

KG
11366
v. 373

Chronograph Record.
A. G. Jones.
24 Circle Readings.
From Sept. 30 1877 to Dec. 17 1877

Charles W. Sever, University Bookstore, Cambridge.

+LS
ndel

2 / 877 Sept. 30

Oct. 1

h - s'						E	G
39	14	72	51	49		7.0 35 1	34.3 45.1
40	25	80	50	20		7.7 35 1	49.5 58.7
41	42	70	50	12 22		9.0 5 0	45.1 53.4
42	27	85	52	50		8.9 5 0	54.6 2.9
44	30	70	50	00		7.0 10 4	4.4 12.9
45	30	66	53	45		7.0 10 3	48.3 53.9
47	38	79	55	0		7.5 35 1	3.1 15.1
49	20	85	49	58 22		8.5 35 1	2.0 12.2
50	9	80	50	1		7.0 25 0	10.7 21.0
51	53	89	55	6		8.6 20 4	58.8 4.9
53	17	85	53	6		7.8 40 1	4.7 15.1
54	20	85	49	57		6.8 40 1	30.1 38.7
56	48	87	54	2 22		8.0 25 0	46.4 57.1
57	25	88	54	36		8.0 25 0	49.1 58.1
59	52	83	53	26		8.7 25 1	42.9 52.7
						8.5 25 1	35.8 44.0
						7.7 20 4	15.6 23.9
						7.8 20 4	19.1 26.1
						9.0 15 4	32.9 14.1
						9.0 15 4	10.8 17.9
						8.4 15 4	20.9 29.8
						8.7 15 4	23.2 31.4
						6.0 25 3	8.9 17.9
						7.2 25 3	16.4 24.7
						8.0 20 4	29.0 37.7
						9.0 20 4	33.4 41.3
						8.7 50 0	11.4 21.8
						8.7 50 0	17.1 25.9
						8.0 55 3	57.9 6.2
						8.1 55 3	52.9 0.1
						8.3	

Mean δ & R.A. close double

~~Mean δ close do~~ Close double, mean δ & R.A.
Mean δ & R.A.

2nd δ pr. 1 stroke for each δ
2nd δ pr

4 / 877 Sept. 30
Oct. 1

				E	G
1 1 7 77 55 3	7.3	20	1	32.0	42.0
	7.4	20	2	14.5	22.1
2 8 85 53 56	9.2	30	0	8.6	19.4
	9.1	30	0	24.1	33.1
3 34 90 54 18	9.1	5	2	0.9	10.5
	9.1	5	2	4.1	12.2
4 20 90 52 42	7.0	40	3	49.5	58.9
	7.0	40	3	54.5	2.1
5 90 81 54 52	7.2	15	1	0.9	10.9
6 1 92 55 10	7.7	15	1	25.4	34.4
11 11 83 53 56	8.3	25	4	48.1	56.4
8 85	8.7	25	4	40.9	48.9
12 13 83 51 56	7.8	25	4	16.4	25.4
	8.7	25	4	16.6	25.6
13 36 83 51 31	8.5	50	4	13.1	22.9
	7.2	50	4	4.1	12.8
15 44 92 53 47	9.0	35	4	9.3	17.9
	9.1	35	4	7.4	15.1

Wrong X

False obs. pr.

Reg order

Seeing very good, but a little trouble with illumination.
Seeing very fine

6 1877 Oct. 6 Obs. W.A.R. W.A.R.
 hms Oct. 7, Rec. J.T.M. J.T.M.

6 — 9
 " — "

36 9	89 50 34				
47 54	94 54 51				
48 40	80 53 27				
50 23	94 50 33				
54 38	9.0 52 22	9.0 5-	0	14.8	23.9
		8.8 0	4	44.9	51.6
58 10	84 52 42				
		9.1 40	0	54.9	2.7
0 26	88 52 23	9.1 0	4	16.4	24.9
		8.8 0	3	55.3	2.9
1 38	80 52 51				
		9.0 35-	0	56.1	0.1
9 24	88 50 46 22	8.8 40	0	46.9	54.4
		9.0 40	0	5.7	13.3
10 2	82 54 47	6.7 40	2	35.5	42.4
		7.8 41	1	59.1	5.9
12 5	83 54 16	8.8 10	1	7.5	15.1
		9.0 10	1	22.9	29.9
13. 2	92 54 43	8.9 40	4	5.4	11.7
		8.8 40	3	34.6	42.0
14 47	85 51 15	9.6 10	1	41.5	58.0
		9.3 10	1	39.9	48.4
16 21	83 50 51	8.8 35-	0	15.8	24.1
		8.8 35-	0	16.7	25.7
19 17	73 54 31	6.8 55-	0	23.8	32.4

19^h 40^m 44^m 48^s

2 line Min

" "

Mid wire & foll.

Not seen

Mid. wire & foll.

Lost 1st wire

Lost

2nd & pr. 1 stroke for each &

8 Oct. 6
Oct. 7

h ~ 5					9.3	4.0	2	8	9
20	20	12	50	50 44				21.3	27.8
21	6	77	50	53	7.0	30	4	5.3	11.5
					7.9	30	4	5.5	13.1
22	4	8.0	55	0	7.4	25	1	3.1	9.1
					8.5	25	1	8.9	16.5
23	50	84	49	53	8.3	10	2	53.2	58.6
24	45	85	50	13	8.8	10	2	42.9	50.5
25	50	84	49	53	8.6	30	2	57.6	3.5
					8.7	30	2	58.1	4.1
27	19	85	51	32	8.4	50	4	18.6	25.5
30	19	50	54	6	9.0	20	0	20.0	27.6
					8.8	20	0	13.4	22.1
31	16	85	51	36	9.6	50	1	25.1	32.9
					9.3	50	0	50.6	59.0
36	34	80	54	29	9.2	55	2	38.8	46.7
					8.9	55	2	14.1	20.4
37	46	80	54	24	9.3	0	2	10.1	18.5
					9.0	0	2	2.1	9.1
39	1	82	51	28	8.0	45	2	37.9	46.9
					8.4	45	2	44.0	52.2
40	15	87	54	10	8.8	15	1	48.9	55.9
					8.8	15	1	33.2	41.5
41	51	77	53	33	8.4	50	3	29.9	37.4
					8.3	50	3	19.4	26.6
43	2	80	54	20	8.7	0	2	3.3	11.4
					8.8	0	0	22.2	31.5
44	45	80	53	36	8.0	50	0	27.1	36.1
					8.0	50	0	11.5	19.1

Suspected double

Lost 1st wire

Ref. 3rd, stroke of 8

10 1877 Oct. 6

Oct. 7

54 23 85 53 29

56 57 80 54 36

59 47 80 53 27 22

21

0 21 80 49 57

1 58 90 49 59

2 10 86 53 57

4 9 85 52 1

8 8 89 53 57

11 46 80 53 24

13 1 58 53 27

14 34 82 51 41

15 51 89 52 26

17 26 89 50 17

18 20 84 55 3 2

19 7 80 55 12

88 55

89 55

92 45

91 45

82 55

8.5-
8.6 55

8.7

8.4 25

9.0 25

8.9 35

8.3 35

9.7 20

8.9 35

8.8 35

8.7 0

9.0 0

5.5- 55

6.0 55

9.0 40

9.0 40

7.2 55

8.0 55

8.6 5

8.3 5

8.2 20

8.8 20

7.9 10

8.1 10

1

1

4

4

3

3

3

1

0

0

1

0

0

1

1

3

3

4

4

4

4

3

3

1

2

3

3

8.11 45.4

43.7

36.1

43.4

46.5

53.7

48.9

36.7

50.4

47.8

46.0

40.1

42.9

42.6

53.9

31.9

27.8

32.0

46.0

55.3

58.5

27.1

26.5

50.5

4.3

47.1

46.4

53.6

57.7

42.9

49.9

53.1

0.0

54.6

44.8

38.1

53.0

57.0

48.5

50.8

51.0

11

39.1

34.4

39.5

53.0

2.1

4.9

32.2

33.8

66.9

10.8

53.8

52.5

2nd & pr. 1 stroke for each &. 1st of double stroke belongs to 2nd
 2nd & pr. 1 stroke for each &.

Lost

Not seen

Double. 1 stroke for each & 2nd. & pr.

2nd & pr. 1 stroke for each &

1 stroke each & 2nd & pr some confusion of wires
 2nd & pr 1 stroke for each &

Reg. order
Reg. order
Not-seen
Not-seen

False stroke after 3rd wire of 2nd X

Confusion of wires

Seeing very bad indeed
Seeing very bad especially during last half.

14 1877, Oct. 13 Obs. W.A.R. W.A.R.,
 Oct-17 Rec. J. M. J. F. M.

h - s' c'
 19 47 54 54 54 54
 48 3 23 50 27

E. — G.
 " " "

50 23 94 50 56

64 40 88 50 40

58 10 84 52 42

8.5 45 0

11.8 21.8

20
 1 5 82 52 57 22

8.4 35 1

3.1 12.1

1 47 82 52 45

9.5 40 2

25.4 34.4

9 38 84 50 10

8.8 10 1

54.4 0.1

13 4 78 51 59

8.3 25 1

38.1 46.9

14 34 65 53 54

6.8 30 1

17.8 25.8

15 48 80 55 8

8.5 15 2

59.1 6.1

21 27 80 54 15

8.8 30 1

6.0 15.3

22 39 95 52 14

8.3 5 3

48.1 53.2

25 50 84 49 53

8.8 30 2

53.9 1.9

27 19 85 51 32

8.4 30 3

16.4 23.5

8.0 50 4

24.8 31.4

A false observation follows
Not seen

16 1877, Oct. 13

Oct. 17

				E		S	
h ~ 5							
31 18	90	51	56	8.9 25-	4	32.5	40.0
				8.6 25-	4	39.1	47.1
36 41	88	53	50	9.0 35-	2	33.5	41.2
				8.9 35-	2	46.1	53.4
38 4	90	53	21	9.0 5-	0	10.4	19.1
				9.0 5-	0	10.7	18.9
39 10	85	51	52	8.4 30	2	47.6	56.1
				8.2 35-	1	22.1	31.2
42 12	90	53	17				
43 19	77	51	18	8.0 5-	1	44.9	53.2
				7.4 5-	1	48.8	56.9
47 40	94	07	46	9.5 40	1	15.0	23.4
57 1	90	50	22	9.0 0	3	16.0	23.5
21				9.1 0	3	30.4	36.9
0 21	79	48	57	8.0 25-	3	23.3	29.9
				8.3 25-	3	30.8	38.5
2 44	90	53	46	8.9 40	1	1.9	10.1
				9.2 40	0	49.2	56.4
12 15	90	50	44 2)	8.7 40	1	22.9	30.9
				9.0 40	1	21.1	28.7
13. 3	86	54	33	8.5 50	3	27.2	34.2
				8.4 50	4	55.6	15-
15 18	90	52	47	9.2 35-	4	22.6	30.0
				8.7 35-	4	39.3	47.4
17 57	89	55	5-	9.1 15-	4	23.0	29.7
				9.2 15-	4	37.5	44.3
18 56	83	55	5 22	8.0 20	0	0.0	7.6
				8.7 20	0	7.9	25.7

Not seen

Not seen

Prob. wrong X

24

1877, Oct. 13

Oct. 17

$\frac{h}{1} - \frac{s}{19} \frac{u}{37} \frac{v}{83} \frac{v'}{55} \frac{v''}{13}$				$\frac{E}{28.7} \sim \frac{E}{35.3}$	
33 31 88 52 27	9.1	10	2	58.4	55
	8.8	55	3	52.1	59.2
35 33 88 52 44	9.1	40	1	49.2	58.3
	9.1	40	1	45.1	54.2
50 49 81 53 17	8.9	5	3	10.5	18.2
	9.0	5	3	15.4	23.5
52 11 80 50 55	9.6	30	1	16.9	24.9
	9.1	30	1	13.6	21.2
58 48 81 55 10					
22 0 48 80 52 10	8.7	15	0	21.3	30.9
	9.0	15	0	20.0	27.5
8 23 80 53 15	8.6	15	4	53.9	0.1
	9.0	5	4	37.5	43.7
13 5 80 51 52	9.2	30	2	22.4	30.5
14 9 89 51 15	8.4	10	0	40.1	48.9
	8.7	10	0	26.6	34.1
15 15 90 51 35	9.0	45	0	33.5	43.4
	9.0	45	0	41.1	49.9
19 46 84 51 29	9.0	55	1	55.9	3.8
	8.8	55	1	57.8	3.9
21 25 87 51 42	9.0	40	3	22.1	29.1
	8.0	40	3	19.5	25.8
22 59 86 51 33	8.5	50	2	42.8	49.9
	8.8	50	2	42.9	50.7
27 57 93 48 15	9.0	30	0	17.8	25.8
	9.2	30	0	36.6	44.5

Mid wire + foll. for 2^{nd} # Light Clouds
foll. X

Not seen
Several Xs in the field

Clouds

26

1877 Oct. 13

Oct 17

$$h \sim 5' \quad 90.50' \quad 0'$$

34 55 84 54 54

37 0 80 52 8

38 29 75 52 38

32 28 83 53 57

53 51 93 55 8

54 47 90 55 5

56 11 89 55 8

57 17 82 55 8

 23
 9 8 94 55 7

14 7 93 55 0

15 11 94 54 58

18 26 92 54 57 2

19 3 85 54 23

20 5 88 54 24

8.7 25 0

8.7 25 0

9.1 30 1

9.3 30 2

7.8 15 2

8.2 15 2

8.0 45 2

8.0 45 2

-

9.2 25 3

9.2 15 2

9.4 15 2

8.9 20 0

9.1 20 0

8.8 15 2

9.0 15 2

8.1 15 1

8.5 15 1

9.0 15 3

9.5 15 3

9.2 25 1

9.5 25 1

9.4 25 2

9.4 25 2

8.0 0 3

8.0 0 3

9.0 0 2

8.7 0 1

86 ~ 8

4.7 12.9

2.1 8.6

56.1 25

5.6 12.4

48.2 53.2

46.8 54.1

44.3 52.8

49.1 53.7

-

18.5 25.7

54.5 0.1

50.5 56.9

52.9 0.1

52.9 59.7

9.9 17.0

14.9 23.0

59.9 5.2

53.1 59.9

2.9 9.5

11.7 17.5

3.9 10.2

11.7 19.4

53.8 16

17.9 24.9

2.1 27.1

5.0 12.2

36.8 44.6

Lower & foll. ✕

Seeing pretty bad.

Seeing pretty good during the 1st of the
evening but pretty bad towards the last.

28

Obs. W.A.R. W.A.R.
Rec. J.H.M. J.H.M.877, Oct. 18
877, Oct. 23

E. G

10 21 52 6.2 53 80

30 3 7.9 53 1 9.2 25 0 10.4 20.1

36 32 8.4 54 48 8.8 35 3 34.7 42.8

37 9 8.7 55.9 9.0 15 2 7.2 16.2

39 25 8.2 51 22 8.8 0 3 16.6 24.9

42 12 9.0 53 17

47 53 8.8 54 41

21 1 8 9.4 49 59 9.0 45 0 6.0 14.5

9.2 25 1 59.8 8.3

9.2 25 1 15.0 21.1

~~47 47 8.3 54 19~~
4 28 9.5 52 47

9.6 35 4 8.1 15.2

12 47 8.3 54 19 22

13 21 7.8 54 31

15 21 8.0 52 56 8.2 30 0 10.2 19.9

8.8 20 4 40.2 46.1

16 13 9.5 53 21 9.5 5 0 4.6 15.7

9.0 0 4 32.2 38.1

17 43 9.1 50 15 8.8 10 0 14.1 21.6

9.3 5 4 14.0 19.6

19 35 9.5 55.10 9.3 15 0 9.5 18.9

9.1 15 0 19.5 25.8

clouds

not seen

not seen

Lost mid wire clouds

not seen

Mid. wire & foll.
Pre. X

Reg. order

30 1877 Oct 18
1877 Oct 23

1	35	23	8.8	55.10 51 36	8.8 8.8 8.4 8.1	10 10 10 10	4 4 4 4	36.9 15.5 53.9 37.6	45.3 22.1 58.2 42.3
	35	20	8.8	51 36					
22	8	40	8.1	54 50					
					7.2	35	0	28.5	34.5
	13	5	9.0	51 52					
					9.2	30	0	24.9	32.0
	16	20	8.5	53 54					
					8.9	30	0	26.4	34.0
	19	50	8.0	53 45	8.0	40	1	7.0	15.8
					8.2	40	1	4.7	11.5
	20	46	7.1	53 10	7.4	15	0	59.2	7.1
					7.0	15	0	52.1	56.7
	26	23	8.4	52 12	8.4	10	3	10.5	19.9
					8.3	10	3	16.2	22.5
	27	17	8.2	54 32 22	9.2	50	3	31.8	38.8
					8.9	50	3	48.7	53.6
	28	5	8.4	54 26	8.8	55	4	39.5	41.9
					8.2	55	4	38.9	45.1
	30	33	8.4	53 32	8.2	50	2	12.4	21.1
					8.0	50	2	6.4	13.6
	37	47	9.5	51 54	9.5	30	0	48.2	57.2
					9.4	30	0	59.9	4.4
	39	14	9.0	52 4	8.8	20	1	14.6	23.9
					8.6	20	1	21.2	28.2
	44	38	6.7	50 0	6.7	25	0	45.1	53.4
					7.0	25	0	35.8	42.7
23	3	46	9.0	50 19					
					9.0	5	0	35.0	41.5

Reg order

Reg. order

Not seen

Not seen

Cand. Oct. 18

Ref A+,

Double, mean S & R.A.

Mean S & R.A.

Feature Obs. Kr

32 1877 Oct-18
1877 Oct-23

E - G

3	9	17	8.5	54	14	8.0	10	0	58.5	6.9
						8.3	10	1	7.4	13.0
	14	29	8.2	55	6	7.8	15	4	22.0	28.4
						8.2	15	4	63	11.0
	21	11	7.9	54	10	8.8	15	4	51.9	57.6
						8.0	15	0	53.2	59.8
	22	22	9.1	54	39	9.0	45	2	40.1	48.4
						9.1	45	2	29.9	35.0
	23	16	7.8	54	27	7.4	55	4	58.1	4.1
						7.8	55	4	56.9	0.1
	24	28	9.4	54	43	9.0	40	2	8.4	15.5
						8.9	40	2	48.1	53.3
	25	40	9.0	54	53	9.2	30	3	7.2	14.5
						9.0	30	3	9.5	15.9
	26	39	8.5	55	4	8.0	20	2	0.9	8.7
						7.7	20	2	3.2	7.9
	27	37	8.0	53	49	8.0	35	2	23.3	29.6
						8.0	35	2	23.1	27.6
	29	38	9.1	52	4 2	9.0	20	0	52.7	0.8
						8.6	20	1	6.2	13.2
	30	21	9.0	51	54					
	31	28	9.5	51	54	9.5	30	1	19.6	28.7
						9.5	30	1	13.1	19.4
	32	24	8.5	54	6	8.4	15	4	48.7	53.5
						8.4	15	4	44.0	48.8
	34	33	7.9	54	26 22	7.4	55	4	14.1	21.1
						7.0	55	4	15.9	29.4
	35	15	9.0	53	39	8.5	45	2	5.5	13.6
						8.7	45	1	42.8	47.4

wrong X

Full sun Part. wrong X

Seeing quite variable
Seeing very fine

34

1877 Oct. 27

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

1877 Oct. 28

~~19 50 17 78 50 49~~
~~19 48 21 80 52 53~~
~~19 50 17 78 50 49~~
~~19 48 21 80 52 53~~

19 50 17 78 50 49

19 54 32 80 51 0

9.2 20 1 23.6 28.4

19 58 10 84 52 42

20 1 5 82 52 51 22

8.5 35 1 1.1 7.1

8.5 35 0 49.3 55.4

1 47 9.2 52 45

9.2 40 2 24.2 29.9

9.4 40 2 23.1 27.9

9 28 84 53 57 22

9.2 25 3 11.1 16.2

9.2 25 3 18.3 17.9

9 59 85 55 0

8. 35 2 18.3

12 11 8.9 54 49

8.8 35 2 18.3 21.7

8.0 30 4 42.0 45.9

15 16 9.1 51 49

9.2 35 2 23.3 27.8

9.4 35 1 53.1 57.1

19 19 8.8 54 18

8.8 35 2 48.9 54.5

9.0 5 2 47.7 52.9

20 13 9.3 50 54

9.2 30 2 47.4 51.9

21 13 8.8 50 36

8.8 50 0 35.0 38.8

9.3 50 0 26.9 32.1

8.8 50 0 43.2 47.4

9.3 50 0 29.1 32.9

25 1 8.0 54 4

8.2 20 1 58.9 27

9.3 20 1 54.1 57.9

8.5 20 1 54.1 57.9

9.2 20 1 54.1 57.9

False stroke & rather after 8

Reg. A_{+1}

lost 1st 3 m

Reg order

36

1877 Oct. 27 1877 Oct 28

					E		B.	
0 39 25 82 51 22	8.8	0	2	52.9	58.6			
	8.6	0	2	54.0	57.9			
40 28 89 50 56	8.7	25	4	28.9	32.9			
	8.7	25	4	37.1	40.2			
42 12 90 53 17	9.2	40	4	56.1	59.5			
47 53 88 54 41	9.2	40	4	56.1	59.5			
	9.0	40	4	42.2	45.7			
20 53 50 88 55 12								
21 4 9 85 52 1								
12 41 82 52 38	8.6	45	3	21.2	29.1			
15 22 82 52 23								
18 11 90 49 56								
51 43 93 55 7								
21 58 48 91 55 10	8.9	15	0	38.9	43.6			
	9.1	15	0	20.1	24.2			
	9.0	15	0	44.7	46.5			
22 0. 49 89 52 45	9.0	40	1	33.5	39.9	21.7		
9 41 92 54 48								
2 43 93 53 54								
9 41 82 54 48	9.1	30	0	39.1	42.7			
	8.4	35	3	313.7	16.1			
	8.5	35	2	42.6	46.9			
14 56 90 49 56	9.2	30	0	53.1	57.2			
	9.0	25	4	47.6	50.6			

Not seen.
 Not seen

Not seen -

2nd & pr

Lost 1st wire. foll #

Lost 1st wire foll #

Rej. #

foll # Lost 1st wire

2nd & pr

38 1877 Oct. 27
1877 Oct 28

				E.	E.
2 15 49 85 54 38 2 2	8.3	45 ¹	1	46.1	49.6
	8.7	45 ⁻	1	52.9	56.9
16 21 92 54 54	9.2	30	4	50.6	52.6
	9.0	30	2	5.6	9.1
17 38 85 51 17	8.4	5 ⁻	4	17.6	20.3
	8.4	5 ⁻	4	28.0	31.5 ⁻
18 33 85 51 49	8.3	35 ⁻	1	29.8	34.1
	8.3	35 ⁻	1	15.2	20.0
19 56 81 54 4	8.5	20	2	20.2	24.2
	7.9	20	1	33.1	37.0
	8.6	20	2	35.4	40.9
20 52 71 53 17	8.0	20	3	35.8	39.3
	7.2	5 ⁻	3	16.4	21.0
	6.5	5 ⁻	3	21.9	26.0
21 2 84 53 4 2					
22 57 81 53 7					
23 6 93 52 37	9.2	45 ⁻	3	54.9	58.7
	9.2	45 ⁻	4	10.1	14.0
	9.5	45 ⁻	3	37.9	43.8
24 33 93 52 24	8.9	0	2	35.3	39.1
	9.2	0	2	27.9	32.4
26 36 80 54 35	8.5	50	0	52.9	56.5 ⁻
	9.0	50	0	50.2	56.2
30 38 88 54 56	9.0	30	3	53.0	58.5 ⁻
	9.0	30	4	12.1	16.3
31 38 80 50 27	9.0	55 ⁻	4	1.4	3.3
	8.0	55 ⁻	4	5.5 ⁻	8.7
33 7 95 51 42	8.8	40	3	18.4	21.7
	9.4	40	3	11.9	16.2
	8.8	40	3	20.5	24.2
35 10 91 54 25	9.0	40	3	11.1	16.4
	9.0	0	0	50.9	54.4
	9.0	0	0	55.2	59.6

Mud wire + foll. several Xs in field

Reg. order

Not seen

Not seen

Not seen

2nd S. pr lost - 1 or 2 wires

2nd S pr.

2nd S pr

2nd S pr

40 1877 Oct-27
1877 Oct-28

1877 Oct-28						Co.	G.
22 37 28 85 50 6	8.0	15-	4	17.2	20.1		
	8.3	15-	4	20.9	23.3		
39 29 70 57 50	6.6	30	4	54.5	58.3		
	6.7	30	4	52.8	57.1		
40 44 60 54 11	8.6	10	4	11.8	14.8		
	6.2	10	4	0.9	3.8		
	8.8	10	4	28.4	30.4		
41 55 76 54 4	7.3	20	1	14.9	19.8		
	8.0	20	1	15.5	20.2		
43 13 87 55 7	8.3	15-	3	6.0	9.6		
	8.8	15-	3	1.0	4.5		
44 31 59 55 13	6.0	10	2	13.8	16.7		
	5.5	10	2	17.2	21.2		
45 30 86 52 22	8.7	0	3	41.4	46.2		
	8.9	0	3	44.5	49.4		
46 22 79 52 31	8.0	55-	0	6.9	9.8		
	8.3	50	4	38.5	13		
47 24 82 54 06	9.0	25-	4	17.9	21.1		
	8.8	25-	4	23.9	25.6		
48 57 94 50 3	9.4	20	2	34.3	36.4		
	9.6	20	2	49.7	52.5		
50 51 81 53 32	9.1	50	3	46.5	50.4		
	9.1	50	2	57.9	1.5		
52 18 86 55 9	8.2	15-	1	29.2	32.9		
	8.8	15-	1	23.4	25.9		
55 21 77 53 37	7.4	45-	2	43.1	45.7		
	7.9	45	2	35.6	38.4		
56 33 90 53 23	8.6	55-	4	54.7	66.4		
	8.3	0	1	39.5	44.1		
	9.0	0	1	15.9	15.9		
59 13 80 55 0	7.8	25	0	26.9	31.2		
	8.0	25	0	28.5	33.3		

False stroke & rather after 8

Perhaps wrong ~~HA~~ 9.4 mag. pr.
 Hill X
 pr X

New York for sheet—

O.K.

2nd 5 pr.

42 1877 Oct. 27

1877 Oct. 28

~~3 6 48 88 55 6~~
~~3 3 46 80 50 19~~

6 48 88 55 6

9 0 87 53 14

10 58 80 53 44

11 52 82 53 39 22

12 26 80 50 8

14 41 88 54 49 22

15 27 89 54 30

17 20 80 54 23

18 26 82 54 17

20 23 88 52 28

22 53 80 51 46

24 16 91 51 57

25 13 73 51 42

26 9 80 51 12

δ	δ	δ	δ	δ
8.8	5-	0	20.1	23.6
8.8	5-	0	24.4	27.9
8.8	15-	4	14.0	17.0
9.0	15-	4	17.8	20.4
8.3	10	1	27.1	31.2
8.7	10	1	19.4	24.3
8.5-	40	1	7.9	12.5
8.8	40	1	19.1	23.5-
8.4	45-	0	53.5-	57.1
9.4	45-	2	0.1	3.4
9.0	15-	2	39.5-	43.1
8.8	38-	2	16.3	18.4
8.3	35-	1	56.9	59.9
8.5-	35-	0	48.9	52.1
8.8	55-	0	20.6	24.7
9.0	0	2	26.1	31.3
9.1	0	2	24.7	28.6
8.8	25-	4	0.6	1.9
9.4	25-	3	57.1	0.1
8.0	55-	2	8.1	11.5-
8.2	55-	3	8.9	7.1
8.8	35-	13	39.6	43.8
9.0	35-	4	25.5-	28.8
9.5-	25-	3	28.0	30.4
9.6	25-	3	25.1	29.0
6.7	40	3	18.2	21.8
7.8	40	3	20.3	23.1
9.0	40	3	26.8	29.7
9.0	40	3	27.2	29.6

A 9.2 mag. pr. wrong #

Lost—
1st & pr.
2nd & pr.

2nd

Seeing quite bad except toward East—
Seeing very fine during 1st part of eve. & moderately good throughout

44 1877 Oct-30 Obs West R.

1877 Nov 4 Rec J. G. M.

h ~ 5
9 50 17 7.8 50 49

8.8 35 2 37.9 46.2

19 54 50 90 51 5

20 9 38 84 50 15

8.5 10 1 30.9 57.5

12 17 89 54 51

9.0 35 2 5.7 30.5
9.0 30 4 58.8 59.5

16 38 82 52 42

9.0 40 4 33.9 43.1
9.0 40 4 14.1 22.1

19 20 86 52 59

8.6 25 1 49.4 87.4

19 20 86 53 0

8.0 25 1 49.4 57.4

21 5 62 53 8

7.0 15 3 13.4 26.4

30 3 79 53 1

8.3 20 4 40.8 49.5

36 32 84 54 48

8.2 35 3 33.0 39.8

37 25 82 54 57 L

9.2 25 3 53.0 10

38 14 88 53 34

9.0 50 2 2.9 9.9

39 27 90 50 12

9.2 10 4 33.2 39.0

42 15 80 52 19

9.7 5 2 41.1 49.9

45 0 88 53 36

8.9 45 4 35.2 42.5

Obs W. A. R.

Rec 2, 7, 9m

1877 Nov. 4

45

Twilight

20 h 10^m 30^s + 56^s 11

88 10 1 58.1 32

20 13 4

Hazy
Not seen

2nd 8 pr.

Reg order

9.2	40	4	2.2	8.6
9.1	45	0	7.7	8.5
Reg order 1st of double stroke				
by wire of 2nd 8.5				
88	25	1	41.2	48.8

8.4 25 1 41.2 48.8

8.1	25	0	14.0	22.9
2nd 1st wire				

8.8	35	3	34.0	38.8
Lost 1st wire				

8.9 25 3 53.9 59.5

9.2 10 4 28.9 33.9

8.3 5 2 34.9 40.5

9.0 45 4 39.6 44.9

46 1877 Oct 29 Obs. W.A.R. W.A.R. ~~W.A.R.~~1877 Oct 30 Rec L.D.M. J.L.M. ~~J.L.M.~~

L - 1877 Nov 4

20 47 47 82 53 33

90 50 2 29.5 37.4
90

21 12 47 83 54 19

15 22 82 52 23

4 35 20 88 51 36

~~22 0 49 89 52 45~~
~~21 51 43 93 55 7~~

22 0 49 89 52 45

8 40 81 54 50

14 50 90 50 1

20 2 84 58 4

24 2 52 54 10 22

24 48 80 53 8

26 0 76 50 12

35 10 81 54 25

37 28 85 50 6

39 29 70 51 50

91 9.4 15 3 20.4 26.9

8.8 15 2 58.6 5.6

9.0 40 1 11.4 21.7

9.0 40 1 5.9 14.5

8.0 35 0 26.7 35.7

7.7 35 0 31.5 40.5

9.1 20 4 53.0 59.6

8.8 20 4 56.9 31

8.8 20 1 20.1 27.9

8.7 20 1 13.3 21.5

9.6 10 4 39.1 46.4

9.0 15 0 13.9 22.2

9.0 10 4 7.1 12.0

8.8 15 3 12.8 19.9

8.0 10 3 0.9 6.4

7.2 10 2 47.9 53.0

8.9 ~~25.3~~ 3 12.4 20.4

9.2 0 0 44.0 52.4

8.7 20 0 2.1 8.7

8.3 15 4 20.4 26.9

7.9 35 0 1.7 10.7

6.4 30 4 53.9 59.6

2nd & pr

Reg order

Nov. 4 1877 47

1 war - 9 2/m

50 2 29.9 35.9

28 pr 1877 Nov. 1

Not

Foll. #

Reg order

8.9 15 3 1.1 3.8 Reg order

9.0 40 1 8.1 76.6

8.3 35 0 43.9 48.5 12.78

8.8 25 0 3.0 25 7.6 1 114 188

Rattle after 8

8.7 20 1 15.1 20.7 154 228

Foll. #

9.0 15 0 15.9 21.8 pr. #

9.2 15 2 43.2 13.8

7.8 10 2 53.4 57.4

9.1 0 0 46.0 51.0

8.1 15 4 17.4 21.8

6.0 30 4 52.1 56.9

48 1877 Oct-29

1877 Oct-30

1877 Nov-4

40 44 90 54 11

48 26 85 54 27

47 6 84 55 0

48 57 94 50 3

51 33 85 52 16 2

52 19 86 55 9

53 23 90 50 36 22

53 57 82 50 19

57 51 95 52 37

22 58 56 85 52 16

28 5 38 93 52 16

17 30 81 52 11 2

18 22 84 54 28

20 54 90 53 19

22 52 92 51 33

	10	3	50.4	57.0
8.0	10	3	50.4	57.0

8.7	10	4	23.9	29.2
-----	----	---	------	------

9.2	55	3	42.7	49.6
-----	----	---	------	------

8.7	55	4	15.9	23.2
-----	----	---	------	------

9.1	25	0	49.9	56.9
-----	----	---	------	------

8.4	25	0	47.5	54.4
-----	----	---	------	------

9.4	20	2	41.4	48.4
-----	----	---	------	------

9.5	5	4	33.9	41.2
-----	---	---	------	------

8.7	5	4	35.5	42.1
-----	---	---	------	------

9.1	15	2	10.9	17.9
-----	----	---	------	------

8.7	15	1	42.9	50.4
-----	----	---	------	------

9.0	45	3	41.1	49.1
-----	----	---	------	------

7.6	50	2	35.4	43.2
-----	----	---	------	------

9.3	10	0	41.8	51.1
8.4	10	0	7.5	17.1

9.4	5	4	15.9	23.3
-----	---	---	------	------

8.4	15	0	3.7	11.0
-----	----	---	-----	------

8.4	55	2	22.9	30.1
-----	----	---	------	------

8.9	5	2	40.2	16.9
-----	---	---	------	------

9.3	50	2	30.5	36.9
-----	----	---	------	------

1877 Nov. 4

49

Prob. wrong * 9.0 10 4 11.0 15.1
 h Prob wrong * 8.6 55 3 42.8 46.9
 22 45

8.5 25 0 33.9 38.7

Not seen 9.6 20 2 38.0 43.0

8.5 5 4 26.5 30.5

Hazy 8.6 15 1 41.8 46.0

Not seen 8.7 45 3 31.4 34.5

Not seen

Not seen

Not seen sure

Lost 1st wire Gave up gone on account of bad seeing 8.1 45 3 42.4 48.1
 22 45

9.0 5 4 23.7 28.4

9.5 10 0 3.6 9.1 Fall of 2 * 5

8.8 15 0 4.1 9.2

8.8 55 1 58.4 1.7

9.0 5 2 40.7 47.2

9.2 50 3 8.3 14.1

50/877 Oct 30

1877 Nov. 4

23	24	44	75	51	13	9.6	10	2	33.5	40.3
						9.6	10	2	26.9	30.7
26	51	82	51	20	22	8.6	5	0	28.1	36.8
						8.6	5	0	22.9	27.9
27	31	89	51	59		8.3	25	0	44.9	32.1
						8.8	25	0	44.3	49.0
28	29	88	57	22	2	8.7	0	3	7.2	15.2
						8.9	1	3	0.9	5.7
29	18	65	51	39		6.6	50	1	0.4	6.5
						7.0	50	1	9.3	13.1
30	19	80	51	27		9.0	55	2	57.1	4.4
						9.0	55	2	57.2	1.2
31	33	87	51	31		8.6	50	3	23.0	29.2
						8.8	50	3	24.5	28.5
32	34	80	54	57		8.8	25	2	58.9	5.0
34	54	83	54	18		9.1	5	3	59.9	6.5
						9.2	5	3	48.5	53.7
36	15	83	53	54		8.4	30	2	5.8	73.6
						8.1	30	2	10.5	14.5
37	23	80	52	16		9.3	5	4	34.5	41.1
						9.1	5	4	23.0	26.3
38	28	82	54	41		7.9	40	4	49.4	53.5
						8.4	40	4	46.1	49.0
39	47	80	54	37		8.8	45	4	43.3	50.0
						9.1	45	4	48.1	50.1
42	20	81	54	29		9.0	0	1	47.2	53.9
						9.3	0	1	44.5	48.9
43	48	85	54	25		9.4	0	1	28.4	33.6
						9.8	0	2	3.6	7.9

52 1877 Oct-30

1877, Nov-4

h m s' s"
3 44 34 81 52 20

45 45	88 54 45	8.5 40	0	38.1	45.2
		8.7 40	0	49.0	54.3
46 56	83 52 25 2	7.8 0	0	43.9	52.0
		9.0 0	0	51.9	57.1
47 38	80 54 44	8.7 40	2	6.5	13.2
		8.9 40	2	44.1	48.1
48 46	80 54 37	8.8 45	3	57.4	57.2
		9.2 45	4	32.5	35.0
49 45	80 54 28 2	8.7 55	2	10.2	17.1
		8.8 55	2	23.9	26.9
50 29	81 51 27	8.5 55	3	41.9	48.1
		8.7 55	3	42.0	45.8
52 19	82 52 57 2	8.5 25	2	54.5	1.4
		9.0 25	3	0.9	3.8
53 9	80 53 17	8.3 5	4	9.0	14.9
		9.1 5	4	15.2	19.2
54 21	88 50 57	8.9 25	2	32.5	39.9
		9.3 25	2	43.1	47.7
56 3	83 54 52 2	8.0 30	4	1.0	6.8
		8.8 30	4	42.9	46.7
56 54	85 54 20	8.2 0	4	56.5	1.4
58 1	92 53 58	9.2 25	3	34.8	40.8
		9.5 25	3	42.2	44.7
58 56	89 54 33	9.1 50	2	17.7	23.7
		9.5 50	2	27.1	29.1
59 59	90 54 45	9.3 40	1	2.4	8.7
		9.0 40	1	4.9	7.8

Not seen

Lost 1st wire

Seeing very fine indeed
Seeing very bad especially toward latter part

54 1877 Nov 3						Obs. W.A. R.		Obs. W.A. R.			
1877 Nov 13						Rec. J. H. M.		Rec. J. H. M.		g	
27	56	84	54	6		8.6	15	4	11.8	17.7	
						8.9	15	4	0.4	1.9	
28	53	80	54	14	22	8.6	10	1	28.4	33.5	
						9.0	10	1	31.9	33.6	
29	25	86	54	23							
30	30	90	54	34		8.8	50	1	8.9	14.9	
						8.8	50	1	18.3	19.3	
31	40	83	54	59	2	8.2	25	1	28.5	33.5	
						8.3	25	2	19.9	21.0	
32	23	85	54	17		8.0	5	3	26.1	29.9	
						7.0	5	3	57.9	59.1	
4	1	82	54	13		8.7	10	2	44.9	50.3	
						9.0	10	2	57.8	59.8	
5	17	88	54	33		8.8	50	2	9.4	16.1	
						8.6	50	1	16.1	21.4	
						9.0	50	2	3.9	4.2	
6	42	84	54	31		8.4	55	0	42.8	44.2	
						8.5	55	0	4.9	5.9	
37	49	85	54	42		8.7	40	4	34.7	38.8	
						8.3	40	4	37.5	37.8	
8	5	86	55	2		8.6	20	3	26.5	30.2	
						8.4	20	3	25.8	24.7	
0	3	84	55	3	2	8.0	20	1	50.6	54.9	
						8.2	20	1	54.9	56.2	
0	45	89	54	30		9.0	55	0	48.8	54.4	
						8.7	55	0	46.0	47.9	
37	82	54	14			8.2	55	0	32.4	34.0	
						9.2	10	1	57.9	30	
						9.1	10	2	19.7	20.6	
2	54	84	54	46		8.0	35	4	30.0	33.6	
						8.8	35	4	42.4	41.9	

False stroke after 1st wire

2nd δ pr.
2nd δ pr

~~Lost~~
Lost 1st 3 wires

2nd δ pr First double stroke belongs to 1st ~~X~~
2nd δ pr

False stroke after δ

2nd δ pr No δ for
2nd δ pr

Mid wire & foll

56/1877 Nov 3
1877 Nov 13

1877 Nov 13

E₀ — E

43 50 80 54 45

8.8 35

4

57.8

1.7

9.0 35

4

60.0

58.6

46 22 80 54 7

8.9 15

4

53.9

58.6

9.0 20

6

7.9

9.9

47 10 — 80 54 57

8.0 25

4

0.8

3.9

7.5 25

4

16.4

16.8

~~48 33 81 53 53~~
~~48 19 81 52 41~~

7.8 45

0

23.0

25.2

~~49 31 86 53 46~~
~~49 46 88 53 19~~

8.5 40

2

48.1

53.2

8.8 25

1

49.8

51.5

~~50 27 85 53 49~~
~~50 17 86 54 58~~

2

8.8 25

1

49.6

51.2

51 6 90 54 12

8.3 10

4

1.5

5.1

8.8 10

4

3.2

3.5

53 28 85 53 48

9.0 35

2

35.0

39.7

9.0 35

2

51.1

54.0

54 34 79 54 37

8.0 45

4

8.9

13.1

8.5 45

4

5.4

7.1

55 27 93 54 57

9.2 25

4

25.2

28.9

9.0 25

4

25.5

26.0

56 24 69 55 1

7.0 25

0

29.3

34.1

6.4 25

0

39.9

32.1

57 15 89 54 19

9.0 5

2

9.0

14.9

9.0 5

2

14.5

16.4

58 8 93 53 58

9.3 25

3

10.1

14.1

9.2 25

3

24.9

25.2

59 43 92 54 38

1 14 85 54 53

Not seen

False stroke & rattle after 8
Not seen

Wing# ^{hms} 2588

58.1877 Nov. 3

1877 Nov 13

						E - S	
8 20 8 52 52	9.2	35	3	41.0	47.2		
	9.0	30	3	47.0	49.0		
9 39 8 54 57	8.2 25		4	9.4	18.1		
	8.8	25	4	4.1	4.1		
10 18 9 52 58	9.0	20	3	6.9	11.4		
	9.0	25	2	38.4	41.9		
12 22 9 52 3							
20 24 6 54 58	8.2	25	3	48.4	53.0		
	6.5	25	3	18.2	24.2		
21 12 7 54 46	8.3	40	0	16.1	20.9		
	8.8	40	0	11	3.4		
22 22 9 54 23	9.0	0	4	32.0	35.2		
	9.0	6	4	43.1	45.5		
23 7 8 54 54	7.0	30	2	46.9	50.8		
	6.0	30	2	51.1	52.5		
24 12 9 54 37	9.0	45	4	53.1	56.3		
	9.0	50	0	0.2	1.1		
27 2 8 54 59	9.0	25	2	45.4	50.1		
	9.0	25	2	35.8	35.3		
30 30 9 54 24	9.2	0	1	57.8	2.5		
	9.0	0	2	8.3	9.5		
31 12 8 54 46	8.8	40	0	52.9	58.4		
	8.6	40	1	3.2	3.4		
32 31 7 54 56	7.6	30	0	21.8	27.1		
	8.3	30	0	25.1	24.5		
38 41 7 55 3	7.5	20	1	31.0	33.6		
	6.9	20	1	41.7	43.8		
43 14 8 53 29	9.0	55	2	12.1	16.1		
	9.0	55	2	20.9	22.2		

lost 1st wire
Not seen
Not seen
A close companion foll. below

Suspected very close double

seeing very bad

60 1877 Nov. 6

1877 Nov 7

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

2 8 43	93 58 54	9.0 30	1	14.0	18.1
		9.0 30	0	42.0	46.8
15 22 82 52 23		9.2 0	0	28.3	32.2
		9.2 0	0	19.1	24.7
18 54 85 52 37		8.3 45	3	36.9	40.4
		8.4 45	3	31.7	35.8
19 45 85 51 15		8.6 10	0	37.5	41.2
		8.3 10	0	39.9	45.1
20 57 81 53 7		8.2 15	2	53.7	56.4
		8.2 15	2	51.1	54.3
23 55 89 19 56		8.2 30	2	21.8	24.9
		8.5 30	2	22.9	26.6
31 2 90 59 24					
		8.8 0	2	39.9	43.9
31 51 85 51 21					
32 49 89 52 8		8.8 15	2	23.4	28.4
		9.0 15	2	21.2	26.0
33 57 82 54 36		8.4 45	4	42.0	44.4
		8.6 45	4	41.1	43.6
34 58 98 50 52		7.2 30	2	43.2	46.9
		8.0 30	2	53.3	58.4
37 41 92 51 1		9.0 20	4	42.5	46.3
		9.1 20	4	44.3	47.9
39 19 83 55 10		8.3 10	4	37.5	40.1
		8.4 10	4	36.6	39.0
40 50 95 54 52		9.4 30	4	4.8	7.5
		9.5 30	3	57.0	59.0
43 13 87 55 7		8.5 15	3	5.6	7.9
		8.8 15	3	17.0	19.9

10^h 24^m 25^s 103° 29'

Several stars in field
 Lower & pri. of 3 II's
 Not seen
 Not seen
 Lower & pri. II

62 1877 Nov. 6
1877 Nov. 7

1877phae.pro

$h - s$									
2 44 31	74	55	13	5.8	10	2	12.0	14.7	
				5.5	10	2	19.5	22.1	
45 56	80	53	37	9.0	45	2	41.8	45.0	
				8.9	45	2	50.9	52.9	
46 37	83	52	7	9.6	15	4	31.9	35.3	
				9.6	15	4	18.9	22.4	
47 24	82	54	56						
				9.0	25	4	57.9	57.9	
50 51	81	53	32	9.0	50	3	44.0	46.8	
				9.2	50	3	37.4	39.9	
				9.0	50	3	44.4	46.2	
52 28	83	53	57	8.5	25	2	36.9	38.9	
				8.1	25	2	44.8	46.9	
							42.9	45.9	
55 21	87	53	37	8.0	45	2	35.8	38.1	
				7.5	45	2	49.5	52.1	
56 4	85	53	57	8.2	25	2	57.4	58.4	
				8.0	25	2	57.4	58.2	
57 2	89	53	29	8.8	55	1	12.4	15.6	
				8.6	55	1	10.9	14.5	
57 47	75	52	37	9.3	5	2	34.9	37.8	
58 22	72	52	16	9.2	5	4	24.9	27.5	
5 38	93	52	16	9.2	5	4	24.9	27.5	
				9.2	5	4	24.9	27.5	
6 21	86	52	29	8.7	55	0	59.9	2.9	
				8.8	55	0	59.9	4.1	
10 52	54	52	32	5.8	50	4	12.5	15.2	
				6.5	50	4	10.7	15.5	
11 41	90	51	36	9.0	45	4	26.9	29.0	
				8.8	45	4	23.6	26.8	
17 37	84	51	21	8.7	0	4	4.0	6.5	
				8.8	0	4	3.9	6.4	

Not-sun

2nd δ pr.

2nd δ pr 1st. of double stroke belong to 2nd, ~~it~~

22 ^h 58 ^m

23 33⁶ + 74 42

Hour stars in field

Reorder 1 stroke for 2nd δ

23 7 16 + 56⁰ 29

23 14 27 + 23 3

23 19 9 + 22 43

64 1877 Nov. 6
1877 Nov 7

				50	8
23 21 12 90 54 6	9.0	15	4	58.2	59.0
	9.0	15	4	58.4	0.9
22 25 81 54 36	9.1	50	1	40.9	43.9
	9.1	50	1	42.9	46.0
23 23 87 52 27	8.6	55	4	25.8	27.6
	8.8	55	4	25.7	29.4
24 30 85 53 34	8.7	50	2	34.4	36.7
	8.6	50	2	25.3	28.3
25 35 75 53 27	8.0	55	4	30.2	32.1
	7.5	55	4	29.5	31.0
26 29 80 53 22	9.0	0	4	23.6	25.2
	8.8	0	4	22.9	26.8
27 44 80 55 14	8.7	10	2	25.3	26.5
	8.6	10	2	25.2	28.8
28 50 84 51 6	8.6	15	3	36.1	38.4
	8.6	15	3	32.4	35.7
29 52 80 51 55	8.8	30	1	12.4	16.8
	9.1	30	0	45.6	49.3
	8.8	30	1	8.1	12.9
30 50 84 51 34	9.5	45	4	36.7	41.1
	8.3	50	1	4.4	6.6
	8.3	50	1	33.5	36.9
32 14 84 53 15					
33 21 81 52 30					
34 47 85 53 49	9.5	35	1	7.9	9.9
	9.5	35	1	25.4	28.6
35 41 89 51 19	9.0	5	0	39.7	43.1
	9.0	5	0	40.0	44.6
36 49 85 51 13	6.8	10	1	48.3	50.8
	6.2	10	1	48.6	53.1

Reg. order

Reg order 1st of double strokes belong to 2nd #

Not seen

Not seen
New sheet

66 1877 Nov. 6

1877 Nov. 7

38 16 77 54 47

42 4 90 55 15 2

42 55 93 54 17

43 51 80 53 40 2

44 34 84 52 23

45 24 88 50 13

46 26 86 53 31 22

47 9 70 50 48

48 38 78 53 53

50 08 87 50 46 222

50 42 60 55 1

52 32 50 55 3

53 40 80 54 0

54 35 82 52 27

58 21 80 54 4

	δ	α	θ	ϕ
8.0	35	3	49.2	52.5

7.8	35	3	41.4	43.9
-----	----	---	------	------

9.0	10	1	33.3	36.4
-----	----	---	------	------

9.3	10	1	61.2	9.8
-----	----	---	------	-----

9.1	5	4	12.2	13.9
-----	---	---	------	------

9.2	5	3	45.7	49.2
-----	---	---	------	------

8.8	45	1	59.1	0.2
-----	----	---	------	-----

8.9	45	1	57.5	0.9
-----	----	---	------	-----

8.6	10	3	0.4	0.7
-----	----	---	-----	-----

8.5	12	2	50.9	53.2
-----	----	---	------	------

8.2	55	0	9.2	11.5
-----	----	---	-----	------

8.1	55	0	4.9	7.7
-----	----	---	-----	-----

7.8	35	2	7.0	8.6
-----	----	---	-----	-----

9.2	35	2	58.9	0.5
-----	----	---	------	-----

8.4	30	2	30.9 49.0 32.9	50.7
-----	----	---	----------------	------

8.2	30	2	57.9	59.9
-----	----	---	------	------

9.0	35	3	42.9	45.2
-----	----	---	------	------

9.0	35	3	39.3	42.4
-----	----	---	------	------

6.4	25	1	35.5	37.0
-----	----	---	------	------

5.2	25	1	13.9	17.6
-----	----	---	------	------

6.0	20	3	36.9	37.4
-----	----	---	------	------

5.0	20	2	58.9	13
-----	----	---	------	----

9.6	25	2	27.3	29.9
-----	----	---	------	------

8.4	55	3	45.2	47.5
-----	----	---	------	------

8.1	55	3	13.0	16.7
-----	----	---	------	------

8.9	20	2	16.5	17.1
-----	----	---	------	------

9.0	20	2	13.2	16.4
-----	----	---	------	------

~~Not seen~~

~~Not seen~~

Not seen

Not seen

1 A close 8.8 mag pr above

X 5

68 1877 Nov. 6

1877 Nov 7

			E		S	
			"		"	
3 59 11 80 59 44	9.0	40	3	5.7	6.0	
	9.0	40	3	6.2	8.5	
0 5 22 80 54 19	8.8	5	2	5.0	5.9	
	9.0	5	2	6.9	8.9	
8 1 84 54 16						
9 23 89 55 9	9.0	15	1	17.9	19.7	
	9.2	15	1	20.0	21.7	
11 22 87 55 11	9.1	10	3	20.0	22.2	
	9.2	15	0	15.5	18.5	
12 48 83 54 59	8.5	25	4	48.6	50.1	
	8.8	25	3	48.5	48.4	
	8.5	25	4	37.1	40.8	
14 13 83 52 43	9.2	40	2	7.0	8.9	
	9.2	40	2	6.3	10.4	
15 50 80 52 54	8.0	30	2	14.6	17.0	
	8.8	30	2	12.9	17.1	
16 59 80 53 27	9.0	55	3	32.8	34.5	
	9.0	55	3	40.9	43.4	
17 56 80 51 11	9.0	10	4	39.9	41.5	
	9.3	10	4	46.2	49.2	
18 45 80 54 18	6.4	5	3	42.9	44.1	
	6.8	5	3	40.9	44.2	
19 54 80 54 8	9.0	15	2	51.4	53.8	
	9.0	15	2	51.4	54.1	
21 6 80 54 33	8.3	50	3	22.5	23.1	
	8.5	50	3	22.9	24.6	
22 2 80 54 7	8.7	15	3	51.5	53.3	
	8.7	15	4	35.2	37.5	
22 58 89 54 42	9.0	45	0	1.5	3.8	
	9.0	45	0	38.2	41.8	

Lost

An 8.7 foll. below
1st #

The first of double strokes belong to 1st #

The first of double strokes belong to 2nd #

Several stars in the field

Reg order

70 1877 Nov. 6

1877 Nov 7

23 56 85 55 4	7.0	25	0	50.0	52.8
	8.3	20	1	14.5	18.0
24 47 82 53 36	8.6	50	0	2.9	5.4
	8.5	50	0	19.8	23.1
25 43 73 53 25	7.3	0	0	46.6	49.6
	7.2	0	0	59.0	2.4
26 55 80 54 14	7.4	10	2	12.3	14.0
	7.4	10	2	10.9	13.9
28 10 82 52 59	9.2	25	1	21.5	24.9
	9.1	25	1	14.9	18.9
29 31 80 52 46	8.2	35	4	29.9	31.5
	8.0	35	4	32.1	33.4
30 40 89 52 4					
31 35 90 53 57	9.0	30	4	30.5	31.7
	9.0	30	4	39.6	42.8
37 8 90 53 41	9.2	45	0	18.3	21.7
	9.0	45	0	8.1	10.2
38 36 85 53 48	8.7	35	2	57.1	57.1
	8.5	35	2	53.8	53.8
39 33 81 53 55	8.3	30	0	46.3	48.8
	7.5	30	0	44.6	48.1
41 18 86 53 28 2	8.6	55	2	46.9	49.1
	8.4	55	2	47.9	50.0
42 3 93 53 19	9.2	5	2	30.9	31.8
	9.2	5	2	9.7	13.1
43 25 82 50 44	9.0	40	4	18.1	18.2
	9.2	40	4	26.6	27.9
44 30 92 50 4					
	7.7	20	1	7.6	9.9

Mag. sure

False stroke + rattle after S
 A 9.4 mag pr. above

Not seen
 o B8120-4500

1 stroke for each S seq. order
 Reg. order 2nd of double strokes belong to 2nd ~~X~~

Not seen
 prob. wrong ~~#~~

72 1877 Nov. 6

1877 Nov. 7

$\frac{h}{m}$	$\frac{s}{s}$	$\frac{u}{u}$	$\frac{v}{v}$	$\frac{w}{w}$	$\frac{x}{x}$	$\frac{y}{y}$	$\frac{z}{z}$	$\frac{a}{a}$	$\frac{b}{b}$
45	48	85	51	11	8.3	10	4	31.1	31.6
					8.7	15	3	4.9	7.8
46	45	80	52	55	8.9	25	4	27.1	28.4
					9.0	25	4	32.8	34.9
48	39	81	54	41	8.2	45	0	37.9	39.5
					9.2	45	0	16.9	19.4
					8.0	45	0	42.7	45.5
49	44	82	54	16	9.2	45	0	41.6	44.1
					7.0	10	0	20.2	22.5
52	12	80	54	45	8.9	40	1	12.4	14.8
					8.8	30	1	37.7	38.6
51	31	89	53	53	9.0	30	1	49.3	52.9
					8.9	55	1	10.8	12.0
52	50	88	53	29	9.0	55	1	6.0	9.0
					8.8	15	2	34.9	35.8
54	1	89	53	7	8.5	15	2	38.0	40.1
					8.7	50	1	49.9	51.4
54	56	85	53	33	8.5	50	1	53.9	56.9
					8.0	55	3	37.9	38.9
55	38	85	52	27	7.8	55	3	38.5	41.5
					8.8	15	0	3.1	5.2
56	29	88	52	10	8.8	15	0	11.4	5.2
					8.5	15	0	11.4	5.2
57	31	88	52	45	9.0	40	0	46.9	50.5
					8.6	40	0	46.9	50.8
58	33	90	54	5	9.0	20	0	21.4	21.7
					8.9	20	0	28.6	32.5
0	28	81	52	36	8.3	45	4	30.0	31.3
					8.0	45	4	34.9	37.5
2	9	88	52	10	8.0	15	0	17.9	20.1
					8.4	15	0	18.1	22.7

ok.

2 δ pri
2nd δ pri

Hot sun
Mid wine & fall

Reg. order 1 stroke for each δ

Seeing wonderfully good

Seeing pretty fair during 1st part but very bad during last part

74 1877 Nov. 13

Obs. W.A.R

Obs. W.A.R

1877 Nov 14

Rec J. F. M^c

Rec J. F. M

h m s
22 17 36 94 50 13

18 29 47 57 30

31 2 80 54 24

31 5 92 54 25

32 6 85 52 15

33 8 80 54 22

33 49 82 54 14

34 47 95 52 49

40 5 84 54 2

41 20 95 54 15 22

41 59 70 52 42 7.5 40 3 56.5 0.5

44 29 81 53 22 8.3 10 0 36.6 40.5

45 30 86 52 22 8.3 0 4 15.7 19.8

46 22 79 52 31 2 7.8 53 0 13.6 19.0

8.3 53 0 27.8 43.5

47 7 89 54 44 8.8 40 3 6.5 8.4

8.7 40 3 25.0 27.2

22 87 2+29 34

76 1877 Nov. 13

1877 Nov 14

1877 Phae. pro J.

1877 Nov 14

				E.		S		
1	52	17	88.5 52° 2'	9.0	20	4	53.2	56.3
				8.8	20	4	28.9	32.1
53 23 90 50 36 22				9.0	45	3	38.3	42.2
53	59	87	51 44	8.4	40	3	38.0	42.1
				8.8	40	2	0.5	4.8
22	57	51	75 52 37 22	8.0	45	4	6.2	14.2
				8.4	45	3	48.0	53.4
23	3	50	81 53 54	8.6	40	1	45.0	49.1
				8.5	30	1	26.7	30.5
1	5	26	72 52 22	7.0	0	3	50.6	53.4
				7.8	0	3	38.1	42.5
11	24	95	52 7 2	9.5	15	3	1.7	5.3
				9.5	15	3	7.4	11.4
11	55	91	54 50	8.6	35	1	33.0	35.8
				9.0	35	1	24.4	27.6
12	45	88	53 42	8.8	40	4	10.0	14.2
				9.1	40	4	8.0	10.7
15	50	80	54 7	8.3	15	4	12.3	14.7
				8.7	15	4	14.0	17.0
17	47	87	54 55	8.5	55	0	1.7	4.4
16	49	75	53 32	8.5	50	4	46.6	49.7
17	47	87	54 55	8.7	30	0	34.4	38.2
				8.9	30	0	30.7	35.0
21	30	85	54 30	8.4	55	0	58.1	1.2
				9.0	55	1	2.7	5.5
22	33	80	54 41	9.0	40	3	42.9	46.7
				9.0	40	3	56.2	57.9
23	22	85	57 58	8.8	25	2	25.8	29.1
				9.1	25	2	29.1	31.7

Not seen

23 56 10 + 41 39

2 Pegasi 22 58 + 14 32

23 7 16 + 56 29

A. 9.1 mag per

23 14 ~~Holl~~ 3

Lost 1st wire

Lost 1st wire

Lost 1st 2 wires ref. 1st stroke

23 19 9 + 22 43

Filmy clouds

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

Not seen clouds

~~Wrong~~ #

clouds

Lower & pr. #

Clouds

80 1877 Nov 13

1877 Nov 14

1877phae.proj

1877phae.14

E - G

3 43 51	90	53	40	2	90	45-	1	56.6	57.9
					90	45-	1	50.0	53.5

44	34	84	52	23					
----	----	----	----	----	--	--	--	--	--

46	26	86	53	31	2	28.3	55-	0	9.1	12.4
						8.3	55-	0	14.6	18.9

47	9	70	50	48		7.0	35-	2	4.9	7.9
						7.4	35-	2	4.6	6.8

48	11	82	54	25		8.5	0	0	36.4	39.0
						8.5	0	0	36.6	41.2

49	5	65	52	2		6.8	20	4	11.2	14.9
						7.0	20	4	13.0	15.8

50	3	75	53	0		7.9	25-	0	34.6	38.6
						8.0	25-	0	33.7	38.4

52	3	90	50	36		9.0	45-	4	15	3.2
						9.0	45-	3	45.8	48.9

53	1	72	50	6		8.0	15-	3	19.8	21.8
						7.8	15-	3	16.1	19.1

54	10	80	54	0						
----	----	----	----	---	--	--	--	--	--	--

58	16	80	51	16		9.0	5-	4	42.1	45.0
						9.2	10	0	23.5	28.1

59	57	88	57	33		8.3	50	2	26.0	28.9
						8.5	50	2	11.8	13.4

0	59	84	52	49						
						8.4	35-	1	43.8	48.3

5 04	90	52	59			8.8	10	3	29.5	32.0
3 49	82	51	12			8.6	10	3	27.9	32.1

4 43	89	51	22			9.2	0	3	44.9	48.5
						9.0	0	3	51.0	55.9

Not seen
Not seen

23 55 31 -6 9.2 Not seen
Not seen

A 9.2 mag pr. below
rej. last of double strokes for 1st #

0 1 06 +28 24

82 1877 Nov. 13

1877 Nov 14

				8	8
5 53	88 54 24	8.7 0	1	59.0	1.1
		9.0 0	1	56.2	59.6
0 8 7	85 54 44	8.9 40	1	41.7	45.2
		9.3 40	1	49.0	51.6
11 22	85 54 46	8.5 35	4	4.8	4.9
		8.4 35	4	34.1	35.5
13 0	75 55 1 2 2	7.2 25	0	22.1	24.9
		8.7 25	0	19.2	23.7
13 41	80 51 24	8.8 0	1	23.9	27.8
		8.9 0	1	19.1	23.1
16 1	90 54 24	9.0 0	2	9.9	12.9
		9.1 0	2	12.1	16.4
16 57	85 53 09	8.6 25	1	57.0	59.4
		8.5 25	1	51.0	54.0
18 2	84 53 10	8.0 15	0	41.6	45.5
		8.7 15	0	39.9	43.2
19 2	89 55 1	9.0 25	0	35.4	37.8
		8.9 25	0	16.7	20.4
20 29	80 53 22	8.8 0	3	46.9	50.4
		8.8 0	3	45.4	49.4
21 44	89 54 53	9.0 30	2	59.6	1.4
		9.0 30	2	54.8	56.8
23 1	94 52 35	9.5 45	4	43.9	47.1
		9.5 45	4	46.0	48.5
24 31	88 52 22	8.8 0	3	7.9	11.4
		9.0 0	3	6.8	10.9
25 20	88 53 15 2 2	8.5 10	1	32.4	34.4
		8.6 10	1	27.0	29.7
26 11	90 53 16	8.6 5	4	52.2	54.3
		8.5 5	4	45.8	48.9

06481429

Clouds

Lost 121 wire

84/1877 Nov-13
1877 Nov-14

1877/10014				E - E	
27 8	73 53 22	7.2 0	4	12.8	14.7
		7.0 0	4	2.0	5.1
28 32	88 54 37	8.9 45	4	27.9	28.6
		9.2 45	4	18.1	19.9
29 39	94 54 13	7.0 10	0	34.0	36.1
		7.5 10	0	24.1	27.4
30 44	92 54 36	9.5 45	3	37.9	58.4
		8.9 45	4	57.2 (55.2)	57.0
34 55	80 51 16	8.4 5	4	36.2	37.9
		8.7 5	4	44.3	46.1
37 10	75 53 27	8.0 55	3	33.6	35.9
		8.0 55	3	23.8	27.7
38 36	80 53 57 2	8.0 25	3	28.0	29.1
		8.0 25	3	21.8	23.4
39 21	89 54 26	8.4 55	4	7.8	8.7
		8.6 55	4	4.0	5.6
40 44	81 52 5				
42 27	80 52 10	9.0 15	0	20.1	23.1
		9.1 15	0	19.2	23.1
44 30	92 50 4	7.4 20	1	3.9	6.1
		7.3 20	0	48.4	51.0
45 43	87 52 11	9.0 10	4	47.5	49.4
		8.9 10	4	48.8	51.4
46 40	80 52 24	8.8 0	0	57.6	0.3
		9.0 0	1	4.1	7.8
48 27	80 53 59 2	9.0 25	1	44.9	47.4
		9.2 25	1	48.0	51.0
49 17	89 52 39	8.9 45	1	22.4	26.1
		9.0 45	1	16.1	20.5

Prob wrong #

0 33 20 + 55 51

Not seen

Not seen

Prob. wrong #

1877 Nov. 13

1877 Nov. 14

1877phae.proj.

1877 Nov. 14

				Σ	\bar{Q}	
50 18	82 52 52	8.0	30	2	30.7	33.1
		8.3	30	2	28.1	32.2
51 33	87 53 56	9.0	25	3	38.1	40.3
		9.0	25	3	35.9	38.0
52 35	85 52 33					
53 34	88 54 57	45	3	30.8	33.0	
		8.4	35	0	34.9	37.9
53 35	89 54 53	8.5	45	3	30.8	33.0
55 9	88 52 10	7.8	15	1	1.5	3.4
		7.5	15	0	46.9	50.1
56 41	88 52 10	8.6	10	4	50.0	51.3
		8.6	10	4	47.2	50.2
57 36	88 50 41	8.9				
58 46	80 54 35	8.6	50	1	40.2	42.6
		8.7	50	1	43.5	46.9
1 2 24	84 52 18 2	8.8	5	2	35.1	37.2
		8.8	5	2	37.9	42.5
3 12	90 52 0	8.9	25	1	28.1	30.4
		9.0	25	1	18.4	21.5
4 10	85 52 0	8.8	25	0	33.2	35.4
		8.5	20	4	35.6	36.8
		8.9	20	4	2.0	2.9
6 13	80 51 23	9.1	0	2	41.8	44.9
		9.2	0	2	35.1	39.4
6 32	93 54 56	9.0	30	0	4.6	6.9
		9.1	30	0	0.1	2.8
8 3	88 50 11	8.7	10	3	54.9	53.5
		8.7	10	3	45.4	46.9

Not seen

Not seen

Prob wrong II

Reg order

Reg. order

Not seen

Not seen

2nd & pr.

Reg order 2nd of double strokes belong to 2nd II

Seeing very bad at first but tolerably good towards last
Seeing very fine indeed

88 1877 Dec. 1 Obs. W.A.R.
 1877 Dec 1 Rec. J. F. M.
 Obs. W.A.R.
 Rec. J. F. M.

50, 5

22 9 28 95 52 47				
12 41 82 52 38	9.2 45	2	16.1	19.6
15 22 82 52 23				
18 29 47 51 35	6.0 50	0	18.4	21.8
	5.8 50	0	23.0	24.0
28 5 84 54 26	8.2 55	4	12.9	13.1
	8.3 55	4	29.1	27.7
31 2 80 54 24	9.0 0	2	51.8	52.9
	8.3 0	2	7.7	9.4
	8.2 0	2	21.9	21.3
32 0 94 53 35	9.3 50	1	39.9 20.4	39.1 22.2
	9.3 50	0	52.1	51.8
33 8 80 54 54 22	8.8 30	2	22.8	25
	8.5 30	1	50.5	50.0
33 48 82 54 14	8.4 10	2	11.1	11.7
	8.3 10	2	8.9	6.8
34 47 95 53 49				
	9.5 35	2	10.0	8.4
40 5 84 54 2	8.0 20	2	50.9	51.1
	7.8 20	3	12.7	11.1
41 20 95 54 15 22	9.0 10	1	0.3	2.1
	8.8 10	1	2.9	0.9
41 55 76 54 4	7.8 20	1	44.2	45.4
	6.6 20	1	22.1	21.1
44 29 81 53 22	7.8 0	4	13.5	14.8
	7.7 0	3	54.8	53.6
45 30 86 52 22	8.6 0	3	48.1	50.4
	8.7 0	3	42.4	40.9

Not seen
 Not seen

2 224 3 2757 47

Reg. order 1 stroke for 1st-8

Reg order

Knuckle foll #

Mid wire & foll a 9.0 foll

Lost-1st-wire

224 9 +29 86 Lost-

Prob wrong # an 8.4 foll below

Wrong #

Prob wrong #

90 1877 Dec 1
1877 Dec 2

~~250 27 75 558~~

51 39 91 52 42	91.0 40	3	53.2	53.9
	88 40	3	41.4	39.2
52 34 88 55 15				
52 19 86 55 9				
53 23 90 50 36 22	45-	3	56.2	56.1
	88 45-	3	48.0	46.4
53 57 82 50 19				
23 5 38 93 52 16	91 15-	1	24.1	26.4
	88 10	4	2.9	1.7
12 3 80 53 43	91.0 45-	1	11.8	12.2
	88 40	2	42.5	41.5
15 11 94 54 58	91.0 25-	2	44.7	45.5
	89 25-	2	45.1	43.5
16 33 85 53 25	85 0	1	21.5	22.9
	85 0	1	15.5	15.5
21 21 93 54 57				
	91.4 25	3	46.4	45.2
22 35 90 54 13	91.2 10	0	55.7	53.4
	9.4 10	0	27.5	27.1
24 28 94 54 43 22	88 40	2	1.7	0.5
	8.9 40	2	3.9	1.0
25 8 90 55 2	8.7 20	4	16.9	17.2
	8.5 20	3	48.4	48.6
29 10 85 51 50	9.3 35	1	35.0	36.1
	9.0 35	4	57.9	55.1
31 7 90 55 11 22	7.3 15	0	23.9	24.4
	7.3 15	0	28.1	28.2