

KG
11365
163

H. 8

Vol. II 93-192

Equatorial
and
Telegraph.
Jan. to Nov. 1849.

KG 11365.163

HARVARD
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Wm Emory 65 State Street
Ex. Phillips Wih

~~Gastrop~~

Oct. 15

" - 18

" - 16

" - 27

" - 28

Nov. 12

" 13

" 16

" 21

Sept

" 1

" 3

" 5

" 11

" 12

Aug 2nd

" 3

" 8

" 13

" 25

" 27

" 30

June 15

" 16

" 21

" 22

Cluster in Hercules

Spiral Cl. in Hercules p 162.

Im 59 Leonis July 22

Em 54 Gemini July 15

Im 71 " "

Im a " "

Em a " "

1849.

Programme of Telegraphic operations, between
Cambridge, New York and Philadelphia

For ordinary communications, the same as ~~last~~ year

For Clock beat signals.

At this end of the line, Mr Smith will issue
the order at the Boston Office for Mr ^{Assistant,}
operator to leave the Office every night in season
for the 8 o'clock Omnibus to Cambridge, unless, previously
notified to the contrary by Mr Bond, he is to take
out with him a good register and local Battery
and receiving magnet, able to conform to the
instructions of Mr Bond.

The terms of settlement to be \$10 per night,
when there is star light so as to pass signals,
or \$2 per night when the operator, go to the
Observatory but find the stars fail.

The Coast Survey allows \$1 on each end as
a perquisite for the operator, besides the above
for one good starry night, or at most, two, will
be sufficient.

To converse - give the signal "Stop the Clock".

To resume - " - - - - "Go on"

Enclon Labels to Prof: Baake, under cover to the
Secretary of the Treasury - mark'd "Official Business"

Jan. 16th

Transit of Sirius Transit.

Polaris - Illumination East.

alt

2557 - 0..39..1.0 A

Level a
E - W
120 - 121Polaris - 0..5 - 66.57
Polaris - 1..5 - 43.53

0..48..15.0 B

0..57..27.2 C

1..01..59.5 C'

1..06..27.3 D

1..11..00.7 D'

1..15..32.5 E

1..24..38.0 F

1..34..00.0 G

9) 58..21.2

1..06..29.02

-2

1..06..27.02

1..04..43.98

+ 1..43.04

1..24.11

18.93

West of north

AT no 2419

2557 - 0..52..0

2419 - 0..52..17.2

Transit Circle

2419 - 1..06..33.5 mid wire

2557 - 1..54..0

2419 - 1..54..17.2

1..06..33.5

17.2

1..06..16.3

1..06..27.0

10.7

1..24.1

17.2

1.413

V Ceti - 2.35 h m
50.15 R 2.35
α Ceti - 57.06 + 2.54

Intervals Polaris

V Ceti

41.5

5..87..0

5..21.3

a Ceti 5..35.7

5..50.2

6..4.3

6..18.3

2..56..32.7

2..55..49.93

2..55..47.93

2..56..23.82

1..24.11

9..14.0 - 13.1

9..12.2 - 17.8

4..22.3

4..27.8

4..33.4

4..31.8

9..05.5

9..22.0

2557 - 2..36..55.2
..09.3
120..45.8
2..36..55.27
2..36..53.27
2..35..26.86
+ 1..24.27

Polaris

diff

a Ceti

mid wire - 1..06..27.3

2..55..50.2

A + G - 1..06..30.5 + 3.2

2..55..49.85

B + F - 1..06..26.5 - 0.8

2..55..49.80

C + E - 1..06..29.8 + 2.5

2..55..50.00

C + D' - 1..06..30.1 + 2.8

A + G 0..39..1.0
1..34..0.0
2..13..01.0
1..6..30.5

B - 0..48..15.0

F - 1..24..38.0

12..12..53.0

1..6..26.5

C - 0..57..27.2

E - 1..15..32.5

2/2..12..59.7

1..6..29.8

C' - 1..01..59.5

D' - 1..11..00.7

2/2..13..00.2

1..6..30.1

Jan 16th

Polaris

obs. - 1. 06. 27.02

Cal. - 1. 04. 43.98

1. 43.04

1. 24.11

18.93

-1.27715

1. 30. -

87. 31 -

86. 01 -

8. 41792

9. 99959

10. 00105

10. 13860

9. 83431 = 0.68

a. l. e. t. e.

obs. - 2. 55. 47.93

Cal. - 2. 54. 23.92

1. 24. 11

39495/16.0
36
175

1. 6. 07. 0
1. 6. 22
4. 33
0. 1 56

Y Per +14.21
47.37
alt 61.58

1) Jan 17

Illuminated Earth

Level

E W

+123.0 - 132

55.7

5
3355
30
35

2

Polaris

0. 57. 31.0 C

1. 02. 04.0 C'

1. 06. 07.0 D

1. 10. 39.8 D'

15-13 E

adj. in az

1. 6. 05. 0
1. 4. 56. 5
1. 08. 5
1. 28. 5
200

Y Perseus

6. 11.7

6. 26.3

6. 41.0

6 look

7. 10.7

7. 25.6

0. 07. 40.2

155.5

6) 41. 35.5

0. 06. 55.8

0. 05. 27.4

1. 28.4

19h Am 2557 fast 1.39.0

257-15. 15. 0

158-7. 18. 50.3

15. 15. 0.0

1. 30.0

39. 13. 30.0

19. 57. 53.21

19. 21. 36.79

19. 3. 10.3

7. 18. 26.49

7. 18. 50.3

28 Nov + 23.99

16

B 158 + 07.8

19. 57. 06.46

46. 75

19. 51. 53.21

don't try - 4. 56. 04.5
C & M - 11. 32.5

Phil & HD obs - 5. 0. 42.15

C & Phila - 16. 10.5

M & Phila - 4.38

2.25

2.25

4.50 2557 - at goelook.

Capella - 5.5

B orionis - 5.7

B Tauri -

B orionis

Mar 23.34

Jan 17th

Mr Leonard attended, and passed messages between Cambridge and New York - Prof Zwinn says Mr Walker left New York yesterday, and took the clock with him. The line over the Hudson is down. Prof Zwinn was ready to night, sends word there will be no experiments to night.

Jan 18th

Polaris

2557 - 0..56..32.5

1..01..05.5

1..05..36.5 mid

1..10..08.7

1..16..44.5

No operator appeared

Jan 19th

No operator appeared

Polaris

1..06..33 - 2

1..04..55 - 7

1..37.3

2557 - 1..35.3

6..2..46..0

2557 - 2..41..34.3

5..12.4

5..26.7

5..41.0

altis 5..55.0

6..9.6

56..24.0

2..56..38.0

213867

2..55..55.24

- 2

2..55..53.24

2..54..23.78

2557 + 1..29.46

205.7

180

386.7

6..16.8

6..31.7

altis 6..45.6

7..0.4

7..14.8

7..29.0

2..37..43.2

115

2..37..00.21

2

2..36..58.21

2..35..29.02

2557 - + 1..29.15

Jan 24th *idell*

Telegraphic Stars to be observed

Bow 8^h 13^m 11.2 19^m 55^s 03.02 May 46.75

2557 16^m 13^m 00
 16^m 11^m 29.5
 19^m 55^s 49.8
 20^m 15^s 39.7
 3^m 19.1
 20^m 12^m 20.6
 20^m 13^m 11.2
 0^m 50.6
 16

Bow + 0.34.6 of Bow.

22 Am

2557 - 15^m 42.0

158 - 17^m 33.59.7

15^m 42.0
 1.34.5

39 40 25.5

20^m 03^m 42.88

19^m 36^m 42.62

3^m 12.8

7^m 33^m 29.8

158 - 7^m 33^m 59.7

2^m 9.9

1^m 16

B + 13.9

	R	alt	ZD
Capella	5.5	93.27	+ 3.27
B Orionis	5.7	39.15	- 50.45
B Tauri	5.16	76.05	- 13.55
B Orionis	5.24	47.13	- 42.47
E Orionis	5.28	46.19	- 43.47
a Orionis	5.46	54.54	- 35.01
4 - η Leporis	5.49	33.26	- 56.34
5 - μ Orionis	5.54	57.16	- 32.44
M Geminorum	6.13	70.12	- 19.48
Sirius	6.38	31.06	- 58.54
E C Majoris	6.52	22.57	- 67.09
B Geminorum	7.11	69.52	- 20.08
Castor a Geminorum	7.24	79.50	- 10.10
Pollux	7.31	53.13	- 36.47
Pollux	7.36	76.00	- 14.00
E Hydra	8.39	54.35	- 35.25
a Hydra	9.20	39.36	- 50.24

Jan 22nd

Operator arrived at 10 P.M. could get no communication. Very few stars visible.

1849
 Jan 6. 23
 Standard No. 57 - Ther. *for Jackson, no none, name none*
 10 Am 30.098 50 30.095-7644-13.0
 3 P.M. 30.162 54 30.146-7617-13.2
 31st 9 Am 30.388 45 30.390-7718-8.3 7532
 Feb 73- 29.876 54 29.860-7595-12.6
 78.44 42.22
 11 " 16 24.28
 47.38 17.54
 8.00 72.06
 39.38

Rain in Boston -- By J.P. Hall.					
	1844	1845	1846	1847	1848
January	3.68	4.58	3.12	3.28	2.30
February	2.42	4.25	2.95	4.70	3.90
March	6.00	3.83	2.73	4.77	4.05
April	-0.20	1.23	1.23	2.20	1.40
May	2.72	2.82	2.02	2.03	6.30
June	1.40	2.05	2.25	4.09	1.73
July	2.17	3.28	2.51	2.65	1.35
August	2.62	1.82	1.80	6.45	3.10
September	3.53	2.23	1.30	6.64	3.55
October	5.80	4.00	1.35	1.05	5.10
November	3.15	10.25	4.17	5.12	2.25
December	3.85	5.98	4.52	3.95	5.95
Whole amt in Year	37.54	46.32	29.95	46.93	40.98

Rain in -- 1841 - 47.05
 1842 - 39.11
 1843 - 46.69
 1844 - 37.54
 1845 - 46.32
 1846 - 29.95

Average quantity in six years -- 41.11

Near the head of Hancock Street.

January 23 - L & Linn's Transit
Polaris

69.24
47.37
21.47
68.13

42.23
1.30
43.53

Pending — 46.07

2557 0.58.39
1.03.11.7 4.28.3
1.07.40.0 mid 4.33.8
12.13.3

46.1.20.0
2557-1.15.37.2

3/23.05.0
1.07.41.7
1.07.39.7
1.4.52.3
+ 2.47.4

91 East

24.27
47.37
72.04

79.55
10.05
47.37
57.42

5.08.06
4.44.38
28.36

E W
139 139
139 142
1279
139.1

79.55
47.37
32.18
57.42

@ Hydra

9.22.03.5 1st wire
18.8
22 33.0

09.4
Star A Dec +24.27.48 12.42
47.37
60.19

8.25.5
8.40.8
8.49.0
8.56.4
9.04.4
9.11.5
9.27.5

The clock was
stopped at the
last wire.

69.24
20.36
47.37
68.13

9.39 43.3
9.38.56.44
9.38.56.44
37.17.30
+ 1.39.14

Clock broken off just
before the star
someone wanting to know when
the star was coming

Jan 23

Dec + 10° 04' 35" Lume. H. Earl

557	5.47.6	14.4
6	02.0	14.8
6	16.8	7.2
6	24.0	7.0
6	31.0	7.0
6	38.0	7.3
6	45.3	14.2
6	59.5	14.6
10 27	14.6	

Σ W
+ 140 - 140
141 - 139 +

79.55.25
90
10.04.35

H. Earl

Lume
Σ W
140 - 141
139 - 141

p. Leon
returned by
Philadelphia

A poor register.

9.3
42.30.0
43.0
53.2
10.43 03.7

10 2/6
23
10 4/9

42.22
21.20
21.02

21.21
47.37
68.58

21.02

Jan 23rd 1949

Telescope reversed

Ke West

Two first wires lost } By Clouds

Dec + 21.20.49"

Star C 7.28.5
Leonis 7.36.6
7.43.8
7.53.0
8.00.0
8.14.5

Very uncertain by 1^s

11.08.30.2

11.08.44.13

11.08.44.13

11.06.04.96

1.39.17

My

19.32.2

19.57.5

Leonis 20.12.3

20.33.0

20.53.0

1.15.7

11.24.49.0

Intervals of Robinson's Transit, in the order
of observation to the South, by Transit of
A to D — 42.44 Polaris above Pole Jan'y. 16th

B to D — 28.40

C to D — 14.07

C' to D — 6.08

D' to D — 7.10

E to D — 14.17

F to D — 28.40

G to D — 42.52

Philad 18.0
29.2

8 Leo 39.8

3.2

15.1

14.24.26.2

Went 27th 1849
24th

E	W
140	140
<u>141</u>	<u>139</u>

15.24
47.34
63.02

Transit reversed before Leonis

11.42.15
23.30

Dec + 15.25 W East

Cambridge

Star D. 2. 15.5
2. 30.7
3. 45.8

2. 53.2
3. 00.5

3. 07.7
3. 15.2

3. 29.7

11. 43. 45.0

11. 43. 00.37

11. 43. 00.37

11. 41. 21.80

1. 38.57

some of these are good

N. 2

Leonis

50

10.5

28.5

48.

11. 55. 08.3

Philadelphia

52.8

08. ?

18. ?

36.

46.4

58

08. ?

19. ?

59 31

43

52. ?

12. 00. 65

W East.

139

140

141

139

all very uncertain as it could not
surely be told whether the right click was taken

Jan'y 23rd

47.37

22.033

25.04

aa - 22.33.37"

Jan 23rd

A Corvi

7 .. 21.3 - 4 beats

7 .. 37.6

7 .. 52.8

8 .. 08.2

8 .. 23.0

8 .. 39.0

12 .. 28 .. 54.2

12 .. 28 .. 08.01

- 2

12 .. 28 .. 06.01

26 .. 28.57

19th - +1 .. 37.44 Rate

1 .. 29.19

41 .. 8.25 (+2.06)

Illumination East

Polaris mid wire

13.05.42.5 - 4 beats

- 2

13.05.40.5

- 22.33.35"

20

12.33.35"

B Corvi

obs - 12.28.06.01

Cal - 12.26.28.56

1 .. 37.45

1 .. 21.60

15.85

Sub P. P. D. 1.29.28 - 1.20003

112.33.35 - 8.41534

114.03.03 - 9.96546

42.22.49 - 10.03944

10.13156

9.75183 - 0.5647 East of South

Polaris Sub. P.

obs - 13.05.40.5

Cal - 13.04.18.9

01 .. 21.6

West of North

2906

16.49

37.44

53.92

104
149
Jan 25th Am

2557 - 16..20..0

158 - 8..0..7.8

16..20..0.0

1..39.5

40 - 18..20.5

20 - 15..32.5

20..02..48.0

8..3..17.1

7..59..30.9

78..00..7.8

+36.9

16

158 +20.9

20..14..45.79

46.75

0.15.32.54

2.06

7

8.24

1.39.5

1.47.7

29th Am

2557 - 15..45..0

158 - 7..9..36

15..45..0.0

1..47.7

39..43..12.30

20..31..14.77

19..11.53.53

3..08.7

7..08..44.8

7..09..36

+51.2

16

15 +35.2

20..30..32.02

46.75

20..31..18.77

0 35.2

72 -13.9 158

7/21.3/3.0

31st

2557 - 15..47..0

158 - 7..03..45.5

15..47..0

1..57.8

39..45..08.2

20..39..11.9

190556.3

3.07.7

7..02..48.6

7..03..45.5

+56.9

16

40.9

20..38..25.12

46.75

20..39..11.87

Jan'y - 27 Am

 $\bar{e} + 6.02.1$

$$\begin{array}{r} 41 \\ 30 \\ 31 \\ 30 \\ 16 \\ \hline 142 \end{array}$$

$$\begin{array}{r} 42 \\ 30 \\ 31 \\ 30 \\ 16 \\ \hline 170 \end{array}$$

$\bar{e} - 17.03.0$ — $17.4.0$ — $17.5.0$ — $17.6.0$
 $2557 - 16.58.41.4$ Jy — $16.54.41.2$ 424 $17.0.7.6$ 2419 — $17.01.35$
 $2440 - 17.7.0$ — $17.8.0$ — $17.9.0$ — $17.10.0$
 $17.0.35.8$ 2475 — $17.0.31.2$ 1582 $17.0.38$ 759 — $17.6.37.2$
 $420 - 17.11.0$ — $17.12.0$ — $17.13.0$
 $17.7.33.8$ 743 — $17.05.43.7$ 738 — $17.5.55.8$

Comparison of Worcester's Thermometer

Jan'y

Newm Standard — W
 29 to 3 PM 42.5 42.4
 30 - 7 AM 41.0 40.7

4.25

6.02

1.37

6.31

4.54

24

294

Jan'y. 30th comparison of Thermometers. Dr. Worcester's in Slade & Keast.

Standard Newman — Slade & Keast — C Tagliaabue — Fr & Simms

+ 32.5	31.8	32.0	32.0
- 1.5	- 7.7		
- 1.7	- 6.5		
- 2.0	- 8.0		- 4.0
- 2.3	- 8.0		- 2.0
- 2.4	- 8.2		- 4.0
- 2.0	- 8.0		- 4.0
- 1.8	- 7.7		- 3.5
0.0	- 6.0		- 0.0
+ 0.8	- 5.0		- 1.0

Ex-Charged plans

- 0.7	- 6.0	- 4.0
0.0	- 7.5	- 5.0
+ 38.7	+ 38.0	
+ 39.5	+ 39.5	+ 39.0
+ 55.7	+ 56.3	+ 56.0
+ 96.5	+ 96.7	+ 95.0
+ 103.5	+ 105.0	+ 103.0

Collection of the observations, measures, &c
of Saturn, during the years 1847-8-9-

1847. Nov-26. Remark, The division of the Ring is constantly seen, whenever the atmosphere is in a good state
1848. April 17th. The ~~new~~ spider lines subtend an angle of about three tenths of a second
- „ July. 4th. Examined Saturn carefully. It was not particularly good seeing, used a power of 140 - The Ring, seen on the disc of the Planet appears, a black line which I thought appeared a little broader than when last seen (gn. when?) On the preceding side of the Planet the ring is seen

Jan'y. 31st $\bar{U} + 6..06.8$

$\bar{U} - 17..22..0$ — $17..23..0$ — $17..24..0$ — $17..25..0$
 $2557-17..17..45$ $2440-17..16..23.3$ $2419-17..19..28.7$ $2475-17..17..12.3$
 $1582-17..17..7.4$ $424-17..21..57.6$ $719-17..19..6$ $420-17..25..58.3$
 $743-17..23..52.6$ $738-17..23..48.5$ $719-17..28..47.6$ $1487-8..56..48.3$

July-5th Am *(For further comparisons see Star Book)*
 $\bar{U} + 6..12.3$

Major Emory The Evening House New York.

$\bar{U} - 16..44..00$ $16..45..00$ $16..45..30$
 $2557 \underline{16..39..48.8}$ $420 \underline{16..42..28.4}$ $738 \underline{16..40..19.0}$

$\bar{U} - 16..46..29.7$
 $719 \underline{16..43..30}$

$6..06.8$
 $4..31.3$
 $2419 + \underline{1..35.5}$

719
 July 5th — $2..59.7$
 Jan'y 31 — $3..12.4$
 27 — $3..22.8$

Chronometers

No. 1582 — 719 — 420 — 1481 — 2475 — 738

Dec. 21	- 42..47.6	+ 4..24.3	+ 10..05.2	- 29..13.2	
26	- 43..12.3	+ 4..52.6	+ 10..37.4	- 29..40.4	- 0..37.1
28	- 43..26.9			- 30..10.6	- 0..36.3
28	+ 00..33.1	+ 0..44.9	+ 10..53.8	+ 0..10.6	- 0..36.2
Jan'y - 3	+ 00..02.8	+ 1..10.8	+ 11..31.2	- 0..7.8	- 0..38.6
6	- 00..13.3	+ 1..23.5	+ 11..53.5	- 0..15.8	- 0..41.9
12	- 00..50.8	+ 1..44.7	+ 49.6	- 0..40.3	- 0..48.0
27	- 2..19.9	+ 2..39.3	+ 2..35.9	- 1..26.7	- 1..02.1
31	- 2..45.8	+ 2..54.4	+ 3..05.1	- 1..40.9	- 1..04.7
Feb'y - 1	- 2..52.1	+ 2..58.9	+ 3..13.3	- 1..43.5	- 1..04.5
2	- 2..58.3	+ 3..01.2	+ 3..19.6	- 1..47.6	+ 1..03.6 r.d.
3	- 3..07.4	+ 3..05.4	+ 3..28.1	- 1..52.9	+ 1..02.3
12	- 3..49.8	5 th + 3..12.6	5 th + 3..40.7	12 - 2..17.2	5 th + 1..01.3

1582	Rate	719	420	2475
Dec - 21 to 26 losing	5.0	21 to 26 + 5.7	21 to 26 + 6.4	21 to 26 - 5.4
28	7.3	Jan'y 3 + 4.5	28 + 8.2	28 - 4.7
Jan'y - 3	5.0	6 + 4.2	Jan'y 3 + 6.2	Jan'y 3 - 3.1
6	5.2	12 + 3.5	6 + 7.4	12 - 3.4
12	6.2	27 + 3.7	12 to 27 + 7.1	27 - 3.1
27	5.9	31 + 3.8	31 + 7.3	31 - 3.5
31	6.5	Feb'y 1 + 4.5	Feb'y 1 + 8.2	Feb'y 2 - 3.3
Feb'y - 1	6.3	5 + 3.4	3 + 7.4	3 - 5.3
2	6.2	mean 4.2	5 + 6.3	mean - 3.9
mean	6.3	5 th + 7.2	mean + 7.2	
2 nd to 12	- 5.1			Feb'y 2 to 12 th - 3.0
738	5.78 gain			5 th - 3.5
Dec - 26 to 28	+ 0.4			
Jan'y 3	- 0.4			
6	- 1.1			
12	- 1.0			
27	- 0.9			
31	- 0.6			
Feb'y 1	+ 0.2			
2	- 0.9			
3	- 1.3			
5	- 0.5			
mean	- 0.6 gain			

1848

Examination of the Transit Circle

Decr 28. Microscope D was set to coincidence and B read off after bisecting the division. as follows. It is levelled, Level readings consistent

Set D on 90°	B reads	180° 00' 0.000 of the micrometer.
80	170	0.016
70	160	0.025
60	150	0.026
50	140	0.037
	130	0.044
	120	0.049
	110	1.002
	100	0.057
	90	0.052
	80	0.054
	70	0.054
	60	0.049
	50	0.049
	40	0.045
	30	0.040
	20	0.030
	10	0.029
	360	0.029
	350	0.019
	340	0.016
	330	0.038
	320	0.046
	310	1.005
	300	1.033
	290	1.054
	280	1.054
	270	1.054
	260	1.053
	250	1.047
	240	1.021
	230	1.018
	220	1.015
	210	0.025
	200	0.010
	190	0.013

N.B. the collimation, requires a very little adjustment, the whole instrument is remarkably stiff and acts well as a simple transit.

1984g.

Comparison of Thermometer

Feb. 10th - 8 PM Standard - Curtis - Hardwick - Paine - Taghian, B.

	+ 10.5	+ 9.7	+ 13	+ 10	+ 12
11 8 m	29	+ 30.0	+ 30	+ 30	+ 30

Feb. 12th - AmU₆ + 6.31.4

U₆ - 17.22.0
2557 - 17.17.53

U₆ 17.23.0
1542 17.12.38.8

U₆ 17.24.0
2475 - 17.15.11.4

sid 11th 21.25.43.78
46.75
21.26.30.53

17.23.0
6.31.4
17.16.28.6
1542 17.12.38.8
-3.49.8

2557. fast 9th mid nth
U₆ 17.24.0
6.31.4
17.17.28.6
17.15.11.4
2475 - 2.17.2

2557 12th mid nth
+ 2.19.54
6.4
2.25.94
-1.95
2.24.44
17.17.53.0
2.24.44
17.15.28.56
U₆ 17.22
+ 6.31.44
sid U₆ + 6.12.3
7) 19.1/2

April 30th

30.378 -
30.378 - 65.7
30.373 - 00
30.376 -
30.372 66.5
30.376 67

1849

June 14

Y Virginis

Then

13

air

Pos

50.2832

L 266

Zero

49.987

Zero Pos

270°.55"

.293

~~330~~ too bad

177.05

989

295

178.47

988

292

178.03

997

300

180.10

995

5 12463

180.15

5 456

499912

50.2926

180.00

49.9912

181.20

Power 860

3.014

50.280

180.02

* unsteady

292

179.02

Both stars nearly same mag.

275

180.10

297

179.53

.300

5 399.075 1484

179.49

50.2888

360

49.9912

180.11

2.976

232° 10'

a d

1849 Cluster in Hercules

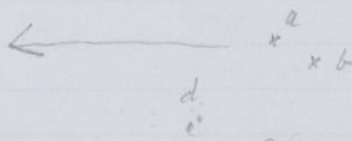
Friday June (15th?) Power 140

Pos. a, s, b

a b

300° 50'

300° 50'

alt dist 51.01
50.97

a & b diff most in R.

Comp of d Pos 35°

cloudy
49°

we suspect a motion in the companion of d when
in double dist = 2" or 3". The sky was rather cloudy
& we could not be sure. But the two stars com-
posing d seemed to point very decidedly preceding b
whereas it was last year stated to point nearly
at b & in the diagrams it points to the following side of b.

not always I think

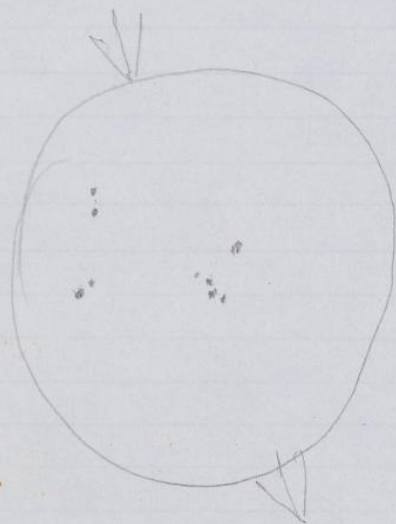
Cluster in Hercules field in 1848 Aug 14 pos of D & d.
 Aug 15th d points nearly to b' pos 45°, 62°, 57°, 57° Aug

6 bsd Sept 13th 1848
 Sept 26
 in 1848
 ab 9" 27.4, 7.8

June 16th 1849

Antares		Companion proceeds (= s. p. ?)		Zero	
Pos	271° 40'				
Del W. Pier	271.00	50.32		50.02	
	270.50	50.37		.00	
	271.30	50.37		.00	
	<u>270.20</u>	50.38			
		<u>50.36</u>			

Cluster in Hercules



145° 10'
 149° 30'

Hercules

cd fol. of pair	
Pos.	Pos.
304.50	305° 10'
<u>300.30</u>	<u>303.30</u>

Angle of Pos. circle
 1 is double 145° 10'
 149° 30'

Pos. of d.
 50°
 51

ab		cd	
Sist	Sist		
51.07	48.26		
<u>51.00</u>	<u>48.12</u>		

1849 June 16th (continued) Cluster in Hercules

ad Dist	ac Dist.	Pos ac
54.60	54.62	218° (208?)
54.63	54.62	

not special seeing

γ Virginis June 18th

49.70
49.70
49.73
49.73
49.73
49.73
24
49.718
50.015
2.97

179° 50'
181.05
178.10
180.10
179.30
5398.45
179.45
360
180.15

Zero of Pos
270° 07'
269.50
270.10
270.00

180
45
225

Antares M.B.

Dist
49.78
.75
.73
.71
.67
.70
.62
.69

Pos
91.0 = 271.0
270.0
266.20
268.25
269.13

Dist
49.71
.68
.69
.69
.69

Zero
50.013
.010
.030
.021
.010
50.74
50.015

June 18
Antares G.P.B.
Dist

49.62

.49 Seeing became so bad that further measuring
was of no value & almost impracticable.

Cluster in Hercules Jan 21st 1849

Pos of d

233° 50'

Pos of 1

143° 50'

142° 40'

a & 2 Pos 102° 10' 2 is sp a

a & 2 Dist 56.81

56.88

←

1
x
a
x
x
b
d
x
x
c

Jan 22

Pos of 18 & 19 not from a but, from each other

1849

311° 00'

Dist

47.86

47.97

←

.19 .2

.18

Zero

50.01

50.02

Pos 2 & 18

39° 20'

48.24

48.13

a & 2 Pos

102° 20'

Dist

56.86

10 & a

Pos 64° 00'

63° 45'

Dist 10 & a

58.91

58.83

near 10 is another pretty
bright star not in the chart

.10²

← .10

Pos 10²

314° 00'

312° 10'

Dist 10²

51.20

51.18

June 25 γ Virginis Leonis

Dist
50.417
50.355
372
350

Pos

Lero 8

Lero. p.

June 25th

Dist

50.370
342
320
355
332
347
340

7/306

50.344
50.011
3.33

50.345

.310

.300

.326

.330

177

50.322

50.011

3.11

 γ Virginis

Lero

50.010

50.012

.011

.012

.020

155

.011

Pos

179.45

180.20

181.00

179.35

180.50

179.25

179.30

7/560.25

180.03

179.57

not very good seeing
Lero

Dist

Pos

June 14 HCB

2.98

179.49

16 G.P.B

2.97

179.45

25 HCB

3.22

180.03

Mean

3.06

179.52

360.00

180.08

 γ Virginis

Pos. 180° 08' } Mean of 3
Dist 3.06 } Set by HCB & G.P.B

8 Librae 14.52.56 -7° 55'

1st 23.80 free S
12' 2' of S

16.08.15 16.16.56.2
16 10 39 19.20
2.24

Antares

9 P B

A = 1st reddish orange
B = 8th greenish blue

B very little n. of A

49.64
49.66
49.72
49.68
49.72
342
49.68
50.015
3.31

89.50

90.45

89.50

88.50 86.30

89.20

211

89.43

So bad seeing that I was
obliged to stop but
soon after it became quite
steady at intervals

9 P B

Dist

Zero

Zero Pos
90.15

89.50
87.30
88.05
87.00
88.00
87.39.45
87.57

49.72
.68
.68
.71
67
49.69
50.015
3.25

50.01
.02
.02
01
50.015

1 Aug
July 10
X aquila

P 860

me B

A B
C

A B	dist	Pos
50.040		217.45
.048		211.05
.052		209.00
.051		375.50
.055		212.37
5/246		
50.949		
50.133		
0.84		

A B	dist	Pos
50.067	Zero	287.30
.087	50.133	288.15
154		286.45
50.077		284.40
50.133		281.15
0.56		5/28.25
		285.41

160
25
209

New Zero

50.030	49.954	49.954
.010		50.017
.022	50.067	0.63
.002	50.017	
.023	0.50	
5/087	0.63	
50.017	113	
	0.56	dist A B

Pos ab

G. P. B.

ab

a 7^b

b 8

c 9^E284⁰

286

288

282

4/25

286.15

dist = 0.3 to 0.4 or 0.5

ab

3)12
0.4

a & b are undoubtedly separated
G P B

B is n.f. A
C is n.f. A

When best seen, A & C were distinctly separated, and
A B only for a short time at intervals, but then certainly
Proof. Manlock of Shelby College, Kentucky, saw A C separated
and A B as an elongated star.

July 11th

Antars

Power 860

companion seen with Antars 16.20 - 26.05

A rather blaring, but good seeing

Antars
 49.701
 .680
 .650
 .681
 .662

 13374
 49.675
 50.014

 3.39

Pos
 270.05
 272.07
 270.30
 269.45
 269.50

 5/352.17
 270.27

Zeno
 50.020
 .080
 .020
 .013
 .018

 5/21
 50.014

Antars
 50.347
 .342
 .377
 .350
 .363

 1229
 50.356
 50.017

 3.39

Antars
 50.362
 .358
 .352
 .353
 .365

 1290
 50.358
 50.017

 3.41

Zeno
 50.022
 .020
 .028
 .005
 .017

 50.077

7/87
 1

companion 10^L mag blue

There may be duplicated inform

1/22

July 11th - α Aquila - No 6 - 860.

Dist	AB	Pos
49.950		287.30
960		287.05
970		286.15
953		287.45
950		287.05
<u>1283</u>		<u>538.40</u>
49.957		287.44
50.017		
0.60		

220

Dist	A.C.	Pos
50.105		200.25
092		202.30
103		205.30
092		205.15
.125		204.05
.090		<u>18.45</u>
<u>6.607</u>		205.49
50.107		
50.019		
0.82		

Luro

50.047 $\times$ obliquePretty good seeing
the thin stars are separated

50.022

020

002

025

026

1095

50.019

July 15th (16) 2557 fast.

Emersion of Aldebaran. * First seen.

2557 - 6. 26. 11. 3 - 4. very doubtful whether it was the emersion

9. 18. 1
30. 17. 01. 2
7. 33. 39. 87
22. 43. 21. 33
21. 16. 23. 75
42. 12. 95
20. 94
93
22. 39. 37. 97

7. 32. 53. 16
46. 73
7. 33. 39. 87

22. 43. 21. 33

3. 43. 37

22. 39. 37. 96

Em. 54 Tauri	July 15 th 14 ^h 22 ^m 37.6	M.S.G.	H.C.B.
Im. 71 Tauri	" 16. 20. 38.2	"	"
Im. a Tauri	" 24. 25. 53.7	"	"
"	" 21. 25. 53.6	"	G.P.B.
"	" 21. 25. 52.8	"	A.V.S.
Em a Tauri	" 22. 39. 38.0	"	H.C.B.

1849 July 15 (16^h Am)

occultation.

of 54 Tauri. Emperor

Linnal 2557 - 22^m 07^s 49^s T - 6 M.C.B. quick, star broad, s. trans.2557 fast - 9^m 07^s 27

obs. Camb. m.s.t. - 14^m 22^s 37.65
 Cal. R.F.P. 14^m 22^s 36.60
1.65

2557 4^m 50^s 00 = 4^m 51^s 00.0
 2440 4^m 36^s 30.9 2419 4^m 48^s 23.2
13.291 2.36.8
 9^m 7.9 4^m 51^s 00.0
 - 4^m 21^s 2 9^m 7.9
 4^m 41^s 52.1
 4^m 48^s 23.2
+ 6^m 31^s 1

Immersion of Tauri

m.s.t. 239 - 16^m 20^s 53^s - 5 - will, but not exact, error could be well
 exceed two seconds, prob. much less.

239 fast 16^m 20^s 51.0
 Camb m.s.t. 16^m 20^s 38.2
 16^m 21^s 04.
25.8

2557 - 0^m 10^s 0
 239 - 4^m 24^s 44.
43.8

2557 fast - sid. t.
 at Camb. 9^m 07^s 47

α Tauri (Aldebaran) Immersion bright limb.
 5 ft Equatorial

W.C.B.

2557 5^m 12^s 14.7 - 4 beats5^m 12^s 12.7Camb. m.s.t. - 24^m 25^s 53.67 AmCal. R.F.P. - 9^m 25^s 51.0
2.7

G.P.B.

2440 = 4^m 58^s 51.0 - 15 beats

g. 25^m 53.59
 Camb. m.s.t.
 Cal g. 25^m 51.0
2.59

Thought this was a slight
 projection for 1 or 2 beats.
 disappeared instantly.

G.N.S. 2419 5^m 09^s 35.0 - 0 beats2419 fast - 6^m 31.1

Perfectly instantaneous

Camb. m.s.t. Am - 9^m 25^s 52.79

at 4.30 sid. time

2557 fast - 9^m 07^s 87

saining daily 1.7

Camb. sid. time on moon 1st - 7^m 33^s 39.87

M.C.B. counted 5 beats = 2.5. between the first apparent contact of
 Aldebaran and bright limb, and the stars instant disappearance.

2557 - 5^m 59^s 0
 2440 - 5^m 45^s 30.7
13.29.3

2557 - 6^m 01^s 0
 2419 - 5^m 58^s 23.7
2.36.8

2419 - 6^m 20^s 0
 2557 - 6^m 4.36.8

2557 - 6^m 12^s 0
 2419 - 6^m 29^s 23.2
2.36.8

124

$$2419 + 6^{\text{h}} 56.7^{\text{m}} .5$$

July 22.

observed immersion

of 59 Leonis - Obs. 2419.
 WCB - $15^{\text{h}} 59^{\text{m}} 30.3 - 4$

$$2419 - 15^{\text{h}} 57^{\text{m}} .0$$

$$2440 - 15^{\text{h}} 39^{\text{m}} 37.8$$

$$11.22.2$$

July 28th 1849
 15^h 5

X Aquila

IR $19^{\text{h}} 35^{\text{m}} 28^{\text{s}}$
 Set $11^{\circ} 29'$

Zur

$$15^{\text{h}} 59^{\text{m}} 28.3$$

$$6^{\text{h}} 56.7$$

$$15^{\text{h}} 52^{\text{m}} 31.6 \text{ Sid. Time}$$

$$9^{\text{h}} 01^{\text{m}} 15.78$$

$$7^{\text{h}} 51^{\text{m}} 15.82$$

$$1^{\text{h}} 17.20$$

$$7^{\text{h}} 49^{\text{m}} 58.62 \text{ M.S.T.}$$

Im of 59 Leonis July 22nd $7^{\text{h}} 49^{\text{m}} 58.6^{\text{s}} \pm 1^{\text{s}}$
 Some doubt of the local time

August 2^o - § Herculis.
 Power 860. Red illumination

Wirt

$$49.842$$

$$.842$$

$$.830$$

$$.850$$

$$.820$$

$$5 \overline{) 184}$$

$$49.8368$$

$$49.834$$

$$7.466$$

Pas.

$$82^{\circ} 20$$

$$83^{\circ} 20$$

$$84^{\circ} 00$$

$$81^{\circ} 30$$

$$81^{\circ} 55$$

$$113.05$$

$$82.37$$

Zeno

$$49.986$$

$$.970$$

$$.945$$

$$.950$$

$$.986$$

$$51617$$

$$49.9834$$

For Pas. laid the stars between the wires at the same distance they were measured. I consider them good measures notwithstanding the stars are flickering.

A 3 mag. 6 7-8 - A precedes

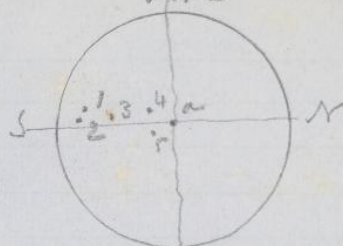
Aug^r. 2apparent places
Cluster in Herculesas seen ⁱⁿ Telescope 125

(a) double star - S. p. quadrant

Dist

Pos

1 & 2 in a double star 2 mag



1 & a	32.105	20.45
	32.050	20.20
	32.235	20.70
	<u>490</u>	<u>175</u>
	32.163	20.25
	49.995	
	<u>178.32</u>	

In these observations the star a is not the same as that designated by the same letter in other parts of the book

Lined

49.995

2 & a	31.577	18.30
	31.531	18.00
	31.700	18.08
	<u>31868</u>	<u>138</u>
	31603	18.33
	49.995	
	<u>183.92</u>	

3 & a is a single star S. p. quadrant

3. 3 mag Dist

Pos

3 & a	36.095	8.35
	36.147	8.38
	36.050	9.45
	<u>1292</u>	<u>126.58</u>
	36097	8.59
	49.995	
	<u>139.98</u>	

a here is identical with d.d' of the old diagram.

The upper or preceding right hand star of the Trapezium is, a, of the old Chart.

d, is the star more central this evening

4th May 4 a little precedes (a) and is North of it

a & 4

Dist

Pos

	42.860	5.02
	42.835	6.15
	42.900	7.35
	<u>312595</u>	<u>121.52</u>
	42.865	7.17
	49.995	
	<u>71.30</u>	

3-4 May 5 following (a) and is North of it

Dist

Pos

5 & a	43.078	352.30
	43.150	357.65
	43.207	352.25
	<u>31435</u>	<u>316.40</u>
	43.145	352.13
	49.995	
	<u>68.50</u>	

August 3^d

Cluster in Hercules

	dist	Pos
a c	54.503	
	54.645	
	54.543	
	54.633	
	54.655	
	<u>80</u>	
	54.60	
	49.78	
	<u>4.62</u>	

August 7th

	dist	Pos
a. 1	47.185	3.30
3 mag	47.297	4.45
South of a	47.340	<u>4.05</u>
North	<u>522</u>	4.07
	47.274	
	49.595	
	<u>2.72</u>	

The 2 bright stars at d, d'. points very nearly to b, where the wires are laid on d d'. the direction of the line is $\frac{1}{2}$ above b, toward r, a.

New measure of a, b, c, d, d'.

	dist	Pos
a. b.	49.115	301.15
	.135	302.05
	.195	<u>302.30</u>
	.160	
	.113	301.57
	<u>158</u>	
	49.133	
	50.00	
	<u>0.87</u>	

a. c.	45.403	26.05
	45.375	25.85
	<u>45.470</u>	<u>25.25</u>
	45.47	25.32
	<u>50.00</u>	
	4.59	

a. d	45.470	46.45
	45.350	46.40
	45.300	46.50
	45.395	<u>46.45</u>
	<u>45.350</u>	
	45.37	
	<u>4.63</u>	

1849

Aug¹⁴ - 8

line

Cluster in Hercules South pole & quadrants

(north)

127

Pos

Ang

300.45

300.35

300.35

300.38

2 lines exactly with a + b (1 mag.)

a-2

61.180

61.207

61.190

61.19

11.19

a-3

61.887

61.950

61.870

61.90

11.90

325.15

324.55

325.05

325.05

a-4

- 60.550

60.740

60.800

60.71

10.71

325.50

4 in the direction of d from 3
it is 3 mag. difficult to catch
with binoculars

a-5

66.687

66.795

66.512

66.67

16.67

318.00

317.15

318.65

318.00

5 first mag. lines nearly
with c & d

a-6

- 83.835

84.220

84.090

84.05

34.05

320.40

319.50

320.20

320.17

6 is an outlier of the 1.2 mag

Zero

50.00

28 Aug 8th Comet ~~see R~~ in a line between Cor. Caroline & Cor. 5
 Mean Solar Time 10^h 04^m 2^s Dec +46° 30' Great Bear
 W H 7^m 00^s

2th 9th ~~com~~ Could not find in G.R.
 on account of C. & L. being
 239 - 10.30.2.15 10.30.21.3 = 18.8 diff R Const 45" S of Sw
 239 10.30.38.0 Center of Field Dec 42° 51' 30"
 H 6^m 31^s 02

239 10.30.38
 9^m 10^s 00

Aug 8th 13th H.C.

	Birth	Pos	
a-10	26.20	289.20	11 & 11 double outside 2.5 mag.
	26.14	289.50	
	26.62	289.45	
	26.25 50.00 23.75	289.42	
a-11	27.640	287.00	Zero 50.01
	27.650	286.40	
	27.712	287.30	
	27.66 50.00 22.34	287.03	

August 13 - Cluster in Hercules

North preceding Quadrant
(pos. as seen.)

129

	Left	Pos.	South
a-1	43.280	282.25	1 is 1 st mag - in North preceding
	43.310	284.30	
	43.265	283.45	
	<u>43.29</u>	<u>283.33</u>	
	6.71		

a-3	47.353	289.00
	47.340	289.20
	47.480	288.55
	<u>47.49</u>	<u>289.05</u>
	2.51	

3 & 2 form a double star
of the 3rd mag

a-2	47.020	296.05
	46.992	297.50
	46.900	297.50
	<u>46.97</u>	<u>297.15</u>
	3.03	

a-4	41.483	329.75	4 is 2 mag
	41.327	331.10	
	41.415	331.05	
	<u>41.408</u>	<u>330.30</u>	
	8.59		

a-5	32.225	318.25	5 is 2 mag. outside
	32.385	318.25	
	32.385	317.40	
	<u>32.33</u>	<u>318.10</u>	
	17.67		

a-6	35.257	Pos a little north (7°) of 5	There are double stars
	<u>14.74</u>		6 is too close to see separately
a-7 & 7	37.400	Pos. 3° south of No 4	
	<u>12.60</u>		

130

Aug^r 13HG (North) following quadrant
South

a-1

min

Pos

57.927

47.35

58.012

47.50

58.035

47.50

57.99

47.45

7.99

1 is 3rd mag

a-2

68.605

31.40

68.715

31.00

68.600

31.45

68.64

31.30

18.64

a-3

78.025

4.30

77.900

3.40

77.970

5.25

77.97

4.30

27.97

3 is very faint 3rd mag or 4th
too faint to measure well

Aug 24^h 15^m 4^s
 $\frac{5.20}{24.20}$

24^h 20^m
 $\frac{12}{24.08}$

71° 16' - 27° 16'

4.38
 - 27.51

AR 4^h 45^m 04^s
 Dec - 27° 16'

3^h 24^m
 $\frac{41.45}{1.21}$

60 11
 4^h 44^m

1.04

4^h 45^m 04^s

Saturday Aug $\frac{24}{25}$ 1849

Comet of April 11th

~~8.46.56~~
 3 13.10

- 27° 44' 00"

1^h 23^m 26^s - 27° 44'

3^h 13^m 12^s
 $\frac{4.36.38}{1.38.01}$

Chro 424

Comet low & very difficult
 to observe in the Equatorials.
 Disappeared with the first twilight

3^h 13^m 12^s

1.29.50

4^h 43^m 02^s

2557 13^h 28^m 00^s

424 13^h 15^m 42.6

12^h 17^m 4^s

10.53

424 slow 1.24

Comet is ¹⁵ n of star 8th

< ¹⁷ x * — star of comp = 8th
¹³

1.47 13=1 47 48
 29 04

Star 8th

Comet

1^h 49^m 21^s

49 56.0

35

50 20

50 54.0

34

57 23.5

51 58.5

35

Comet below zero 49.98

1^h 56^m

95.58

1^h 58^m

96.73

2^h 00^m

96.43

96.24

49.98

46.26

9.2

45.3.4 = 7^h 33.4

Star 8th of comp

Eye pin out of center

2^h 10^m 19.0 - 5^h 14^m - 27° 15' 40"

A 9^h 27^m 14^s
 4^h 43^m 03^s

cor last 6^h 15^m

- 27° 21' 55"

2^h 15^m 26.5

9^h 32^m 22^s

4^h 43^m 02^s

4^h 43^m 02.5

1^h 23.0

4^h 44^m 25.5 Feb. AR 1849.0

Comet

1^h 23.02

Star 5th BAC 1634

2^h 21^m 59^s - 27° 00' 28"

9^h 14^m 01^s

5^h 07^m 58^s

2^h 34^m 12^s - 27° 00' 50"

9^h 26^m 14^s - 27° 07' 00.6

5^h 07^m 58^s - 6.15.6

5^h 09^m 21.02 Cor. inst

Comet of April 11th 1849 (Continued)

Aug $\frac{24}{25}$ Dec.

3.1 Comet follows Star dR 34.8 at $424 = 1.50^m$
 cor Ref -0.15 1.24 424 $Star$
 dR 34.75 $1.51..24$
 Star R $4..44..25.54$ $10..11..22$
 Comet R $4..45..00.39$ $15..40..02$
 $2..34$ $15..37..28$

Comet North of Star $7' 33'' .4$ 165.7 241.96
 cor ref $+3.1$ 67 241
 d Dec $7' 36'' .5$ 6590 23949
 $1.51..24$ $Star$ Dec $-27..21..50$ $3..59.5$
 $4..45$ Comet Dec $-27..14..08$
 $2..34$ 16

Lucaille 1613
 1750 $4..40..26.7$ $-27..33..47$
 Dec $3..58.84$ $10..54.24$
 1849.0 $4..44..25.54$ $27..22..47.6$

Landi 9167
 $4..42..28.32$ $-27..17..10.4$
 $1..58.53$ $5..23.0$
 $4..44..26.85$ $27..11..48.4$ $(+10' 00'' 2)$

M.S. 2 Aug 24^m 15^h 37^m 30^s Comb M.S. 2.

Comet follows Star $dR = 0' 34.75''$ 657.7
 " North of " d Dec = $7' 36'' .5$ 328.8
 $322.2 = 5' 22''$

Write the Circles
 Comet R $4..45..00.4$ 3 $c-o = +3.6$
 Dec $-27..14..10$ 1 $c-o = -1.10$

The Star is Lucaille 1613 But I have no confidence in his declination.
 Landi 9167 Was not to be found it differs just

10' in Dec. (being so far north) from the star's observed place

Lacaille perhaps is 1' too far south and
 La Lande " 10' " North
 But the uncertainty is too great. For I do
 not believe the observed place of the star
 was 30" in error in Dec. unless the eye piece
 moved.

Cluster in Hercules

Aug 25th 1849 John saw last night
a nebula, looks n.p.
Coma but very large

Star 2nd

n.p.a

67° 35'
67° 42'

67.39
~~67.41~~

30.45
30.32
30.33
30.37
19.61

20.20

10.05

10.15

4.59

20.10

2.15

R 22.25

~~21.30~~

Star 1st

n.p.a

45° 50'
46.12

46.08
46.03

~~46.05~~

19.16
19.00
18.97
19.04
30.94

Great diagonal
nebularity

424 21° 11' 40"

10.52.15

22.19.33

1.25

R 22.20.58

~~21.36~~

Star 5th n.p.a

63° 40'

63.40

63.45

56.20'

63.42

~~6.56~~

8.39
8.51
8.55
8.48
41.50

This reading is probably in error as I can find no star there
but one in 56.20' at same dist. It might have arisen by read-
ing complement Sept 28th

Aug.
B.J. Comet

Star

Proceeding
Comet North of Star422 1.58.52
1.59.11.82.02.12.7 - 20.7
2.02.32.0 - 20.275.06
49.72
25.34

49.72

d.R 3. 20.7
3. 20.274.57.00
2. 34.15
22.4525.45
49.98
24.50
d.R

Comet

2. 17. 34 2. 20.52.2 + 1^s

2.34

Star of Comp. Lacaille 1613

South star 10" N of star of comp

comp 11.7. 17. 0.6"

27. 17. 16

Star 5. 11.7. 02. 2.3
14. 43 2.01.20Star of Comp same as on 24th4. 44. 25.54
3. 20.35
4. 41 05.21

27. 21. 50

Comet N.

Comet prec.

4. 05.7
27 17 44.3

Lig Dec

d.R

4. 04. 0 + 1.7

3. 20. 45. 10

4. 05.7
7. 36.8
3. 30.83. 20.35
0. 34.75
3. 55.10

1. 59. 00

1. 30

2. 00. 30

10. 19. 15

15. 41. 15

2. 33

15. 38. 42

M.S.G. Aug 26th 15. 38. 42

Comet proceeds Star d.R = 3. 20. 35

" N of Star d.D = 4. 05. 7

Star of Comp. Lacaille 1613

Lacaille Star is not in its place
from circleAug 26th 15. 39. 2d.R 4. 41. 05. 2
Dec - 27. 17. 44

S of double star Feb. 22. 45

x 5 27. 00

4. 45. 00. 4 27. 14. 10

3. 55. 0

3. 31

d.R 4. 48. 55. 2 27. 17. 41

4. 41. 05. 4

August 27th C. HerenlisStar 4th n.f. a
$$\begin{array}{r} 157^{\circ} 30' \\ 157^{\circ} 12' \\ 157^{\circ} 07' \\ \hline 157^{\circ} 20' \end{array}$$

wrong position

~~69.97~~	70.15
~~70.12~~	70.02
~~69.85~~	70.00
<u>69.78</u>	<u>70.06</u>
	20.06

Star 3.4 n.f. a

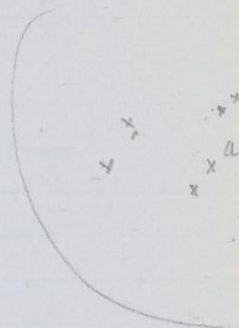
$$\begin{array}{r} 166^{\circ} 40' \\ 166^{\circ} 40' \\ 167^{\circ} 15' \\ \hline 166^{\circ} 54' \end{array}$$

$$\begin{array}{r} 69.47 \\ 69.59 \\ 69.51 \\ \hline 69.52 \\ 19.52 \end{array}$$

Star 4

$$\begin{array}{r} 168^{\circ} 00' \\ \hline 168.00 \end{array}$$

Dist.

$$\begin{array}{r} 70.76 \\ 70.78 \\ \hline 70.77 \\ 20.77 \end{array}$$


$$\begin{array}{c} \angle \\ \times \times \end{array}$$

x

Aug 29th Sent to J. B. Glind obs. at the
Recap. of Schweitzer's Comet (also to Schu. by Dr Gould.)
Disap. of Saturn's Ring
Variableness of Satellites of Jupiter.

Cluster in Hercules

Aug 30

a	Star 12 th	Star 8 th
19 "50" 36.8	51 "28.8	51 59.8
19 "50" 45.3	36.5	52 "08.2
	57.0	1 "23.0
	51.2	1 "22.9
19 52 "33.3	53 "24.4	53 "56.2
41.1	32.7	3.9
	51.1	1 "22.9
	51.6	1 "22.8
19 "54" 24.8	55 "16.3	~~56 "16.3~~
33.4	24.4	~~24.8~~
	51.5	
	51.0	
56 "16.3	57 "07.8	57 39.6
24.8	16.4	48.0
	51.5	.8
	51.6	

Cluster in Hercules

$4 \times 12^{\text{th}}$	$\times 12^{\text{th}}$ N.J. a	$2 \times 8^{\text{th}}$
Sif Dec		Sif Dec
27.79	Zero	28.96
27.63	49.98	28.88
27.76	50.05	28.90
27.88	49.99	29.05
27.72	50.02	29.05
37.8	50.02	4
27.756	50.01	

Aug 30 1849

a is the central star of the Cluster in Hercules. There is north following a star of the 12^{th} mag and another of the 8^{th}

a	12^{th}	8^{th}
20.19 03.8	20.19 55.0	20. 26.4
13.2	20 04.7	20 36.3
20 21. 01.8	20.21 52.9	20.22 24.7
11.3	22. 02.5	33.8
22. 57.3	23 48.4	20.24 19.7
23. 06.5	58.0 ?	29.2

(8^{th}) South of (12^{th})	Zero altered by accident	(12^{th}) S.p. a	Yr star 12^{th} & 8^{th} are <u>not</u> the same as those above. They are here both <u>Souths</u> of a.
5.07		5.23	Zero
5.11		5.20	50.015
5.18		5.25	50.040
5.12		5.23	50.010
Zero			50.018

Cluster in Hercules Aug 30th 1849

139

(12)
52 " 53.8
53 " 03.2

(4)
~~39.0~~

Scud rolling in from S E

(12)
20 " 55.0 5.0
14.5

a
56 " 52.8
55 01.7

(12)
20 " 57 41.8
57 56.8
05.7

(8)
57 " 50.5
58 05.0

(12)
20 " 58 41.4
58 " 56.4

(8)
58 " 49.7
59 " 04.5

Sept 1 1849 Cluster in Hercules.

Sta 3 s/p a

110 ⁰ .25	35.62
110.30	35.49
<u>110.15</u>	<u>35.62</u>
110.22	35.57
	14.43

Sta 5 s/p a

104.20	37.94
103.40	38.02
<u>104.00</u>	<u>37.95</u>
104.00	37.97
	12.03

* 4 s/p a

112 ⁰ .00	38.97
112.30	38.92
<u>112.25</u>	<u>38.94</u>
112.20	38.94
	11.06

Sta 5 s/p a

115 ⁰ .45	31.09
115.40	31.15
<u>116.10</u>	<u>31.00</u>
115.52	31.08
	18.92

s/p a

s/p a

Sta 1 st m	26.48
Sta 2 nd m	26.62
<u>109.50</u>	<u>26.62</u>
109.50	26.58
<u>109.40</u>	<u>27.42</u>
109.47	

Star 1st N.J.M. above * 1st

157 ⁰ .30	48.38
<u>156.00</u>	<u>48.34</u>
156.45	48.36
	1.64

Sta 3 n/p a

50.50	59.57
<u>50.50</u>	<u>59.53</u>
50.50	59.55
	9.55

Sta 2nd n/p a

50.30	61.37
<u>50.40</u>	<u>61.37</u>
50.35	61.37
	11.37

Sta 1.2 n/p a

49.50	65.95
<u>49.50</u>	<u>65.90</u>
49.50	65.92
9.10	15.92

Sta 3rd n/p a

37.40	72.58
<u>37.40</u>	<u>72.74</u>
37.40	72.63
	72.65
	22.65

Double Sta 1.2 n/p a

Conspicuous 25.30	72.30
<u>25.30</u>	<u>72.30</u>
25.30	72.30
	22.70

Comp. of above is n/p

147 ⁰ .40	50.92
<u>145.20</u>	<u>50.88</u>
146.30	50.90

all nearly in a line

Zero
50.02
50.00
50.00

Stations 2nd 3rd
 n.f. a
 nearest one to a 350° 50' γ
 74.77
 74.86
 74.81
 24.51
 good
 Companion
 farthest one 349° 39'

d points between b & a but nearer a
 d has a smaller companion more distant
 pointing between c & b.

Pos & Dist of Comp. n.f.

			mag.	dist	prob	No. obs	
X	342° 28'	57° 54'	4	11.06	292° 20' sp	3	obs'd before?
		1.54	5	12.03	284° 00' sp	3	
			3	14.43	290° 22' sp	3	obs'd before?
			3.4	15.82	152° 17' n.f.	2	
			5	18.52	295° 52' sp	3	
Stn 3.4 n.f. a		γ	X 3.4	19.83	157° 20' n.f.	2	
157° 10'	69.77		3.4	20.36	149° 05' n.f.	2	
157° 30'	69.89		4.5	20.77	143° 40' n.f.	2	
157° 20'	69.83		obs before 1	23.42	289° 47' sp	3	Comp n.f. γ 1.64 = 156° 45' n.f.
	19.83		2.3	24.51	170° 50' n.f.	1	Comp n.f. γ 1.54 = 162° 28' n.f.
Stn 3.4 n.f. b			3	9.55	230° 50' n.p.	2	
152° 05'	65.79		2	11.37	230° 35' n.p.	2	
152° 30'	65.84		1.2	15.92	229° 50' n.p.	2	
152° 17'	65.82		3	22.65	217° 40' n.p.	2	
	15.82		1.2	22.30	205° 30' n.p.	2	Comp n.f. 146° 30' γ 0.90
Stn 3.4 n.f. a							
149° 10'	70.50						
149° 00'	70.29						
149° 05'	70.27						
	70.36						
	20.36						
Stn 4.5 n.f. a							
143° 20'	70.63						
144° 00'	70.96						
143° 40'	70.73						
	70.77						
	20.77						

Monday Sept 3rd 1849 Cluster in Hercules

Sta 5 th n/a		3.4 s/a		Zero
100.30	56.21	42.30	64.59	50.04
X 101.05	56.14	X 42.30	64.54	50.03
100.47	56.17	42.30	64.56	50.01
	6.15		14.54	50.02
				50.02
Sta 3.4 n/a		4.5/a		12
100.15	59.79	46.00	62.53	
X 100.05	59.73	45.00	62.48	X
100.10	59.76	45.20	62.64	
	9.74	45.27	62.55	
			12.53	
Sta 4.5 n/a		3.5/a		
100.00	66.02			
X 99.50	65.94	32.30	62.25	
99.55	65.98	32.20	62.31	X
	15.96	32.30	62.28	
			12.26	
X 2.3 n/a		4.8/a		
93.10	90.77.76			
93.10	90.86.55	34.15	65.78	
93.10	90.80	34.30	65.64	X
	90.67	34.22	65.71	
	90.69		15.70	
	40.67			
1.2 s/a		4.5/a		
48.15	80.94	26.45	72.08	
48.05	80.99	27.10	72.15	X
48.10	80.97	26.58	72.11	
	30.95		22.09	
4.5 s/a		4.8/a		
49.30	55.91		71.33	
49.10	55.84	7.40	71.30	
X 49.20	55.87	8.10	71.46	X
	5.85	7.55	71.36	
			21.34	
		3.4 s/a		
		350.15	76.22	
		349.50	76.09	
		350.02	75.98	X
			76.23	
			76.13	
			26.10	

Oct 4 of Sept 3

J. M. Ballard Norton

mag	dist.	pos	obj.
5	6.15	100.47 nj	2
4.5	5.85	49.20 sj	2
3.4	9.74	100.10 nj	2
3	12.26	32.30 sj	2
4	12.53	45.27 sj	3
3.4	14.54	42.30 sj	2
4	15.70	34.22 sj	2
4.5	15.96	99.55 nj	2
4	21.5 ²⁷	8.45 sj	2 obsd Sept 19 th
Before obsd 3.4	26.10	350.02 sj	3
4	28.08	26.58 sj	2
Before obsd 1.2	30.95	48.10 sj	2
2.3	40.6 ⁴	93.1 ⁰⁷ nj	2 obsd on 11 th

Sept. 5th Cluster in Hercules

The preceding of a pair of stars in the North Boundary Quadrant we shall call α

	Dist	Pos
α	27.845	25.40
	.785	25.50
	.840	25.30
	.870	25.50
	.880	25.35
Pos for this series		25.40
293.40	22	
	27.844	
	50.013	
	22.169	

2nd Comp. N. & W.

49.105

.155

.110

.061

.130

49.112

50.013

90

328.25

327.05 Carefully

325.20 measured

324.00

325.05

29.45

325.57

Line of sight

50.000

.027

.030

.010

.000

50.013

326
30
416
16

Star 4.5 S of 2

77° 30' 49.31

81° 30' 50.71

83° 00' 50.60

82° 30' 50.75

81.07 50.69

0.68

2 = 1

measures from α

mag Dist

22.17

Pos

205° 40' N. P.

No. of obs.

5

double

S.P.

90° 20'

99° 10'

103° 15'

91° 15'

measures from 2

Comp. of 2 =

2

0.90

145° 57' N. P.

4

4.5

0.68

81° 07' S. P.

4

Sept 11th 1849

Cluster in Hercules

3rd sp a
$$\begin{array}{r} 350.20 \\ 350.15 \\ \hline 350.17 \end{array}$$

$$\begin{array}{r} 23.69 \\ 23.72 \\ \hline 23.70 \\ 26.30 \end{array}$$
 $x = 2^{\text{nd}}$ up a
$$\begin{array}{r} 226.00 \\ 229.35 \\ \hline 227.47 \end{array}$$

$$\begin{array}{r} 19.05 \\ 18.95 \\ \hline 19.00 \\ 31.00 \end{array}$$
sp a 5th

$$\begin{array}{r} 336.47 \\ 336.40 \\ \hline 336.43 \end{array}$$

$$\begin{array}{r} 0.60 - 0.16 \\ 0.98 - 0.35 \\ \hline -0.134 \\ -0.28 \\ \hline 50.28 \end{array}$$

Measured from x

$$\begin{array}{r} 5^{\text{th}} \text{ sp } x \quad 355.15 \\ 354.50 \\ \hline 355.02 \end{array}$$

$$\begin{array}{r} 36.52 \\ 36.21 \\ \hline 36.35 \\ 13.65 \end{array}$$

Two or three x1

sp 1st a
$$\begin{array}{r} 320.10 \\ 320.14 \\ \hline 320.12 \end{array}$$

$$\begin{array}{r} 5.95 \\ 5.94 \\ \hline 5.94 \\ 44.07 \end{array}$$
4th sp x
$$\begin{array}{r} 296.50 \\ 296.45 \\ \hline 296.47 \end{array}$$

$$\begin{array}{r} 38.48 \\ 38.37 \\ \hline 38.42 \\ 11.58 \end{array}$$

Zero

$$\begin{array}{r} 50.005 \\ 50.01 \\ 50.01 \\ \hline 01 \end{array}$$
3rd sp a
$$\begin{array}{r} 296.05 \\ 295.30 \\ \hline 295.47 \end{array}$$

$$\begin{array}{r} 19.60 \\ 19.64 \\ \hline 19.62 \\ 30.39 \end{array}$$

3 sp x

$$\begin{array}{r} 300.10 \\ 300.15 \\ \hline 300.12 \end{array}$$

$$\begin{array}{r} 25.41 \\ 25.43 \\ \hline 25.42 \\ 24.58 \end{array}$$
3rd sp a
$$\begin{array}{r} 281.05 \\ 281.05 \\ \hline 281.05 \end{array}$$

$$\begin{array}{r} 18.28 \\ 18.33 \\ \hline 18.31 \\ 31.70 \end{array}$$
> 1st sp x
$$\begin{array}{r} 294.05 \\ 294.10 \\ \hline 294.07 \end{array}$$

$$\begin{array}{r} 17.49 \\ 17.62 \\ \hline 17.55 \\ 32.45 \end{array}$$

$$\begin{array}{r} 85.50 \\ 87.20 \\ \hline 86.35 \end{array}$$

$$\begin{array}{r} 3.4 \\ 48.29 \\ \hline 57.57 \\ 51.64 \\ 1.63 \end{array}$$

3 sp a

$$\begin{array}{r} 272.35 \\ 272.00 \\ \hline 272.17 \end{array}$$

$$\begin{array}{r} 22.08 \\ 22.18 \\ \hline 22.13 \\ 27.88 \end{array}$$
> 1st sp x
$$\begin{array}{r} 295.00 \\ 294.40 \\ \hline 294.50 \end{array}$$

$$\begin{array}{r} 5.72 \\ 5.67 \\ \hline 5.70 \\ 44.30 \end{array}$$

Measured from a

may be before Dist. Pot.

3rd sp a 26.30

350.17 sp

2

5 50.28

336.43 sp

2

1st sp a 44.07

320.12 sp

2

3 30.39

295.47 sp

2

3 31.70

281.05 sp

2

3rd sp a 27.88

272.17 sp

2

5 13.65

355.02 sp

2

4 11.58

296.47 sp

2

3 24.58

300.12 sp

2

> 1 32.45

294.07 sp

2

> 1 44.30

294.50 sp

2

3.4 19.94

269.00 sp

2

4 29.52

226.35 sp

2

2 21.94

209.35 sp

2

3.4 21.05

196.15 sp

2

3.4 1.63

86.35 sp

2

$$\begin{array}{r} 3.4 \text{ n/p } x \\ \text{From a, Dist. Pot.} \\ x = 2^{\text{nd}} = 31.00 = 227.47 \text{ n/p } 2 \end{array}$$

3.4 n/p x

270.10

268.00

268.50

264.00

29.97

30.14

30.06

19.94

4 n/p x

226.40

226.30

226.35

20.56

20.37

20.48

29.52

2 n/p x

209.30

209.40

209.35

28.00

28.12

28.06

21.94

3.4 n/p x

196.20

196.10

196.15

28.77

29.12

28.94

28.95

21.05

Measured from x

γ Aquilae Sept 11

626

50.07
105
.05

Zero

50.020
000
018

62579

31.30
33.30
38.0

ade dist 0.5 or 0.6

109.30 ac e is n/a
104.30
114.10

The star up the Northern of
the three bright stars in Aquila

The star following γ^2 Aquila is double or triple
Dist 0".4 pos S of 30°

Cluster in Hercules Sept. 12th 1849

Measures from γ the pre-
ceding of the double star of Sept 5th

Mag.	Dist.	Pos	Obs.	Obs.
4	12.36	204° 32'	n/p	2
4.5	14.20	200.52	"	
4.5	33.23	187.40	"	
5	38.27	177.00	n/p	
4	36.38	168.40	"	
4	26.74	161.10	"	
2.3	33.44	126.52	"	
2.3	36.14	105.40	"	

Measures from α

Mag.	Dist.	Pos	Obs.
3	10.38	194° 48'	n/p 2
3.4	11.10	203.17	

γ^2 2.3 40.62 93.02 " Obs'd before

Measures from γ

4.5	15.66	5.54	S.J.
3.4	3.88	171.28	n.f.
4.5	13.00	159.00	n.f.
3	14.64	98.25	n.f.
3	22.92	51.17	S.J.

Sept 12th 1849 Cluster in Hercules

Measures from 2nd the preceding of the pair
measured Sept 5th

4th n p 2 $\begin{array}{r} 203^{\circ}.56 \\ 205^{\circ}.15 \\ 204^{\circ}.32 \end{array}$

$\begin{array}{r} 37.83 \\ 37.55 \\ 37.64 \\ 12.36 \end{array}$

4.5 n p 2 $\begin{array}{r} 201^{\circ}.00 \\ 200^{\circ}.45 \\ 200^{\circ}.52 \end{array}$

$\begin{array}{r} 35.67 \\ 35.94 \\ 35.78 \\ 35.80 \\ 14.20 \end{array}$

4.5 n p 2 $\begin{array}{r} 187^{\circ}.50 \\ 187^{\circ}.30 \\ 187^{\circ}.40 \end{array}$

$\begin{array}{r} 16.96 \\ 16.59 \\ 16.77 \\ 33.23 \end{array}$

5 n p 2 $\begin{array}{r} 177^{\circ}.30 \\ 176^{\circ}.30 \\ 177^{\circ}.00 \end{array}$

$\begin{array}{r} 11.81 \\ 11.66 \\ 11.73 \\ 38.27 \end{array}$

4 n p 2 $\begin{array}{r} 168^{\circ}.50 \\ 168^{\circ}.30 \\ 168^{\circ}.40 \end{array}$

$\begin{array}{r} 13.58 \\ 13.66 \\ 13.62 \\ 36.38 \end{array}$

4 n p 2 $\begin{array}{r} 161^{\circ}.00 \\ 161^{\circ}.20 \\ 161^{\circ}.10 \end{array}$

$\begin{array}{r} 23.39 \\ 23.13 \\ 23.26 \\ 26.74 \end{array}$

2.3 n p 2 $\begin{array}{r} 126^{\circ}.45 \\ 127^{\circ}.00 \\ 126^{\circ}.52 \end{array}$

$\begin{array}{r} 16.66 \\ 16.46 \\ 16^{\circ}.56 \\ 33^{\circ}.44 \end{array}$

2.3 n p 2 $\begin{array}{r} 105^{\circ}.40 \\ 105^{\circ}.40 \\ 105^{\circ}.40 \end{array}$

$\begin{array}{r} 13.77 \\ 13.75 \\ 13.86 \\ 36.14 \end{array}$

measures from the 3rd 3rd
3rd n p a $\begin{array}{r} 92^{\circ}.55' \\ 93.10 \\ 93.00 \\ 93.02 \end{array}$ $\begin{array}{r} 9^{\circ}.40 \\ 9.41 \\ 9.34 \\ 9.38 \\ 40.62 \end{array}$ $\begin{array}{r} 49.995 \\ 50.005 \\ 50.000 \\ 50.000 \end{array}$

from 3

4.5 n p 2 $\begin{array}{r} 7.15 \\ 36.30 \\ 6.54 \end{array}$ $\begin{array}{r} 65.21 \\ 64.90 \\ 65.06 \\ 15.06 \end{array}$

3.4 n p 2 $\begin{array}{r} 171^{\circ}.15 \\ 171^{\circ}.40 \\ 171^{\circ}.28 \end{array}$ $\begin{array}{r} 46.11 \\ 46.13 \\ 46.12 \\ 3.88 \end{array}$

4.5 n p 2 $\begin{array}{r} 159^{\circ}.00 \\ 159^{\circ}.00 \\ 159^{\circ}.00 \end{array}$ $\begin{array}{r} 37.11 \\ 36.88 \\ 37.00 \\ 13.00 \end{array}$

2.3 n p 2 $\begin{array}{r} 98^{\circ}.50 \\ 98^{\circ}.00 \\ 98^{\circ}.25 \end{array}$ $\begin{array}{r} 35.35 \\ 35.36 \\ 35.36 \\ 14.64 \end{array}$

3 n p 2 $\begin{array}{r} 51^{\circ}.30 \\ 51^{\circ}.05 \\ 51^{\circ}.17 \end{array}$ $\begin{array}{r} 27.31 \\ 27.05 \\ 26.84 \\ 27.12 \\ 27.08 \\ 22.92 \end{array}$

Sept 12th Continued

Star 3 rd n p a	194.30	39.63
	195.05	39.63
	<u>194.48</u>	<u>39.63</u>
		1.0 38

Zero of Position very nearly exact.

3, 4 n p a	203.30	38.98
	203.05	38.82
	<u>203.17</u>	<u>38.90</u>
		11.10

Sept 18th C. H. :

The portion of the Cluster which appears filled with "star dust" extends N & S about $2\frac{1}{2}$ times the length of the Trapezium.

The centre of the Cluster is very near the stars marked a' & b' in this diagram.

When the light falls obliquely on the eye, there is an appearance of nebulous cloud enveloping the central portion of the Cluster and extending a considerable distance, say 4 times, the length of the Trapezium in the north following direction, and also follows up the Horse of stars which sweep in a curve off north to north preceding, (a)

The sky is dark round the Cluster, for a field in every direction except possibly in the N. W. quadrant where there is a bright star about the 8 mag.

The cluster is not regular, but branches off in several directions, of which three are pretty prominent & curved from N. to S. on the south side.

Sept 11th 1849
Comet von Schweitz

Comet δ 3^h 40^m 20^s
Sept 18th 15^h - 27^m 38^s

Cloudy * a

Star 6^h 12^m 20^s 02^s
1096 Lucille - 27^m 51^s 35^s

Cluster in Hercules

Sept 19th PM 1849

8.45 s/a	12 ^m 47 ^s	73.68
	<u>12^m 15^s</u>	<u>73.46</u>
	12 ^m 31 ^s	73.57

Zero

49.99
50.03
49.99
50.00

Zero of Pot.
90°

3.4 s/a	8 ^m 30 ^s	71.21
	<u>8^m 15^s</u>	<u>71.17</u>
	8 ^m 22 ^s	71.19

The centre of the Cluster is half way between cab & a little further from a (near where B' put it)

3 s/a	4 ^m 20 ^s	76.58
	<u>4^m 15^s</u>	<u>76.59</u>
	4 ^m 17 ^s	76.58

Seeing very bad obliged me to stop observing.
from a

4.5 s/a	9 ^m 45 ^s	75.57
	<u>10^m 00^s</u>	<u>75.96</u>
	10 ^m 52 ^s	75.74

mag	dirt	Pot	obs
4.5	23.57	12 ^m 31 ^s s/a	2
4	21.19	8 ^m 22 ^s "	
3	26.58	4 ^m 17 ^s "	
4.5	25.74	9 ^m 52 ^s "	
2.	26.07	349.52 sp	

As before

2.3 spa	349.45	76.08
	<u>350.00</u>	<u>76.07</u>
	349.52	76.07

Sept 20th commenced gazing in the stars by eye sketches
 found east very fine definition & at the best moments
 there seemed to be no nebulosity unresolved but
 a vast multitude of stellar atoms. These minute
 nebs is indescribable
 d points between a & b certain & to
 night I think nearest to a.

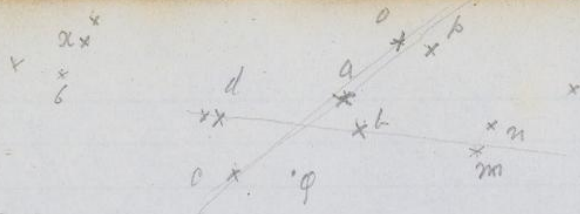
Sept 24th Oct 1849 $50^{\circ} 18'$
 CR $3^h 21^m 12^s$ $-27^{\circ} 30'$

$6 \frac{1}{2}$ $3^h 20^m 02^s$ $-27^{\circ} 51' 35''$

$3^h 14^m$ $-27^{\circ} 08'$
 $3^h 20^m$ $27^{\circ} 51'$

Clouded again.

Sept 24th
Cluster in Herenby



c is left hand a

The following of the pair to the right hand (Santo) of a

m n	pos	341 ⁰ .30	49.27
		343 ⁰ .30	49.32
		342 ⁰ .30	49.30

from a

o p		81 ⁰ .20	49.28
		83 ⁰ .40	49.33
		82 ⁰ .30	49.30

m. n o sp of the 5th & 6th mag

o is above the line c d

p is below "

m is below d b line

n is above "

Zero 50.00

x = 1st n p a

243 ⁰ .45	41.27
243 ⁰ .40	41.02
243 ⁰ .42	41.15
	8.85

1.2 sp x

313 ⁰ .30	48.84
316 ⁰ .00	48.86
314 ⁰ .45	48.85

From each other

mag	dist	pos
5	m n	0.70 342 ⁰ .30
	o p	0.70 82 ⁰ .30

41.50 Diamet^r of bright part

50.00 of cluster when enveloped
in clouds as the clouds passed
rapidly. Had a good opportunity
of fixing the centre of the cluster
which is near the point q
or the two stars near it.

The increase of light ^{round the cluster} is strongly
manifested for a diamet^r of 1.0 to 1.2
when screened by clouds.

Clouded suddenly

xx comp 1.15 314⁰.45

From a

x 8.85 243⁰.42

Sept 25 Adl

2557 6^h 21^m 00^s424 6^h 17^m 56.8Sept. 26th Adl.

Search for the Comet of April

1^h 40^m = 6^h 40^m4^m 3^h 21^m 12^s2^h 40^m 3^h 14^m 32^sR 3^h 14^m 32^sDec - 27^h 26^m6 = 3^h 14^m 19^s3^h 20^m 00^s7 3^h 02^m 48^s-27^h 09^m (a)-27^h 5^m-27^h 19^m1^h 33^m 45^sH 10^h 21^m 35^s - 27^h 05^m1^h 38^m 25^s3^h 12^m 10^s

I found the star (a) & recognised it with certainty by its companion given in Lacaille

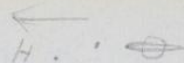
I then swept for a long time between Dec. -27^h 20^m and -27^h 40^m and four or five minutes in R on both sides of R of the star. But to no purpose whatever.

During this interval when clear have been mapping by eye sketches the small stars in the Cluster of Hercules. The chart is almost never in error, every star is examined & all but one or two recognised without difficulty.

(Uranus, R 1^h 31^m + 8^h 53^m)

Oct 18th Cluster in Hercules There is certainly no star to be seen unless with difficulty within the trapezium. There is one near to the 18th mag. There is a groundwork of star-dust which in the best views seems wholly resolved.

Hyperion n p Saturn's Centre



Pos $74^{\circ} 50'$ Sept 25th 12^h 30^m 24^s S. 7.

Pos 75° Dist 62⁷120 Zero 50.00 Not improbably the new Satellite

Oct 15 1849

Not the Sat.

424 22¹¹ 20

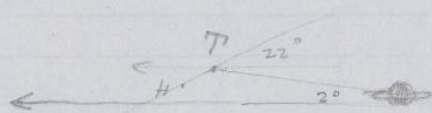
in direction of Saturn or in pos = 357°

* ~~H~~ prec T' 35.98
35.95
35.96

T' prec h centre 33.09
33.13
33.11

1^h & 15^m afterwards the above object was
11" from R nearer Saturn & was probably a star

Oct 18th 1849



1491 Sid 10^h 30^m

T & H dist 45.10
Pos 45.18
68.45
68.10

Saturn T' 35.18 Pos 91⁰ 30' Zero 50
centre 35.05



1849 Oct 16^h 11^m R 2^h 07^m 04^s Dec - 22° 57' 06"

Oct 19/20

Hyperion

Clouds	H 5/2 *	Friday PM Oct 19 th	1849	* n p n	
42.58	10 ^h 30 ^m	29.00'	20 th Oct	254.40	24.61
43.40		30.30		254.40	24.51
43.38		28.30			24.80
43.46					

Roughly taken 11^h 15^m
Hyperion n.p. Saturn's centre

28.69 267°
29.08 268

This is certainly Hyperion

H 5/2 *

43.42
43.61

* n p n

253.20 25.46
253.10 25.67
25.42

12^h 15^m
16^h 00'

2^h 15^m Sid. Time
Rough direct from Saturn
Oct 12^h 30^m Hyp precedes n
dist 28.90 pos 267°
28.18
28.40

* n p n

252°

* α H3 peria

12^h 45^m
H 5/2 13^h 00'

11.44
 4.45
 16.00

$R 1.55.35 - 21.50.5$

2.42

$B.A.C. 618$
 4^m

$R 1.52.53.4$
 $Dec - 21.48.5$

$Star 6^m$
 13.4
 $15' N$

Oct 20th 12 RH

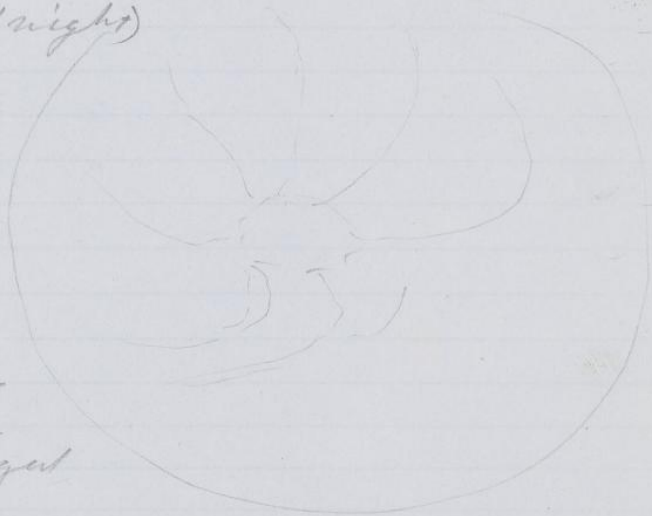
Cometary object 4R
 $424 2.01.25 - 0.38'$
 $\Sigma 0.29.20$
 $RZ. 30.45$

Oct 23

Cluster in Heracles

The general outline of the Cluster tends to elongate in the direction of δR owing to a group of stars proceeding in same direction $\alpha = \text{dist with } \alpha$. There seem to have a slight nebulosity (not good night)

By moving the eye rapidly so as not to allow it time to rest its attention on any single star or group. The impression is as in the sketch that the brighter stars are arranged in curved lines diverging from the nucleus.



The star dust tends to follow out the principal arms but not at all strongly unless on the S.E. side.

Oct. 27th

Doubtful if seen triple

2 Aquila

19^h 35^m 30^s

78° 31'

115^m 20105^m 4544^m 00

a c

55^m 3050^m 30

a b

104^m

114

a. c
b.00^m 00

49.995

49.993

G.P.B.

7610

50.019

50.035

50.047

50.052

50.033

Dist a c = 0.4

a b = 0.4

7610

49.975

Duturn

11/57 8^h 13^m

Titan

0.93500

0.97968

9.95532

38.61 1.50670

34.84 = 1.54202

9.00

26.84

within as

8^h 22^m

2 from N's free limb

53.97

50.033

39.41

38.79

38.61

a very faint

2 pretty bright

3 Enceladus?

Oct. 28th Am 9^h 30^m - 5th Equator, given line micrometer
 parallel diameter of the umbra of the largest spot on the sun
 is = 1.63" = 48.9



Oct 31st 1869 Cluster in Hercules

Much of the month spent in locating stars by allinication with those measured.

Have examined all the stars microscopically measured & find them almost all correct.

Full moon to night but almost every star mapped can be recognised. I think the ground work of star-dust follows the rays of larger stars diverging from the centre.

It is the loss of the minute stars - the star-dust - apparently, which caused the cluster to lose so much of its brightness by Moon-light.

d

a

d points nearer a than to b but between them

b

c

This I always notice the companion of d points between a & d? (b?)

Nov 3 Cluster in Heron's Trapesium.

	Pos	Dist
a-c	26.38	45.490
	25.40	45.445
	26.18	<u>45.355</u>

a-d	48.07	45.455
	47.05	45.410
	<u>47.20</u>	<u>45.525</u>

a-b	120.31	49.245
	120.38	49.345
	<u>120.00</u>	<u>49.340</u>

d-d The line joining them
 passes a little preceding, b.
 perhaps $\frac{1}{4}$ the dist to a & b. between them
 d appears to me to be decidedly less mag.
 than d

d-d
 c
 a
 b
 North
 South
 follow

Nov 12th 7^h 15^m

Saturn pretty well seen a pretty conspicuous dark belt above the ring which I fancy to be double or otherwise irregular. Think it may be possible to recognize it so as to get the time of Rotation



At 9^h 45 Think the belt not so distinct seeing has deteriorated but not bad.

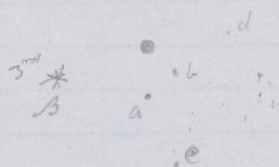
Uranus	1 ^h 27 ^m	h _y m _o
	+ 8° 29'	- 0.33
		- 1.9

Wranus
bright .a
a .c
b
u
c
order of mag.
a, b, c, d, e

3 x¹
3
3

(.)
[see certainly 2 or 3 below or N of Uranus (new sat?)]
On the true n.f side I see two satellites, certainly & think there are more in the same quadrant. — proceeding there may be two but am not at all confident & hardly suspect them.

Nov 13th Uranus
 at 23^h 30^m Sidl.



a & b certain c doubtful - d just suspected.
 a & b more distant than last night.

As on last night have been impressed with the
 idea that there are other satellites n. of the planet
 c is perhaps a star

at 22^h Sidl. Saturn looked something as on last eve
 but ~~two~~ hours later the belt seemed less distinct.
 Note that very little weight belongs to these
 remarks. They are merely shadows of suspicions.

Thin hazy clouds & only tolerable vision
 can however discern the division of the ring at the
 ends of the ansae.

Woo (14^h 21)

cluster in Hercules.

of the cl the inner is brighter

exactly in a line from the inner ones of J & d.
are two of 6th

Zero

50.05

50.05

Center of cluster is B
(m.f.) a (358°) dist 52.68
(op. vernier)

x 1 S.P. a
Pos.
From a - 290.30 - f. double
inner star 290.55
292.30

K x 4th mag. N.P. a
Pos. dist
196.20 53.43
53.22 (from a
132
54.32
bright spot)

dist from a
52.72
52.65
52.58 47.42
52.67 47.33

Following K is another 4th mag. 8th
distant from it as far as a is from b
and the two point a little above c

outer star is 3
inner 3.4

The tendency of the stars is to form
curved rays.

The centre of the cluster is a kind
of hole, less bright than the surrounding parts - 10" wide

The whole groundwork is of star dust, which
adds greatly to the effect of the whole

bright double star s.p. a little from a 290°
 51.62 from each other. stars 2nd mag
 339.50

in line of ring. Looked at Saturn = fancy a small satellite
 belt & ring



Power 140.

Satellites of Uranus

Nov 14th 1849

clear & tolerably steady
 but not fine definition

a b

a 424 0^h 40^m
 obs good

345.40'
 345.44
345.30

tried & found
 plainly too large
54.25
 53.81
 53.83
 53.90
 53.89
54.10

* B

b 4^h 00

30.25
 33.20
 36.15
31.30

52.98
 52.95
 52.95
53.08

Zero

50.023

022

026

a & b are the satellites obs'd on 12 & 13. They have been
 moving away from H. B is a star
 a & b were not difficult to observe as yesterday & the day
 previous.

Nov 14 1849
15 Dec

6.16.55
3 06
6 20.01

Mars 6.25.41 + 24.55.02
- 6.28.47.5 24.58.22

Clear but the stars are unsteady & jump from
one side to the other of the wire

Power 140

6.25.25

67.00

Mars' S limb

Power No 4?

6.32.50

66.82

Mars S. limb

6.37.00

66.77

is S of star of Comp

Zero

6.41.10

66.76

50.855

034

1030

6.46.20 65.18 set wire to let in the better rejected
6.51.00 65.03
6.55.57 64.96
7.03.07 64.94

Mars N Limb

is S of star of Comp.

2557 Fast of Sol. Time at 7.00^{am}

+ 3^{am} 09.12

Daily Rate gaining + 2.70

Mars

Refined 248

Double stars in the Cluster in Perseus
Two stars 2nd 3rd mag n.p.a
brighter in that s.p.

147.20

49.10

328.00

49.12

326.50

49.10

This pair or ^{ve}
the preceding of them is n.p.a 205.30 Dist 4'

Pos. of this pair from (a).

206.30

205.45

205.25

Double star 3rd mag n.f.a

339.50 point nearly to d

48.38

n.p.a pos 171.15 Dist 5'

341.15

48.43

340.30

48.32

Double star S.P.

Dist Pos of S.P. of this Pair

57.49 from (a) 288.10 - 108.10

57.58 289.15 -

57.53 289.50



166

Satellite of Uranus

Nov 15

MS 7.45

Easily seen

3^h 106^h 107^h 456^h 153^h 308^hVery bad vision.
but cannot see the other

54.33

54.18

54.08

54.20

54.06

Zero 50.03

Obs on Mars Nov 15thStar a - 14th mag. prec. Mars' fol. limb.

2557

dR

0^h 40^m 6

34.5

40.8

34.0

44.5

35.0

44.8

35.0

48.2

34.0

48.4

34.3

54.9

34.3

55.2

34.6

59.5

34.6

59.734.0

96.6

43.3

0^h 49^m 66

34.43

Nov. 15 Pm.

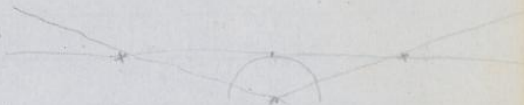
2557 at 00.00 sid. Lim just 3.10.66
Daily Rate gaining +2.70

Mars

Nov 15 1849

167

Zero of Pos 270.05
90.05



Obs'd by W. C. B.

u	Star 14 th	Mars fol. limb	Star 8 th 9 th	52	prec limb 1
+2557	O. 40. 02.7 16.0	O. 40. 37.2 50.0	40. 59.0 41. 12.5	4 0 0 53	28.7 1 st wire
		34.5		~~4~~ 4	41.8 2 nd ..
		34.0		~~4~~ M	01.8 1 st ..
				4 M 53	14.7 2 nd ..
fol limb	41.8 O. 40. 47.3	O. 42. 21.4	42 45.0	~~4~~ 6	25.5 1 st ..
prec limb	02.2	prec limb 34.5	57.5	6 53	38.4 2 nd ..
				4	

43.8	fol limb
O. 40. 56.7 10.0	44. 31.7 45.0
	35.0
	35.0

5	prec limb
O. 40. 47.0 59.8	46. 20.4 33.5
	33.4

(72)	fol. limb
48. 38.2 51.0	48. 12.2 25.3
	34.0
	34.3

49	prec limb
50. 36.3 50.0	50. 9.9 23.4
	50. 33.6 46.3

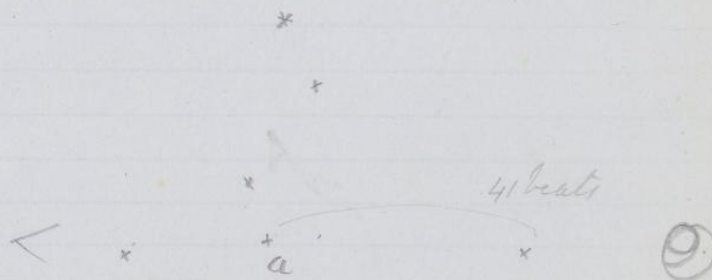
Nov 15th 9^h PM1st wire2nd wirea is same dec with Mars
b is 5' North of it

a	0.. 54.. 21.5	34.3	0.. 54.. 34.7	34.6
MJ	0.. 54.. 55.8		0.. 55.. 09.3	
b	0.. 55.. 18.5		0.. 55.. 31.7	

a	0.. 56.. 13.3	33.0	0.. 56.. 25.5	
MJ	0.. 56.. 46.3		0.. 56.. 59.6	34.1
b	0.. 57.. 10.5		0.. 57.. 23.5	

a	56.7	110.9
MJ	56.7	

a	0.. 58.. 53.0	34.6	0.. 59.. 6.0	
MJ	0.. 59.. 27.6		0.. 59.. 40.0	34.0
b	0.. 59.. 49.5		1.. 00.. 3.0	



a	03.. 32.5	34.2	03.. 45.5	34.1	par 4 GPR	34.08 val = 6
MJ	04.. 06.7		04.. 19.6		Mars from a	a is 13 ^h

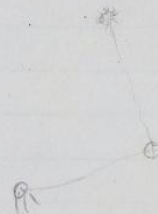
a	1.. 09.. 23.2	34.1	1.. 09.. 38.7	34.3
MJ	1.. 09.. 58.8		1.. 10.. 13.0	

1.. 11.. 06.8	34.1	1.. 11.. 22.5	34.5
1.. 11.. 40.9		1.. 11.. 57.0	

1.. 12.. 29.6	34.3	1.. 12.. 45.1	34.6
1.. 13.. 03.9		1.. 13.. 19.7	

1.. 13.. 44.0	34.2	1.. 13.. 59.8	34.3
1.. 14.. 18.2		1.. 14.. 34.1	

55.5	33.9	11.0	34.1
29.4		1.. 15.. 45.1	



Nov 15

16^h 5.30 AM

Main fol. limb

Obs by G.P.B

Wires dist 20"

* a 1st 8. 56 17.8 24.2 8. 56 32.0 24.5
 Main fol. limb 8. 56. 42.0 8. 56 56.5 24.5

58.2 23.8 12.5 24.0
 22.0 58. 36.5

57.3 24.2 11.5 24.2
 21.5 9. 00. 35.7

01.2 24.3 15.5 24.5
 25.5 01. 40.0

21.0 24.0 35.3 24.1
 45.0 02 59.4

Wires dist. 18"

28.0 41.0
 01.7² 01.47² 7 04. 51.7

28.0 41.0

51.7 4.7

1st2nd

46.8 59.6
 10.8 06 23.7

a 9. 12. 29.2 a 9. 12. 41.6
 Main fol. 53.0 m 05.5
 9. 13. 39.0 c

32.5 45.0
 56.3² 08 09.2

Nov. 15/16 AM.
 1491 at 9.00 sid. Time + 50.65
 Daily rate gain. + 0.30

34.0 47.0
 58.6 09. 10.5

27.5 40.0
 57.3 11 03.8

23.6 36.5
 47.5 9. 17 00.5
 12²

Nov. $\frac{15}{16}$ Dec 1849 Mars with companion star

Cannot see small star

04.3

Mars fol. limb with L

Mars free limb gibbons with L

By 1491
fol Mars 53.5 33.0 11 06.4 33.1
H.E. 12554 1st 8² 26.5 9. 16. 39.5

Mars free 02.4 35.1 15.6 34.4
H.E. 12554 37.5 9. 17. 50.0

31.3 33.7 44.1 34.2
05.0 19. 18.5

49.7 33.1 01.3 34.4
22.8 20. 35.7

58.5 33.0 11.3 33.3
31.5 21. 44.6

29.7 34.3 43.0 33.9
04.0 123. 16.9

Inst. alt. in Dec

55.5 33.1 08.0 34.0
28.6 24. 42.0

04.4 35.0 17.5 35.0
39.4 25. 52.5

21.0 33.5 34.3 33.2
54.5 26. 57.5

41.6 33.7 54.5
15.3 28. 29.0

Wires turned 180°

50.0 32.8 02.4 33.6
22.8 32. 36.0

55.2 34.5 07.7 34.3
29.7 33. 42.0

15.2 34.1 28.4 33.6
49.3 35. 02.0

24.0 35.0 33.6 34.6
56.0 9. 36. 08.5

31.3 33.2 44.5 33.2
04.5 37. 17.7

49.8 34.2 02.5 34.7
24.0 38. 37.2

58.0 33.8 10.9 33.9
31.5 39. 44.8

16.3 35.5 29.4 35.0
51.8 41. 04.4

34.0 33.6 47.0 33.2
07.6 9. 42 20.2

58.0 35.0 10.6 35.6
33.0 143. 46.2

9^h 51^m 29.33
Mars N limb South of L

The foregoing observations on Mars were intended only as an experiment & are not specimens of what may be done for the following reasons.

1st The want of proper illumination of the second hand of the Chronometer made the obj. liable to 0.5 or one beat on each wire or 1.0 in the dir. of R.

2nd The state of the atmosphere was highly unfavourable

3rd The small star was too small

4th The large star was too distant in declination

The 1st objection is the chief one

Star	10 ^h 00 ^m 15 ^s	44.54
- dir	35	
Mars	10 ^h 00 ^m 50 ^s	44.54
Mars	10 ^h 01 ^m 55 ^s	44.46
"	10 ^h 08 ^m 20 ^s	44.50

Compared with Gilliss star

Part of Object gliss out off by Dunc

24.33

50.03

20.70

202.86

33

9.20^m

15.40

17.40

4.44

22.24

6^h 25^m 13^s 24^h 58^m 35^s

33 3.35

6^h 25^m 46^s 25^h 02^m 10^s

Star of Comp. H.C. 12554.

8^h 9^m R 6^h 25^m 46^s

Dec + 25[°] 02' 10"

192

11.0

21.0

41.2

57.3

06.8

19.8

Nov 16th 1849

Satellites of Uranus

f. . . . d

Satellite a

i e

Power 140

2557.0^h 20^m

n.p.

0^h 30^m

Sat were 22^o 15'
 seen 22^o 45'
21^o 45'

54.23 very good seeing
 54.31
 54.10
 54.33
 54.33

a is quite easy the rest difficult but I think that at least 5 or 6 satellites are just at the limit of visibility except a which is plain. f is nearest.

The region N & Np the planet I think contains several satellites not distinguishable one from another & distant from 40" to 120" or there has been often on different nights a satellite or star 3' N of f now perhaps a little preceding but of this I am not sure.

Nov 16th

Daturn Upper belt not seen without attention at S^h sid.
with pretty good vision full average if not better
N pole is bluish white & Pole more golden

at 1^h sid a very small satellite follows the ansa
about $\frac{2}{3}$ of the diameter of the globe dist



Jupiter quite faint

Nov 16 11 P.M.

Power No 4 or 5

Mars in limb S of Gillies star = H.C. 12554

1491 2.33.08 57.00

Very disturbed atmosphere

2.36.00 57.00

2.37.58 56.99

2.39.40 56.96

Zero

50.067

.071

.062

Mars in limb S of Gillies star

2.43.01 58.40

49.36 58.42

46.58 58.31

48.48 58.37

0^h

174

h m s
6..25..48

25..02..02

Nov 16th Cont.

22.5

16.8

10.5

31.0

Micr Throughout 70.03
= 20"Start following limb with Gilliff star
bad definition

Start fol. Z

58

1st wire

59.9

3.9

2nd wire

59 14.5

53.6

from 146

H.C. 12554.

58.8

3..

00..08.1

~~01..58.3~~
~~58.3~~
~~02..51.6~~
~~03..51.62~~

04.5

58.3

07.8

58 03 42.5 54.0
 36.5

03..57.0

54.1

04..51.1

37106

15.43

16..17

4.44

16.00

at 7.46

31.4

05..46.0

43.9

54.0

58.5

53.9

37.9

08..52.4

6..24..50

54

25..02..00

27

29.0

54.1

43.0

54.4

23.1

3..

10

37.5

6..25..44

25..02..27

32.0

53.8

46.5

54.0

25.7

12..40.5

Star of Comp. in S
 8th R 6..25..44

Dec +25..02..27"

36.8

54.2

13..51.2

54.3

31.0

14..45.5

16 Pm.
 1491 at 3..00 sid. time + 50.87
 Daily rate + 0.30

Nov $\frac{16}{17}$ 6.46 Mars with Gillip starMars fol. 25.3 3.7 9. 37. 39.7 3.6 obs. good & fair seeing
HC 12554 29.0 38. 43.304.4 3.7 39 18.8 3.6
08.1 40 22.650.7 3.8 05.2 3.8
54.5 42 09.034.4 3.6 42. 49.0 3.6
38.0 43. 02.61 09.1 3.6 44 33.4 3.8
22.7 45. 37.208.1 3.9 46 22.7 3.8
12.0 47 26.503.8 3.7 48. 18.0 4.0
07.5 49 22.010. 17. 05.0 10. 17. 19.5
09.5 18 24.044.8 18. 59.2
49.5 04.023.0 20 37.5
27.6 ? 21. 42.122.9 22. 37.4
27.5 23 42.016/17. Am.
1491 at 10. 00 sid. time + 50.95
Daily rate " " + 0.3016. 29. 30
Mars with Gillip star
HC 12554 10. 30. 10
36. 05Mars in limb of Gillip star
57.98
51.83 power 146

Nov 16th

bright place shining

nearer the middle -
10^h red

This region left bright

Zone of brighter light

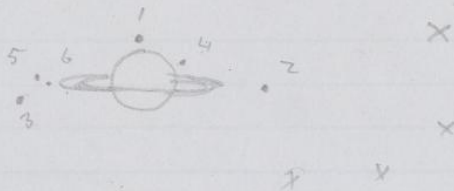
star 12th 1' 5 yellow fol line

Not very good vision

x 10 ⁰⁰	10	56.0	Star 12 th
11	11	14.4	most fol
	11	31.0	
	11	46.6	
	12	23.6	
	12	39.2	
	13	27.1	
	13	42.5	
	14	10.8	
	14	26.2	
	14	50.8	
10	15	66.3	

Saturn Nov 26th Dec. 1849424 0^h 15^m

Some Moonlight.



6 is very small but certain perhaps it was

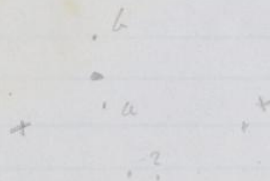
Satellites of Uranus

com. 0^h 10^m finished 0^h 30^m
 28 424

342.20	52.58
341.30	52.58
340.30	52.62
343.50	52.52
—	<u>52.56</u>

Sat, 5 p^h from 424 0^h 40^m to 1^h

46.06	172.00
46.09	171.05
45.89	172.15
45.90	
45.87	
<u>46.09</u>	



a & b easily seen

Nov 22nd Thursday 8^h

Looked at Saturn & Uranus
 Uranus' two satellites as on last
 evg. but both further off.

Fine definition but
 Visitors

178

Wed Nov 21st 1849 Mary

Following hint of Mars with Gillips etc

Write 1491

Gillips etc 51.3 05.4 G.P.B etc
 Mars 200.7 1. 49 34.5

Unsteady.

Dist of 40 miles = 20" Motion

56.3

2nd

09.8

2ndstem
Mars followed

43.7

12.0

.3

1. 52

26.5

.5

58.0 - 6 beats

stem

51.4

20.0

.6

53

34.4

.6

01.7

30.3

.6

54

44.6

.4

12.7

41.9

.3

55

55.5

.5

45.8

14.1

.3

57

28.6

.5

56.8

25.2

.4

58

39.7

.4

04.6

32.8

.2

19.0

47.2

.2

25.8

54.2

.4

2. 01

08.5

.2

stem
R 6. 21. 15

Dec 25. 13. 36

at 11

26. 03

16. 03

10. 14

4. 44

15. 00

6. 21. 31

28

6. 21. 03

28

15. 00

25. 17. 50

3. 12

25. 14. 38

Star of Comp R 6. 21. 04^s
9^m Dec 25. 14. 36

Nov. 21

1491 at 2. 00 sid. time + 58. 24

Daily rate + 0. 30

Nov. 21 Mars

179
89

	Star	δ		1 st min	2 nd	
1 st	0.2	27.9	27.7	* - 59.8	13.7	7.0 7.1
2 nd	14.3	2.7.42.5	28.2	δ - 26.8	2.29.41.3	
	15.8	43.6	27.8	17.2	31.8	
	30.0	2.08.58.1	28.1	44.3	2.30.59.0	7.1 - 7.2
	8.9	37.0	28.1	40.5	54.9	
	23.0	2.10.51.0	28.0	7.5	2.32.22.0	7.0 - 7.1
	19.5	47.1	27.6	30.0	44.4	
	33.8	1.4	27.6	57.2	2.34.11.5	7.2 - 7.1
	32.2	0.2	28.0	6.0	20.4	
	46.4	2.13.14.4	28.0	33.1	2.35.47.7	7.1 - 7.3
	48.0	15.8	27.8	21.9	84	
	2.1	2.14.29.9	27.8	49.0	2.37.03.3	7.1
	9.2	37.0	27.8	31.4	46.0	
	23.4	2.15.51.3	27.9	58.6	2.38.13.1	7.2 - 7.1
	30.0	57.9	27.9	43.9	58.0	
	44.4	2.17.12.0	27.6	10.6	2.39.25.0	6.7 - 7.0
	15.6	(23) 43	27.4	57.9	12.2	
	29.5	14.18.57.3	27.8	24.6	2.40.39.0	6.7 - 6.8
	31.5	59.2	27.7	8.0	22.2	
	46.0	2.20.13.4	27.4	35.0	2.41.49.4	7 - 7.2
	43.7	41.3	27.6			
	58.6	2.21.25.3	27.3			

Nov 21 diff of Dec of $\sigma^1 L^*$ x South Pole. σ^1 farthest limb

69.628

69.617

737

630

638

nearest limb

67.812

.947

.993

68.060

68.028

Sept 523

Mars nearest limb

1491 nearest

3.8.12 68.126

3.10.10 68.130

11.18 68.145

12.45 68.215

13.50 68.277

16.05 68.405

17.50 68.403

19.30 68.324

21.20 68.373

22.50 68.396

Sept 1 523

Mars ^N farthest limb

3.24.45 70.22.5

27.30 - 70.24.6

28.55 - 70.34.0

30.05 70.35.0

32.17 70.24.9

239
11.301491
3.35

Nov 21 1849 6^h AM

80.05

181
91

9 49. 29.5 ^{Star}
40.0 ^{Mars}

Clamp vernier to N reads 0^o.05'

Dist of wires

50 03.3
14.2

80.05

Lever

Dist.

Star 13.3 35.0 - 6 beats
Mars 24.0 52. 45.6

08.5 30.2
19.2 53 40.8

03.8 25.6
14.5 54. 36.2

08.6 30.2
19.0 55 40.7

23.0 44.6
33.5 56 55.0

33.0 54.6
43.5 58 05.2

24.0 45.5
34.3 58 55.9

21.5 42.2
31.8 59. 53.5

29.5 51.3
39.9 01.6

34.5

Nov 21 1849 Mast Continued

1491 Power 140

10^h 07^m 00 74.38 Mast nearest (S) limb North of Yellow str

08 ^m 25	.30	Zero			
09 ^m 35	33	50.04	*	51.0	10.0 - 4 beats
12 ^m 25	32	02	Mast fol.	00.5 ^m 10.27	19.2 ^m
14 ^m 05	35	01			
15 ^m 20	33	01			

03

Dist of Wires
39.0 57.9^m
48.2^m 28 07.0^m 75.986

Mast N limb N of Mast 525

10 ^m 17 ^m 50	76.01	Mast n limb
19 ^m 05	.01	Mast 523
20 ^m 20	76.00	
21 ^m 30	75.99	
22 ^m 30	98	

26.6	45.3	Dist
35.8 ^m 28	54.5 ^m 2	
22.9 ^m 1	41.6 ^m 3	
32.0 ^m 29	50.9 ^m	

34.30		
16.04	6 ^m 21.14	25 ^m 18.50
18.26	9	4.15
4.44	6 ^m 21.05	25 ^m 14.34
13.10		

09.9 ^m 0	28.5 ^m 3
14.49 ^m 30	37.8 ^m
19.2 ^m	
56.4 ^m 1	15.0 ^m 2
05.5 ^m 31	24.2 ^m 2

43.5 ^m 10	02.0 ^m 3
52.5 ^m 32	11.3 ^m 3

32 ^m 31.4 ^m 1
40.5 ^m 1

24.

02.0 ^m 3	20.8 ^m 2
11.3 ^m 33	30.0 ^m 2

02.5 ^m 10	21.3 ^m 34
81.5 ^m 34	30.3 ^m 0

50.3 ^m 10
34 59.3 ^m 10

35 ^m 55.5 ^m 9
04.4 ^m

21/22 Am.
1491 at 10.00 +53.34
Daily rate gain. + 0.30

Nov 21st Continued 1849 M. W. f.

1st2nd

33.2
10. 48 41.6

03
49. 11.7

Star 598
Mars yellow 08.2

19.0 40.6
27.5 10. 51 49.0

12.5 34.3
20.9 52 42.7

03.2 24.7
11.5 53 33.1

00.1 21.8
08.3 10. 54 29.9

Observed without illumination
through cirrus cloud.
Limb tremulous



Great illumi-
brought in
the rest of the
surface



at 11^h S. E. time
all this region bluish
conspicuous
Polar spot conspicuous
represented a little large perhaps

The limbs of Mars
not now so bright (except
the pole) as the centre
contrary to what I have
before noticed

End. Nov 22nd

Cor - 25^s24 P.S.
+ 3'

Gr		Metis		Graham			
1849	June 28.5	22 ^h 43 ^m 12.45	1.00.61	-15 ^h 46 ^m 46.0	8.40.0	2.32.3	
	July 2.5	22. 44. 13.06	0.35.95	24.66-15. 55. 26.6	11.12.3	2.32.3	
	" 6.5	44. 49.01	0 10.30	25.65-16. 06. 38.3	13 44.6		
	" 10.5	44 59.31		-16. 20. 22.9			

Gr. m. s. t.		R		Dec		h. p	
Oct 10 ^h 12 ^m	2 ^h 24.06 ^s	10.06	-24° 46'	42	h 6.54		
13.	2. 14.00	9.12	24.04	47	6.40		
16.	2. 04.48	8.16	23.17	51	6.25		
19.	1. 56.32		22.26		6.11		
Ephemeris of Schweitzers Comet. C.H.D.							
Gr. m. s. t.		R		Dec		hor. par.	
Oct 15.0	2 ^h 12.19 ^s	3.03	-23° 23.6'	15.7	6.34		
16	09. 16	3.03	23. 07.9	16.1			
17	06. 13	2.59	22. 51.8	16.3			
18	03. 14	2.55	35.5	16.7			
19	2. 00. 19	2.52	18.8	16.9			
20	1. 57. 27	2.48	22. 01.9	17.1			
21	54. 39	2.45	21. 44.8	17.4	6.00		
22	51. 54	2.42	27.4	17.6			
23	49. 12	2.37	21. 09.8	17.8			
24	46. 35	2.34	20. 52.0	17.9			
25	44. 01	2.31	34.1	18.1			
26	41. 30	2.26	20 16.0	18.1			
27	39. 04	2.23	19. 57.9	18.3			
28	36. 41	2.18	39.6	18.3	5.63		
29	34. 23	2.15	21.3	18.4			
30	32. 08	2.12	19. 02.9	18.5			
31	29. 56		-18. 44.4				

168 1.57.27 5.7
 96 1.52 11.4
 112 1.55.35

185

9th Dec 25° 35' 44"

July 20th 1850

Atad 50.00

Daily net gain +0.60

1491 ad. 11.00 + 56.55

62/27

2'77
0.2 27

6.05
33.5 47

5.5/ 2.8.5 7.7

4.53
15.0 97

9.25
2.55 4.5

15.6
1.8.1 44

0.12
5.61 71

24.2
36.8

ms
19.0
43 00.5

17.56 21
8.11
17.56 21

[illegible]

HC 12237
Lump

Star in 5' N. of planet. per. 180.05

Sept 11 = 6

7.62 24 01.10

Don't had account
don't work - getting other

95

[illegible]

7.51 9.99
 4.72 1.72
 2.82 2.82

$$\begin{array}{r} 18^{\circ} 22' \\ 72^{\circ} 31' \\ \hline 77^{\circ} 4' \\ 18^{\circ} 47' \\ \hline 16^{\circ} 23' \\ 11^{\circ} 10' \end{array}$$

$\overline{17.87}$	$\overline{51.70}$
51.87	59.10
78.87	80.69
98.87	97.30

96/86

Nov 27th 1849 P.M. Mars compared with the small star
of comp. in R used this morning Very bad vision

Mars 24.8 22.9

Star 08 47.7

Obs. uncertain from passing clouds.

Mars fol. limb with

1st wire 2nd wire reads 68.00

Mars 16.0 22.8

Mars fol. 17.1 30.2 Zero 50.00

Star 09 38.8

Star 42.0 1. 50. 55.0

2419 07.5 22.8

18.1 31.2

10 30.3

43.0 51 56.1. 9 better vision

50.3 23.2

23.5 36.5 .1

11 13.5

59.8 48.7 53. 01.6

36.6 23.1

23. 23.2 20.9 33.8 .2

12 09.7

45.5 45.8 53 59.0

25.0 22.8

07.5 21.8 35.0 .0

12 47.8

25 31.1 47.0 55 00.0

31.3 23.2

55.0 31.2 44.3 .0

13 54.5

26 19.0 56.2 56. 09.3

13.3 Clouds

35.0 48.0 .3

27.0 23.5

43.3 00.3 57. 13.3

15 50.5

27 07.0 38.8 51.9 .1

12.3

32.5 04.1 1. 58. 17.0

27 56.3

g p m o f y

20.0 .0

1 28 44.0

28.5 25.0 34.5

46. 48.5

15.0 25.0

40.0

27 P.m.

14 91 at 2.00 sid. Lim + 56.77

Daily rate + 0.60

187
97 '03

188
96Nov 27th (Continued) Mars & small star1491
8th
9.2
*11=6

50.4 3.3

16.3 29.2

59.4 12.3

25.4 38.5

7.3 20.3

33.3 2.12.46.6

8.0 — 21.2

34.1 2.14.47.3

56.8 9.4

22.6 2.16.36.0

4.6 — 17.7

30.7 2.17.44.0

27.2 — 40.5

53.6 2.14.6.3

42.2 — 55

8.3 2.20.21.4

52.0 5.0

18.4 2.21.31.6

2.2 — 15.3

28.6 2.22.42.2

12.4 25.2

39.6 2.23.52.2

56.8 9.4

23.3 2.25.36.4

6.0 14

32.2 2.26.45.6

Reversed the Circle

49.0 2.0

16.2 2.36.28.9

5.6 18.4

32.6 2.37.46.0

18.3 31.9

46.0 2.38.59.0

34.0 47.0

1.3 2.40.14.3

52.0 5.0

19.3 2.41.32.3

2.0 15.0

29.5 2.42.42.5

15.0 27.9

42.7 2.43.55.5

29.0 42.1

57.0 2.45.09.7

41.8 54.9

9.3 2.46.42.2

12.1 24.7

40.0 2.47.53.0

27.3 40.5

55.2 2.49.08.2

40.3 53.3

8.2 2.50.21.2

53.8 6.8

21.7 2.51.34.8

22.8 36.7

57.8 2.53.4.6

80th Jan
 1491 at 2.00 a.m. time + 57.76
 Daily note

9489 03

54
14

100/90

Friday Nov. 30 1849 Mars with Gillies star

Microometer Measures in direction of Right Ascension.

Zero 50.00

1491 Clamp 180°

Clamp at 0° Measures with micrometer in the

18 1491 03.8

Direction of R. is

0" 47" 17.2

Prepared nos 2" 29" 20 39.42

Mean pt. 2" 31" 10 39.57

Clamp 180°

48. 15.4

32.15 39.64

3" 8" 5 → 57.50

52.2

33.35 39.72

10.15 - 57.27

49 05.5

35.23 39.86

13.25 - 57.10

26.8

36.50 40.04

14.52 - 56.89

49 40.0

39.40 40.31

17.00 - 56.72

06.3

41.15 40.28

18.20 - 56.57

50 19.5

42.28 40.46

20.12 - 56.49

38.6

21.59 - 56.27 X

50 51.9

23.58 - 56.21

14.8

2" 44 Clamp at 180°

Clamp 0

51 28.1

2" 46.20 40.73

3" 29.04 - 55.75

48.0

47.48 40.74

31.14 - 55.62

52 01.3

49.10 40.85

36.35 - 55.23

20.6

50.25 41.03

38.28 - 55.07

52 33.8

52.40 41.13

41.10 - 54.93

06.4

54.12 41.26

42.43 54.75

53. 13.5

55.46 41.42

44.43 - 54.72 (found)

33.0

56.55 41.59

53 46.0

58.20 41.64

43.0

overcast

54. 56.0

Nov. 30 Pm.

17.0

1491 at 2.00 sid. time + 67.16

55. 30.0

Daily rate + 0.00

55.5

Zero

50.02

Ther. 35

56. 08.4

50.01

50.00

34.8

49.98

50.00

56. 47.8

49.99

49.99

49.98

Marx & Gilliss star Saturday Oct. Nov 30 1849

191 '03

2419	Clamp 180	Sign.	Clamp 0	Star now prec. Mars Jd. link
Repeal 405	10.11.20	22.72	10.31.30	21.21
then fol.	12.55.18	22.74	33.32.43	21.11
1419	14.20	22.67	34.50	21.06
	15.47	22.58	36.13	20.80
	18.00	22.39	42.37.30	20.77
	19.11	22.23	39.12	20.51
	20.45	22.18	40.37	20.44
	22.25	22.09	42.00	20.33
11	25.03	21.74	44.15	20.29
	26.50	21.64	45.15	20.18

Micrometer measures for difference of declination of Marx & link & Repeal 405

Diff Dec D m of x

10.49.52	31.37	5's nearest or
10.51.45	.29	s. link
53.30	38	very bad vision
54.40	37	
56.15	31.27	
58.00	.24	

Star of Comp

9th R 6.11.37

Dec 25.45.34

11.01.45 29.47 5 from n link
Repeal 405 suddenly Clouded up
Marx & link Zero

49.98

50.01

50.02

.98

Nov. 30/31 Am.

149 at 10.00 sid time + 67.16

Daily rate + 0.00

2419 at 10.00^m fast of sid time + 13.21.0

Rate + 1.81

2.36.50	10.00
3.39.00	5.00
1.2.00	5.00
7.14	35
9.51	35
18	1.50
10.09	26.50
6	
10.15	27.00
	28.00

192
163

Oct

Oct

Nov 23rd 3^h. 42^m Sid. Sun

looked at Mars not very distinct could not
recognize the Gillies star



not like it

Mars following time
always observed unless otherwise
stated.

Cambridge Observatory Sept. 4 1850.

