 5 f

f 4 g

g 5 h



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1890phae.proj..447R

Wednesday June 10 1891

9.1 S. ~~Cassiopeiae~~ Cassiopeiae
q 5 v

~~χ Persei~~

9.3 R Lyncis
d 4 V
V 3 e

10.8 S Virginis
h 3 K
K 5 l
l 3 m
m 5 n
n 6 o
o 3 p
p 4 q
q 3 r
r 3 s
r 4 t
t 3 u
u 3 w
w 3 x

11.3 R. Canis ~~Venatici~~ Venatici
a 4 b
b 4 c
c 5 d

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11.3

✓ Wednesday June 10 1891

R Cassiop

m + r

r # m

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1890phae.proj..447R

Friday. June 12 1891

R Delphini

a	a 5 b	b
b	b 5 c	c
c	c 5 d	d
d	d 6 e	e
e	e 6 5 f	f
f	f 3 g	g
g	g 5 h	h
h	h 6 k	
	k 4 l	k
k	l 6 m	l
m	m 5 0	n
n	0 3 p	o
o	p 5 q	p
p	q 3 R	q
q	R 6 S	R

T Aquarii

a	a 4 b
	b 3 c
	c 5 d
	d 4 e
	e 3 f
	f 6 g
	g 4 h
	h 4 k
	k 3 l
	l 5 m
	m 4 n
	n 3 0

(Continued on P 206)

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1890phae.proj..447R

Friday June 12 1891

T Aquarii (Continued from P. 205)

04 r
r 3 g
g 3 R

R 4 S
S 3 T

β Lyrae

14.7 β 2 O
E 2 β

δ Cephei

14.7 V 2 S
S 6 E

η Aquilae

η 2 L
14.7 E 2 η

10 Sagittae

14.8 b 5 V
V = X g

R Scuti

14.9 h 2 V
V = g

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1890phae.proj..447R

Monday June 15 1891

9.7 γ Cassiop L ✱ M
h 3 v
v 3 K

9.8 S. Cassiop L ✱ M
v 3 g
f 3 r

9. ~~φ Persei~~

10 R Lyncis L ✱ M.
v 5 e

~~10~~ d 5 v

10.1 R, Ursae Majoris ✱ L M
h 4 v

10.1 β Ursae Majoris L ✱ M
v invisible
~~v 5 f d~~
~~e 4 v~~ X

10.2 S. Ursae Majoris L M
v 5 f
e 4 v

10.3 δ Bootis L M
v 3 e
d 4 r

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1890phae.proj..447R

Monday June 15 1891

10.3 R. Camelopardi
r invisible

10.4 R. Ursae Minoris
r 4 d
c 2 r

10.5 R Draconis
d 2 r
r 2 e

10.5 S. Cygni
r invisible

10.6 T Cephei
r 2 c
b 5 r

10. ~~R Cassiop~~

(Beta) Lyrae β

10.9 r 2 B
B 4 ~~5~~ β 4 5

10.9 η Aquilae
~~B 3 etea~~ η 3 β
etea 3 β η 2 ε
etea 2 ε

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1890phae.proj..447R

Monday June 15 1891

10.9 Delta Cephei — δ Cephei
delta 4 γ — δ 4 γ
iota 4 delta — ι 4 δ

11. R Scuti
h 3 r
r = g

11.1 R Sagittarii — 10 F Sagittarii Sagittae Sagittae 10 F. Sagittae
r 5 b
r 3 c
h 4 r — h 4 r

11.3 Chi Cygni — χ Cygni
r = w
r 4 B

11.6 No 8 — new variable — dead (IX)
γ 4 r — α 4 r
r 3 B — r 3 β

11.7 No 9 — new variable
r = γ — r = α
β 5 r
redness (zero)

11.8 No 10 — new variable
r = α
r 4 B

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13.1 No. 11 new variable.
r 2 a
B 2 r

7.1 No 12 new variable
13.1 r = r
r 4 R
redness (7/4).

2. T. Herculis
a 4 b
b 4 c
c 5 d
d 4 e
e 3 f
f 3 g
g 5 h
h 3 K
K 5 l
l 3 m

S. Herculis
a 3 b
b 3 c
c 4 d
d 5 e
e 4 f
f 2 g
g 6 h
h 4 K
K 3 l
l 4 or (m).

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m 5 n
n 40

S Herculis continued

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9.1 T. Cassiopeiae L M
r = h
g 4 r
r 3 K

10.1 S Cassiopeiae L M
e 2 r
r 2 f

10.2 Persei L M
C 3 r

10.3 T Persei L M
~~5~~ c 4 r
~~r 3 g~~
~~r 2 d~~

~~10. R Aurigae~~

10.4 R Lyncis L M Z
r 6 e
d 3 r

10.4 R Ursae Majoris L M
h 6 r

10.4 T Ursae Majoris L M
r irregular
~~K H~~
~~e 3~~

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40.5 δ Ursae Majoris L M
r 4 f
e 3 f
r 4 f
e 3 v

10.9 δ Bootis L M
r 3 c
b 4 r

10.6 R Camelopardi L M
r invisible

10.6 R Ursae Minoris L M
c 4 v
r 2 d

10.7 R Draconis L M
r 1 f

10.7 δ Cygni L M
r invisible

10.8 δ Cephei L M
b 4 r
r 3 c

10.8 δ Cephei L M
r invisible

10.9 R Cassiopeiae L M
r = 9
r 4 h

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Beta Lyrae β Lyrae 11

10.9 γ 3 β
β 4 ξ

Delta Cephei δ Cephei 1

~~γ 4~~

10.9 γ 4 δ
δ 4 ξ

η Aquilae

11.0 β = η

11.1 Ten Sagittae 10 Sagittae
V 1 b
b 4 V

11.4 Variable No 2
b 4 V
V = β

11.5 Variable No ~~4~~
b 2 V
V 5 β
~~V 4 β~~

11.6 Variable No 13
V 2 β
~~b 1 β~~ b 1 V

H. ~~Variable No 6~~

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11.8 Variable No 8 ✓
V = ∞
γ 3 V

11.9 Variable No 9 ✓
~~delta 1 V~~
~~delta 2 V~~
V 2 ε
δ 1 V
V 2 ε

~~Variable No 10~~

12.2 Variable No 11 ✓
ζ 3 β ?
β 3 γ ?
α 3 V ~~V~~ This uncertainty makes
V 3 γ the observation useless.
β can not refer to the var.
as at first suppose. '93 3/28.

12.3 Variable No 12 ✓
β 4 V
~~V 5 ε~~ V 1 γ

~~R Hydrae~~

X Cygni ✓
13.0 γ 3 V
V 2 delta

~~R Bergasi~~

~~R Vulpeculae~~

~~R Bootis~~

U. Herculis

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h
9.1 T Cassiop. L
g 4.0 V, [r 2.0 a] V 2.0 h

S Cassiop. L
9.1 V 3 f, V = *E

9.2 S ~~X~~ Persei. I
* C 2 V, V 5 d

9.2 T Persei I
V 5 d, C 3.0 V

R Aurigae I

R Lyncis I Z C
9.4 e 3 V, ~~V 3 f 2~~
V 3 f ?

R Ursa Maj. I
9.4 V = m
V 4 m

9.6 T Ursa Maj. ~~X~~ H
invisible
~~v nisible~~, t visible

9.8 S Ursa Maj. L
V 3 e
d 5 V

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Monday July 6, 1891.

S Bootis I

9.79 V 3 c
d 3 V

R Camelop. H.

10.0 variable possibly seen, about equal to 0.

R Ursa Min. I

10.2 V 4 d
c 3 V

10.2 R Draconis I

V R 3 h
g 4 V

10.3 S Cygni . H
variable invisible

T Cephei E I

10.4 b 2 V
V 3 c

S Cephei I

10.5 m 3 V
V 3 m

R Cassiop. I

10.9 V 2 0
m 4 V

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Monday July 6 1891

δ Cephei

11.4 f 5 δ
δ 3 ζ

β Lyrae

f 4 β
11.4 β 2 ζ

γ Aquilae

11.5 δ 3 γ
γ 4 β

10 Sagittae

v = 6
11.5 c 3 v

R Scuti

11.6 v 4 c
g 4 v

New Variable No. 4

11.7 d 3 v
a 5 b
b 5 c
c 4 d
d 5 e
e 3 f
f 3 g
g 4 h
h 5 k
k 4 l

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Monday July 6 1891

New Variable No. 4

l 3 m
m 3 n
n 4 0
0 3 p
p 3 q
q 5 R

R Sagittae 9.4 m L

13.5 c 5 v
v 4 d (S.C.C. Intuition)

S Aquillae 9.4 m L

v 6 a
b (R Sagittae) 2 v

T Aquarii 11.0 m L

14.5 q 1 v
v 2 R

X Ophiuchi L L

~~n 3 v~~
~~d 5~~ v 3 n
~~n 3 v~~ ~~d 5~~ 4 v

R Lacertae L L

d 2 v
v 1 p

X Cygni L L

15.0 k 2 v
v 4 l (Sec Intuition)

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