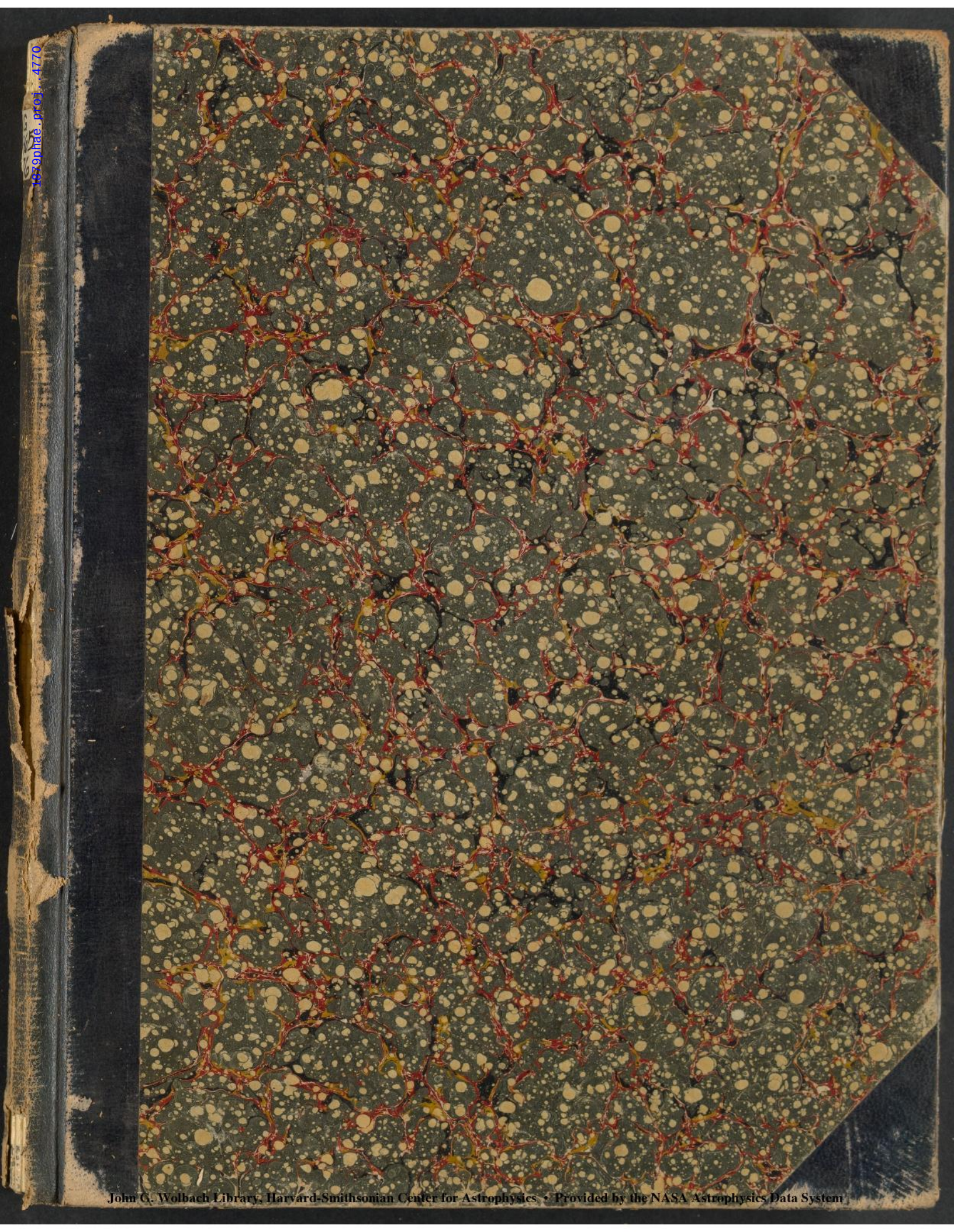
1979phd..proj..4770



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1879phad.proj...4770

RG11345.476

Eclipses
May 30
June 18
July 7
15
15
14
27
Aug 2
Aug 3
Aug 10
17
19
20
20

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61 sept 7 33° = angle moved over.

2 sept 8. page

3 sept 14. 56

4 sept 20 77

5 sept 25 87

7 ~~Sept~~ 27 107

8 sept 29 11

9 Oct 2 119

70 Oct 8 134

2 Oct 9 137

3 Oct 13 145

4 Oct 15 157 (telescope ~~sweeping~~ eyepiece)

5 Oct 16 164

6 Oct 20 184

Ledger for d'Arrest

46 w Eq. Page

6 sept 25 117

1 Oct 8 121

List of Eclipses.

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Ledgers for δ Cancri.

Ledger " μ Andromedae.

Comparisons with Pole star. Pages 16

" 20

Carried to first ledger of δ Cetæ 22

" 26

" μ Andromedæ 30

R Leonis 36

R Leonis 40

R Leonis 46

46

48

50

R Leonis 54

R Leonis 58

62

These are the names of the stars to be corrected (in the Reduction).

8
10
12

These numbers are the pages of Book 34 on which corrections are to be made in Reductions.

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Kc 11365.476

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Form for Journal

Book	Page	Time	Object	No. settings	Reading	Zero	Obs.	Inst.

No readings will be needed on subsequent pages.

The columns need not be ruled, but are to kept as regular as may be by the eye.

One line is to be left blank at the end of each day's record.

The date of the next day is to be written on the following line.

Each day is to be entered, as in a diary. If no observations were made, the reason is to be entered in the column of Remarks, opposite to the date.

The book where the original observation is recorded is to be designated by letter and number (as R 50) in the first column, and the page in the second.

The time of the observation is ordinarily to be entered in the third column in hours and tenths of mean time; but when accuracy is required, as in the observation of an occultation, the exact time will be entered (as read from the Chronograph sheet in case the observation was made with the Chronograph). A record in sidereal time is to be enclosed in parentheses.

The column headed Object is to be filled out in accordance with the rules stated in the second chapter of Vol. XI of the Observatory Annals, so far as they may be applicable, and the same general principles on which they are based

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Reductions.	Remarks.

are to be observed in all cases.

The next four columns are to be filled out as in the printed Journal of Vol. XI, Chapter II, where the observations are made with similar instruments.

The first, or left-hand, half of the right-hand page, is to be reserved for reductions and the rest for remarks.

Ordinarily, a single line of each page will be used for one set of observations. One line will be enough for each series of observations of disappearance or reappearance of Jupiter's satellites, or for any similar series where the result cannot be given without a discussion of some length requiring reference to the original record.

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Wednesday, Jan. 29. 1879.

R,50.	196	6.1	Japetus	5	1.164		P	A
"	"	6.2	"	5	.912		S	A
"	"	6.4	Star b	5	.786		S	A
"	"	6.5	" b	5	.836		P	A
"	197	6.6	Star c	3	.483		S	A
"	"	6.7	Star d	3	.503		S	A
"	"	6.7	Star e	3	.440		S	A
"	"	6.8	89°.37	3	2.250		U	A
"	198	6.9	c	3	.663		U	A
"	"	6.9	e	3	.403		U	A
"	"	7.0	f	3	.360		U	A
"	"	7.0	"	3	.317		S	A
"	199		α Ursae Minoris	4	2.15	128.60	P	K
"	"	7.7	6.0	4	33.33	127.48	R	K
"	200	7.8	7.5	4	21.92	126.20	R	K
"	"		9.0	4	3.80	126.85	R	K
"	"		7.0	4	20.60	129.35	R	K
"	"		9.5	4	1.62	127.17	R	K
"	201	7.9	5.5	4	50.72	215.77	R	K
"	"		6.5	4	21.67	127.83	R	K
"	"		8.5	4	5.75	126.70	R	K
"	"		5.0	4	65.78	217.08	R	K
"	202	8.0	8.0	4	11.10	127.35	R	K
"	"	8.2	α_2 α Ursae Minoris	4	1.37	126.97	S	K
"	"	8.4	" "	4	2.72	126.27	U	K
"	"	8.1	51 Ophei λ' — α Ursae Minoris	4	11.25	127.25	U	K
"	203	8.6	" "	4	11.85	127.85	S	K
"	"	9.2	δ_2 — "	4	8.95	128.50	U	K
"	204	9.3	" "	4	6.47	128.92	S	K
"	"	9.5	λ_1 — "	4	22.00	128.40	S	K

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$\frac{10}{2}$ log I
$+ \frac{10}{2}$ log sin K $\quad \frac{10}{2}$ log cosec K
$\frac{10}{2}$ log cos H

0.33
9.80
9.48
9.61
8.42
8.51
8.22
1.76
9.11
8.03
7.78
7.51
7.13
1.30
2.14
5.89
2.27
7.74
0.56
2.16
5.00
0.20
3.58
8.10
6.63
3.50
3.44
4.04
4.74
2.13

Seeing 6, 6, 5. Some comparisons of stars at different altitudes, by naked eye.

{ a in field, symmetrically placed.
Shutter begins to obstruct Aperture.
a out of field.

Stars near pole.

Limit of visibility .38

Limit of visibility .30

Limit of visibility (star occasionally seen) .28

{ Observations to determine scale of magnitudes.

Two settings reexamined; not changed.

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R,50. 204	9.7	λ, -	α Ursae Minoris	4	25.62	127.23	U.	K
" "	9.8	88°.4, -	"	4	17.65	125.70	U	K
" 205	9.8	" ,	"	4	18.27	127.38	S	K
" "	10.1	88°.9,	"				S	K
" "	10.2	" ,	"	4	59.15	214.85	U	K
" "	10.3	α ,	"	4	2.83	125.12	U	K
" "	10.4	" ,	"	4	14.18	126.92	S	K

Thursday, Jan., 30. 1879.

" 206	6.2	Japetus		5	1.104		P	J
" "	6.2	Star b		5	.904		P	J
" "	6.3	" b		5	.786		S	J
" "	6.4	Japetus		5	1.254		S	J
" 207	6.7	"		5	1.440		U	J
" "	6.7	Star b		5	.808		U	J
" "	7.6	δ Cancri		4	1.62	125.93	P	K
" 208	7.6	"		4	1.23	126.03	U	K
" "	7.8	c,	δ Cancri	4	5.75	126.65	P	K
" "	7.9	"	"	4	4.45	126.45	U	K
" "	7.9	a	"	4	11.20	126.10	P	K
" 209	8.0	"	"	4	10.10	126.25	U	K
" "	8.0	δ	"	4	12.70	126.50	P	K
" "	8.1	"	"	4	10.32	127.93	U	K
" "	8.1	e	"	4	27.90	127.60	P	K
" 210	8.2	"	"	4	24.68	129.42	U	K
" "	8.5	b	"	4	23.25	126.05	P	K
" 211	8.5	"	"	4	20.25	126.90	U	K
" "	8.6	d	"	4	10.20	126.60	P	K
" "	8.6	"	"	4	8.43	126.48	U	K
" "	8.7	f	"	4	39.60	217.20	P	K

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182
259
252

Nowhere as bright as α.

033
6.55
~~1.53~~
5.69
~~0.68~~

Seeing 6, 7, 6. Some comparisons of stars at different altitudes, by naked eye.

0.21
9.78 α out of field.
9.43 α " " "
0.49
0.79
9.54 α in field, symmetrically placed.
7.74
8.35
5.00
5.55
3.56
3.78
3.29
3.73
1.65
1.90
2.02
2.31
3.76
4.17
0.98

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R50	212	8.7	f	4	43.23	215.82	W	K
"	"	8.7	S Cancri	4	1.80	126.90	P	K
"	"	8.9	"	4	1.68	126.97	W	K
"	"	9.1	g	4	16.67	125.58	P	K
"	213	9.2	"	4	17.37	125.07	W	K
"	"	9.3	α, α Ursae Minoris	4	3.12	125.53	S	K
"	214	9.9	λ, α "	4	12.95	126.85	S	K
"	"	10.0	δ, "	4	10.42	124.12	S	K
"	"	10.2	51, "	4	10.83	123.33	S	K
"	"	10.4	α, "	4	2.40	125.20	S	K

Friday, Jan., 31, 1879.

R51	3	7.2	Iapetus	5	1.098		S	J
"	"	7.3	Star b	5	.962		S	J
"	4	7.4	" b	5	.654		W	J
"	"	7.5	Iapetus	5	1.212		W	J
"	"	7.5	"	5	1.158		P	J
"	"	7.5	Star b	5	.920		P	J
"	5	8.0	δ, δ Cancri	4	1.17	126.33	W	K
"	"	8.1	", "	4	1.85	126.80	P	K
"	"	8.2	", "	4	1.78	126.87	S	K
"	7	8.4	c	4	4.78	~~128.52~~ 125.82	W	K
"	"	8.4	"	4	6.03	126.32	P	K
"	"	8.5	"	4	5.53	126.38	S	K
"	8	8.1	a	4	8.62	126.92	W	K
"	"	8.6	"	4	9.60	126.45	P	K
"	"	8.7	"	4	9.62	125.52	S	K
"	9	8.8	g	4	13.73	126.82	W	K
"	"	8.8	"	4	17.65	127.70	P	K
"	"	8.9	"	4	18.55	128.40	S	K

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1879phae.proj..4770

0.82
7.51
7.68
2.72
2.63
6.32
3.25
3.71
3.63
6.89

Seeing 6,7,7.
Before this, some occultations in the Pleiades.
a out of field.

0.20
9.92
9.08
0.42
0.32
9.82
8.44
7.45
7.55
5.40
4.90
5.08
4.12
3.89
3.88
3.12
2.59
2.49

Transits of comparison stars previously taken.
R 51, 6. Order of brightness of chief stars by estimate; Sirius, Capella, etc.
Stars too near.

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R.51	10	9.0	S	4	~~8.60~~ 9.10	125.30	W	K	.
"	"	9.0	"	4	11.68	124.42	P	K	.
"	"	9.1	"	4	12.85	123.65	S	K	.
"	11	9.2	b	4	19.55	125.40	W	K	.
"	"	9.2	"	4	21.80	126.70	P	K	.
"	.	9.3	"	4	22.17	125.68	S	K	.
"	12	9.3	e	4	24.20	126.80	W	K	.
"	"	9.4	"	4	27.50	128.45	P	K	.
"	"	9.4	"	4	25.60	129.50	S	K	.
"	13	9.5	f.	4	~~40.75~~ 43.25	212.65	W	K	.
"	"	9.6	"	4	58.08	209.72	P	K	.
"	"	9.6	"	4	62.22	216.33	S	K	.
"	14	9.7	d	4	9.68	126.67	W	K	.
"	"	9.7	"	4	10.45	126.45	P	K	.
"	"	9.8	"	4	11.80	126.40	S	K	.
"	15	9.9	S, S Cauchi	4	1.92	126.23	W	K	.
"	"	9.9	", "	4	2.05	125.65	P	K	.
"	"	10.0	", "	4	2.15	126.02	S	K	.

Saturday. February 1, 1879.

"	16	8.3	c	3	1.097		S	J	.
"	"	8.5	"	3	.623		S	J	.
"	"	8.6	d	3	1.033		S	J	.
"	"	8.9	h	3	.447		S	J	.

Sunday, February 2, 1879,
Monday, February 3. 1879.

"	17	6.4	Iapetus	5	1.232		S	J	.
"	"	6.4	"	5	1.180		P	J	.
"									

Tuesday. February 4, 1879.

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4.13
3.47
3.27
2.38
2.15
2.12
1.94
1.68
1.82
0.93
0.36
0.27
3.87
3.72
3.45
7.37
7.23
7.13

0.20 Seeing 5, 3, 4 for this set.
8.97 Seeing improved; set repeated.
0.07
8.25 Became cloudy.
Cloudy.

0.45
0.36 Clouds coming.

See following page.

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Tuesday, February 4, 1879.

R51	18	6.1	Iapetus	S	1.038		P	☽
"	"	6.2	Star b	S	.624		P	☽
"	"	6.4	" b	S	.684		S	☽
"	"	6.6	Iapetus	S	.526		S	☽
"	19	6.7	"	S	.952		S	☽
"	"	6.8	"	S	1.208		W	☽
"	"	6.9	"	S	.964		W	☽
"	"	7.1	Star b.	S	.848		W	☽
"	20		6.0 α Ursæ Min.	4	30.70	127.15	R	K
"	"		7.5 "	4	15.58	128.52 ~~128.75~~	R	K
"	"		9.0 "	4	4.00	126.95	R	K
"	21	7.7	7.0 "	4	19.75	124.35	R	K
"	"		9.5 "	4	1.88	126.48	R	K
"	"		5.5 "	4	46.40	215.85	R	K
"	"		6.5 "	4	27.95	128.75	R	K
"	22	7.7	8.5 "	4	6.10	125.45	R	K
"	"		5.0 "	5	61.57	217.33	R	K
"	"		8.0 "	4	11.23	123.92	R	K
"	23	9.8	89°.35	3	1.787		S	☽
"	"	10.0	89°.1	3	940		S	☽
"	"	10.0	89°.26	3	.983		S	☽

Wednesday, Feb., 5. 1879.

Thursday, Feb, 6. 1879

Friday, Feb. 7. 1879

"	24	6.3	Iapetus	S	.832		S	☽
"	"	6.4	"	S	1.036		P	☽
"	"	6.6	Star b.	S	.498		S	☽

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Seeing 5,7,7.

0.08	Prism to the left and below.
8.98	" " " " " "
9.18	Prism above; a in field, symmetrical.
8.60	" below; Saturn behind prism.
9.89	" above; " out of field.
0.41	" " ; " " " " .
9.92	" below; " behind prism.
9.64	" above; a out of field.
1.46	Observations for determining
2.86	scale of magnitudes
5.78	used in estimates by
2.36	Prof. W. A. Rogers.
7.46	
0.70	
1.65	
4.87	
0.28	
3.55	
1.26	Stars near pole;
9.87	DM. numbers; aperture
9.96	12.7 cms.

Cloudy.

Cloudy.

9.60	Prism to the left and below.
0.08	" " " " " "
8.49	" left; a out of field on right.

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Friday, Feb., 7. 1879

R.S.I.	24	6.7	• Star b	5	.798		W	J	
"	25	6.8	Fapetus	5	.958		W	J	
"	"	6.9	Star b	5	.802		S	J	
"	"	7.0	" b	5	.712		W	J	
"	"	7.1	" b	5	.800		P	J	
"	26	7.1	" b	5	.566		P	J	
"	27	7.8	γ Andromedae	4	1.80	126.15	P	K	
"	"	7.9	"	4	1.08	126.57	W	K	
"	"	8.4	d, μ Andromed	4	25.50	127.90	P	K	
"	"	8.5	", "	4	23.95	126.45	W	K	
"	28	8.5	b, "	4	51.72	214.08	P	K	
"	"	8.6	" "	4	34.88	214.92	W	K	
"	"	8.6	c, "	4	~~34.55~~ 37.05	214.50	P	K	
"	"	8.7	" "	4	~~24.12~~ 24.62	125.58	W	K	
"	29	8.7	g', "	4	13.38	126.43	P	K	
"	"	8.8	" , "	4	12.95	125.30	W	K	
"	"	8.9	h, "	4	11.78	126.27	P	K	
"	"	8.9	" , "	4	9.55	125.55	W	K	
"	30	9.1	g, "	4	17.15	~~126.55~~ 126.05	P	K	
"	"	9.2	" , "	4	15.68	126.62	W	K	
"	"	9.2	f, "	4	24.92	125.83	P	K	
"	"	9.3	" , "	4	21.22	125.12	W	K	
"	31	9.4	μ Androm.	4	2.28	125.32	P	K	
"	"	9.4	"	4	1.43	126.47	W	K	

Saturday, Feb., 8. 1879. 8

"	~~32~~	6.7	Fapetus	5	.848		P	J	
"	"	6.9	Star b	5	.850		P	J	
"	33	7.9	δ Cancri	4	1.62	126.17	P	K	
"	"	8.0	c, "	4	12.10	125.65	P	K	

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9.51	Prism left; a out of field on right.
9.91	
9.52	Prism above; a in field, symmetrical.
9.26	
9.51	
8.76	Prism left; a out of field.
7.51	Transits of Saturn & Lepetus previously taken.
8.62	
1.83	
1.96	
0.53	
1.21	
1.23	
1.94	
2.18	
3.25	
3.45	
3.90	
2.65	
2.84	
1.88	
2.21	
7.01	
8.02	
9.64	
9.65	Prism to left; a out of field.
4.74	
3.39	c much blurred; reprocessed.

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Saturday, Feb. 8. 1879.

R51	33	8.1	α, δ Cancri	4	12.42	126.62	P	K
"	34	8.1	g. "	4	20.67	125.42	P	K
"	"	8.2	S "	4	11.35	126.15	P	K
"	"	8.3	e "	4	41.38	215.33	P	K
"	"	8.4	b "	4	27.58	124.73	P	K
"	35	8.4	f "	4	50.95	217.15	P	K
"	"	8.5	d "	4	12.73	124.83	P	K
"	"	8.6	δ Cancri	4	1.98	126.43	P	K
"	36	8.9	6.0 α Urs. Min.	4	32.72	127.72	R	K
"	"	9.9	7.5 "	4	19.98	125.57	R	K
"	37	9.0	9.0 "	4	3.33	125.58	R	K
"	"	9.0	7.0 "	4	24.03	125.48	R	K
"	"	9.0	9.5 "	4	~~2.23~~ 2.05	126.20	R	K
"	"	9.0	5.5 "	4	67.27	221.62	R	K
"	38	9.1	6.5 "	4	29.20	213.35	R	K
"	"	9.1	8.5 "	4	7.05	125.55	R	K
"	"	9.1	5.0 "	4	62.43	213.68	R	K
"	"	9.2	8.0 "	4	21.45	124.30	R	K

Sunday, Feb. 9. 1879.

"	39	6.2	Tupetus.	5	.888		P	J
"	"	6.8	"	5	.900		S	J
"	"	6.9	Star 6	5	.574		S	J
"	"	7.0	"	5	.830		P	J
"	40	7.0	"	5	1.088		P	J
"	"	7.0	"	5	.986		P	J
"	"	7.1	"	5	1.014		S	J
"	"	7.2	"	5	.892		S	J
"	41	8.0	6.0 α Urs. Min.	4	45.90		R	K
"	42	8.0	7.5 "	4	19.48		R	K

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3.34	
2.26	
3.53	
0.90	
1.67	
0.55	
3.28	
7.31	
1.34	
2.33	
6.18	Increased illumination.
1.95	
7.05	Stopped clock.
0.18	
1.56	Moved telescope to bring star to centre of field.
4.56	
0.26	
2.18	R. looked for (123); moonlight.
	Seeing 4, 5, 6.
	-Clouds.
9.74	Prism to left.
9.77	Prism left; a out of field on right.
8.79	" " a " " " " "
9.60	
0.18	Reading made by recorder { Prism above; a in field.
9.97	" " ; a out of field.
0.03	" " ; a in field.
9.75	" " ; a out of field.
0.72	P. previously looked at stars near pole; m > g.
2.39	

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Sunday, Feb. 9. 1879.

R 51	42	8.0	9.0	α Urs. Min.	4	~~19.48~~ 2.05 +1.80	125.85	R	K
"	"	8.1	7.0	"	4	26.80	123.90	R	K
"	43	8.2	9.5	"	4	1.65	126.00	R	K
"	"	8.2	5.5	"	4	65.55	223.95	R	K
"	"	8.2	6.5	"	4	36.88	127.48	R	K
"	"	8.3	8.5	"	4	6.70	125.35	R	K
"	44	8.3	5.0	"	4	68.00	220.35	R	K
"	"	8.3	8.0	"	4	17.23	126.38	R	K
"	"	9	R Andr. and o Ceti					P.S.	

Monday, Feb. 10. 1879.

"	45	6.5	Fapetus		5	.800		P	J
"	"	6.6	Star b.		5	.598		P	J
"	"	6.6	" b.		5	.656		P	J
"	46	7.5	δ Ceti		4	2.38	126.12	P	K
"	"	7.6	"		4	1.75	126.05	W	K

Tuesday, Feb. 11. 1879.

Wednesday, Feb. 12. 1879.

"	47	6.8	Fapetus		5	1.000		S	J
"	"	6.9	Star b.		5	.688		S	J
"	"	7.0	" b.		5	.846		W	J
"	"	7.2	Fapetus		5	.940		W	J
"	48	7.5	μ Androm.		4	1.88	125.88	W	K
"	"	8.0	d,	"	4	41.20	215.45	W	K
"	"		b,	"	4	61.63	218.77	W	K
"	"	8.1	c,	"	4	31.88	127.92	W	K
"	49	8.3	g'	"	4	12.88	126.12	W	K
"	"	8.3	h,	"	4	11.63	126.32	W	K

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7.23
~~7.51~~
1.73
7.70
0.20
1.11
4.67
0.16
2.64

Identification of regions.

9.52
8.88 a in field.
9.08 a out of field; focus poor.
6.96
7.58 Clouds came on.

Cloudy.

Seeing 7, 4, 3.
0.00 Prism above.
9.19 Prism above; a symmetrically placed.
9.64 Images as in last set; stars flickering.
9.87 Prism above.
7.43
0.91
0.28
1.39
3.26
3.48

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R51	49	8.5	g, n Androm.	4	19.12	125.82	W	K
"	"	8.6	f, "	4	31.88	126.93	W	K
"	50	8.8	n Androm.	4	2.65	125.45	W	K
"	"	8.9	"	4	2.30	125.70	S	K

Thursday, Feb. 13. 1879.

Friday, Feb. 14. 1879.

"	51	6.3	Iapetus	5	.874		P	J
"	"	6.4	"	5	.506		S	J
"	"	6.6	"	5	.692		S	J
"	"	6.6	"	5	.938		P	J
"	52	6.7	Star b	5	.696		S	J
"	"	6.8	" b	5	.822		P	J
"	"	6.8	" b	5	.628		P	J
"	"	6.9	" b	5	.400		S	J
"	53	6.9	" b	5	.440		S	J
"	"	7.0	" b	5	.682		W	J
"	"	7.1	" b	5	.658		W	J
"	"	7.2	Iapetus	5	.820		W	J
"	54	7.3	"	5	.876		W	J
"	"	7.5	f d Cecti.	4	~~2.65~~ 2.15	125.65	P	K
"	"	7.5	"	4	2.30	125.15	W	K
"	55	7.6	"	4	2.08	125.43	P	K
"	"	7.8	c, "	4	40.98	125.02	P	K
"	"	7.9	", "	4	33.27	123.52	W	K
"	"	8.0	n, "	4	15.80	125.10	P	K
"	56	8.7	n, "	4	23.52	126.73	P	K
"	"	8.7	", "	4	23.60	125.85	W	K
"	57	8.8	n, "	4	8.03	125.40	P	K

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2.42	
1.39	R too faint to measure.
6.68	Seeing improved during the series,
6.98	images sharper than at first.
	Clouds came on.
	Cloudy.
	Seeing 8, 5, 6.
9.72	Prism to left.
8.52	
9.20	Prism above.
9.86	
9.21	Prism above; a
9.57	placed symmetrically.
8.99	Prism to the left;
8.01	a out of field.
8.22	Prism to the left; images nearer, a in field.
9.17	Prism to the left; a out of field.
9.09	Prism above; a placed symmetrically.
9.57	Prism above.
9.71	Prism to the left.
6.67	
6.98	
7.16	Position of images made more symmetrical.
0.92	
1.30	
2.82	
1.99	
1.99	
4.28	

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Friday Feb. 14 1879.

R.51	57	8.9	m, δ Cœti	4	9.15	126.40	W	K
"	"	9.0	"	4	2.38	124.08	P	K
"	"	9.0	"	4	3.07	124.37	P	K
"	58	9.1	n, "	4	13.88	123.17	W	K
"	"	9.2	i	3	2.27		S	J
"	"	9.3	i	3	3.29		S	J
"	"	9.5	g	3	1.33		P	J
"	"	9.7	"	3	1.123		W	J
"	59	9.8	"	3	1.53		S	J
"	"	10.0	"	3	.273		W	J
"	"	10.0						
"	"	10.1	g	3	.32		P	J
"	"	10.1	"	3	.357		S	J

Saturday, Feb. 15. 1879.

"	60	6.5	Star 6.	5	.724		P	J
"	"	6.6	" 6	5	.488		S	J
"	"	6.7	Piscium	5	.520		S	J
"	"	6.8	"	5	.870		P	J
"	61	6.9	"	5	.852		S	J
"	"	6.9	"	5	1.054		P	J
"	"	8.0						
"	62	8.5	u Androm.	4	1.85	124.45	P	K
"	"	8.5	"	4	~~2.20~~ 1.98	123.85	P	K
"	"	9.0						
"	"	9.6	d	3	.68		S	K
"	63	9.7	e	3	.45		S	K
"	"	9.8	g	3	.317		P	K
"	"	9.9	"	3	.300		S	K

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3.98
6.87
6.36
3.10

Comparison star lost, and region too low to continue.

Brightest of a group.
Pole stars.

7.18

Chart of stars near pole seen by P. with naked eye.

7.53
7.76

Seeing 7, 6, 7.
} Prism to left; a in field.

9.30
8.44
~~9.70~~
~~8.58~~
8.58
~~9.70~~
~~4.23~~
9.65
0.11

Japetus follows Saturn 20°.
Prism to left in this & last set.
} Prism above.

Tried Photometer Q on nebula in Androm.

7.46
7.08

Identification of region of R Androm.
Stars near pole.

9.64
10.54
11.30
11.40

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Sunday, Feb. 16. 1879.

Monday Feb. 17. 1879.

Tuesday Feb. 18. 1879.

Wednesday Feb. 19 1879.

Thursday, Feb. 20. 1879.

Friday, Feb. 21. 1879.

Saturday, Feb. 22 1879.

Sunday, Feb. 23 1879.

R51	64	
"	"	
"	64	8.8
"	"	8.8
"	6.5	8.9
"	"	9.0
"	"	
"	"	
"	66	9.2
"	"	9.3
"	"	9.4
"	"	9.5

Mond

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Cloudy.

Cloudy.

Cloudy.

Cloudy.

Cloudy.

High wind; considered
prudent not to open dome.
Cloudy.

Seeing 6, 7, 6.
Experiments with Photometer Q.
Estimated positions of small stars near ζ Leonis.
Effect of position of
prism of Photometer I with
respect to telescope. A
out of field. Prism successively left, above, right, below.
Focus readings, to find best
position, and position used above.
Effect of place of prism. Prism below.
" " " " " " to right.
" " " " " " left
" " " " " " above.
Approximate settings for confirmation
of number of whole turns of
screw in previous sets. In
all the sets the recorder read the settings.

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Monday 24 Feb. 24. 1879.

R51	68	7.3	μ Androm.	4	1.73	126.52	P	K
"	~~68~~	7.4	h	4	12.03	126.23	P	K
"	"	7.5	g	4	19.73	128.17	P	K
"	"	7.6	f	4	28.78	125.67	P	K
"	69	7.8	μ Androm.	4	2.70	125.55	S	K
"	"	8.3	h	4	15.5	125.15	S	K
"	"	8.3	f	4	20.17	127.03	S	K
"	"	8.4	g	4	24.72	126.03	S	K
"	70	8.6	g'	4	15.45	126.00	P	K
"	"	8.6	g''	4	12.35	125.35	S	K
"	"	8.7	d	4	43.05	216.15	P	K
"	"	8.8	d	4	34.95	213.55	S	K
"	71	8.9	c	4	~~43.62~~ 53.62	218.23	P	K
"	"	8.9	d	4	44.98	223.02	S	K
"	"	9.1	μ Androm	4	1.78	126.47	P	K
"	"	9.1	"	4	2.28	126.68	S	K
"	72	9.7						
"	"	9.8						
"	"	9.9						
"	73	10.0						
"	"	10.1						
"	74	10.3						
"	"	10.5						
"	"	10.5						
"	"	10.6						

Tuesday, Feb. 25. 1879.

Wednesday Feb. 26. 1879.

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Seeing 7, 6, 6.

7.60
3.21
2.36
1.59
6.63

For constant.
Comparison stars for R Andromedae

2.86
2.31
1.89
2.87
3.35
0.83
1.21
0.80
0.75

For constant.
Comparison stars for R Andromedae; b not measurable, owing apparently to difference of atmospheric absorption at altitudes of μ & b.
In last set, star near edge of field at first setting; had to be moved before 2d set.

7.54
7.00

For constant.

Tests of Photometer I as on Feb. 23.
Focus readings.
A out of field. Prism above.
" " " " " to left.
" " " " " below.
" " " " " to right.
" " " " " right.
" " " " " below.
" " " " " to left.
" " " " " above.

Cloudy.

Cloudy.

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Thursday, Feb. 27. 1879.

R.51.	7587/6							
1	76	7.8	6.0		4	35.38	122.98	R K
"	76							
"	77	9.0						
"	"	9.1						
"	78	9.1						
"	"	9.2						
"	"	9.3						
"	"	9.4						
"	79	9.4						
"	"	9.5						
"	80	9.8						
"	"	9.8						
"	"	9.9						
"	"	10.0						
"	81	10.1						
"	"	10.2						

Friday, Feb 28. 1879.

"	82	
"	"	8.4
"	"	8.5
"	83	8.6
"	"	8.6
"	"	8.8
"	"	9.0
"	84	9.3
"	"	9.4
"	"	9.4
	"	9.5

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Seeing 6, 4, 5.

Positions of stars near μ Cassiopeiae,
Interrupted by clouds.

Positions of stars near μ Cassiop.
Tests of Photometer I, as on pp. 25, 27.
A out of field. Prism above.
" " " " " to left.
" " " " " below.
" " " " " to right.
A & B " " " " right.
{A out of field; B in field, placed symmetrically.} " below.
{A out of field; B in field, in line with others.} " to left.
A & B out of field. " above.
{A & B out of field. Prism above. Great care taken to get the whole of the reflected pencil.}
{A out of field; B in field, symmetrically placed} Prism above.
A & B out of field. " to left.
" " " " " below.
{A out of field; B in field, placed symmetrically.} " below.
A & B out of field; prism to right; reflected images somewhat the higher at first, brought to level of other after 1st or second setting.

Seeing 6, 5, 3.

Experiments with Photometer Q.
Tests of Photometer I, as on pp. 25, 27, 29.
A out of field. Prism to right.
" " " " " below.
" " " " " to left.
" " " " " above.
" " " " " to right.
A & B out of field. " " right.
A & B in field, both placed symmetrically. " " right.
{A in field, placed symmetrically B out of field.} " below.
A & B out of field. " below.
" " " " " to left.

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Friday, Feb. 28. 1879.

R51	85	9.6						

Saturday, March 1. 1879.

Sunday. March 2. 1879.

Monday. March 3 1879.

R51	86	7.1	6.0 , ∝ Ure. Min.	4	~~40.48~~ 39.12	~~120.42~~ 123.78	R	K
"	"		7.5 , "	4	12.88	125.68	R	K
"	"		4.0 , "	4	3.82	127.08	R	K
"	"		7.0 , "	4	22.98	125.08	R	K
"	87		9.5 , "	4	1.82	126.42	R	K
"	"		5.5 , "	4	58.00	218.70	R	K
"	"		6.5 , "	4	22.10	125.60	R	K
"	"	7.3	8.5 , "	4	6.75	126.15	R	K
"	88		5.0 , "	4	78.85	201.85	R	K
"	"		8.0 , "	4	12.48	126.02	R	K
"	"	7.6	5.0 , "	4	76.10	208.95	R	K
"	"		5.5 , "	4	~~58.90~~ 56.40	205.75	R	K
"	"		6.0 , "	4	37.78	209.78	R	K
"	"		6.5 , "	4	25.38	210.58	R	K
"	"		7.0 , "	4	17.42	~~122.08~~ 122.12	R	K
"	"	7.7	7.5 , "	4	11.60	~~148.75~~ 123.75	R	K
"	"		8.0 , "	4	8.98	124.42	R	K
"	"		8.5 , "	4	4.98	126.88	R	K
"	"		9.0 , "	4	2.45	126.80	R	K
"	"		9.5 , "	4	1.58	127.32	R	K
"	89	8.4						
"	"	8.5						
"	"	8.5						

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A & B out of field. Prism above.

Cloudy. Dome opened, but no observations obtained.
Cloudy

Seeing 6, 8, 8,

.94
3.26
5.88
2.04
7.49
.35
2.12
4.65
.04
3.33
.06
.34
1.06
1.84
2.62
3.48
4.04
5.31
6.84
7.80

For determination of estimates of magnitude.

Tests of Photometer I, as on Nos. 25, 27, 29.
A & B out of field. Prism above.
" " " " " to left.
A & B in field; A placed nearly symmetrically, B symmetrically. " below.

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Monday, March 3d 1879.

R51	90	8.6						
"	"	8.7						
"	"	8.8						
"	91 92	9.2						
"	"	9.2						
"	93	9.3						
"	"	9.3						
"	"	9.4						
"	94	9.6						
"	95	9.7						
"	"	9.7						
"	"	9.8						
"	"	9.9						

Tuesday, March 4. 1879

Wednesday, March 5. 1879.

"	96	6.5						
"	"	7.7	η Leonis, η	4	1.95	125.35	u	K
"	"	8.0	h	4	27.80	127.60	u	K
"	"	8.1	g	4	33.82	127.02	u	K
"	"	8.2	b	4	8.50	125.15	u	K
"	97	8.4	c	4	15.52	126.28	u	K
"	"	8.5	e	4	9.68	125.88	u	K
"	"	8.8	η Leonis, η	4	1.55	126.00	u	K
"	98	9.4						
"	"	9.5						
"	99	9.5						
"	99	9.6						
"	"	9.6						

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A out of field; B in field, placed symmetrically } Prism below.
A & B out of field. " to right.
A in field, placed symmetrically } " " right.
B out of field;

Tests of Photometer I for effect of focus.

Focus at reading 382.0
" " " 366.1
" " " 350.2
" " " 334.3
" " " 318.4
" " " 386.1
" " " 338.4
" " " 354.3
" " " 322.5
" " " 370.2

Cloudy.

Seeing 6, 5, 5.

Identified region of R Leonis.

For constant.

7.3
7.34
1.66
1.27
4.15
2.86
3.87
7.84

Comparison stars for R Leonis. The remaining comparison stars not identified; moon close to the region.

For constant.

Tests of Photometer I for effect of focus.

Focus at reading 374.7
" " " 390.6
" " " 342.9
" " " 358.8
" " " 327.0

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Wednesday, March 5th 1879.

R51	100	9.7					
"	"	9.8					
"	"	9.9					
"	"	10.0					
"	101	10.0					
"	"	10.1					
"	"	10.5	Star N, ζ Cassiopeiae	5	1.406	S	4
"	102	10.5	" B, — " —	5	1.108	S	4
"	"	10.7	" B, — " —	5	1.076	W	4
"	"	10.7	" A, — " —	5	1.480	W	4

Thursday, March 6th 1879.

Friday, March 7th 1879.

R51	103	6.3	ζ Can. Maj.			M
"	104	7.6		3		Q
"	"			3		Q
"	"	7.7		3		Q
"	"			3		Q
"	105			3		Q
"	"			3		Q
"	"			3		Q
"	"					
"	106	8.4				9
"	"	8.4				9
"	107	8.5				9
"	"	8.5				9
"	"	8.6				9
"	"	8.7				9
"	108	8.8	ζ Leonis			9

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Focus determined by α Leonis.
Focus at reading 361.3
" " " 313.6
" " " 345.4
" " " 377.2
" " " 329.5

Stars A and B near θ Cassiopeiae, measured at request of D. Waldo. Prism to right.
A p 133° 20′ s 149.″8
B p 255° 0′ s 281.″3

Cloudy.

Seeing 4, 5, 7.
B not seen. Experiments with Photometer K.

Experiments with Photometer Q on nebula in Orion. Comparison stars ε Orionis, etc.

Tests of photometer, as on pp. 25–33
A & B out of field. Prism to right.
A out of field, B symmetrically placed. Prism below.
A symmetrically placed, B not. " below.
A & B out of field. " to left.
A symmetrically placed, B not. " " left.
A & B out of field. " above.
Focus readings.

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Friday, March 7. 1879.

R.51.	108	8.9							J
"	"	9.0							J
"	109	9.0							J
"	"	9.1							J
"	"	9.1							J
"	110	9.7	β Persei	A	4	1.18	124.88	S	K
"	"	9.7	"	A	4	1.75	124.80	P S	K
"	"	9.8	β Persei	B ?	4	33.68	212.98	S	K
"	"	9.8	"	B ?	4	33.35	121.35	S	K
"	111	9.8	"	B ?	4	40.62	214.78	P	K
"	"	9.9	"	B ?	4	~~40.68~~ 50.68	218.72	P	K
"	"	9.9	β Persei	A	4	1.38	123.82	S	K
"	"	10.0	"		4	1.72	123.58	P	K

Saturday, March 8. 1879.

R.51.	112	6.7	β Persei	C	4	18.78	214.42	P	K
"	"	6.7	"	C	4	18.18	123.82	P	K
"	"	6.8	"	C	4	21.30	122.25	S	K
"	"	6.8	"	C	4	20.00	121.25	S	K
"	113	6.9	"	A	4	1.58	124.18	P	K
"	"	6.9	"	A	4	1.55	124.00	S	K
"	"	7.0	"	C	4	18.25	125.40	S	K
"	"	7.1	"	C	4	~~17.40~~ 14.90	124.80	S	K
"	114	7.2	"	B	4	20.58	123.62	P	K
"	"	7.2	"	B	4	22.35	123.25	P	K
"	"	7.3	"	A	4	1.42	124.38	S	K
"	"	7.4	"	A	4	1.48	124.38	P	K
"	115	7.4	"	B	4	32.22	126.32	P	K
"	"	7.4	"	B	4	3.09	126.25	P	K
"	"	7.5	"	B	4	32.78	127.82	S	K

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1879phae.proj..4770

Tests of photometer for effect of focus.
Setting 89.7 (1 cm. too long),
" 42.0 (2 cms. too short).
" 73.8 (correct focus).
" 105.6 (2 cms. too long).
" 57.9 (1 cm. too short).

~~8.44~~
~~8.36~~
7.58
1.28
1.30
0.93
0.93
8.09
7.60

For maximum light of β Persei. Somewhat doubtful which star was used for comparisons; see note March 8.

Seeing 5, 5, 6.
For variation of β Persei.
Readings for constant taken by S. partly with right eye and partly with left eye.
Two stars used for comparison with β Persei, DM. +40° 671 and 676; the second used to 7.1 inclusive, the first afterwards; called B and C, while A means β Persei itself.
Focus altered after first four sets.

2.46
2.53
2.20
2.33
2.30
7.80
7.83
2.52
2.62
2.~~27~~ 29
2.10
8.03
7.94
1.37
6.35
1.33

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Saturday, March. 8. 1879.

R51	115	7.5	β Persei	B	4	28.02	125.08	S	K
"	116	7.6	"	A	4	1.22	124.08	S	K
"	"	7.6	"	A	4	1.52	124.02	P	K
"	"	7.6	"	B	4	27.10	124.85	P	K
"	"	7.7	"	B	4	25.08	124.92	P	K
"	117	7.8	"	B	4	42.00	210.00	S	K
"	"	7.9	"	B	4	35.85	126.70	S	K
"	"	8.0	"	A	4	2.35	123.65	S	K
"	"	8.0	"	A	4	2.00	123.75	P	K
"	118	8.1	"	B	4	35.20	211.20	P	K
"	"	8.1	"	B	4	38.45	216.05	P	K
"	"	8.1	"	A	4	1.60	123.40	P	K
"	"	8.2	"	B	4	36.52	213.28	P	K
"	119	8.2	"	B	4	31.80	124.90	P	K
"	"	8.3	"	B	4	37.68	210.62	S	K
"	"	8.3	"	B	4	30.58	123.62	S	K
"	"	8.4	"	A	4	1.82	123.67	S	K
"	120	8.4	"	A	4	20.00	123.50	P	K
"	"	8.5	"	B	4	36.85	125.90	P	K
"	"	8.5	"	B	4	45.32	213.88	P	K
"	"	8.6	"	B	4	32.52	214.62	S	K
"	121	8.6	"	B	4	31.50	125.45	S	K
"	"	8.6	"	A	4	1.78	123.17	S	K
"	"	8.7	"	A	4	1.92	123.08	P	K
"	"	8.7	"	B	4	34.22	212.82	P	K
"	122	8.7	"	B	4	40.65	216.70	P	K
"	"	8.8	"	B	4	41.82	212.62	S	K
"	"	8.8	"	B	4	32.08	120.72	S	K
"	"	8.9	"	A	4	1.62	123.32	S	K

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1.64
8.35
7.87
1.71
1.86 — After this set, moved shutters & turned prism.
0.87 Prism star looks brighter than before.
1.16
6.93
7.28
1.20
1.03
7.77
1.13
1.39
1.07 Left eye.
1.47 Right eye.
7.48
2.33
1.11
0.74
1.35 Left eye.
1.41 Right eye.
7.54
7.37
1.25
0.93
0.88 Left eye.
1.37 Right eye.
7.74

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Saturday, March 8. 1879.

R51	123	8.9	β Persei	A	4	2.22	123.42	P	K
"	"	8.9	"	B	4	37.28	215.02	P	K
"	"	9.0	"	B	4	43.85	215.50	P	K
"	"	9.0	"	B	4	33.68	122.18	S	K
"	124	9.1	"	B	4	43.70	211.00	S	K
"	"	9.1	"	A	4	1.88	122.62	S	K
"	"	9.2	"	A	4	2.12	122.78	P	K
"	"	9.2	"	B	4	~~56.42~~ 53.92	213.08	P	K
"	125	9.3	"	B	4	54.60	216.55	P	K
"	"	9.3	"	B	4	43.30	210.60	S	K
"	"	9.4	"	B	4	39.32	209.48	S	K
"	"	9.4	"	A	4	1.85	122.45	S	K
"	126	9.5	"	A	4	1.90	122.55	P	K
"	126	9.5	"	B	4	50.75	210.40	P	K
"	"	9.5	"	B	4	46.72	215.92	P	K
"	"	9.6	"	B	4	35.18	216.02	S	K
"	127	9.6	"	B	4	42.08	212.42	S	K
"	"	9.7	"	A	4	1.82	122.32	S	K
"	"	9.7	"	A	4	1.98	122.~~48~~ 22	P	K
"	"	9.8	"	B	4	68.37	206.52	P	K
"	128	9.8	"	B	4	59.02	206.87	P	K
"	"	9.8	"	B	4	44.08	206.62	S	K
"	"	9.9	"	B	4	41.92	212.52	S	K
"	"	9.9	"	A	4	1.85	121.85	S	K
"	129	10.0	"	A	4	1.68	121.72	P	K

Sunday, March 9. 1879.

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1879phae.proj..4770

1.09
.80
1.28 Right eye.
.80 Left eye.
7.42
~~.40~~
7.15
.40
.44
.82
~~.94~~ Right eye.
.99 Left eye.
7.45
7.40
.56
.69
1.20 Left eye.
.87 Right eye.
7.48
~~.46~~
7.31
.16
.35
.79 Right eye.
.88 Left eye.
7.45
7.67

Transits for places of stars B and C.

Cloudy.

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Monday, March 10 1879.

R51	130	7.6
"	131	7.7
"	131	7.8
"	"	7.8
"	"	7.9
"	132	8.2
"	133	8.3
"	"	8.3
"	"	8.4
"	"	8.5
"	134	8.5
"	"	8.9
"	"	9.0
"	135	9.1
"	"	9.2
"	"	9.3
"	"	9.4
"	136	
"		

Tuesday, March 11, 1879.

"	137	7.4	3	4.73	P	Q
"	"	7.5	3	11.27	P	Q
"	138	7.5	3	13.53	P	Q
"	"	7.6	3	1.40	P	Q
"	"	7.6	3	18.73	P	Q
"	"	7.6	3	20.93	P	Q
"	"	7.6	3	25.23	P	Q
"	139	7.7	3	29.33	P	Q
"	"	8.9	3	9.70	U	Q
"	"	8.9	3	4.10	U	Q
"	140	8.9	3	11.90	U	Q

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1879phae.proj..4770

Tests of Photometer I for effect of focus.
Setting 66.8 (1 cm. too long).
" 19.1 (2 cms. too short).
" 50.9 (correct).
" 35.0 (1 cm. too short).
" 82.7 (2 cms. too long).
Prism to right. A & B out of field.
" below. A & B in field, symmetrical.
" " . A & B out of field.
" to left. A & B " " " .
" " " . A & B in field, symmetrical.
" above. A & B out of field.
6 Cass. out of field.

Identification of stars near R Leonis.

Seeing 8, 7, 7.

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Tuesday, March 11, 1879.

R51	140	8.0		3	.80		u	Q
"	"	8.0		3	17.07		u	Q
"	"	8.0		3	20.87		u	Q
"	"	8.1		3	26.80		u	Q
"	141	8.1		3	28.33		u	Q
"	"	8.4	Star A, α Cassiop.	5	1,758		S	J
"	"	8.5	Star B, "	5	1.562		S	J
"	"	8.6						
"	142	8.7						
"	"							
"	"	9.3	S Cancri, S Cancri	4	9.90	126.75	S	K
"	143	9.4	" "	4	10.22	123.32	S	K
"	"	9.5	DM. +19° 2089, "	4	36.75	212.65	S	K
"	"	9.6	" "	4	27.85	123.90	u	K
"	"	9.7	S Cancri, "	4	12.98	121.88	u	K
"	144	9.7	" "	4	12.35	122.10	u	K
"	"	9.8	" "	4	11.68	122.42	P	K
"	"	9.8	" "	4	12.68	121.92	P	K
"	"	9.8	DM. +19° 2089, "	4	23.95	121.10	P	K

Wednesday, March 12, 1879.

"	145	8.9	S Cancri, S Cancri	4	17.08	122.28	u	K
"	"	9.1	" , "	4	16.98	121.42	u	K
"	"	9.3	" , "	4	27.65	124.25	u	K
"	146	9.3	" , "	4	35.20	211.10	S	K
"	"	9.7	" , "	4	18.65	123.85	S	K
"	"	9.7	" , "	4	16.85	120.85	S	K
"	147	9.8	" , "	4	20.00	121.60	u	K
"	"	9.9	" , "	4	24.70	120.85	u	K
"	"	10.0	" , "	4	27.65	120.55	u	K

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θ Cass. out of field. Prism to right.

Places of stars near θ Cass.
For full light of 1 Cancri.

3.82
3.75
1.12
1.65
3.24
3.35
3.46
3.28
1.96

Seeing 5, 5, 6.
All these observations often interrupted by clouds.

2.66
2.67
1.67
1.20

Reversed telescope after this set.

2.48
2.69
2.33
1.90
1.67

} Image furthest from prism used in these sets, except in the last two readings.

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Wednesday, March 12, 1879.

R51	147	10.1	S Cancri, S Cancri	4	29.82	211.88	S	K
"	148	10.3	" , "	4	~~30.70~~ 30.45	210.45	S	K
"	"	10.4	" , "	4	32.55	210.10	S	K

Thursday, March 13, 1879.

"	149							
"	"	9.6	ζ, ζ Leonis	4	1.80	122.15	S	K
"	"	9.8	h, "	4	29.90	212.20	S	K
"	"	9.9	g, "	4	41.25	211.00	S	K
"	150	9.9	b, "	4	~~8.98~~ 8.98	124.32	S	K
"	"	9.9	c, "	4	11.58	121.92	S	K
"	"	10.0	21, "	4	10.30	122.70	S	K
"	"	10.1	ξ, "	4	2.65	123.00	S	K
"	151	10.4	18, "	4	6.00	121.10	S	K
"	"	10.5	ν, "	4	~~3.58~~ 3.32	122.38	S	K
"	"	10.7	31, "	4	3.50	122.20	S	K
"	"	10.8	η, "	4	1.65	123.25	S	K

Friday March 14, 1879.

Saturday March 15, 1879.

"	152	7.8						
"	"							
"	"							
"	"	9.5		3	6.27		P	Q
"	"	9.5		3	5.70		P	Q
"	153	9.6		3	51.07		P	Q
"	"	9.8		3	6.10		S	Q
"	"	9.9		3	[3] 92.93		S	Q
"	"	9.9		3	[4] 05.53		S	Q

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1.52
1.48
1.35

Seeing 5, 6, 4.
Companion of Sirius suspected with Phot. M.

7.51
1.51
0.90
4.04
3.49
3.74
6.68
4.90
6.02
6.07
7.75

Cloudy.
Seeing 5, 7, 6.
Photometer Padjusted.
Mr. Chart of stars near Pole
compared with sky.
Experiments.

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Sunday, March 16. 1879.

Monday, March 17. 1879.

Tuesday, March 18. 1879.

R51	154	7.3	μ Cass. B, α Cass.	5	2.~~320~~ 386		P	~~9~~
"	"	7.3	μ " B, "	5	2.054		u	
"	"	7.7	θ " D, "	5	1.010		P	
"	155	7.7	θ " B, "	5	2.822		P	
"	"	7.8	θ " B, "	5	3.168		u	
"	"	7.8	θ " D, "	5	.804		u	
"	156	8.0	g, α Urs. Min.	3	.327		P	
"	"	8.1	g, "	3	.320		u	
"	"	8.3	g, "	3	.310		S	
"	157							
"	"							
"	"							
"	158							
"	"							

Wednesday, March 19. 1879.

"	160							
"	"	8.4	ζ, ζ Leonis	4	1.28	122.32	u	K
"	"	8.5	" "	4	1.60	122.05	S	K
"	"	8.8	h, "	4	26.22	121.78	u	K
"	"	8.8	g, "	4	~~35.95~~ 35.70	211.85	u	K
"	161	8.9	" , "	4	32.88	208.62	S	K
"	"	8.9	h, "	4	28.32	125.48	S	K
"	"	9.0	b, "	4	7.98	122.12	S	K
"	"	9.0	" , "	4	6.48	122.48	u	K

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Cloudy.

Cloudy.

B from A 187° 2'

D between B and A.
A behind a bar.

Limit of visibility 0.27
" " .29
" " .25

Estimated positions
of stars near pole.

Looked at Uranus
and ζ Leonis.

Asteroid Observations by R.

8.26
7.77
1.77
1.16
1.33
1.62
4.29
4.74

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Wednesday, March 19. 1879.

RS1	162	9.1	c, η Leonis	4	13.35	119.90	W	K
"	"	9.1	" , "	4	14.65	122.30	S	K
"	"	9.2	e , "	4	10.92	122.18	S	K
"	"	9.3	" , "	4	6.62	121.62	W	K
"	163	9.4	r , "	4	3.42	122.08	S	K
"	"	9.4	" , "	4	3.10	122.50	W	K
"	"	9.6	A , "	4	2.68	122.52	W	K
"	"	9.6	" , "	4	2.88	122.22	S	K
"	164	9.8	ξ , "	4	4.38	123.32	W	K
"	"	9.8	" , "	4	3.82	123.48	S	K
"	"	9.9	18 , "	4	5.00	121.90	W	K
"	"	10.0	" , "	4	4.92	121.18	S	K
"	165	10.1	η , "	4	1.65	121.85	W	K
"	"	10.1	" , "	4	1.50	121.55	S	K

Thursday, March 20. 1879.

Friday, March 21. 1879.

"	168	8.6	η. η Leonis	4	1.70	122.20	P	K
"	"	8.7	b , "	4	8.02	122.48	P	K
"	"	8.7	h , "	4	31.72	123.02	P	K
"	"	8.8	g , "	4	34.30	212.35	P	K
"	169	8.8	c , "	4	20.82	122.42	P	K
"	"	9.0	e , "	4	8.98	121.12	P	K
"	"	9.1	r , "	4	~~5.82~~ 6.02	122.32	P	K
"	"	9.3	A , "	4	5.25	121.30	P	K
"	170	9.4	ξ , "	4	9.28	123.42	P	K
"	"	9.5	a , "	4	10.55	122.50	P	K
"	"	9.6	η , "	4	2.98	123.72	P	K

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1879phae.proj..4770

3.18
2.99
3.61
4.62
6.12
6.34
6.65
6.49
5.59
5.88
5.30
5.33
7.75
7.91

Cloudy.

7.64
4.27
1.40
1.25
2.25
4.04
6.06
5.19
3.96
3.69
6.42

At the close of this series, the object-glass was found to be somewhat dewed.

(7) 18

Stars not previously found in region of R Leonis observed with Mer. Circle.

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S.

Saturday, March 22. 1879.

Sunday, March 23, 1879

Monday, March 24, 1879

Tuesday, March 25, 1879

Wednesday, March. 26, 1879.

K.51.	h.172 7.2	2 Urs. Min., Moon	R
"	7.9	54 Leonis	M
"		"	M
"	8.3	"	M
"	8.7	"	M
"	8.8	"	M
"	8.9	"	M
"	9.3	"	M
"	9.4	"	M
"	9.6	"	M
"	9.7	"	M

Thursday, March. 27, 1879.

Friday, March. 28, 1879

Saturday, March. 29, 1879.

Sunday, March 30, 1879.

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1879phae..proj...4770

Cloudy.

Cloudy

Cloudy

Cloudy

Experiment, hindered by haze.

Cloudy

Cloudy

Cloudy

Cloudy

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Sunday, March, 30, 1879.

R.S. Planetary nebula in Hydra Q

Monday, March 31, 1879.

Tuesday, April 1, 1879.

56 Aurigae M

Wednesday, April 2, 1879.

R 51	182	9.3	β Persei	4	1.95	121.75	P	K	7.
"	"	9.3	"	4	2.08	121.78	P	K	7.
"	"	9.4	DM 40°671, β Persei	4	60.32	210.~~98~~ 48	P	K	.
"	"	9.4	" , "	4	49.38	211.18	P	K	.6

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1979phae.proj..4770

Adjusted Photometer P.
Cloudy.

Adjusted Photometer P.

7.34
7.17
.31
.60

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1879phae.proj..4770

Wednesday, April. 2, 1879

R.51	183	9.4	DM. 40°,676, β Persei	4	38.55	214.75	P	K
"		9.5	" , "	4	40.02	215.12	P	K
"		9.5	β Persei	4	2.35	121.55	P	K
"		9.5	"	4	2.80	121.95	P	K
	184							

Thursday, April 3, 1879.

Friday, April 4, 1879.

Saturday, April 5, 1879.

Sunday, April 6, 1879.

R.51	185							
"	186	8.3	α Urs. Min.	4	1.72	122.38	P	K
"	"	8.6	"	4	1.38	122.22	P	K
"	"	8.6	DM. 88°4,	4	14.58	122.22	P	K
"	187	8.7	DM. 88°9,	4	34.50	209.10	P	K
"	"	8.8	DM. 89°3,	4	51.92	214.62	P	K
"	"	8.9	δ Urs. Min.	4	6.12	122.22	P	K
"	"	9.1	Star taken for 51 Cephei	4	4.68	122.02	P	K
"	188	9.2	"	4	4.75	122.05	P	K
"	"	9.5	λ Urs. Min.	4	14.02	122.12	P	K
"	"	9.6	51 Cephei	4	6.62	121.92	P	K
"	189	9.7	α Urs. Min.	4	2.58	120.92	P	K
"	"	9.7	"	4	1.55	120.75	P	K

Monday, April 7, 1879

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1879phae.proj..4770

1.03
.96
1.94
1.56

Measured hole R1.
Plate broke through R3.

Cloudy

Cloudy

Cloudy

Adjusted Photometer P.

7.58
8.09
3.00
1.23
.52
4.86
5.44
5.41
3.07
4.69
6.73
7.84

Eye-piece moved after first set; its position in second set 2.34 cms.

Eye-piece thought to have slipped.
" found at 2.25 cms.; result at 2.34 cms. Wrong star.

D.M. stars nearest pole too faint for Photometer K.
Eye-piece found at 1.28 cms.
" reset to 2.34 cms.
Object of comparison 2 Hrs. Min. throughout.
Cloudy.

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1879phae.proj..4770

Tuesday, April 8, 1879.

R 51	190	7.4	η, η Leonis	4	1.58	127.12	P	K
"	"	7.5	", "	4	1.38	126.92	u	K
"	"	7.5	g, "	4	47.65	214.20	P	K
"	"	7.6	h, "	4	39.00	127.30	P	K
"	191	7.6	b, "	4	8.92	127.18	P	K
"	"	7.7	c, "	4	15.42	124.62	P	K
"	"	7.7	21 Leonis	4	13.22	127.72	P	K
"	"	7.8	d	4	~~13.30~~ 13.28	127.22	P	K
"	192	7.8	" , "	4	11.80	125.80	u	K
"	"	7.9	f , "	4	20.38	127.02	P	K
"	"	7.9	" , "	4	19.75	126.05	u	K
"	"	8.0	k , "	4	24.60	126.05	P	K
"	193	8.0	" , "	4	~~21.42~~ 21.62	125.38	u	K
"	"	8.1	i , "	4	10.85	126.80	P	K
"	"	8.2	" , "	4	8.62	126.62	u	K
"	194	8.3	A , "	4	2.88	126.17	P	K
"	"	8.4	" , "	4	1.88	126.22	u	K
"	"	8.5	v , "	4	4.88	125.98	P	K
"	"	8.5	" , "	4	4.22	125.78	u	K
"	195	8.6	ξ , "	4	3.78	126.52	P	K
"	"	8.6	" , "	4	2.82	126.32	u	K
"	"	8.8	a , "	4	5.45	127.10	P	K
"	"	8.8	" , "	4	4.28	126.72	u	K
"	196	8.9	η , η Leonis	4	2.48	126.62	P	K
"	"	8.9	" , "	4	1.88	126.58	u	K
"	197	9.2	α Ursæ Minis.	4	1.52	126.18	P	K
"	"	9.3	Dm. 88° 4 , α Ursæ Min.	4	9.85	126.25	P	K
"	"	9.3	Dm 88° 9 "	4	25.90	127.95	P	K
"	"	9.4	Dm 89° 3 "	4	47.85	217.05	P	K

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1879phae.proj..4770

7.80
8.09
.66
1.01
4.05
2.88
3.20
3.19
6.45
2.29
23.6
1.90
2.17
3.63
4.12
6.49
7.42
5.35
5.67
5.40
6.54
5.11
5.64
6.82
7.42
7.88
3.83
1.80
.65

Eye-piece 2.05 cms.

Eye-piece found at 2.02 cms;
reset at 2.05 cms.

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1879phae.proj..4770

Tuesday, April 8, 1879

R51	198	9.5	δ Ursæ Min, α Ursæ Min	4	4.98	125.92	P	K	5.
"	"	9.6	λ Ursæ Min, "	4	17.50	126.25	P	K	2.
"	"	9.8	51 Cephei, "	4	5.80	125.70	P	K	4.
"	"	9.9	α Ursæ Min, α Ursæ Min.	4	1.90	126.30	P	K	7.

Wednesday, April 9 1879.

Thursday, April 10, 1879.

Friday, April 11, 1879.

Saturday, April 12, 1879.

R51	199	8.6	η Leonis.	4	1.42	126.28	S	K	8.
"	"	8.9	A	4	3.60	125.90	S	K	6.
"	"	9.1	V	4	5.60	126.30	S	K	5.
"	200	9.6	Star taken for W.937	4	14.95	127.15	S	K	2.
"	"	10.0	21	4	9.68	123.78	S	K	3.
"	"	10.1	937	4	7.25	124.90	S	K	4.
"	201	10.9	Star taken for W.914	4					
"	"	11.0	903	4	19.38	126.68	S	K	2.
"	"	11.1	896	4	16.38	124.52	S	K	2.
"	"	11.3	914	4	35.12	124.02	S	K	1.
"	202	11.4	η Leonis	4	2.05	124.80	S	K	7.

Sunday, April 13, 1879.

Monday April 14, 1879.

"	203	9.1	δ, δ Virginis	4	1.42	124.82	W	K	8.
"	"	9.3	f, "	4	4.70	124.50	W	K	5.

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5.29
2.61
4.48
7.40

Eye-piece found at 2.04 cms.

Meeting of Am. Academy.

Cloudy. Illumination of East Equatorial improved by G.B. Clark.
Cloudy.

8.03
6.01
5.05
2.94
3.87
4.52

Comparison stars for R Leonis.

2.40
2.75
1.37
7.23

Cloudy.

Seeing 8, —, —,

8.03
5.43

Comparison stars for R Virginis.

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Monday, April 14. 1879.

R.51.	204	9.4	K,	4	7.00	124.50	W	K	
"	"	9.5	i,	4	10.48	124.42	W	K	
"	"	9.5	e,	4	6.15	123.65	W	K	
"	"	9.7	h,	4	20.55	124.60	W	K	
"	205	9.7	w,	4	~~51.65~~ 55.65	191.55	W	K	
"	"	9.8	g,	4	20.85	126.05	W	K	
"	"	9.8	m,	4	42.40	~~212.38~~ 214.85	W	K	
"	"	9.9	a,	4	11.70	125.65	W	K	
"	206	9.9	d,	4	3.30	126.35	W	K	
"	"	10.0	c,	4	16.55	124.10	W	K	
"	"	10.0	b,	4	11.48	123.22	W	K	
"	"	10.1	δ, δ Virginis	4	1.80	125.10	W	K	

Tuesday, April 15, 1879.

Wednesday, April 16, 1879.

"	207	8.0	ζ, ζ Urs. Min.	4	1.68	126.48	W	K	
"	"	8.2	51 Cephei, "	4	8.75	125.25	W	K	
"	"	8.3	" " , "	4	7.25	124.70	S	K	
"	"	8.4	α, "	4	1.22	125.28	S	K	

Thursday, April 17, 1879

Friday, April 18, 1879.

Saturday, April 19, 1879.

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4.57
3.70
4.90
2.27
.42
2.24
.86
3.47
6.20
2.73
3.51
7.51

Cloudy.

7.66
4.08
4.50
8.36

Observations interrupted by clouds.

Cloudy.

Cloudy.

Cloudy.

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Sunday, April 20, 1879.

K.51.	209							
"	"		Jupiter I	8	24.51	153.99	S	76
"	"		Jupiter III, I	1		135.0	S	76
"	"		" III, I	1		131.7	S	76
"	"		" III, I	1		193.1	S	76
"	"		" III, I	1		113.3	S	76
"	"		" III, I	1		196.8	S	76
"	"		" III, I	1		105.5	S	76
"	"		" III, I	1		200.8	S	76
"	"		" III, I	4	44,15	155.50	S	76
"	210		" III, I	4	45.30	156.10	S	76

Monday, April 21, 1879.

"	211							
"	212	9.2	Neb. G.C. 1861, ε Leonis	3	15.8		P	Q
"	"	9.2	" "	3	30.3		P	Q
"	"	9.3	Star a	3	398.1		P	Q
"	213	9.3	" a, ε Leonis	3	294.0		P	Q
"	"	9.3	" a, "	3	336.8		P	Q
"	"	9.4	Neb. G.C. 1861, "	3	11.7		U	Q
"	"	9.5	" "	3	27.9		U	Q
"	214	9.5	Star a	3	411.9		U	Q
"	"	9.6	" a, ε Leonis	3	269.4		U	Q
"	"	9.6	" a, "	3	340.0		U	Q
"	"	9.7	" a	3	399.1		S	Q
"	215	9.7	Neb. G.C. 1861, ε Leonis	3	13.2		S	Q
"	"	9.8	" "	3	26.2		S	Q
"	"	9.8	Star a, "	3	254.3		S	Q
"	"	9.8	" a, "	3	336.1		S	Q

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Seeing 4, 4, 2.

Limit of visibility.
Reappearance
of Jupiter III.

Adjustment of Photometer P.
Central part of nebula.
Outer " " " .
Focus of large telescope. a f. neb. 10s, 6's.
ε Leonis = outer part of nebula.
" = central " " " .
Central part " " .
Outer " " " .
Focus of large telescope.
ε Leonis = outer part of nebula.
" = central " " " .
Focus of large telesope.
Central part of nebula.
Outer " " " .
ε Leonis = outer part " "
" = central " " " .

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Tuesday, April 22, 1879.

R.51	216						
R.52	1	9.1	Star a , & Leonis	3	362.7	S	Q
"	"	9.2	Neb. G.C. 1861, "	3	13.2	S	Q
"	2	9.2	" , "	3	22.5	S	Q
"	2	9.2	Star a , "	3	244.0	S	Q
"	2	9.3	" a , "	3	312.5	S	Q
"	2	9.4	" b , "	3	336.3	S	Q
"	3	9.4	" b , "	3	318.5	S	Q
"	"	9.5	" a	3	372.0	u	Q
"	"	9.6	Neb. G.C. 1861, & Leonis	3	11.0	u	Q
"	"	9.6	" , "	3	27.0	u	Q
"	4	9.6	Star a , "	3	325.0	u	Q
"	"	9.7	" a , "	3	246.3	u	Q
"	"	9.8	" b , "	3	308.8	u	Q
"	"	9.8	" b , "	3	367.4	u	Q
"	5	10.1	" a , "	3	3.913	u	g
"	"	10.1	" b , "	3	1.543	u	g
"	"	10.2	" b , "	3	1.823	S	g
"	"	10.2	" a , "	3		S	g
						S	

Wednesday, April 23, 1879.

"	6	8.6	Star a , & Leonis	3	384.3	S	Q
"	"	8.8	Neb. G.C. 1861, "	3	11.9	S	Q
"	"	8.9	" , "	3	28.4	S	Q
"	"	9.0	a , "	3	271.2	S	Q
"	7	9.1	b , "	3	247.2	S	Q
"	"	9.1	b , "	3	353.0	S	Q
"	"	9.2	a , "	3	335.5	S	Q
"	"	9.3	a .	3	393.6	P	Q

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Value in cms. of divisions of focus pinion.

Focus. Star a follows nebula G.C. 1861 10^s, 6's. of nebula

Places of a and b only

approximate.

E Lewis = outer part of nebula

= central " " "

(Order reversed in next two sets).

Star b precedes nebula G.C. 1861 $22^s.5$, 4' n. of nebula.

In same field with nebula, & has

a faint companion p.

Focus.

Central part of nebula.

Part of " nebula apparently above centre,

E Lewis = central part of nebula

E Lewis = outer " " "

" = " " " "

" = central " " "

Prism above

" "

" "

Reflected image too faint. " "

Seeing 7, 7, 7.

Focus.

Central part of nebula.

Outer " " "

E Lewis = outer part "

" = " " "

" = central " "

" = " " "

Focus.

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Wednesday, April 23, 1879.

R 52	8	9.3	Aeb. G.C. 1861, & Leonis	3	12.9		P	Q
"	"	9.4	" , "	3	33.7		P	Q
"	"	9.4	Star a , "	3	336.5		P	Q
"	"	9.4	" a , "	3	270.2		P	Q
"	9	9.5	" b , "	3	343.2		P	Q
"	"	9.5	" b , "	3	362.9		P	Q
"	"	10.0	" b , "	3	1.38		S	J
"	"	10.0	" b , "	3	2.06		P	J
"	10	10.0	" a , "	3	4.34		P	J
"	11	Thursday, April 24, 1879.						

Friday, April 25, to Sunday, April 27, 1879, inclusive.

"	12	Monday, April 28, 1879.						
		Tuesday, April 29, 1879.						
"	13	Wednesday, April 30, 1879.						
"	"	8.7	α Ursæ Min; α Ursæ Min.	4	1.78	125.38	S	K
		Thursday, May 1, 1879.						
"	14							
"	"	8.7	α Ursæ Min; α Ursæ Min.	4	1.40	125.10	S	K
"	"	8.9	" ; "	4	1.80	125.10	W	K
"	15	9.0	DM 88°.4 ; "	4	14.38	126.38	W	K
"	"	9.1	" ; "	4	11.00	125.00	S	K
"	"	9.2	88°.9 ; "	4	20.10	125.75	S	K
"	"	9.3	" ; "	4	21.10	125.90	W	K

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Central part of nebula
Outer " " "
ε Leonis = central part "
" = outer " "
" = " " "
" = central " "
Prism to left-,
" " "
" " "

Observations attempted, stopped by clouds.

Cloudy.

Aperture of West Equatorial and reduction in magnitudes for caps of E. Equat.
Cloudy, as yesterday.

Observations attempted, stopped by clouds.

7.54

Focussing pinion 401.5. H. observes with eye-piece pushed in as far as possible; S. with eye-piece drawn out 0.6 cms.

8.06
7.51
3.03
3.60
2.32 " " " "
2.22 " "

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Thursday, May 1, 1879.

52	16	9.5	δ Urs. Min.; α Urs. Min.	H	10.60	124.45	S	K
"	"	9.6	" ; "	4	15.72	124.02	W	K
"	"	9.7	51 Cephei ; "	4	7.05	125.40	W	K
"	"	9.8	" ; "	4	7.18	124.98	S	K
"	17	10.0	δ Urs. Min; "	4	7.75	124.28	W	K
"	"	10.1	" ; "	4	5.68	123.18	S	K
"	"	10.2	ζ Urs. Min.; "	4	14.02	125.02	S	K
"	"	10.3	" ; "	4	11.02	123.78	W	K
"	18	10.4	α Urs. Min.; "	4	2.78	122.28	W	K
"	"	10.5	" ; "	4	1.38	122.48	S	K

Friday, May 2, 1879.

Saturday, May 3, 1879.

Sunday, May 4, 1879

Monday, May 5, 1879.

52	19	9.1	δ, δ Cancri	H	1.72	123.68	S	K
"	"	9.3	" , "	4	1.78	122.72	P	K
"	"	9.5	S , "	4	14.10	122.60	P	K
"	"	9.5	e , "	4	29.15	211.60	P	K
"	20	9.6	e , "	4	24.35	119.30	S	K
"	"	9.7	S , "	4	9.45	122.70	S	K
"	"	9.8	S , "	4	13.82	122.08	P	K
"	"	9.9	e , "	4	30.20	123.40	P	K
"	21	9.9	e , "	4	25.52	123.62	S	K
"	"	10.0	S , "	4	10.90	121.55	S	K
"	"	10.1	δ , "	4	1.62	123.68	S	K
52	"	10.1	δ , "	4	2.08	123.68	P	K

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3.68
2.84
4.59
4.52
4.35
5.02
3.08
3.59
6.57
8.09

{ Star observed probably DM. 86° 272.

Cloudy.

Cloudy.

Cloudy.

Seeing 6, 5, 3.
Same setting of eye-piece for both observers.
Field thought by S. to be somewhat nighter at setting 120° than at 300°; effect not very marked. Moonlight.

7.61
7.55
3.07
1.56
1.92
3.92
3.11
1.49
1.83
3.62
7.74
7.20

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Tuesday, May 6, 1879.

Wednesday, May 7, 1879.

Thursday, May 8, 1879

52	22	8.3	S, δ Cancri	4	22.75	122.00	P	K
"	"	8.4	E, "	4	26.12	120.48	P	K
"	"	8.4	S, "	4	24.30	122.15	P	K
"	"	8.4	E, "	4	23.25	122.50	P	K
"	23	8.5	S, "	4	26.68	120.42	P	K
"	"	8.5	E, "	4	21.88	123.08	P	K
"	"	8.6	S, "	4	37.58	212.48	P	K
"	"	8.6	E, "	4	23.15	121.90	P	K.
"	24	8.6	S, "	4	29.60	121.30	P	K
"	"	8.7	E, "	4	20.06	122.60	P	K
"	"	8.7	S, "	4	24.60	122.80	P	K
"	"							
"	25	9.5	E, δ Cancri	4	32.88	126.72	U	K
"	"		S, "	4	30.72	121.98	U	K
"	"	9.8	E, "	4	29.65	122.15	U	K
"	"		S, "	4	36.88	211.28	U	K
"	26	9.9	E, "	4	31.72	211.38	U	K
"	"		S, "	4	35.52	211.02	U	K
"	"	10.0	E, "	4	31.62	124.08	P	K
"	"	10.1	S, "	4	42.70	213.90	P	K
"	27	10.1	E, "	4	37.25	216.75	P	K
"	"	10.1	S, "	4	48.90	216.20	P	K
"	"	10.3	E, "	4	39.52	215.28	P	K
"	"	(10.4)	S, "	4	41.58	212.22	P	K

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1879phae.proj...4770

Cloudy.

Cloudy.

2.06
1.78
1.93
2.02
1.74
2.14
1.07
2.03
1.53
2.27
1.90

Sketch of S Cancri and
Comparison stars a and e.

1.32
1.46
1.53
1.11
1.40
1.18
1.40
.84
1.09
.61
.98
.89

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Thursday, May 8 1879.

52	28		ℓ, δ Cancri	4	35.8	211.30	P	K
"	"	10.5	S, "	4	38.6	212.15	P	K
"	"	10.6	S, "	4	54.42	216.32	W	K
"	"	10.8	ℓ, "	4	52.30	215.60	W	K
"	29	10.9	ℓ, "	4	36.6	213.45	P	K
"	"	10.9	S, "	4	49.4	216.45	P	K
"	"	10.9	ℓ, "	4	42.15	213.40	P	K
"	"	11.0	S, "	4	44.45	212.35	P	K
"	30	11.0	ℓ, "	4	36.48	212.42	P	K
"	"	11.1	S, "	4	43.62	218.68	P	K
"	"	11.1	ℓ, "	4	30.95	122.25	P	K
"	"	11.2	S, "	4	39.70	212.90	P	K
"	31	11.6	ℓ, "	4	54.50	213.75	W	K
"	"	11.8	S, "	4	65.28	217.75	W	K

Friday, May 9. 1879

52	32	8.3	S, δ Cancri	4	13.58	122.58	P	K
"	"	8.3	ℓ, "	4	28.55	123.45	P	K
"	"	8.4	ℓ, "	4	29.28	121.38	S	K
"	"	8.4	S, "	4	26.80	120.65	S	K
"	33	8.5	S, "	4	26.60	121.30	P	K
"	"	8.5	ℓ, "	4	32.65	124.15	P	K
"	"	8.6	ℓ, "	4	29.18	121.48	S	K
"	"	8.6	S, "	4	15.70	122.15	S	K
"	34	8.7	S, "	4	15.58	120.52	P	K
"	"	8.8	ℓ, "	4	34.50	211.60	P	K
"	"	8.8	ℓ, "	4	32.45	211.25	S	K
"	"	8.9	S, "	4	13.45	123.90	S	K
"	35	9.0	S, "	4	12.35	121.85	W	K

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1879phae.proj..4770

1.16
1.02
.45
.51
1.12
.60
.87
.77
1.13
.81
1.44
.97
.45
.21

3.15 ζ Cancri in better focus than last night.
1.60
1.55
1.73
1.74
1.34
1.56
2.84
2.86
1.23
1.33
3.17
3.35

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Friday, May 9, 1879.

52	35	9.0	ℓ, δ Cancri	4	23.98	118.62	W	K
"	"	9.2	ℓ, "	4	25.08	121.48	W	K
"	"	9.2	S, "	4	11.72	123.32	W	K
"	36	9.3	ℓ, "	4	29.58	124.32	W	K
"	"							

Saturday, May 10, 1879.

"	37	8.6	α, α Ursæ min	4	1.52	122.62	S	K
"	"	8.8	" , "	4	1.90	122.65	P	K
"	"	8.8	Dm 88°.4 , "	4	12.78	122.58	P	K
"	"	8.9	" , "	4	10.75	123.25	S	K
"	38	8.9	Dm 88°.9 , "	4	22.08	121.78	P	K
"	"	9.0	" , "	4	17.45	120.70	S	K
"	"	9.1	Dm 89°.3 , "	4	47.55	209.75	S	K
"	"		" , "	4	50.98	215.02	P	K
"	39	9.2	α , "	4	2.22	121.52	S	K
"	"	9.3	α , "	4	2.20	122.55	P	K
"	40							
	41							
	"	14.9	Jupiter I	5	2.750		P	J
	"			5	.492		P	J
	42	14.9		5	2.452		P	J
	"	14.9		5	2.230		P	J
	"	15.0		5	2.456		P	J
	"	15.0		5	2.486		P	J
	"	15.0		5	2.494		P	J

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1.96
1.86
3.46
1.53

Westerly Clear

{ Photometer I. Aperture 12.7 ins.
{ ζ Cancri too bright for comparison with ε Leon.

7.88
7.40
3.28
3.65
2.12
2.62
.66
.55
7.00
7.08

Same focus for both observers.

Thick haze coming up from the west.
Thick haze; images faint.
Images very faint.
Comparison of chronometers.
Disappearance of Jupiter IV.

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Saturn May 10, 1879.

52	42.3	15.1		5	2.602		P	A
"				15			P	A
"								

Sunday, May 11, 1879.

Monday, May 12, 1879.

Tuesday, May, 13, 1879.

Wednesday, May, 14, 1879

52	44	8.6	α, α Ursa. Min.	4	2.82	121.92	W	K
"	"	8.7	88°9, "	4	31.42	210.38	W	K
"	"	8.8	89°3, "	4	31.40	125.15	W	K
"	45	9.1	88°.4, "	4	13.58	120.38	W	K
"	"	9.2	α, "	4	2.52	121.17	W	K

Thursday, May 15, 1879.

"	46	8.5	δ, δ Virginis	4	2.25	222.65	P	K
"	"	8.6	", "	4	2.80	122.40	S	K

Friday, May 16, 1879.

"	47	9.5	α, α Ursa. Min.	4	1,82	121.48	S	K
"	"	9.6	α, "	4	1.92	121.68	S	K
"	"	9.9	δ, "	4	6.32	121.62	S	K
"	"	10.0	", "	4	5.00	121.20	S	K
"	48	10.3	λ, "	4	14.42	120.92	S	K
"	"	10.5	σ^1, "	4	9.58	120.82	S	K
"	"	10.8	$\sigma\mu$ 88°.4, "	4	10.38	119.58	S	K

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Disappearance of Jupiter I.
Comparison of chronometers.

Photometer P used.

Cloudy.

Cloudy.

Meeting of Am. Academy.

6.54
1.42
1.42 Photometer slipped; readjusted.
3.15
6.78

Observations stopped by clouds.

7.03
~~9.06~~
6.56

Seeing 6, 7, 5.

7.49 Dome probably interfered.
7.38 Repeated after moving dome.
4.80
5.30 Repeated without change of apparatus.
3.02
3 90
3.72

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Friday, May, 16. 1879

R.52	48	11.0	DM 88°.9, α Urs. Min.	4	21.85	118.75	S	K
"	49	11.1	" , "	4	22.90	120.30	S	K
"	"	11.3	α , "	4	1.45	120.05	S	K

Saturday, May 17. 1879

Sunday, May, 18. 1879

Monday, May, 19. 1879.

Tuesday, May, 20. 1879.

R.52	50	8.6		4	1.60	120.65	S	K
	"	8.8		4	17.55	117.50	S	K
	"	9.0	α , α Urs. Min.	4	2.78	120.38	S	K
	51	9.3	α , "	4	2.48	120.52	S	K

Wednesday, May 21, 1879.

Thursday, May 22, 1879.

R.52	54	8.4	α Urs. Min.	4	1.05	120.70	S	K
"	"	8.5	DM. 88°.9.	4	24.95	123.65	S	K
"	"	8.7	DM 88°.4.	4	10.52	120.58	S	K
"	55	8.9	δ Urs. Min.	4	6.22	118.98	S	K
"	"	9.3	λ Urs. Min.	4	20.58	119.58	S	K
"	"	9.4	51 Cephei	4	6.55	119.55	S	K
"	"	9.6	DM. 89°.3.	4	41.98	209.32	S	K
"	56	9.7	α , α Urs. Min.	4	1.20	120.60	S	K

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	†
2.15	Passing clouds.
2.07	Passing clouds.
8.14	Clouds continue to thicken.
	Cloudy.
	Cloudy.
	Cloudy.
7.77	By mistake for 2 Urs. Min.
2.60	" " " 2M. 88° 9.
6.57	
6.82	Repeated with altered focus.
	Clouds.
8.69	{ Focus pinion 408.
1.87	{ Eye-piece 1.95 cms.
3.69	
4.88	
2.27	Star and reflected image identified by P.
4.71	
.87	
8.40	

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Thursday May 22. 1879.

R 52, 56

Friday, May 23 1879.

R 52, 57 Nebula G.C. 2102 S.

Saturday, May 24, 1879.

R 52, 60 Nebula G.C. 2102
" " 3258
" " 3305

Sunday, May 25, 1879.

Monday, May 26, 1879.

R 52. 61.	9.2	S, δ Cancri	4	12.12	120.98	S	K
" "	9.2	Stars, δ Cancri	4	30.95	209.95	S	K
" "	9.4	" "	4	30.82	209.08	P	K
" "	9.5	S, "	4	14.45	120.50	P	K

Tuesday, May 27. 1879.

Wednesday, May 28, 1879.

R 52, 65	9.4	2 Nebs. Min.	4	1.35	120.55	S	K
" "	9.4	"	4	1.45	120.30	P	K
" "	9.6	Δ M. 89°.3	4	46.92	242.08	P	K
" "	9.6	"	4	43.48	210.98	S	K
" 66	9.9	δ Nebs. Min.	4	3.98	119.82	P	K
" "	10.0	1 Nebs. Min.	4	12.95	121.15	S	K

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Photometer Q with direct vision prism in end of tube towards object-glass. Spectrum of nebula in Lyra.

Apparatus as yesterday.

Apparatus as May 22.

Cloudy.

3.39
1.44
1.45
3.01

Intermediate star not seen.

Too hazy to continue.

Cloudy.

Seeing 6, 6, 5 –
Focus pinion 402.
Eye-piece 1.75 cms.

8.14
7.99
.68
.81
5.79
3.25

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Wednesday, June 28, 1879.

R.52	66	10.0	k Ursæ Min.	4	15.80	121.15	P	K
"	"	10.2	51 Cephei	4	7.40	119.85	P	K
"	67	10.2	k Ursæ Min.	4	1.20	119.75	S	K
"	"	10.3	"	4	1.25	119.85	P	K

Thursday, May 29, 1879.

	68							
	"							
R.52	68	9.4		3				
"	"	9.5		3				
"	69	9.6						
	"	9.6						
	"	9.6						
	"	9.6						
	"	9.6						
	"	9.6						
	"	9.7						
	"	9.7						
	70	9.8						
	"	9.8						
	"	9.8						
	"	9.8						
	"	9.9						
	"	9.9						
	71	10.0						
	"	10.0						
	"	10.0						
	"	10.0						
	"	10.1						
	"	10.1						

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2.82
4.45
8.40
8.31

Photometer Q without direct-vision prism.

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Thursday, May 29, 1879.

R.A.	71	10.1						
	"	10.1						
	"	10.2						
	"	10.2						
	72	10.2						
	"	10.2						

Friday, May 30, 1879.

R.A.	73							
	"							
	"							
	74							
	75	15.4	Jupiter II, III	4		220.62	P	H
	"			4	38.85	130.55	P	H
	"	15.5		4	41.42	217.02	S	H
	76	15.5		4	38.65	221.55	S	H
	"	15.5		4	39.32	221.48	S	H
	"	15.5		4	36.18	221.52	S	H
	{76 77}						S	H
	77		Jupiter III	4	9.62	218.88	S	H

Saturday, May 31, 1879.

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Clouds collecting.

Constants, Phot. Q.

Eclipse of II.

Limit of visibility.

Constants, Phot. Q.

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Sunday, June 1, 1879.

Monday, June 2, 1879.

Tuesday, June 3, 1879.

Wednesday, June 4, 1879.

R52, 80

Thursday, June 5, 1879.

Friday, June 6, 1879.

R52, 81

Saturday, June 7, 1879.

Sunday, June 8, 1879.

82

"

"

"Monday June 9, 1879.

R52. 84

" 9.9

" 9.9

" 10.0

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Clouds increasing.

Cloudy.

Cloudy.

Cloudy,
Measure of magnifying power of microscope used in measuring hole R 3.

Clouds came on.

Cloudy. Note on a thunder shower.

Cloudy.

Photometer Q with prism as on May 22.
Nebula G. C. 3855; catalogue place seems wrong by 1^m.
The nebula is 10′ n. and 9^s following G. C. 3851.

Photometer Q without prism.

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Monday, June 9. 1879.

RS2	84	10.0			3		
"	85	10.1			3		
	"	10.2			3		
	"	10.3			3		
	"	10.3			3		

Tuesday, June 10. 1879.

Wednesday, June 11, 1879

Thursday, June 12, 1879

Friday, June 13, 1879.

Saturday, June 14, 1899

Sunday, June, 15, 1879.

Monday, June, 16, 1879

Tuesday June 17, 1879.

RS2.	87						

Wednesday. June 18, 1879.

RS2	88		G.C. 4173.				
"	89	*	Jupiter I	5	4.64	P	I
	90			5	4.032	P	I
	"			5	3.634	P	I
	"			1363		P	I
	91			5	.488	P	I

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Comparison stars for P
τ Virg.; for S. perhaps ε Virg.
Cloudy.

Cloudy.

Cloudy.

Observations only with Photometer P.

Cloudy.

Cloudy.

Cloudy.

Mostly cloudy.
With prism as on May 22.

With prism as on May 22.

Disappearance.
Limit of visibility.

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Thursday, June 19, 1879.

Rec 92

Friday, June 20, 1879.

Saturday, June 21, 1879.

Sunday, June 22, 1879

Monday, June 23, 1879.

Tuesday, June 24, 1879

Rec 98		Jupiter	S	.722	S	A
	98 99	Jupiter II	S	1.522	S	A
	99	"	S	1.398	S	A
	99	"	15		S	A
	100					

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Seeing allows only
the brightest nebulae
and clusters to be found.

With prism as May 22.

With prism as May 22.

Cloudy.

Telescope out of order.

Note on θ Virg. Nebulae
Observed with prism as May 22.
Limit of visibility.

Disappearance.
Observations of Swift's comet.

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Wednesday, June 25, 1879.

R52 101

Thursday, June 26, 1879.

R 52 102

103

Friday, June 27, 1879.

R52 104

Saturday, June 28, 1879.

Sunday, June 29. 1879.

Monday, June 30, 1879.

R52	112	9.1	β Cephei		M	S
"		9.5			M	S
"		9.5			M	S
"		9.8			M	S
"	113	9.8			M	U
		10.0			M	U
		10.0			M	U
	114					

Tuesday, July 1, 1879.

	118					
	119		Jupiter	S	.362	S ☉
	120		Jupiter II	S	2.692	S ☽
	"			S	2.942	S ☽
	"			S	2.662	S ☽
				S	2.394	S ☽

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Nebulae and Swift's
comet with prisms May 22.
Clouds came on.

Visitors.
Observations of Swift's comet.

Observations of Swift's comet.

Observations of Swift's comet.

Observations of Swift's comet.
Limit of visibility.

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Tuesday, July 1, 1879.

R52 120
121
121

18 .446 W S A
O D

Wednesday, July 2, 1879.

R52 123 9.3 β Cephei S M
" 9.7
" 9.9
" 10.0
124 10.2
" 10.3
125

Thursday, July 3, 1879

Friday July 4, 1879

Saturday, July 5, 1879.

R52 128

Sunday July 6, 1879

Monday, July 7. 1879

Tuesday, July 8, 1879.

134

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Disappearance.
Limit of visibility.

Observations of Swift's comet.

Haze and clouds.

Cloudy.

Observations of Swift's comet.

No evening observations attempted.

Cloudy.

Rather cloudy.
Observations of Swift's comet.

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Wednesday. July 9, 1879.

R52 135 α Urs. Min. S M

138

139

Thursday, July 10, 1879.

R52 139 Friday, July 11, 1879.

Saturday, July 12, 1879.

R52 140 S M

141

142

Sunday, July 13, 1879.

Monday, July 14, 1879.

R52 143 β Cephei S M

144

Tuesday, July 15, 1879

R52	147	$1\frac{2}{3}.6$	Jupiter III, II	4	52.05	134.90	P	H6
"	"	$1\frac{2}{3}.6$		4	52.15	135.15	P	H6
"	"	$1\frac{2}{3}.6$		4	52.58	135.72	P	H6
	148	$1\frac{2}{3}.7$		4	50.22	223.52	P	H6
	"	$1\frac{2}{3}.7$		4	50.95	224.45	P	H6
	"	$1\frac{2}{3}.8$		4	54.60	225.15	P	H6
	"	$1\frac{2}{3}.8$		4	50.52	225.12	P	H6.
	"	$1\frac{2}{3}.8$		4	8.07	222.58	P	H6
	149	$1\frac{2}{3}8$		4	43.82	225.18	P	H6
	"	$1\frac{2}{3}.8$		4	41.72	225.18	P	H6
	"	13.8		26			P	H

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Value of divisions of rack.
Observations of stars near (185).
Too hazy for comet.
Cloudy.

Cloudy.
Eclipse Jupiter I invisible.
Seeing 3, 2, 2.
Value of divisions of rack.
Stars near (185).
Comet.
{ Observations of stars at
70° 30′ in book R 58.

Stars near (185).

Disappearance of III.

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Tuesday, July 15, 1879.

R52. 151	16.3		4	14.98	223.32	P	He.
" {151 152}			27				
" 153	16.5		4	51.18	228.38	P	He.
" 153	16.5		4	57.92	224.18	P	He.

Wednesday, July 16, 1879.

Thursday, July 17, 1879.

R52 154

Friday, July 18, 1879.

R52. 155

156		Jupiter I, II	4	34.80	132.70	P	He
"		" II	4	3.62	132.12	P	He
157		" I, II	4	33.18	129.22	P	He
"		" I, II	4	28.40	134.25	P	He
"		" I, II	4	29.45	132.40	P	He
"		" I, II	4	27.62	133.70	P	He
		" I, II				P	He.

Saturday, July 19. 1879.

R52. 159	9.0	η Draconis	4	5.88	225.02	S	He.

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Reappearance of III.

Cloudy.

Spectroscopic observations of nebulae.

Seeing 7, 4, 3.
Companion of η Drac. not seen.
Spectroscopic observations of nebulae, (wire gauge & prism).
Images opposite sides of field.
Limit of visibility.

Disappearance of I.

Spectra of nebulae; wire gauge & prism.
Region of (185).

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Sunday, July 20, 1879.

R52 161

Monday, July 21, 1879.

Tuesday, July 22, 1879.

Wednesday, July 23, 1879.

Thursday, July 24, 1879.

Friday, July 25, 1879

Saturday, July 26, 1879.

Sunday, July 27, 1879

R52	176	11.7	Jupiter I, ~~III~~	4	25.70	226.30	S	H.
"	"	11.8		4	34.22	226.28	S	H.
"	"	11.8		4	32.82	225.78	S	H.
"	177			4	20.10	227.05	S	H
"	" 98			24			S	H
"	178	12.4	Jupiter III	5	5.90	227.25	S	H
"	"	12.5	11	4	3.72	226.48	S	H

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Disappearance of Jupiter I.
Clouds nearly prevent observation.

Cloudy.

Cloudy.

Cloudy till 9h½.
Observations of (185)
and of Comet.

Cloudy till about 10h.
Observations of (185)
and of Comet.

Cloudy.

Cloudy.

Cloudy till late.
Images opposite edges of field.
Time recorded on chronograph

Disappearance of I.
Limit of visibility.
" " "

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Monday, July 28, 1879.

Tuesday, July 29, 1879.

Wednesday, July 30, 1879

Thursday, July 31, 1879.

R52.	180							
"	"	9.1	α Lyrae	3	12.8		S	Q
"	"	9.2	"	3	12.2		S	Q
"	"	9.2	G.C. 4447, α Lyrae	3	28.2		S	Q
"	181	9.3	α Lyrae	3	13.2		P	Q
"	"	9.4	G.C. 4447, α Lyrae	3	26.5		P	Q
"	"	9.6	G.C. 4244, α Herc.	3	15.9		P	Q
"	"	9.7	" "	3	15.1		S	Q
"	182	9.8	" β Drac.	3	16.9		P	Q
"	"	9.9	" "	3	16.4		S	Q

Friday, August 1, 1879.

"	183	8.5	ν Draconis.	4	5.85	231.85	S	He.
"	"	8.9	"	4	3.95	141.05	S	H
"	"	9.1	"	4	3.15	141.40	P	H
"	"	9.2	"	4	3.55	231.45	P	H
"	184	9.8	G.C. 4234, ζ Herc.	3	14.3		S	Q
"	"	9.9	" "	3	11.8		S	Q
	"	9.9	" "	3	15.6		P	Q
	"	99	" "	3	11.1		P	Q

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1879phae..proj...4770

Cloudy.

Cloudy.

Cloudy.

Companion of γ Drac. barely visible.
Focus small telescope.
" " "
Ring nebula in Lyra.
Focus; field small telescope darker than large.

Spectrum G. C. 42444.

Observations difficult and uncertain.
Very difficult and unsatisfactory.
Field of prism much brighter than field of large telescope.

Spectrum of G.C 42444.

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Saturday August 2, 1879

R 52	185	8.4	η Draconis	4	5.00	231.45	S	H
"	"	8.6	"	4	4.22	141.08	S	H
"	"	8.8	"	4	2.25	141.30	N	H
"	"	8.9	"	4	3.92	231.28	N	H
"	186		Jupiter IV, II	4	30.32	226.42	P	H
	"		IV, II	4	26.18	227.52	P	H
	"		IV, II	4			P	H
	187		Jupiter IV, II	36			P	H
	188		IV, II	4	34.6	8385	P	H
	"		IV, II	4	34.22	85.22	P	H
	"		IV, II	4	35.40	85.30	P	H
	"		IV, II	4	36.88	85.58	P	H
	"		IV, II	4	34.82	85.78	P	H
	190		II	4	8.82	86.68	P	H
	191		Jupiter II, IV	4			S	H
	192		IV	4	28.00	81.00	S	H
R 46	111		Jupiter IV	4	1.07		S	(♃)
	"			4	.520		S	(♃)
	"			5	.624		S	(♃)
	112			6			S	(♃)
	"			5	1.486		S	(♃)
	"			5	1.138		S	(♃)
	113		Jupiter II	5	2.60		P	(♃)
	"			4			P	(♃)

Sunday, August 3d 1879.

R 52	193	13 50	Jupiter I	5	3.256		P	♃
	"	13 53		5	2.60		P	♃

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Companion conspicuous with ordinary eye piece; estimated $p = 140^{0}$ $s = 5''$. Seen without difficulty in first set with photometer, less easily in second.

Seeing 7, 4, 8.

Seeing 4, 6, 2.

Disappearance of Jupiter IV.

Reappearance of Jupiter IV.

Limit of visibility.

Disappearance of Jupiter II. Clouds.

Limit of visibility. Clouds.

Disappearance of Jupiter IV.

Limit of visibility.

Limit of visibility.

Reappearance of Jupiter IV.

Bar across dome interferes with the prism; prism moved during observations.

Disappearance of Jupita II. Clouds

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Sunday, August 3d, 1879.

RS2	193			8		P	A
"	194			8	.998	P	A

Monday, August 4, 1879.
~~Cloudy~~.

Tuesday, August 5, 1879

Wednesday, August 6, 1879

Thursday, August 7, 1879

RS2	195	8.8	α Reticuli	3	13.2	S	Q
		8.9	G.C. 4045, α Serp.	3	17.3	S	Q
		8.9.0	" "	3	8.5	S	Q
		9.1	" "	3	6.6	U	Q
	196	9.1	" "	3	16.9	U	Q
		9.2					
		9.2					
		9.3	G.C. 4083, α Serp.	3	17.4	S	Q
		9.6	" "	3	6.9	S	Q
		9.7	" "	3	6.2	U	Q
		9.7	" "	3	18.2	U	Q
		9.8		3	~~18.2~~		

Friday, August 8, 1879

Saturday, August 9, 1879.

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Disappearance of Jupiter I.
Limit of visibility.
Relative brightness of planets.
Cloudy.

Cloudy.

Visitors.

Spectrum G.C. 4042 not seen.
Spectrum of G.C. 4045.
Focus.
Eye-piece perhaps a little too far out.

Spectrum of G.C. 4045.
" " G.C. 4083.
Aperture 12.7 cms.
" "
" "
" "

Cloudy.

Cloudy.

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Sunday, August 10, 1879.

R52 197 R12 198							
199							
199	15.2	Sm, 89°37, a	4	28.40	164.85	S	H
"	15.3	" "	4	26.08	165.52	S	H
200		Jupiter I, III	4			S	H
201		I, III	4	37.45	166.05	S	H
"		I, III	4	81.20	70.45	S	H
"		I, III	4	40.22	71.72	S	H
"		I, III	4	35.2	70.80	S	H
"		I, III	4	40.52	71.02	S	H
201 202		I, III	13 ~~4~~	~~40.52~~			
"			4	3.82	163.58	S	H6

Monday, August 11, 1879.

202	8.9	Sm, 89°37, a	4	25.38	166.62	S	H
"	9.1	" "	4	24.75	165.80	S	H

Tuesday, August 12, 1879.

206		Jupiter I, IV,	4	58.38	76.42	P	H
"		I, IV	4	56.98	71.98	P	H
"		I, IV	4	27.35	164.80	P	H
"		I, IV	4	29.20	165.20	P	H
"		I, IV	4	30.55	166.05	P	H
"		I, IV	4	26.42	162.62	P	H
207		I, IV	9			P	H
"		IV	4	6.02	163.68	P	H

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Comparison of diaphr.
Swift's comet.

Observation barely possible.

Perseid meteors numerous and brilliant.

Images in opposite edges of field.

Disappearance of Jupiter I.
Limit of visibility.

Observations just possible.

Nebulae looked for,
not seen; hazy.
Spectrum of Swift's comet.
Observations " " "

Clock troublesome,
throughout.

Disappearance of Jupiter I.
Limit of visibility.

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Wednesday, Aug. 13. 1879.

R Thursday, Aug 14, 1879

R.52 214

Friday, Aug. 15, 1879.

Saturday, Aug. 16, 1879.

Sunday, Aug. 17, 1879.

Monday, Aug. 18, 1879.

Tuesday, Aug, 19, 1879.

R.52	213	G.C. 3801(?)				S	
	"	" , 109 Virginis	3	14.33		S	Q
	"	" "	3	10.5		S	Q
	"	109 Virginis	3	12.63		S	Q
	"	G.C. 4302				P.S.	
	9.13	" , η Ophiuchi	3	18.8		S	Q
	214	" "	3	4.8		S	Q
	215	Jupiter I, II	4	40.85	160.75	S	H
	"		4	37.40	163.15	S	H
	216		4	40.02	164.82	S	H
	"		4	41.05	161.10	S	H
	"		4	37.70	162.30	S	H
	"		4	38.25	161.00	S	H
	"		4	38.35	163.00	S	H

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Cloudy.

Swift's comet. Region identified.

Cloudy.

Cloudy.

Cloudy.

Cloudy.

Place apparently wrong. Spectrum Continuous.
Beyond focus.
Within focus.
Focus.
Spectrum gaseous.
Beyond focus.
Within focus.
Swift's comet.
Images about $\frac{3}{4}$ of the field apart.

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Tuesday. Aug. 19, 1879.

R.52.	216	Jupiter I, II	4	38.75	162.50	S	H
	216-17		4	41.68	161.82	S	H
	217		4	44.22	164.42	S	H
	"		4	41.28	163.72	S	H
	"		4	46.50	165.40	S	H
	"		4	51.02	155.38	S	H
	"		7			S	H
	218	Jupiter II	4	5.02	253.08	S	H

R.54. Wednesday, Aug. 20, 1879.

	1	G.C. 4302, 7 Ophiuchi	3	20.3		S	Q
	1	" "	3	5.33		S	Q
	3	Jupiter III, II	4	46.95	73.70	P	H
	"		4	47.05	73.00	P	H
	"		13			P	H
	5	Jupiter II, I	4	39.52	159.75	S	H
	"	Jupiter I	4	13.00	72.40	S	H
	"	Jupiter II, I	4	41.00	70.00	S	H
	"		4	36.30	71.85	S	H
	"		4	38.58	72.98	S	H
	"		4	38.20	72.90	S	H
	5-6		4	38.60	70.55	S	H
	6		23			S	H
	7	DM. 89° 37, a	4	24.52	161.58	P	H
		" "	4	17.70	162.10	P	H
	8						

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Seeing 7, 6, 6.
Disappearance of Jupiter I.
Limit of visibility.

Beyond focus.
Within focus.
Satellites too close to be distinctly separated.
Disappearance of Jupiter III.
Both images of Jupiter in the field.
Limit of visibility.

Disappearance of Jupiter II.
Observation difficult.

Swift's comet.

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Thursday, August 21, 1879.

R.54. 9

Friday, August 22, 1879

R 54 9

Saturday, August 23, 1879.

R 54 10

11

12

" Comet 1879, β Urs. Maj. 3 21.93 P Q

" β Urs. Maj. 3 10.83 P Q

13

Sunday, August 24, 1879.

Monday, August 25, 1879.

Tuesday, August 26, 1879.

Wednesday, August 27, 1879.

20

Thursday, August 28, 1879.

R.54. 22 Jupiter I, III 4 39.62 176.88 P H.

22 Jupiter III 4 11.22 186.68 P H

22 Jupiter I, III 4 38.00 179.70 P He

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1879phae.proj..4770

Cloudy.

Swift's comet.
Visitors, Struve, Newcomb.

Palisa's comet; place.

Spectrum continuous.

Focus.
Swift's comet.

{Cloudy, or partly clear.
Cloudy.

Partly cloudy.

Partly clear.
Attempted observation of disappearance of Jupiter II not successful.

Limit of visibility.

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Thursday, August 28, 1879.

8.54.	23		Jupiter I, III	4	39.02	176.82	P	H
	23			4	37.92	180.32	P	H
	23-4			21			P	H
	25		D.M. 89°37, a	4	22.15	180.35	P	H
	"		" "	4	26.45	180.05	P	H
	"		" "	4	24.58	179.88	W	H
	"		" "	4	20.42	180.32	W	H

Friday, August 29, 1879.

2.54.	26							

Saturday, August 30, 1879.

	27							

Sunday, August 31, 1879.

	28							
	29							

Monday, Sept. 1, 1879.

	30							
	30							
	31		G.C. 4244, γ Drac.	3	17.23		S	Q
	"		γ Drac.	3	11.40		S	Q
	"		"	3	14.50		P	Q
	"		G.C. 4244, γ Drac.	3	17.23		P	Q
	32	9.3	γ Drac.	3	14.63		W	Q
	"	9.4	G.C. 4244, γ Drac.	3	18.57		W	Q

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Disappearance of Jupiter I.
Triple star near pole.

Search for comet found by Palisa, and for nebulae.
Moonlight too strong. Red star seen α 18^{h}12^m, δ −13° 7′.

Relative position of DM. 53°
Nos. 1787 and 1794.

Experiments with
Photometer L.
Search for Hekate (100).

Experiments with solar micrometer.

Focus.
Focus.

Focus.

Haze thick; moonlight strong.

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Monday, Sept. 1. 1879.

254.	32		β Draconis	3	12.4	S	Q
"	"		G.C. 4244, β Drac.	3	15.9	S	Q
"	33		β Drac.	3	13.97	P	Q
"	"		G.C. 4244, β Drac.	3	17.07	P	Q
"	"	9.5	β Drac.	3	14.93	M	Q
"	"	9.6	G.C. 4244, β Drac.	3	17.77	M	Q
"	34		α Lyrae	3	13.04	P	Q
"	"	9.8	G.C. 4447, α Lyrae	3	23.4	P	Q
"	"	~~9.8~~	α Lyrae	3	11.2	S	Q
"	"	9.8	G.C. 4447, α Lyrae	3	23.4	S	Q
"	"		α Lyrae	3	12.4	M	Q
"	"	9.9	G.C. 4447, α Lyrae	3	23.1	M	Q

Tuesday, Sept. 2, 1879.

Wednesday, Sept 3. 1879.

Thursday Sept 4, 1879.

Friday, Sept 5, 1879.

35 to 38

Saturday, Sept. 6, 1879.

"	40		Jupiter I	8		P	♃
	"	7.3	"	5	2.548	P	♃
	"	7.3	"	5	2.780	P	♃
	41	7.5	Jupiter	5	.336	P	♃

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Focus.

Focus,

Focus,

Focus.
Ring nebula in Lyra.
ε Lyrae Nuer than nebula.

Focus,

Focus.

Cloudy.

Cloudy.

Cloudy.

Position of comet
found by Palisa.

Reappearance of Jupiter I.

Limit of visibility
Satellite close to limit.
Jupiter low; seeing poor.

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Sunday, Sept. 7. 1879.

R54 44

Monday Sept. 8, 1879.

45							
45			η Urs. Maj	3	13.57	W	Q
"			Comet, η Urs. Maj	3	23.77	W	Q
46			G.C. 4244, β Drac.	3	16.2	P	Q
"	9.5		β Drac.	3	13.6	P	Q
"	9.5		"	3	13.0	W	Q
"	9.6		G.C. 4244, β Drac.	3	16.0	W	Q
47	9.6		G.C. 4244, γ Drac.	3	16.6	P	Q
47	9.6		γ Drac.	3	13.3	P	Q
"	9.7		"	3	13.2	W	Q
"	9.7		G.C. 4244, γ Drac.	3	16.7	W	Q
48	9.8		G.C. 4447, α Lyrae	3	24.8	P	Q
"	9.8		α Lyrae	3	12.4	P	Q
"	9.9		"	3	12.5	W	Q
"	9.9		G.C. 4447, α Lyrae	3	23.83	W	Q

~~Tuesday Sept. 9. 1879.~~

Tuesday Sept 9. 1879

					~~13.17~~		
54	49		η Urs. Maj.	3	13.17	W	Q
"			Comet, η Urs. Maj.	3	18.43	W	Q
	50		G.C. 4373				

Wednesday, Sept 10, 1879.

Thursday. Sept. 11. 1879.

54	51						
	"			3	14.00	W	Q
	"			3	16.00	W	Q

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Place of comet found by Palisa. Search for Hekate (100)

Focus.

Focus.

Focus.

Focus.

Focus.

Focus.

Focus.

Central portion.

Spectrum; diagram.

Cloudy.

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Friday. Sept. 12. 1879.

R.V4	V2						
		ν Aquilae	3	13.33		W.	Q
		G.C.4510, ν Aquilae	3	16.03		W	Q
	V3	α Aquilae	3	13.27		W	Q
		G.C.4572, α Aquilae	3	29.00		W	Q
R54	54	Saturday. Sept 13. 1879.					
		Sunday, Sept. 14. 1879.					
R54	55						
	55	Jupiter III	4	16.30	93.95	S	H.
	56	Jupiter II, III	4	39.88	175.88	S	H.
	"	" II, III	12			S	H.
		Monday, Sept 15 #1879.					
R54.	V7	G.C. 4378 & 4479					
	8.9	G.C.4479, δ Aquilae	3	32.93		P	Q
	9.0	" "	3	29.97		W	Q
	9.0	" "	3	27.97		S	Q
	V8	G.C.4510, γ Aquilae	3	15.83		S	Q
		γ Aquilae	3	13.20		S	Q
	9.6	G.C.4510, γ Aquilae	3	11.03		P	Q
		" "	3	15.9		P	Q
	V9	G.C.4373, β Urs. Min.	3	11.3		S	Q
		" "	3	15.30		S	Q
	10.3	" "	3	12.93		W	Q
	10.4	" "	3	15.73		W	Q
		Tuesday. Sept. 16. 1879.					
R54	60669	Wednesday. Sept. 17. 1879					
		Thursday. Sept. 18. 1879					

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Palisa's comet seen.

Focus.

Spectra of both nebulae gaseous.

Focus.

Cloudy.

Seeing 7, 1, 4.

Limit of visibility.

Reappearance of II.

4378 evidently a cluster.

4479, monochromatic spectrum.

Focus.

Bright monochromatic and faint continuous spectrum.

Cloudy.

Search for asteroids.

Cloudy.

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Thursday Friday. Sept. 19. 1879.

R.A. 70		G. C. 4234					
"							
"	8.7	G. C. 4234, ζ Herculis	3	15.3	P	Q	
"	8.7	" "	3	12.8	P	Q	
"	8.8	" "	3	12.2	P	Q	
"	8.8	" "	3	15.5	P	Q	
71	9.3	" "	3	17.1	P	Q	
"	9.3	" "	3	10.9	P	Q	
"	9.4	" "	3	12.7	P	Q	
"	9.4	" "	3	14.3	P	Q	
"		" "	3	12.1	P	Q	
"		" "	3	14.3	P	Q	

~~Friday. Sept.~~
Saturday. Sept. 20. 1879.

R.A. 72	9.1						
"	9.3	G. C. 4628					
"	10.2	G. C. 4628, β Aquarii	3	10.6	P	Q	
"	10.2	" "	3	14.9	P	Q	
73	10.3	" "	3	16.0	P	Q	
"	10.3	" "	3	11.8	P	Q	
"		G. C. 4628					
"	10.4	G. C. 4628, β Aquarii	3	11.9	P	Q	
"	10.4	" "	3	15.9	P	Q	
73b-75	10.5				P		
76		Jupiter	5	.337	S		
"		Jupiter I	10		S		
77		" I	5	1.436	S		
"		" I	5	1.214	S		
"		" I	5	1.306	S		

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Spectra of nebulæ,
with drawings.

Plate No. 11, Aperture 12.6,
in these six sets.

Moved images nearer,
Star close to nebula.

Search for Clymene (104).
Spectrum mainly monochromatic.

Ratio of axes 2 to 3. Long axis p = 70°.

Search for Clymene (104).
Limit of visibility.
Reappearance.

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Sunday. Sept. 21st 1879.

Monday. Sept. 22nd 1879.

Tuesday. Sept. 23d, 1879.

Wednesday, Sept. 24, 1879.

R54	78	7.8	Jupiter, equat. diam.	4	112.35	60.17	P	M
	"	7.9	" polar "	4	104.45	60.21	P	M
	79	8.1	" " "	4	104.95	60.35	W	M
	"	8.2	" equat. "	4	111.03	60.63	W	M
	"	8.7	G.C. 4628, longest "	3	176.1		P	M
	"	8.7	" " "	4	58.41	60.45	P	M
	80	8.8	" least "	4	43.41	60.37	P	M
	"	8.8	" longest "	3	73.9		W.	M
	"	8.9	" " "	4	51.24	60.44	W.	M
	"	9.2	" "	4	42.95	60.08	W	M
	81	9.6	Star				W	
	"	9.4	"				S	
	"	10.0	G.C. 4628, longest diam.	3	86.4		S	
	"	10.0	" " "	4	49.77	60.07	S	M
	82	10.2	" least "	4	41.54	60.21	S	M
	"	10.3	Jupiter, equat. diam.	4	96.14	60.23	S	M
	"	10.4	" polar "	4	105.75	59.97	S	M
	83		"	3	6.7		S	
	83							
	83	Thursday, Sept. 25, 1879						
	85-6	6.4					P	M
	87		Jupiter II	6		142.47	S	M
	87-8		" III, II	28			S	M
	88		" III, II	4	40.55	143.05	S	M

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1879phae.proj..4770

Cloudy.

Cloudy.

Meridian photometer only.

Vernier A 202°.3 when Jupiter seen on wire.
Focus 360.0. Vernier A 179.5 } Red spot seen on Jupiter.
" " 89.5 Images unsteady
" " 89.5
" " 179°.5
Focus 351.9. Measure of position.
Vernier A 176°.
" " 87°.
Measure of position
Vernier A 343°.9
" " 73°.9
Images run on bar at 7°.8.
" " " " " 7°.8.
Measure of position.
Vernier A. 356°.4.
" " 86°.4, Clouds.
Focus 370. Vernier A 345.3.
" " 255.3
Images run on bar at 6.7.
Satellite of Mars(?)

Transit for value of divisions.
Limit of visibility.
Reappearance of Jupiter III.

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Thursday, September 25th 1879.

R.54.	88	8.6	Jupiter III, II	4	45.05	143.55	S	M
	89		" III, II	4	44.68	146.82	S	M
	"		" III, II	6	40.25	142.58	S	M
	"		" III, II	4	39.42	230.08	S	M
	"		" III, II	4	37.70	232.10	S	M
	90		" III, II	4	34.22	233.32	S	M
	"		" III, II	4	34.42	231.68	S	M
	91	9.2	Jupiter, equat. diam.	4	114.73	59.64	S	M
	"	9.4	" polar "	4	108.37	59.71	S	M
	"	9.4	" " "	4	105.16	59.53	P	M
	"	9.5	" equat. "	4	113.05	59.47	P	M
	92	10.1	G.C. 4572, diam.	4	85.31	58.83	P	M
	"	9.2	" "	4	75.34	60.36	S	M
R46	117	8.5	Jupiter II	4	12.00	178.30	P	(H)
"	117.8		" III, II	26			P	(H)
"	118	8.6	" III, II	4	49.58	179.88	P	(H)
"	"	8.6	" III, II	4	50.08	181.18	P	(H)
"	119	8.6	" III, II	4	53.82	179.25	P	(H)
"	"	8.6	" III, II	4	51.00	179.45	P	(H)
"	"	8.7	" III, II	4	51.65	182.00	P	(H)

Friday, Sept. 26th 1879.

R.54	93	7.8	G.C. 4234, diam.	4	29.31	58.92	P	M
"	94	7.8	" "	4	26.62	59.32	W	M
"	"		G.C. 4244					
"	"		" 4510					
"	95	8.4	" 4510, diam.	4	56.70	59.00	P	M
"	"	8.6	" " "	4	54.28	59.32	W	M
"	"	8.7	" " "	4	54.31	58.89	S	M

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Jupiter out of field.

— " —

— " —

Jupiter in field.

— " —

Seeing 6, 6, 5.

Focus 352. Vernier A 179°.3.

Images about equally deformed.

" less deformed in second set.

Focus 358.3.

Seeing very variable.

Spectrum observed.

Vernier A 181.8. Moon too bright.

Circular, hazy. Focus 356.5. Vernier B 235°.2

" 357.5

Spectrum and appearance

" " "

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Friday, Sept. 26, 1879.

R54	96		W. 23^h 1013					
	"							
	97							
	"							
	98							
	99							
	100							
	101							

Saturday Sept. 27, 1879.

	102		G.C. 4964.					
	"	8.8	—"—, diam.	4	56.45	59.40	S	M
	"	8.9	" "	4	58.82	59.10	W	M
	"	9.0	" "	4	58.93	59.07	P	M
	103	9.2	"					
	"	9.5	G.C. 4670					
	107	~~13.1~~	Jupiter I, II	14			P	M
	"	13.1	" I, II	4	46.60	72.90	P	M
	"	13.1	" I, II	4	42.62	75.72	P	M
	108	13.2	" II	4	36.40	71.95	P	M

Sunday, Sept. 28, 1879.

	109							

Monday, Sept. 29, 1879.

	110	7.4	Jupiter	5	.876		S	J
	111		Jupiter I	15	"		S	J
	"	7.6	"	5	4.126		S	J
	"	7.6	"	5	4.078		S	J
			"					

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Identification of
Stars a and b
observed with Saturn,
1878–79.

Looked for satellites
of Mars & Saturn.

Spectrum.
Focus 351.

Spectrum.
Occultation of a star.
Spectrum.
Reappearance of Jupiter I.

Limit of visibility.

Mostly cloudy.
Sketch of Mars.

Limit of visibility.
Reappearance of Jupiter I.

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1879phae.proj..4770

Tuesday, Sept 30th 1879.

R54

Wednesday, Oct. 1 1879.

113

Thursday, Oct. 2, 1879.

114

115

116

117

118	12.3	Jupiter II,	4	5.25	107.00	P	H.
119		" III, II	37			P	H
120	12.5	" III, II	4	46.98	106.48	P	Hb
"	12.5	" III, II	4	51.52	102.72	P	Hb
"	12.6	" III, II	4	46.22	105.88	P	Hb.
121	12.6	" III, II	4	45.92	105.58	P	Hb

Friday, Oct 3, 1879.

Saturday, Oct 4, 1879.

125	8.3	G.C. 4510, diam.	4	55.92	60.38	P	M
"	8.6	" "	4	58.63	60.29	W	M
126		G.C. 4628	3	27.3		W.	M
"		"	3	32.6		P	M
127	9.9	", least diam.	4	54.63	59.86	P	M
		", longest "	4	41.77	60.01	P	M

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Microscopes of declination circle.

Transits for value
of divisions of
rack of Photometer M.

Limit of visibility.
Reappearance of Jupiter III.

Dome beginning to interfere.

Cloudy.

Search for nebulae.
Stars run on wire at 63.2 Vernier A.

Measure of position
Stars run on wire at 45.4 Vernier B.
Measured position.
Focus 355.0
Position angle derived from reading of B 339.5
" " " " " " " 69.5

Note made June 7, 1890.
Record of seeing 8, 8, 9,
for October 20 1879 in
book of equatorial records
for that date
v R 54 (paper label 15) p. 187.
This is probably the last record of seeing.

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No.

1.18

2

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Collection of records of seeing, 1878, March 4 to 1879, Oct. 20, inclusive. This collection begun June 7, 1890.

No.	Date		Barometer reduced to freezing point. 8 P.M.		External Therm. 8 P.M.	Relative humidity 8 P.M.	Wind		Record of seeing.		
1.	1878. March	4	29.57		29	63	11	NW	5	5	2
2		5	30.18		32	80	0	S	8	8	8
3		8	30.22		50	59	0	S	7	8	5
4		9	30.40		40	77	3	SE	7	5	5
5		10	30.00		57	65	0	W	2	8	8
6		15	29.94		39	53	3	NNW	5	4	4
7		16	30.00		36	78	4	SE	4	6	3
8		19	29.65		42	—	3	SE	5	4	4
9		20	29.76		33	42	10	NW	8	6	5
10		21	30.06		28	100	0	NW	4	8	8
11		22	29.96		32	69	0	NW	good.		
12		25	29.62		25	52	8	W	9	6	5
13		30	29.95		42	72	0	E	5	6	3
14		31	29.63		38	87	1	SE	6	6	4
15	April	2	29.65		42	57.	3	NW	5	6	4
16		8	30.02	42.1	85.	0	Calm.		3	3	3
17		8	30.20	43.7	88.	2	SE		2	4	3
18		13	29.50	49.3	56.	6	W		2	3	4
19		14	29.72	47.9	62.	6	NW		3	6	5
20		16	30.14	53.4	96.	0	SE		2	5	5
21		17	30.19	44.0	91.	0	N		6	4	4
22		18	30.10	47.0	88.	0	SE		8	4	3
23		19	29.84	61.2	48.	0	N		5	3	3
24		21	29.71	54.1	58.	7	W		7	5	6
25		24	29.89	47.5	95.	1	E		2	8	8
26	May	1	29.88	47.8	89	2	E		Bad.		

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No.	DATE		BAROMETER	AT	THERMOMETER.	Hygrometer.	WIND. VELOCITY	WIND. DIRECTION.	SEEING.		
27	1878, May.	2	29.77		60.1	75	0	C.	7	7	5
28		3	29.68		67.3	73	7	S	6	8	7
29		7	29.79		56.0	81	1	E	8	8	7
30		8	29.76		55.0	92	0	E	6	6	3
31		10	29.64		57.5	47	4	W	6	4	2
32		11	29.62		49.4	57	2	W	6	7	6
33		12	29.84		56.3	52	2	WNW	6	5	5
34		13	29.88		48.0	54	3	NW	7	4	5
35		19	30.22		51	84	0	C	5	4	5
36		21	29.81		54	89	0	SE	6	3	4
37		25	29.60		64	63	7	NE	5	6	2
38		26	29.45		64	73	1	NE	5	4	4
39		27	29.60		65	57	1	WNW	8	7	6
40		29	29.87		63	56	0	NW	3	3	3
41	1878, June -	1	30.15		54	70	2	E	7	4	6
42		3	29.87		60	91	0	C	6	6	6 {very rarely.
43		4	29.70		69	78	5	SSW	5	6	7
44		5	29.75		67	64	7	WNW	6	6	7
45		6	29.83		57	40	2	WNW	7	7	7
46		7	29.80		58	56	5	SW	3	6	7
47		9	29.68		58	76	2	NW	5	8	6
48		12	29.90		55	100	0	C	7	5	6
49		13	30.00		62	83	2	SW	4	5	6
50		14	30.04		63	77	0	C	5	5	5
51		15	29.91		63	84	3	S	5	4	3
52		16	29.82		69	68	3	SW	4	6	7
53		18	29.81		63	90	0	SW	4	5	6
54		19	29.77		66	67	0	NE	5	3	3
55		20	29.72		70	65	2	SE	4	6	4
56		23	29.74		70	91	0	C	4	6	5

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No.	DATE.		BAROMETER.	THERMOMETER.	NEGATIVE HUMID.	WIND. VELOCITY	WIND. DIRECTION.	SEEING.
57	1878, June.	24	29.66	67	87	4	SW	6 8 7
58		25	29.67	68	51	1	WNW	8 7 2
59		26	29.96	68	51	0	WNW	8 5 7
60		28	30.01	75	77	0	C	8 7 6
61		30	29.98	81	77	3	SE	6 7 7
62	1878, July.	1	29.91	84	77	2	S	7 5 6
63		2	29.90	83	79	2	SW	6 5 6
64		3	29.96	83	69	4	SW	7 6 7
65		4	29.95	73	79	0	C	7 4 6
66		5	29.76	76	33	9	NNW	7 6 5
67		6	29.90	65	64	0	SE	5 4 4
68		8	29.83	80	74	2	SW	5 5 5
69		9	29.84	74	97	6	SSW	5 7 7
70		10	29.83	72	89	6	SW	6 8 6
71		13	29.90	76	89	0	SE	5 4 4
72		15	29.98	61	83	4	ESE	4 5 5
73		16	29.98	67	78	5	S	3 6 6
74		17	29.72	73	83	7	SW	3 7 7
75		18	29.71	84	61	0	C	7 8 6
76		20	29.81	69	89	1	E	2 5 5
77		21	29.43	68	90	4	WSW	8 5 2
78		22	29.49	68	64	6	WNW	8 5 5
79		23	29.87	71	65	0	NW	7 6 6
80		24	29.88	74	61	0	WSW	8 8 8
81	1878, August.	2	29.58	66	97	3	SE	6 6 6
82		3	29.67	71	92	1	N	8 7 7
83		12	29.80	71	79	0	C	4 6 7
84		22	30.03	59	84	0	C	8 5 5
85		23	30.09	61	80	3	SE	8 5 4
86		25	29.66	63	61	5	NW	5 1 2

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No.	Date.	Barometer.	Ext. Thermometer.	Relative Humidity.	Wind Velocity	Wind Direction	Seeing.
87	1878. August, 26	29.83	62	87	1	SE	7 4 4
88	27	29.84	65	83	2	SSW	6 6 6
89	29	29.96	63	86	—	—	6 3 6
90	30	30.05	69	83	0		6 6 8
91	31	30.09	68	89	4	SWS	4 6 7
92	1878, Sept., 2	29.83	73	97	2	SE	4 7 5
93	7	30.38	56	88	6	NE	4 6 4
94	8	30.29	57	89	1	SE	6 6 7
95	9	30.17	62	93	0	&	7 4 5
96	12	30.00	70	99	2	SSE	5 3 4
97	14	29.85	61	71	3	S	4 4 3
98	15	30.07	56	71	3	NNW	4 5 2
99	16	30.21	55	91	0	C	4 5 5
100	17	30.04	61	91	3	SSE	4 5 5
101	18	29.94	71	80	0	C	7 7 7
102	19	30.03	63	88	1	SE	7 7 8
103	22	30.20	61	57	2	N	7 5 3
104	25	30.07	69	87	0	C	8 6 6
105	27	30.26	50	61	6	N	7 5 4
106	28	30.26	47	79	0	N	7 8 8
107	29	30.17	53	85	2	SE	5 7 6
108	30	30.12	55	93	1	S	5 6 7
109.	1878, October, 1.	29.96	60.	88	2	S	6 6 7
110	2	29.78	65	87	3	S	5 7 5
111	3	29.85	62	70	2	S	7 5 5
112	4	29.86	60	68	0	S	5 4 3
113	6	30.03	52	91	0	NW	5 5 5
114	8	30.06	56	85	1	S	3 8 8
115	10	29.93	50	71	6	W	5 6 5

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No.	Date								
116.	1878, October,	13.	29.94	53	45	3	NW	4	6	4
117		14	30.10	51	86	3	S	5	6	6
118		15	29.98	60	83	6	SW	6	7	5
119		16	29.96	59	94	3	S	7	8	7
120		17	30.03	63	88	4	SSW	7	5	5
121		20	29.82	51	37	7	SW	4	6	4
122		21	30.03	58	70	0	C	8	7	7
123		22	30.06	52	96	1	E	4	7	7
124		26	30.21	49	93	1	SE	9	7	8
125		28	30.05	42	70	2	NW	7	4	5
126		29	30.15	41	89	1	E	6	7	7
127.	1878. November,	1.	29.91	38	74	2	W	6	4	4
128		5	29.98	31	61	4	W	3	7	8
129		7	29.51	37	62	2	SW	7	8	8
130		13	29.75	40	60	7	W	7	8	9
131		15	30.27	33	67	0		7	7	7
132		24	29.85	40	70	2	SW	9	7	8
133		25	30.12	33	73	3	NW	8	4	3
134		29	29.99	40	76	2	SW	8	5	5
135		30	30.30	35	70	1	NW	6	5	7
136	1878 December	6	29.75	28	60	5	W	5	5	5
137		16	30.00	21	71	3	NW	8	6	6
138		17	29.99	26	76	0	C	7	6	4
139		19	30.21	22	71	0	C	8	6	6
140		20	30.24	24	73	4	SW	7	5	5
141		29	30.13	22	75	0		6	8	8
142	1879. January;	7.	30.14	20	75	0	W	7	8	9
143		10	30.26	17	78	2	WSW	6	3	3
144		18	29.74	30	59	2	SW	5	6	5
145		23	30.01	28	64	4	WNW	7	7	7

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~~146.~~ 1879 January	28	29.88	43						
~~147~~ 146	28	29.88	43	74	1	SW	6	5	5
~~148~~ 147	29	30.10	49	60	4	NW	6	6	5
~~149~~ 148	30	29.98	24	60	1	W	6	7	6
~~150~~ 149 1879 February	1	29.40	14	70	6	NW	5	3	4
~~151~~ 150	4	29.81	27	62	2	NW	5	7	7
~~152~~ 151	12	29.36	31	57	5	WSW	7	4	3
~~153~~ 152	14	30.07	14	74	2	NW	8	5	6
~~154~~ 153	15	30.31	16	57	0	W	7	6	7
~~155~~ 154	24	29.92	14	64	1	SW	7	6	6
~~156~~ 155	27	30.40	17	62	4	W	6	4	5
~~157~~ 156	28	30.70	12	76	1	N	6	5	3
~~158~~ 157 1879 March	3	30.57	28	76	2	ESE	6	8	8
~~159~~ 158	5	30.47	23	60	6	NNW	6	5	5
~~160~~ 159	7	30.11	19	63	7	NW	4	5	7
~~161~~ 160	8	30.27	25	75	0	C	5	5	6
~~162~~ 161	11	29.72	41	43	5	SW	8	7	7
~~163~~ 162	12	30.03	35	61	1	W	5	5	6
~~164~~ 163	13	29.84	40	74	4	SW	5	6	4
~~165~~ 164 1879 April	20	~~29.85~~	45	46	1	NW	4	4	2
~~166~~ 165	23	30.10	49	40	4	NW	7	7	7
~~167~~ 166 1879 May	16	29.83	67	85	6	SW	6	7	5
~~168~~ 167	25	29.98	64	99	0	C	6	6	5
~~169~~ 168 1879 July	18	29.94	62	88	2	SSE	7	4	3
~~170~~ 169 1879 Aug.	2	29.82	82	66	2	SW	6	5	5
~~171~~ 170	19	29.91	65	68	3	NW	7	6	6
~~172~~ 171 1879, Sept.	12	30.08	59	82	2	S	7	1	4
~~173~~ 172	25	30.19	45	73	1	N	6	6	5

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1878 March.

No.	Bar.	Seeing.	No.	Therm.	Seeing.	No.	Rel. hum.	Seeing	No.	Wind.		Seeing
4	30.40	755	5	57	288	10	100	488	1	11	NW	552
3	30.22	785	3	50	785	14	87	664	9	10	NW	865
2	30.18	888	8	42	544	2	80	888	12	8	W	965
10	30.06	488	13	42	563	7	78	463	7	4	SE.	463
5	30.00	288	4	40	755	4	77	755	4	3	SE.	755
7	30.00	463	6	39	544	13	72	563	6	3	NNW	544
11	29.96	good	14	38	664	11	69	good	8	3	SE	544
13	29.95	563	7	36	463	5	65	288	14	1	SE	664
6	29.94	544	9	33	865	1	63	552	2	0	S	888
9	29.76	865	2	32	888	3	59	785	3	0	S	785
8	29.65	544	11	32	good	6	53	544	5	0	W	288
14	29.63	664	1	29	552	12	52	965	10	0	NW	488
12	29.62	965	10	28	488	9	42	865	11	0	NW	good
1	29.54	552	12	25	965		—		13	0	E	563

	No.	Mean		
Calm	0			
N	0			
NE	0			
E	1	5.0	6.0	3.0
SE	11	6.5	5.2	4.0
S	2	7.5	8.0	6.5
SW	0			
W	2	3.5	7.0	6.5
NW	5	5.8	6.0	5.2

(supposing for No. 10 777)

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April 1878.

No	Barom.	Seeing.	No.	Therm.	Seeing	No.	R.Id.	Seeing	No	Wind	Seeg
17	30.20	2 4 3	23	61	5 3 3	20	96	2 5 5	24	7 W	7 5 6
21	30.19	6 4 4	24	54	7 5 6	25	95	2 8 8	18	6 W	2 3 4
20	30.14	2 5 5	20	53	2 5 5	21	91	6 4 4	19	6 NW	3 6 5
22	30.10	8 4 3	18	49	2 3 4	17	88	2 43	15	3 NW	5 6 4
16	30.02	3 3 3	19	48	3 6 5	22	88	8 4 3	17	2 SE	2 4 3
25	29.89	2 8 8	25	48	2 8 8	16	85	3 3 3	25	1 E	2 8 8
23	29.84	5 3 3	22	47	8 4 3	19	62	3 6 5	23	0 N	5 3 3
19	29.72	3 6 5	21	44	6 4 4	24	58	7 5 6	21	0 N	6 4 4
24	29.71	7 5 6	17	44	2 4 3	15	57	2 8 8	20	0 SE	2 5 5
15	29.65	5 6 4	15	42	5 6 4	18	56	2 3 4	22	0 SE	8 4 3
18	29.50	2 3 4	16	42	3 3 3	23	48	5 3 3	16	0 C	3 3 3

	No.	Means
Calm	1	3.0 3.0 3.0
N	2	5.5 3.5 3.5
NE	0	
E	1	2.0 8.0 5.0
SE	3	4.0 4.3 3.7
S	0	
SW	0	
W	2	4.5 4.0 5.0
NW	2	4.0 6.0 4.5

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May 1878.

No.	Barom.	Seeing	No.	Therm.	Seeing	No.	Rel. H.	Seeing	No.	Wind.	Seeing.
35	30.22	545	28	67	687	30	92	663	28	7 S	687
26	29.88	Bad	39	65	876	36	89	634	37	7 NE	562
34	29.88	745	37	64	562	26	89	Bad	31	4 W	642
40	29.87	333	38	64	544	35	84	545	34	3 NW	745
33	29.84	655	40	63	333	29	81	887	32	2 W	676
36	29.81	634	27	60	775	27	75	775	33	2 WNW	655
29	29.79	887	31	58	642	28	73	687	26	2 E	Bad (suppose 333)
27	29.77	775	33	56	655	38	73	544	39	1 WNW	876
30	29.76	663	29	56	887	37	63	562	38	1 NE	544
28	29.68	687	30	55	663	32	57	676	29	1 E	887
31	29.64	642	36	54	634	39	57	876	27	0 C	775
32	29.62	676	35	51	545	40	56	333	40	0 NW	333
37	29.60	562	32	49	676	34	54	745	30	0 E	663
39	29.60	876	34	48	745	33	52	655	36	0 SE	876
38	29.45	544	26	48	Bad	31	47	642	35	0 C	545

	No.	Mean		
Calm	1	5.0	4.0	5.0
N	0			
NE	2	5.0	5.0	3.0
E	4	6.0	6.0	4.5
SE	1	8.0	7.0	6.0
S	1	6.0	8.0	7.0
SW	0			
W	2	6.0	5.5	4.0
NW	4	6.0	4.8	4.8

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1878 June

No.	Barom.	Seeing.	No.	Therm.	Seeing.	No.	Rel. H.	Seeing.	No.	Wind.	Seeing.
41	30.15	7.46	61	81	6.77	48	100	7.56	66	~~9~~ WNW.	~~6.67~~
50	30.04	5.55	60	75	5.76	42	91	6.66	44	7 WNW	6.67
66	30.01	8.76	55	70	4.64	56	91	4.65	43	5 SSW	5.67
49	30.00	4.56	56	70	4.65	53	90	4.56	46	5 SW	3.67
61	29.98	6.77	43	69	5.67	57	87	6.57	57	4 SW	5.43
59	29.96	8.57	52	69	4.67	51	84	5.43	61	3 SE	6.77
51	29.91	5.43	58	68	8.72	49	83	4.56	51	3 S	5.43
48	29.90	7.56	59	68	8.57	43	78	5.67	52	3 SW	4.67
42	29.87	6.66	57	67	6.87	50	77	5.55	41	2 S	7.46
45	29.83	7.77	54	66	5.33	60	77	8.76	45	2 WNW	7.77
52	29.82	4.67	53	63	4.56	61	77	6.77	47	2 NW	5.86
53	29.81	4.56	51	63	5.43	47	76	5.86	49	2 SW	4.56
46	29.80	3.67	50	63	5.55	41	74	7.46	55	2 SE	4.64
54	29.77	5.33	49	62	4.56	54	67	5.33	58	1 WNW	8.72
44	29.75	6.67	44	61	6.67	55	65	4.64	42	0 C	6.66
56	29.74	4.65	42	60	6.66	44	64	6.67	48	0 C	7.56
55	29.72	4.64	46	58	3.67	46	56	3.67	50	0 C	5.55
43	29.70	5.67	47	58	5.86	48	55	7.56	53	0 SW	4.56
47	29.68	5.86	45	57	7.77	58	51	8.72	54	0 NE	5.33
58	29.67	8.72	48	55	7.56	59	51	8.57	56	0 C	4.65
57	29.66	6.87	41	54	7.46	45	40	7.77	60	0 C	8.76
									59	0 WNW	8.57

	No.	Means		
Calm	5	6.0	5.8	5.6
N	0			
NE	1	5.0	3.0	3.0
E	0			
SE	2	5.0	6.5	5.5
S	2	6.0	4.0	4.5
SW	6	4.2	5.3	6.0
W	0			
NW	5	6.8	6.6	5.8

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1878, July.

No.	Barom.	Seeing.	No.	Therm.	Seeing.	69	97	577	No.	Wind	Seeing.
72	29.98	455	62	84	756	77	90	852	66	9 NNW	765
73	29.98	366	75	84	786	70	89	686	74	7 SW	377
64	29.96	767	63	83	656	71	89	544	69	6 SSW	577
65	29.95	746	64	83	767	76	89	255	70	6 SW	686
62	29.91	756	68	80	555	72	83	455	78	6 WNW	855
63	29.90	656	66	76	765	74	83	377	73	5 S	366
67	29.90	544	71	76	544	63	79	656	64	4 SW	767
71	29.90	544	69	74	577	65	79	746	72	4 ESE	455
80	29.88	888	80	74	888	73	78	366	77	4 WSW	852
79	29.87	766	65	73	746	62	77	756	62	2 S	756
69	29.84	577	74	73	377	68	74	555	63	2 SW	656
68	29.83	555	70	72	686	64	69	767	68	2 SW	555
70	29.83	686	79	71	766	79	65	766	76	1 E	255
76	29.81	255	76	69	255	67	64	544	65	0 C	746
66	29.76	765	77	68	852	78	64	555	67	0 SE	544
74	29.72	377	78	68	555	75	61	786	71	0 SE	544
75	29.71	786	73	67	866	80	61	888	75	0 C	786
78	29.49	855	67	65	544	66	33	765	79	0 NW	766
77	29.43	852	67	61	756	No.	Resultt.	Seeing.	80	0 WSW	888

	No.	Mean		
Calm	2	7.0	6.0	6.0
N	0			
NE	0			
E	1	2.0	5.0	5.0
SE	8	4.7	4.3	4.3
S	2	6.0	5.5	6.0
SW	8	6.0	6.4	6.0
W	0			
NW	3	7.3	5.7	5.3

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1878, August.

Nr.	Barom.	Seeing	No.	Therm.	Seeing	Nr.	Rel. Hum.	Seeing	Nr.	Wind.	Seeing
85	30.09	854	82	71	877	81	97	666	86	5 NW	512
91	30.09	467	83	71	467	82	92	877	91	4 SWS	467
90	30.05	668	90	69	668	91	89	467	81	3 SE	666
84	30.03	855	91	68	467	87	87	744	85	3 SE	854
89	29.96	636	81	66	666	89	86	636	88	~~4 SSW~~	666
88	29.84	666	88	65	666	84	84	855	82	1 N	877
87	29.83	744	89	63	636	90	83	668	87	1 SE	744
83	29.80	467	86	63	512	88	83	666	83	0 C	467
82	29.67	877	87	62	744	85	80	854	84	0 C	855
86	29.66	512	85	61	854	83	79	467	83	0	467
81	29.58	666	84	59	855	86	61	512	89	—	~~512~~ 636

	No.	Mean
Calm	3	5.3 5.7 6.3
N	1	8.0 7.0 7.0
NE	0	
E	0	
SE	3	7.0 5.0 4.7
S	0	
SW	2	5.0 6.0 6.5
W	0	
NW	1	5.0 1.0 2.0

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1878, September.

Dy.	Barom.	Seeing	No.	Therm.	Seeing	No.	Rel. Hum.	Seeing	No.	Wind.	Seeing
93	30.38	464	92	73	475	96	99	534	93	6 NE	464
94	30.29	667	101	71	777	92	97	475	105	6N	754
105	30.26	754	96	70	534	95	93	745	97	3S	443
106	30.26	788	104	69	866	108	93	567	98	3 NNW	452
99	30.20	455	102	63	778	99	91	455	100	3 SSE	455
103	30.20	753	95	62	745	100	91	455	92	2 SE	475
95	30.17	745	97	61	443	94	89	667	96	2 SSE	534
107	30.17	576	100	61	455	93	88	464	103	2 N	753
108	30.12	567	103	61	753	102	88	778	107	2 SE	576
98	30.07	452	94	57	667	104	87	866	94	1 SE	667
104	30.03	866	93	56	464	107	85	576	102	1 SE	778
100	30.04	455	98	56	452	101	80	777	108	1 S	567
102	30.03	778	99	55	455	106	79	788	95	0 E	745
96	30.00	534	108	55	866	97	71	443	99	0 C	455
101	29.94	777	107	53	576	98	71	452	101	0 C	777
97	29.85	443	105	50	754	105	61	754	104	0 C	866
92	29.83	778	106	47	788	103	51	753	106	0 N	758

	No.	Mean		
Calm	3	6.3	6.0	6.0
N	3	7.0	6.0	5.0
NE	1	4.0	6.0	4.0
E	1	7.0	4.0	5.0
SE	6	5.2	5.8	5.8
S	2	4.5	5.0	5.0
SW	0			
W	0			
NW	1	4.0	5.0	2.0

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1878

October, ~~1887~~

Nr.	Barom.	Seeing	Nr.	Therm.	Seeing	Nr.	Rel. Hum.	Seeing	Nr.	Wind	Seeing
124	30.21	978	110	65	575	123	96	477	121	7 SW	464
126	30.16	677	120	63	755	119	94	787	115	6 W	565
117	30.10	566	111	62	755	124	93	978	118	6 SW	675
123	30.06	477	109	60	667	113	91	555	120	4 SW	755
114	30.06	388	112 118	60	543 675	126	89	677	110	3 S	575
125	30.05	745	119	59	757	109	88	667	116	3 NW	464
113	30.03	555	122	58	877	120	88	755	117	3 S	566
120	30.03	755	114	56	388	110	87	575	119	3 S	787
122	30.03	877	116	53	464	117	86	566	109	2 S	677
118	29.98	675	113	52	555	114	85	388	111	2 S	755
109	29.96	667	123	52	477	118	83	675	125	2 NW	745
119	29.96	787	117	51	566	115	71	565	114	1 S	388
116	29.94	464	121	51	464	111	70	755	123	1 E	477
115	29.93	565	124	49	978	122	70	877	124	1 SE	978
112	29.86	543	115	50	565	125	70	745	126	1 E	677
111	29.85	755	125	42	745	112	68	543	112	0 S	543
121	29.82	464	126	41	677	116	45	464	113	0 NW	555
110	29.78	575		~~46~~		121	37	464	122	0 C	877

	No.	Mean		
Calm	1	8.0	7.0	7.0
N	0			
NE	0			
E	2	5.0	7.0	7.0
SE	1	9.0	7.0	8.0
S	7	5.4	6.4	5.9
SW	3	5.7	6.0	4.7
W	1	5.0	6.0	5.0
NW	3	5.3	5.0	4.7

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1878 November-December.

Nr.	Barom.	Seeing.	No.	Therm.	Seeing.	No.	Rel. Hum.	Seeing.	No.	Wind.	Seeing.
135	30.30	657	130	40	.789.	134	76	855	130	7 W	789
131	30.27	777	132	40	978	138	76	764	136	5W	555
140	30.24	755	134	40	855	141	75	688	128	4W	378
139	30.21	866	127	38	644	127	74	644	140	4SW	755
141	30.13	688	129	37	788	133	73	843	133	3NW	843
133	30.12	843	135	35	657	140	73	755	137	3NW	866
137	30.00	866	131	33	777	137	71	866	127	2W	644
138	29.99	764.	133	33	843	139	71	866	129	2SW	768
134	29.99	855	128	31	378	132	70	978	132	2SW	978
128	29.98	378	136	28	555	135	70	657	134	2SW	855
127	29.91	644	138	26	764	131	67	777	135	1NW	657
132	29.86	978	140	24	755	129	62	788	131	0	777
130	29.75	789	141	22	688	128	61	378	138	0C	764
136	29.70	555	139	22	866	130	60	789	139	0C	866
129	29.57	788	137	21	866	135	60	657	141	0	688

	No.	Mean		
Calm	4	7.0	6.8	6.2
N	0			
NE	0			
E	0			
SE	0			
S	0			
SW	4	7.8	5.8	6.5
W	4	5.2	6.0	6.5
NW	3	7.3	5.0	5.3

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1879, January–February.

Nr.	Barom.	Seeing	Nr.	Therm.	Seeing	No.	Rel. Hum.	Seeing	Nr.	Wind	Seeing	
143	30.26	633	~~146~~ 147	43	665	143	78	633	~~151~~ 152	5 WSW	743	156
142	30.14	789	~~151~~ 152	31	743	142	75	789	~~147~~ 148	4 NW	665	
147 ~~148~~	30.10	665	144	30	565	146	74	665	145	4 WNW	777	157
152 ~~153~~	30.07	856	145	28	777	152	74	856	~~149~~ 150	6 NW	534	158
145	30.01	777	~~150~~ 151	27	577	149	70	534	143	2 WSW	633	155
148 ~~149~~	29.98	676	~~148~~ 149	24	676	145	64	777	144	2 SW	565	153
* ~~146~~	~~29.88~~	~~565~~	142	20	789	150	62	577	~~150~~ 151	2 NW	577	160
146 ~~147~~	29.58	665	~~147~~ 148	19	665	147	60	665	~~152~~ 153	2 NW	856	159
150 ~~151~~	29.81	577	143	17	633	148	60	676	~~146~~ 147	1 SW	665	162
144	29.74	565	~~149~~ 150	14	534	144	59	565	~~148~~ 149	1 W	676	154
149 ~~150~~	29.40	534	~~152~~ 153	14	856	151	57	743	142	0 W	789	163
157 ~~152~~	29.36	743	.	.	.	.	.	.	.	.	.	161

*146 is same (identical) as 147.

	No.	Mean		
Calm	0			
N.	0			
NE	0			
E	0			
SE	0			
S	0			
SW	4	6.0	4.5	4.0
W	2	6.5	7.5	7.5
NW	5	6.2	5.6	5.8

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1879 February - March.

~~158~~	~~30.13~~	Seeing.	Nr. Therm.		Seeing	Dew. Pt.	Rel. Hum.	Seeing.	Nr. Wind		Seeing.
156 ~~157~~	30.39	6 ~~5~~ ~~3~~	~~162~~ 161	41	877	156	76	653	~~160~~ 159	7 NW	457
157 ~~158~~	30.57	688	~~164~~ 163	40	564	157	76	688	~~159~~ 158	6 NNW	655
158 ~~159~~	30.47	655	~~163~~ 162	35	556	160	75	556	~~162~~ 161	5 SW	877
155 ~~156~~	30.40	645	~~158~~ 157	28	688	163	74	564	~~156~~ 155	4 W	645
153 ~~154~~	30.31	767	~~161~~ 160	25	556	154	64	766	~~164~~ 163	4 SW	564
160 ~~161~~	30.27	556	~~159~~ 158	23	655	159	63	457	~~158~~ 157	2 ESE	688
159 ~~160~~	30.11	457	~~160~~ 159	19	457	155	62	645	~~155~~ 154	1 SW	766
162 ~~163~~	30.03	556	~~156~~ 155	17	645	162	61	556	~~157~~ 156	1 N	653
154 ~~155~~	29.92	766	~~164~~ 153	16	767	158	60	655	~~163~~ 162	1 W	556
163 ~~164~~	29.84	564	~~155~~ 154	14	766	153	57	767	~~154~~ 153	0 W	767
161 ~~162~~	29.72	877	~~157~~ 156	12	653	161	43	877	~~161~~ 160	0 C	556

	No.	Mean		
Calm	1	5.0	5.0	6.0
N	1	6.0	5.0	3.0
NE	0			
E	0			
SE	1	6.0	8.0	8.0
S	0			
SW	3	6.7	6.3	5.7
W	3	6.0	5.0	6.0
NW	2	5.0	5.0	6.0

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1672phae..proj..4770

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