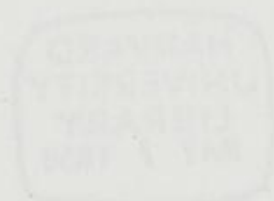


KG
11365
392

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STATIONERS,
(82 State Street)
BOSTON.

KG 11365.392

Vol. 2



KG 11365.392



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8 and 12 Can. Ven.
compared.

8 Can. Ven
Cap 2. Pinhole 5.

16.0	3.25
13.9	3.61
15.3	3.37
18.0	2.96
18.0	<u>2.96</u>
	3.23

12 Can. ven.
Cap 2. Pinhole 5.

24.6	2.21
27.6	1.94
24.3	2.24
27.5	1.95
28.3	<u>1.88</u>
	2.04

Extinction of Photometer Star

~~Plus side~~

+	-
0.3	1.3
0.6	1.2
0.3	1.0
0.2	1.1
0.2	1.1
0.1	1.0
0.0	1.3
- 0.1	1.0
0.1	1.2
0.0	0.6

The readings have generally been on the minus side but if more than 90° on the plus side,

$$\begin{array}{r} 0.53 \\ 0.46 \\ \hline 0.07 \\ 0.76 \\ \hline - 0.69 \end{array}$$

1872 March 22

Very bright moonlight; windy and hazy, but definition good. Observer had a violent headache.

Groups xxv and xxvi.

12 Can. ven.

Cap 2. Pinhole 6.

33.5	1.50
39.7	1.13
39.3	1.15
33.3	1.51
39.1	<u>1.16</u>
	1.29
	<u>1.79</u>
	- 0.50

12 Can. ven.

Cap 1. Pinhole 5.

54.1	0.54
50.9	0.64
61.3	0.34
57.3	0.44
49.7	<u>0.69</u>
	0.53

6 H Can. ren.

Pinhole G.

25.2	2.15
26.5	2.03
23.8	2.29
23.6	2.31
29.0	<u>7.82</u>
	2.12

10 Can. ren.

Pinhole G.

25.8	2.10
23.1	2.36
24.0	2.27
22.3	2.44
24.1	<u>2.26</u>
	2.29

9 Cam. ren.
Pinhole 6

21.7	2.51
21.3	2.55
21.1	2.58
19.0	2.83
19.9	<u>2.72</u>
	2.64

8 Cam. ren
Cap 1. Pinhole 6

37.6	1.25
44.2	0.91
38.5	1.86
40.0	1.12
43.6	<u>0.94</u>
	1.22
	46
	<u>0.76</u>

56 B.

Cap O. Pinhole 6

20.7

2.62

22.6

2.41

20.2

2.68

21.1

2.58

21.6

2.52

2.56

60 B

Pinhole 6

39.4

1.15

33.3

1.51

33.6

1.49

32.5

1.57

37.1

1.28

1.50

11 North.

Pinhole 6.

18.0	2.96
19.1	2.82
16.9	3.12
20.2	2.68
20.1	2.69
	2.85

11, South.

Pinhole 6

18.2	2.94
21.5	2.53
18.4	2.91
23.1	2.36
21.8	2.50
	2.65

77B

Pinhole 6

21.4	2.54
27.6	1.94
26.2	2.06
25.2	2.15
24.7*	2.20
	2.18

81B

Pinhole 6

22.3	2.44
22.1	2.46
28.8	1.84
22.1	2.46
23.8	2.29
	2.30

92B

Pinhole 6

32.7	1.55
28.2	1.89
28.1	1.90
28.5	1.86
25.6	<u>2.12</u>
	1.86

~~The following observations are~~
~~put together, being experiments~~
~~with the photometer~~

The following experiments, which
did not involve the observation
of real stars, are put together,
as they were recorded in a se-
parate book.

Washington, 1872 April 10.

The photometer had got very dusty in coming from Cambridge and had been taken apart and cleaned. Positions of prisms disturbed. Experiments on new positions of prisms.

Extinction of artificial stars.

1 st Side.	2 nd Side.
+0.3	+0.4
+0.1	+0.1
+0.2	+0.1
+0.0	0.0
-0.1	0.3
0.0	0.0
0.0	0.1
0.0	0.2
+0.1	0.1
-0.3	0.2

Concluded point of extinction +0.1

The quartz plate was taken out
and the extinction of artificial pho-
tometer star was produced by turning
the color circle which was then read.

1 st Side	2 nd Side
2°	3°
2	3
2	3

Concluded point of extinction 2.5

1872 April 13.

A Kerosene lamp was observed
with the sun and moon appura-
tus.

☉ and ☾ App.

Small circle 90° Large circle 90°

Photometer.

Color 115° Pin hole 6

+136.1	0.90
-131.1	0.70
+ 47.3	0.76
- 49.8	0.66
+ 48.6	0.71
+ 131.6	0.71
- 125.9	0.52
- 54.2	0.51
	0.58

⊙ and Q App.

Small circle 90° Large circle 45°

Photometer

Color 115° , Pinhole 6.

- 34.0	1.43
+ 33.2	1.49
+ 146.6	1.47
- 143.7	1.30
- 31.2	1.62
+ 28.9	1.80
+ 145.1	1.37
- 143.7	1.30
	1.47

Extinction of light with large circle
of ⊙ and Q App.

+ 2.1
+ 1.5
+ 1.6
+ 1.8
+ 1.8

Another Series of Experiments of the same kind.

① and ② App.

Large Circle $+45^\circ$

Photometer.

+ 144.5	1.33
- 149.6	1.67
- 30.0	1.70
+ 32.1	1.57
+ 147.0	1.49
- 142.3	1.22
- 36.1	1.30
+ 30.1	1.71
	1.50

☉ and ♄ Apr.
Large circle - 45°
Photometer.

+ 145.1	1.37
- 141.6	1.18
- 38.0	1.19
+ 38.2	1.19
+ 143.0	1.25
- 139.8	1.08
- 35.3	1.35
+ 32.1	1.57
	1.27

Third Series of Experiments
of the same kind.

Q and Q App.

Large circle -45°

Photometer

Color 94°

-35.4	1.34
$+32.7$	1.53
$+145.7$	1.41
-145.7	1.42
-32.8	1.51
$+32.8$	1.52
$+145.1$	1.37
-142.8	1.25
	1.42

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© and A App.

Large circle $+45^\circ$

Photometer

Color 94°

-146.2

1.45

- 37.7

1.21

+ 32.6

1.53

+ 149.8

1.69

- 144.5

1.35

- 34.6

1.39

+ 33.4

1.47

+ 144.7

1.35

1.43

1872 April 22.

Comparison of Readings of Large
Circle of the ☉ and ☿ Apparatus
on opposite sides of the zero.

Photometer 166°.5 3.61

☉ and ☿ App.

Large circle

+ 16°.9	3.30
+ 21.6	2.66
- 162.2	3.16
+ 16.5	3.37
+ 18.2	3.10
+ 17.6	3.19
	3.13

Photometer 166.5

3.61

⊙ and ⊙ App.

Large circle.

-17.2	2.78
-12.2	3.52
+162.7	2.77
-15.2	3.05
-13.2	3.35
-15.0	3.08
	3.08

Comparisons of light of different colors.

⊙ and ⊙ App.

Small circle 90° , ^{0.00} Large circle - 90° (-35° ?)

Photometer

Color 103° Orange, same as Kerosene flame.

+151.8	1.86
-151.2	1.79
+25.6	2.06
+26.2	2.01
-21.9	2.44
+27.5	1.90
	2.01

Color circle read 280 at the end.

Photometer
Color 342° Deep red.

Photometer,

+ 42.9	0.94
- 49.5	0.68
+ 63.8	0.27
+ 133.2	0.78
+ 41.2	1.02
- 37.5	1.23
	0.82

~~Color 30° Intense green.~~

~~Q and Q App. - 20°~~

~~G~~

Color 30° Intense green.

+ 103.4	0.07
- 108.3	0.13
- 60.0	0.35
- 91.1	0.00
	0.14

☉ and ♄ App.
Large circle - 20°

Photometer

~~☉ and ♄ App. - 20°~~ 2.45

Color 0° Bright crimson.

-48.9	0.70
+47.6	0.74
-49.2	0.69
+42.5	0.96
-52.7	0.57
+53.0	0.55
	0.70

☉ and ♄ App.

Large circle - 15° 3.08

Photometer.

Color 195° Bluish violet.

+128.5	0.61
+54.5	0.50
-83.4	0.02
+67.0	0.20
-121.0	0.38
+108.6	0.13
	0.31

Photometer

Color 210° Intense green

+148.2	1.59
+ 32.1	1.55
- 35.6	1.34
+ 34.0	1.43
- 34.6	1.40
+ 33.6	1.45
	1.46

Photometer

Color 225° Greenish white.

-22.9	2.34
+21.8	2.43
-20.3	2.62
+22.8	2.33
-23.0	2.33
+21.4	2.48
	2.42

[Faint, illegible handwriting in pencil or light ink, possibly bleed-through from the reverse side.]

[Faint, illegible handwriting in pencil or light ink, possibly bleed-through from the reverse side.]

3 12

Photometer

Color 240° Slightly greenish yellow;
almost white.

-17.9	2.92
+17.0	3.02
-19.5	2.72
+17.0	3.02
-16.4	3.13
+15.9	3.18
	3.00

Photometer

Color 255° ; slightly orange yellow;
nearly the color of Kerosene lamp.

-14.8	3.38
+14.7	3.37
-14.2	3.48
+14.9	3.33
-13.2	3.66
+13.7	3.53
	3.46

Photometer

Color 270° Orange yellow, much the same
as Kerosene lamp.

-12.8	3.74
+13.9	3.50
-11.3	4.04
+11.7	3.91
-11.1	4.09
+12.4	3.77
	3.84

Photometer

Color 285 Orange yellow, nearly the
color of Kerosene flame.

-11.7	3.96
+12.1	3.83
-12.2	3.85
+10.4	4.20
-10.7	4.18
+11.7	3.91
	3.99

Photometer

Color 300° Orange, redder than Kerosene flame.

-14.1	3.50
+11.5	3.96
-13.2	3.66
+12.3	3.79
-11.5	4.00
+11.0	4.06
	3.83

Photometer

Color 315° Red orange.

-15.0	3.35
+12.2	3.81
-14.3	3.47
+12.6	3.74
-12.9	3.72
+12.7	3.72
	3.63

Photometer

Color 330°. Scarlet.

-17.8	2.94
+16.2	3.13
-15.1	3.33
+14.8	3.35
-18.2	2.88
+15.5	3.24
	3.14

Photometer

Color 345°. Scarlet red.

-25.3	2.11
+22.5	2.36
-24.9	2.14
+21.1	2.51
-23.9	2.24
+23.3	2.38
	2.29

The light is at a minimum when
the color circle is at 15°

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Extinction of light of photometer
star.

+0.4	-0.8
+0.6	-0.7
+0.3	-0.8
+0.3	-0.7
+0.5	-0.4

Concluded point of extinction -0.1

Zero of large C and C circle.

+2.1	+1.3
+1.8	+1.6
+2.3	+1.3
+2.0	+1.2
+2.3	+1.1

Concluded point of extinction +1.7

Another Series of Experiments

⊙ and ⊕ App.

Large Circle + 91.0° 0.00

Photometer

-49.9	0.66
+53.0	0.55
-54.5	0.51
+51.7	0.59
-49.4	0.58
+48.9	0.69
	0.61

⊙ and ⊕ App.

Large Circle + 41.2° 1.12

Photometer

+29.2	1.76
-21.3	2.51
+22.2	2.39
-18.3	2.87
+20.0	2.63
-31.9	1.58
	2.29

☉ and ☾ App.

Large Circle $+25^{\circ}.6$

2.13

Photometer

$-19^{\circ}.7$

2.69

$+15^{\circ}.4$

3.25

$-16^{\circ}.1$

3.18

$+14^{\circ}.1$

3.47

3.20

1872 April 26.

☉ and ☾ App.

Small circle 90° , 0.00 Large circle $91^{\circ}.7$ 0.00

Photometer

$-48^{\circ}.5$

0.72

$+43^{\circ}.0$

0.94

$-47^{\circ}.0$

0.78

$+48^{\circ}.2$

0.72

$-46^{\circ}.5$

0.80

$+43^{\circ}.1$

0.93

0.81

☉ and ☿ App.

Large Circle $+41^{\circ}.2$ 1.12

Photometer

$+33^{\circ}.6$	1.45
-37.9	1.21
$+31.8$	1.57
-29.6	1.75
$+30.3$	1.68
-40.2	1.08
	1.46

A series of measures with small circle of ☉ and ☿ Apparatus.

Large ☉ and ☿ Circle $+46^{\circ}.7$ 0.85

Photometer $+44.9$ 0.85

Small ☉ and ☿ Circle

125.6	0.52
134.9	0.86
133.2	0.79
119.8	0.36
126.7	0.55
	0.63

Large $\odot$ and $\odot$ circle $+91^{\circ}.7$ 0.00
 Photometer -90.7 0.00

Small $\odot$ and $\odot$ circle

138.2	1.02
137.5	0.98
139.0	<u>1.05</u>
	1.02

Large $\odot$ and $\odot$ circle $+16^{\circ}.7$ 3.33
 Photometer -15.1 3.33

Small $\odot$ and $\odot$ circle

+125.6	0.52
-133.2	0.77
-139.8	7.06
-136.7	<u>0.94</u>
	0.82

Zero of small $\odot$ and $\odot$ Circle.

+179. ⁰ .9	+179.9
+179.5	-179.9

Another series with the Kerosene
Lamp brought nearer.

Large O and C circle	+ 91.7	0.00
Photometer	+ 90.1	0.00

Small O and C circle

137.0	0.96
47.7	0.73
-131.5	0.70
+ 54.0	0.51
	0.72

Large O and C circle	+ 41.7	1.09
Photometer	- 40.1	1.09

Small O and C circle

+ 42.0	0.98
- 46.2	0.82
-141.0	1.13
139.7	1.09
	1.00

Large $\odot$ and $\odot$ circle $+31.7$ 1.71
 Photometer -30.1 1.71

Small $\odot$ and $\odot$ circle.

$+137.3$	0.97
$+44.0$	0.89
-40.8	1.06
$+139.0$	1.05
	0.99

Large $\odot$ and $\odot$ circle 16.7 3.33
 Photometer 15.1 3.33

Small $\odot$ and $\odot$ circle

$+137.0$	0.96
-34.0	1.43
-55.0	0.50
-140.0	1.06
	0.99

Large O and A circle $+31.7$ 1.71

Photometer circle -15.1 3.33

Small O and A circle

-161.0

2.73

$+163.5$

3.13

$+18.0$

2.80

-22.0

2.43

2.80

Large O and A circle $+41.7$ 1.09

Photometer -30.1 1.71

Small O and A circle -34.7 1.40

1872

April 26th

Experiments on Discs of Light -
O and C App.

Small circle	90.0	0.00
Large "	+155.0	1.97

Photometer

+34.3	1.41
+37.7	1.21
-35.2	1.36
+39.7	1.10
-48.7	0.71
-31.1	1.64
	1.24

① and ② App.

Large circle + 165.0

3.08

Photometer.

+20.7
-27.2
+22.0
-21.1
+22.9
-24.2

2.55
1.94
2.41
2.53
2.32
2.21

2.33

① and ② App.

Large circle + 175.0

5.30

Photometer

-10.2
+10.3
-9.8
+10.8
-10.3
+12.4

4.29
4.22
4.39
4.11
4.27
3.77

4.17

D and C App.
 Large circle + 170.0 3.94
Photometer

+ 21.4	2.48
- 21.5	2.48
+ 18.6	2.81
- 22.7	2.36
+ 20.6	2.56
- 21.6	<u>2.48</u>
	2.58

D and C App.
 Large circle + 160.0 2:45
Photometer

+ 32.5	1.53
+ 30.8	1.64
- 30.1	1.71
* + 38.8	1.15
- 32.3	1.55
+ 33.9	<u>1.43</u>
	1.50

⊙ and ☾ App.

Large circle + 150.0 1.59
Photometer.

+52.6	0.56
-55.6	0.48
+47.8	0.74
-53.9	0.53
-49.9	0.66
	<u>0.59</u>

Note. \

* Just before this obs. the instrument
was somewhat disturbed.

⊙ and ☾ App.

Zero of small circle.

-177.9	-177.4
-178.2	-176.9

Conclude point of extrusion =
+2.4

1872

May 2nd Noon -

Found that the image of the sun
could not be extinguished by
any of the Nicols if one of two
O and C circles stood at 90°

May. 30th

O and C app.
Zero of large circle -

Several times without glasses
Sky light - 1.8°

Also at exactly 180° from this -

1872

Sunday, June 2^d - forenoon.

Daylight judgment concern-
ing colors of artificial stars -

50° a very pale straw color, or
crem color. No, whiter than this im-
plies. A slightly greenish yel-
low-white -

55° Yellowish white

60 Straw color.

65 Pale yellow.

70 Yellow.

75 Decided yellow.

80 Strong yellow

85 Very bright yellow.

90 Intense yellow.

100 Same.

105 Yellow orange -

110 Orange -

115 Rich orange

120 Very red orange

125 Firey -

- 130^o Orange red.
 135 Scarlet.
 140 Scarlet red.
 145 Almost cherry.
 150 ~~Full~~ Cherry.
 155 Full cherry.
 160 Crimson cherry.
 165 Crimson.
 170 Magenta crimson.
 175 Purple crimson.
 180 Very red purple
 185 Purple.
 186 Violet purple.
 187 Red purple
 188 Violet
 189 Pale violet
 190 Violet white.
 193 White.

193 is rather a puer white than 50
 50 is greenish
 193 is bluish.

- 50 Slightly greenish white.
- 45 Decidedly greenish white.
- 40 Pale blue-green.
- 35 Decidedly bluish green.
- 30 Intense blue green.
- 25 Very intense blue-green.
- 20 Very intense green blue.
- 19 Intense blue green
- 18 Pale blue green.
- 17 Strongly bluish white.
- 16 Bluish white.
- 15 Grey.
- 10 Violet white.
- 14 White.



1872
June 5th

Experiments in Jarret.

Removed quartz plate and Nicol. Removed from Q and C app. the concave lens. Looked



at Porcelain shade of linings and compared the two surfaces. Color not identical but very near the same --

D and C App.

Small circle 90° ^{0.00} large circle 90° ^{10.00}
Photometer.

-20.6	2.59
-21.9	2.44
-22.3	2.40
-20.0	2.68
-19.7	2.69
	2.55

D and C App.

Small circle 90° ^{0.00} large circle 90° ^{10.00}
Photometer.

+20.2	2.61
+19.9	2.65
+20.7	2.55
+18.8	2.78
+19.2	2.73
	2.65

⊙ and ⊕ App.

Small circle 90° ^{0.00} Large circle 90° ^{10.00}
Photometer.

+158.0	2.43
+159.9	2.65
+158.4	2.48
+161.0	2.78
+156.4	2.27
	2.52

⊙ and ⊕ App.

Small circle 90° ^{0.09} Large circle 90° ^{10.00}
Photometer.

-158.5	
-158.5	2.26
-158.8	2.39
-158.8	2.50
-160.3	2.67
-157.0	2.31
	2.43

O + C app.

Large circle 15° 3.62
Photometer.

+175.0	5.97
-175.0	5.97
-175.0	5.97
-5.1	5.97
-5.2	5.92
	5.96

O and C app.

Large circle 15° 3.62
Photometer.

-5.0	6.07
-5.3	5.92
-5.2	5.97
+4.7	6.12
+4.3	6.33
	6.08

Q and Q App.

' Large circle 15° 3.62
Photometer 3.62

+4.5	6.22
+4.5	6.22
+4.7	6.12
+174.3	5.74
+174.3	5.74
	6.01

Q and Q App.

Large circle 15° 3.62
Photometer

+173.9	5.49
+174.4	5.78
+174.1	5.65
-175.0	5.94
-174.7	5.83
	5.74

