

KG
11366
v. 551

zone.
Chronograph Records.
Circle Readings.
From 1876, Dec. 24 to Feb. 14, 1877
A 22

Charles W. Sever, University Bookstore, Cambridge.

1876, Dec 24
Dec 27

23 10 52

5.4

5-2 32

Obs. W.A.R. W.A.R.
Rec. J.F. Mc J.F. Mc

6.0

5.8

12 3 8.5 53 24 22

12 45 8.8 53 42

14 7 9.3 55 00

15 27 8.9 54 30

9.0

16 33 8.5 53 25

9.0

17 47 8.7 54 55

8.8

9.0

19 3 7.5 54 23

8.0

8.1

20 5 8.8 54 24

8.8

21 11 7.9 54 10

8.3

8.0

22 22 9.1 54 39

9.1

23 16 7.8 54 27

8.5

8.6

Twilight & haze Dec 27

50	3	18.9	18.9
50	3	14.2	16.0

50	4	20.0	20.6
~~50~~	~~4~~	~~4.8~~	~~5.8~~
0	0	39.8	40.8

rej. 1st & 2nd wire

25	4	30.9	29.6
25	4	29.8	31.9
0	1	42.0	40.3
0	1	55.1	57.1
0	0	31.8	31.9

med. wire?

15	0	2.5	1.6
10	4	56.0	56.9
45	1	32.2	31.6
~~45~~	~~1~~	~~32.7~~	~~33.4~~
55	3	59.9	59.4
55	3	56.8	58.4

1876, Dec. 24
Dec 27

23 24 25 8.6 54 37 8.8

25 48 9.3 52 53 9.4

26 53 9.3 52 21 22 9.1

27 37 8.0 53 49 8.0
7.829 33 8.8 52 32 8.8
8.931 27 8.9 54 14 9.0
9.032 24 8.5 54 6 8.6
8.034 33 7.9 54 26 22 7.4
7.735 11 9.0 53 39 8.9
8.837 23 9.0 52 16 9.0
9.0

38 28 8.2 53 35

39 47 9.0 54 31

9.1

45 4 16.9 16.2

30 1 56.4 57.1

lower end of 3#R

0 3 15.8 15.4

35 1 40.8 40.1

35 1 23.7 24.3

50 3 48.3 47.8

ann 50 3 5.4 6.1

10 0 4.7 4.8

10 0 5.1 6.8

15 3 49.5 48.4

15 3 49.8 48.7

55 3 14.0 12.9

55 3 5.6 6.5

45 0 53.5 52.2

45 1 12.7 13.3

5 3 33.6 33.7

5 3 27.1 28.8

lost 4th wire
not seen

not seen

50 1 51.4 52.1

1876, Dec. 24

hms Dec. 27,

23 40 36 7.3 54 10

7.8

7.7

9.0

9.0

42 20 9.1 54 24

9.5

9.3

43 48 9.5 54 25

44 52 8.9 54 25

8.5

45 45 8.8 54 45

8.8

8.8

47 20 9.3 54 11

9.2

9.1

48 46 9.0 54 37

9.1

8.8

49 45 9.0 54 28 2 2

8.8

8.6

50 29 8.1 51 27

8.5

8.4

52 19 8.2 52 57

8.3

8.3

54 10 9.0 55 0

9.0

8.8

56 3 8.3 54 52

8.4

8.3

15 0 38.9 38.3
15 0 44.1 44.0

0 0 42.9 42.3

0 0 48.1 49.1

0 0 30.0 30.5

0 0 29.0 29.9

53

0 0 53.4 53.5

35 4 41.1 39.4

35 4 42.9 42.1

10 4 23.4 23.6

10 4 20.1 20.1

45 2 52.9 52.9

45 2 50.1 50.0

55 1 12.6 10.5

55 1 11.9 13.2

55 2 42.9 43.5

55 2 42.0 43.1

25 2 3.6 4.6

25 2 7.9 8.0

20 4 6.9 6.3

25 0 28.8 30.2

30 2 58.5 58.0

30 3 2.2 2.6

lost

at first
seeing pretty bad especially
seeing pretty good

hms 01
~~24524 87 53 17~~ 2

~~46 18 87 53 16~~

~~47 39 88 54 41~~

~~48 55 89 54 40~~

48 46 89 53 59

1877 Jan. 4

50 40 89 54 41

~~53 25 90 53 23~~

2 43 14 89 53 29 =

9.0 9.2 Jan 4

~~55 52 89 52.8~~

45 33 87 54 1 =

9.0 9.4 Jan 14

~~56 59 88 52 34~~

47 39 88 54 41 =

9.0 8.8 Jan 14

~~58 48 68 51 43~~

48 55 90 54 40 =

8.2

9.0 9.0 Jan 14

~~59 57 90 51 36~~

0 54 89 54 1 22

~~55 1 24.0 24.7~~

Obs. W.A.R.
Rec. J.F.M.

Jan 13

Obs. W.A.R.
Rec. J.F.M.
Obs. W.A.R.
Rec. J.F.M.

1877 Jan 14
Rec

4	pr & upper #							
	45 2 49.3 57.0	55 1 24.0 24.7						
4	15 0 41.9 49.1	20 4 11.9 10.1						
		~~15 3 33.9~~						
4	35 0 42.9 50.0	40 3 57.6 57.4						
	#?	Jan 13 15 3 33.9 39.2						
4	35 1 36.1 43.1	45 0 2.1 3.1						

Jan 4 For beginning see 2 pages ahead.
 Jan 13, 1877

2 50 27 8.5 53 49 8.8 9.0 Jan. 14

8.9

53 27 8.5 53 46 8.7 8.8 Jan. 14

8.5

55 52 8.9 52 8 7.7 7.5 Jan 14

8.0

56 59 8.5 52 34 8.9 unexpected close Jan 14

9.2 pr. # = 9.5 mag

58 6 8.5 53 59 8.8 lower & foll. #

pr + upper # Jan 14

6 31 8.4 53 41 8.6 8.8 Jan. 14

8.1

2 16 9.5 53 49 9.2

9.5

3 27 9.0 54 16 8.7 8.9 Jan 14

8.9

4 28 8.7 54 16 8.9 8.9 Jan 14

9.1

6 58 8.5 52 59 9.4 9.5 Jan 14

9.4

8 30 8.8 54 38 2 9.0 8.8 Jan 14

9.0

9 19 8.4 54 56 8.8 8.7 Jan 14

8.7

1877 Jan 14

4	25	2	51.4	58.5	35	1	12.5	11.4
				Jan 13	20	4	59.2	5.2
4	30	0	30.3	38.4	35	4	6.0	5.1
				Jan 13	30	0	45.7	5.1
4	5	4	5.0	11.4	15	2	45.9	45.3
				Jan 13	5	3	59.7	3.4
4	40	3	42.0	49.0	50	2	6.7	6.5
	mean	8	R.A.	Jan 13	40	3	55.1	2.1
#	15	3	11.1	17.2	25	1	55.3	55.9
4					35			
4	35	0	11.5	19.0	40	3	51.1	49.6
				Jan 13	35	0	12.8	18.9
					35	0	42.4	41.5
	(lost Jan 14)			Jan 13	25	2	11.8	16.9
4	0	0	35.6	42.2	5	4	2.9	1.0
	(baint comp. folls above)			Jan 13	0	0	34.9	40.2
4	0	0	40.0	47.3	5	4	4.9	3.8
				Jan 13	0	1	0.9	5.7
1	15	3	9.4	15.9	25	2	19.1	17.4
				Jan 13	15	3	24.3	28.5
1	45	0	30.2	37.5	50	3	51.9	51.6
				Jan 13	45	0	17.9	22.4
4	20	1	31.4	38.1	30	0	10.1	8.6
				Jan 13	20	1	24.0	28.5

1877 Jan 4

1-5

3 10 8 80 53 14

8.4

8.6

8.3 Jan 14
mod. win 2

11 46 8.8 53 40

8.8

8.8

8.8 Jan 14

13 14 8.3 53 03

8.4

8.5

8.8 Jan 14

14 16 8.7 53 48

8.8

9.0

8.9 Jan 14

15 14 8.7 53 38

8.3

8.7

8.9 Jan 14

16 15 6.3 53 29

6.8

7.0

7.3 Jan 14

18 17 8.6 54 44

8.4

9.0

9.2

8.8 Jan 14

close double

20 14 4.8 55 1

5.8

5.0

5.5 Jan 14

faint comp.

22 57 9.2 53 58

8.9

9.1

9.1 Jan 14

23 53 9.5 51 27

9.1

9.1

9.5 Jan 14

25 14 8.8 53 31

9.0

8.8

9.0 Jan 14

27 27 8.4 53 33

8.7

8.8

8.6 Jan 14

Jan 14 seeing very bad indeed 7.8 seeing moder

14 0 2 43.9 51.2
2 foll.

10 1 12.0 12.1
Jan 13 0 2 25.4 30.1
4 35 1 16.5 23.5 40 4 37.7 36.9

Jan 13 35 1 13.0 18.1
1 10 4 45.6 49.9 20 3 2.4 1.4

Jan 13 10 4 43.4 47.1
4 25 4 56.7 3.1 35 3 19.7 19.0

Jan 13 25 4 54.8 58.2
4 35 4 49.9 55.5 45 3 10.5 9.5

Jan 13 35 4 42.9 47.5
14 45 3 48.8 54.1 55 2 28.5 27.3

Jan 13 45 3 45.0 50.9
14 30 3 17.8 23.9 40 1 45.8 46.3

mean S & RA Jan 13 30 3 14.1 18.5
14 151 21.2 27.9 20 4 51.7 50.8

foll $\frac{1}{2}$ below Jan 13 15 1 21.1 25.3
14 15 4 25.6 31.4 25 2 47.3 47.8

Jan 13 15 4 17.1 21.0
14 45 4 58 11.9 not seen

Jan 13 45 4 3.8 9.8
14 45 1 40.6 47.5 50 4 58.0 54.7

Jan 13 45 1 33.5 39.0
14 40 3 25.9 31.8 50 1 50.6 49.6

seemingly moderately good
moderately good towards Jan 13 40 3 19.1 22.9
the best

31 33 31 83 51 15

3 34 6 9.0 53 7

3 36 20 8.0 53 30

3 37 41 9.4 53 33

3 39 0 9.0 53 26

3 41 32 8.7 53 9

3 43 2 8.0 53 6

3 45 45 9.0 53 30

3 46 38 8.7 52 10

3 48 42 8.8 53 32

3 49 18 9.3 51 17 22

3 50 41 8.5 52 35

2^h 3 7 21 50 52 38

38 37 94 53 39

40 46 95 52 00

1877, Jan. 20

Jan 23

3^h 11 19 20 53 23Obs. W.A.R. W.A.R.
Rec. J.T.M. J.T.M.

13 22 70 54 46

2 7.7

~~7.4~~
8.5

78

false

14 10 93 54 7

9.0

8.5

9.0

15 35 84 54 13

22 29.0

8.6

8.9

~~16 12 84 53 19~~

16 54 95 53 6

18 17 86 54 44

9.0

9.1

close double

9.1
9.3

20 05 93 53 13

22

9.2

20 47 67 52 27

7.4

7.0

6.8

21 47 94 53 13

9.3

9.5

9.4

22 57 92 53 58

9.2

9.2

9.0

23 54 87 52 31

8.9

8.7

8.9

27 33 90 57 7

9.1

9.2

9.2

1877 Jan 30

Obs. W.A.R.
Rec. J.F.M.
not seen
^{28th}
~~30 0 27.6 40.9~~
~~30 0 37.8 50.7~~

not seen

stroke + rather after 8

30 0 52.2 5.6

30 0 32.8 44.8

5 4 23.9 36.0

5 4 26.8 39.4

Last 2 wires

5 4 0.5 8.2

0 2 45.4 58.1

0 2 47.9 0.9

0 2 30.7 41.6

not seen (sure)

not seen

not seen sure

¹¹
³
 30 3 21.4 33.9
 double mean of R.A.
 mean S + R.A.

30 3 12.0 25.4

30 3 15.2 26.9

not seen (sure)

* not seen

not seen

45 4 32.1 44.5

45 4 36.8 49.1

45 4 52.2 3.1

⁰
³
 15.9 27.1
 upper & gold. #

0 3 30.1 43.9

0 3 34.6 46.0

15 4 10.4 22.5

15 4 28.6 41.1

15 4 17.0 26.4

45 0 52.9 5.9

45 1 2.3 16.5

45 0 54.4 5.0

5 4 35.2 45.4

5 4 39.8 52.4

5 4 35.5 43.8

1877 Jan 20 Jan 23 Jan 30

3 28 52 83 53 27

8.6

8.8

8.5 false

31 19 90 53 35

9.0

9.4

9.1

33 35 80 53 41 22

9.0

9.0

9.2

34 6 90 53 7

9.0

8.7

8.8

36 20 80 53 30

8.2

8.4

37 41 94 53 33

9.4

9.5

39 0 90 53 26

9.0

8.3

40 54 80 54 57 22

8.0

8.6

41 32 87 53 09

9.0

9.0

43 55 84 52 11

8.3

8.4

45 45 90 53 30

9.5

9.0

48 42 88 53 32

Seeing pretty good except for faint stars
stopped on account of clouds. (Jan. 20)

45 4 59.1 9.4 45 4 54.7 6.5

rattle + stroke after 8 50 0 1.3 12.0

40 1 39.8 51.2 40 1 59.0 10.8

40 1 50.9 0.8

35 0 12.4 25.1 35 0 18.9 32.0

35 0 15.0 26.0

10 0 22.9 34.6 10 0 22.2 36.4

10 0 30.9 41.4

clouds

not seen (sure)

45 1 45.8 56.8 45 1 53.3 2.8

40 3 40.0 51.8 40 3 38.4 48.0

50 1 19.1 31.2 50 1 27.8 37.8

15 4 26.0 36.4 15 4 50.1 59.0

(lost 1st + 4th wire)

(5 3 16.0 28.6 5 3 15.1 24.8

5 0 51.7 4.5 5 1 1.9 11.1

45, 1 52.1 3.5 45 1 58.9 8.5

not seen

not seen

Jan 23 Jan 30

3 30 40 8.3 52 1.3 ~~8.8~~

5-2 22 8.7 53 22 8.8 8.4

84 42 8.5 54 39 8.8 8.4

56 10 8.4 53 14 8.5 8.4

57 56 8.7 53 3 2

58 41 7.1 53 01 7.0 7.2

Jan 23 seeing quite variable pretty
 Jan 30 seeing pretty bad, difficult

not seen

not seen

50 3 37.1 47.5 50 3 27.5 36.7

35 4 18.6 28.6 35 4 27.7 35.2

0 2 18.4 30.3 0 2 25.0 36.1

not seen

not seen

15 0 57.2 8.1 15 1 6.9 16.9

bad towards the last
to see faint stars.

1877 Feb. 1
Feb 3Obs. W.A.R. S.A.R.
Rec'd J.M. J.T.M.5^h 30^m 58^s 7.6 5-4 338.7 very faint
8.4

21 48 81 51 17

9.3

9.3

22 41 9.3 54 9

9.5

24 2 8.8 54 38

8.8

9.0

~~25 58 8.5 54 40~~

5.8

26 03 6.0 54 19

5.5

~~28 2 9.0 54 44~~

9.0

28 38 8.8 54 9

9.1

~~31 2.8 8.0 54 25~~

9.4

30 0.2 9.4 54 29

9.3

~~33 2.8 9.0 54 1~~

9.4

31 23 9.3 54 16

9.3

~~34 00 8.5 54 13~~

9.1

32 28 9.2 54 11

9.1

~~35 36 8.8 54 55~~

9.1

33 48 9.3 58 0

9.2

~~36 2.8 9.0 55 00~~

8.8

34 33 8.7 54 43

8.7

~~37 43 8.8 54 35~~

9.1

35 10 9.0 54 22

9.0

comp. pr. below:

40 3 59.9 10.1

40 3 58.1 8.1

0 0 17.2 30.1

0 0 28.1 42.1

not seen

and wine + foll.

5 3 41.1 53.9

35 4 7.1 18.1

35 4 15.8 28.4

55 2 14.7 27.6

55 2 19.2 32.4

5 3 20.9 32.2

5 3 15.7 28.0

45 4 1.5 12.9

45 4 6.4 18.0

0 1 39.1 51.8

0 1 39.9 53.6

5 1 4.1 16.4

5 1 7.5 20.2

15 3 11.0 22.4

15 3 12.0 25.1

35 0 38.6 51.1

35 0 34.3 46.1

55 0 39.0 51.5

55 0 52.0 3.9

1877 Feb. 1
Feb. 3

5-37 3 6.5 54 25 6.3

7.0

39 30 9.3 54 1 9.5

9.5

40 26 8.5 54 39 8.8

9.0

42 45 9.0 54 35 9.2

9.5

45 8 9.0 54 00 9.5

9.5

45 51 8.3 54 15

47 2 9.0 54 49

49 29 8.5 54 22

50	1	15.9	28.1
50	1	22.5	34.8
15	2	7.9	19.1
15	2	7.2	19.7
35	4	7.9	17.9
35	4	9.3	20.9
40	3	48.4	0.9
40	3	54.1	4.7
25	3	54.1	5.2
25	3	53.9	5.4

not seen

seeing moderately good.
seeing quite bad

Feb. 1

1877 Feb. 3

Feb. 4

Obs. W.A.R. W.A.R.
Rec. f. H. M. f. H. M.

4 33 17 88 53 26

35 14 9.0 53 24

9.2

9.0

37 40 9.0 53 3

7.2

6.8

39 21 7.8 53 8

8.6 sure

8.8

41 9 9.2 52 27

9.1

9.1

42 34 8.0 54 19

7.9

8.4

45 51 8.9 51 4

9.0

9.0

47 48 9.0 51 55

8.8

9.0

49 11 8.0 52 16

8.0

8.0

50 26 8.9 54 39

8.9

9.1

52 1 8.8 54 12

8.9

9.2

53 18 9.2 54 39

9.1

9.1

50 lost 7 21.8

50 3 8.7 21.8

50 3 9.9 24.1

10 3 2.5 14.9

10 3 8.9 22.1

5 3 56.9 9.9

5 4 6.9 19.0

50 1 16.9 30.5

50 1 15.5 30.4

25 2 47.9 0.1

25 2 54.1 6.0

md. wire + foll.

10 1 14.0 28.1

10 1 22.1 35.9

20 2 40.0 54.1

20 2 40.9 54.5

55 4 34.5 47.6

55 4 42.8 56.9

40 0 37.2 50.2

40 0 34.2 47.5

5 1 24.2 35.9

5 1 26.9 39.8

40 3 19.8 32.8

40 3 20.5 33.5

1877 Feb. 3

Feb. 4

4 54 10 8.4 54 48

8.5

8.7

55 50 7.5 54 57

8.2 sure

8.5

57 22 7.5 54 50

8.2

8.2

58 26 9.1 54 50

9.2

8.8

51 38 7.0 53 17

7.2

6.7

3 5 9.4 53 29

9.0 sure

8.8

prob.

4 29 6.5 53 4

5.9

6.0

~~6 25 8.3 53 20~~

9.3

12 29 9.0 53 31

9.1

13 29 8.9 53 27

9.2

9.1

14 31 9.0 51 30

9.2

9.1

~~18 13 7.6 54 33~~~~20 58~~~~21 47 7.0 50 55~~

25	4	17.9	30.1
----	---	------	------

25	4	19.1	32.1
----	---	------	------

20	1	2.4	14.1
----	---	-----	------

20	1	5.4	18.4
----	---	-----	------

25	3	51.4	2.9
----	---	------	-----

25	3	43.0	55.1
----	---	------	------

25	2	41.9	58.4
----	---	------	------

25	2	27.5	43.0
----	---	------	------

0	0	6.7	20.9
---	---	-----	------

0	0	12.5	27.9
---	---	------	------

50	2	11.4	24.5
----	---	------	------

wrong # for both nights

50	2	10.6	24.2
----	---	------	------

10	3	59.9	11.6
----	---	------	------

10	3	54.3	6.6
----	---	------	-----

45	2	59.5	40.4
----	---	------	------

45	3	2.2	14.9
----	---	-----	------

50	1	10.5	23.8
----	---	------	------

50	1	8.9	23.1
----	---	-----	------

coll. of 3 stars

45	1	33.1	46.1
----	---	------	------

45	1	27.9	41.9
----	---	------	------

Seeing variable Feb 3

Seeing pretty good Feb 4

877, Feb. 6 Feb. 11

Feb. 8

Obs. W.A.R.
Ref. J.M.W.A.R. W.A.R.
J.M. J.M.

40^m 36^s 88 54 49
38 166 47.5

41 30 80 54 42
41 11.0 39.8

8.4 8.2
7.8

42 34 85 54 18
41 15.0 16.0

8.8 8.8
9.0

45 07 80 57 23
48 53.6 20.6

7.0 7.7
7.0

46 08 89 57 32
44 54.6 20.0

9.1 9.1
9.2

47 47 94 53 42
46 27.2 40.3

9.5 9.3 false stroke
9.5

50 26 89 54 39
49 6.3 36.9

9.0 8.6
8.8

52 1 88 54 12
50 41.4 9.9

8.8 9.0
9.2

53 18 92 54 34
51 58.2 32.4

9.0 9.0
9.2

54 10 84 54 48
52 48.7 46.4

8.4 8.2
8.8

55 50 71 54 57
54 28.7 55.5

8.3 8.7
8.8

57 22 75 54 50
56 1.2 47.8

8.0 8.0
8.3

not seen

~~35 1 29.7 41.5~~

85	1	32.0	45.9
~~35~~	~~1~~	~~29.6~~	~~44.0~~
35	1	26.6	39.1

~~0 1 13.6 27.9~~

0	1	9.4	22.3
~~0~~	~~1~~	~~1.6~~	~~15.8~~
0	1	7.7	20.5

~~50 3 10.2 54.2~~

50	3	48.4	2.5
~~50~~	~~3~~	~~40.9~~	~~56.2~~
50	3	45.4	57.9

~~40 4 51.3 3.9~~

40	4	40.3	53.9
~~40~~	~~4~~	~~46.1~~	~~10~~
40	4	42.8	55.9

~~before mid. 40 4 37.1 52.1~~

35	0	15.2	29.2
~~35~~	~~0~~	~~21.6~~	~~36.3~~
35	0	37.1	50.5

~~hazy 40 1 1.3 12.6~~

40	1	33.1	46.2
~~40~~	~~0~~	~~31.6~~	~~45.8~~
40	0	33.9	47.2

5	1	33.1	46.4
~~5~~	~~1~~	~~19.6~~	~~34.5~~
5	1	22.6	35.6

40	3	18.6	31.6
~~40~~	~~3~~	~~20.0~~	~~34.0~~
40	3	33.6	45.5

25	4	17.9	31.1
~~25~~	~~4~~	~~16.6~~	~~30.3~~
25	4	31.3	43.4

20	0	57.9	4.9
~~20~~	~~0~~	~~53.6~~	~~7.1~~
20	0	57.1	9.0

25	3	38.4	51.5
~~25~~	~~3~~	~~40.8~~	~~55.1~~
25	3	46.4	58.1

1877 Feb. 6 Feb. 11

Feb. 8

$$\begin{array}{r} 4 \quad 58 \quad 37 \quad 8.5 \quad 53 \quad 41 \\ \quad \quad 57 \quad 17.5 \quad \quad \quad 388 \end{array}$$

$$\begin{array}{r} 8.2 \quad 8.0 \\ 8.5 \end{array}$$

$$\begin{array}{r} 5 \quad 5 \quad 38 \quad 7.5 \quad 53 \quad 17 \\ \quad \quad 6 \quad 18.6 \quad \quad \quad 15.6 \end{array}$$

$$\begin{array}{r} 6.8 \quad 6.9 \\ 7.5 \end{array}$$

$$\begin{array}{r} 3 \quad 13 \quad 9.0 \quad 53 \quad 24 \quad 22 \\ \quad \quad 1. \quad 51.6 \quad \quad \quad 224. \end{array}$$

$$\begin{array}{r} 8.8 \quad 8.9 \\ 9.2 \end{array}$$

$$\begin{array}{r} 3 \quad 48 \quad 8.0 \quad 53 \quad 52 \quad 22 \\ \quad \quad 2 \quad 26.7 \quad \quad \quad 1 \quad 50.3 \end{array}$$

$$\begin{array}{r} 7.0 \text{ sure } 8.4 \\ 8.7 \end{array}$$

$$\begin{array}{r} 4 \quad 33 \quad 9.2 \quad 53 \quad 5 \\ \quad \quad 3 \quad 13.4 \quad \quad \quad 3.1 \end{array}$$

$$\begin{array}{r} 9.1 \quad 9.4 \\ 5.8 \end{array}$$

$$\begin{array}{r} 6 \quad 33 \quad 7.5 \quad 54 \quad 2 \quad 22 \\ \quad \quad 5 \quad 11.8 \quad \quad \quad 0.2 \end{array}$$

$$\begin{array}{r} 7.0 \quad 7.0 \\ 8.7 \end{array}$$

$$\begin{array}{r} 7 \quad 19 \quad 8.5 \quad 54 \quad 15 \\ \quad \quad 5 \quad 18.4 \quad \quad \quad 13.5 \end{array}$$

$$\begin{array}{r} 8.8 \quad 8.4 \end{array}$$

$$\begin{array}{r} 8 \quad 52 \quad 8.3 \quad 54 \quad 48 \\ \quad \quad 7 \quad 31.2 \quad \quad \quad 46.3 \end{array}$$

$$\begin{array}{r} 9.1 \quad 8.7 \end{array}$$

$$\begin{array}{r} 9 \quad 49 \quad 8.0 \quad 54 \quad 55 \\ \quad \quad 8 \quad 28.5 \quad \quad \quad 53.8 \end{array}$$

$$\begin{array}{r} 8.5 \quad 7.5 \\ 8.5 \end{array}$$

$$\begin{array}{r} 10 \quad 57 \quad 8.3 \quad 54 \quad 7 \\ \quad \quad 9 \quad 30.2 \quad \quad \quad 6.0 \end{array}$$

$$\begin{array}{r} 6.3 \quad 6.7 \end{array}$$

$$\begin{array}{r} 12 \quad 33 \quad 9.4 \quad 54 \quad 55 \quad 22 \\ \quad \quad 11 \quad 11.9 \quad \quad \quad 53.6 \end{array}$$

$$\begin{array}{r} 9.5 \quad 9.4 \end{array}$$

$$\begin{array}{r} 13 \quad 19 \quad 9.0 \quad 53 \quad 14 \\ \quad \quad 11 \quad 57.8 \quad \quad \quad 12.1 \end{array}$$

$$\begin{array}{r} 8.8 \quad 8.7 \end{array}$$

35	2	43.5	57.5
~~35~~	~~2~~	~~51.0~~	~~4.8~~
35	2	48.1	1.1

0	0	4.4	19.1
~~0~~	~~0~~	~~0.1~~	~~5.7~~
0	0	6.3	20.5

50	1	56.7	9.9
----	---	------	-----

the last & long stroke only for 50

~~50~~	~~2~~	~~19.1~~	~~32.0~~
50	2	19.1	32.0

25	0	39.1	53.6
~~25~~	~~0~~	~~43.3~~	~~58.4~~
25	0	43.7	57.3

10	3	12.7	26.1
~~10~~	~~3~~	~~22.0~~	~~35.4~~
10	4	25.9	37.2

15	0	52.6	5.9
~~15~~	~~0~~	~~50.9~~	~~6.0~~
15	0	4.5	18.5

too faint to obs.

0	2	47.5	1.3
~~0~~	~~2~~	~~44.1~~	~~59.1~~

30	0	7.2	21.6
~~30~~	~~0~~	~~4.9~~	~~20.2~~

not seen

the extremely bad seeing gave up the gone on account of

20	2	44.9	57.4
~~20~~	~~2~~	~~47.9~~	~~1.8~~
20	2	56.1	1.6
10	0	32.3	46.8
~~10~~	~~0~~	~~31.5~~	~~45.7~~

20	2	39.8	52.1
~~20~~	~~2~~	~~42.3~~	~~55.2~~

0	2	42.6	56.9
~~0~~	~~2~~	~~38.4~~	~~54.3~~

1877, Feb. 6

Feb. 11

5	20	24	77	53	3	8.3	8.2
	19	3.0			20		

8.2

24	2	8.8	521	38	9.0
22	419			367	9.0

9.0

28	53	9.4	54	48	9.2
27	317			450	9.0

9.0

30	47	9.0	54	14	8.8
29	257			130	8.8

8.8

31	58	8.5	54	46	8.5
30	267			445	8.2

8.2

33	48	9.3	55	00	9.1
32	271		54	588	9.1

9.1

35	05	8.0	54	1	7.4
33	407			03	7.8

7.8

37	00	9.5	54	36
----	----	-----	----	----

10	4	11.1	24.3
10	4	4.8	19.1

35	4	11.4	23.4
35	4	5.3	18.4

30	1	52.0	5.7
30	1	43.4	57.9

0	3	38.2	52.2
0	3	25.8	39.5

30	1	59.7	12.5
30	1	54.0	7.5

15	3	17.9	30.4
----	---	------	------

15	3	10.2	24.5
----	---	------	------

15	1	0.8	13.6
----	---	-----	------

15	0	55.5	10.0
----	---	------	------

seeing very fine Feb. 6

seeing very good Feb. 11

