KG
11366
v. 408

ADS plate_proj_1991.28

Fundamental Stars
Observations. A. 5
From Nov. 22, 1881 to Jan. 24. 1883

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A 33

A 33

Level readings

Sun & Dr RJ.

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A 33

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Nov 22 1881

B Nunc Mon

10 5 4 41

+ 5 7 R 1

10 3 1 32

23,8

3,0

56,8

16,8

13 16,70

Seing very bad

Rej 1st

S Nunc Mon

10 56 23

+62 23 R R

10 1 6,3 6,7

16,9 17,3

57,0 46,4

50,0 49,7

13 0 2 12 0 1

11 32,53 30,02

S Sec. X Nunc Mon

11 7 4 9 11 3 0 2

+2 1 4 +45 8

R

0 4 5 6,2

7,1

45,3

39,7

8 8 3

5 22,08

Rej A-1

S Sec

11 7 4 9

+2 1 2

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2 Copied in proper book.

Nov. 22, 1881.

Long Coll. Seeing too bad for observation.

13^h 20^m	N.C.	S.C.
17	+7.7	16.8
	+7.2	17.8
	+7.1	18.8
	+6.8	17.3
	+7.8	17.7
	36.6	88.4
	~~5915~~	1768
	5732	
	1768	
	17501	
	87.57	

Cal-01 89,2

+		N	S	E	W
50 4	31.6	15.3	14.9	9.1	11.0
	36.4	14.8	15.3	9.8	10.2
	19.2	9.9	10.3	9.8	10.2
	21.2	9.8	10.3	9.8	10.3
	2710	12.50	12.70		
	48		-.20		
	2758		.10		

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Copied in Jordan book 3

Nov 22 1881

N	S		N	S
√1	1.4	18.6	√2.6	17.8	2.2
10.8	1.0	19.1	√7.7	16.7	3.3
53.1	0.9	18.1	39.√	17.6	2.4
√4.8	1.3	18.7	4.1.8	17.0	3.0

~~0.5.95~~
~~30.93~~ +1.40 1165 47.90 17,18 27²
~~24.08~~ 1720 − 20,38 ~~20.38~~ 1456
6.09 8.60 27.52 7.28
24.08
~~6.87~~
25.03

N	S		N	S
3.6	1.4	18.3	√2.3	16.9	3.1
9.9	0.1	19.7	√7.7	17.3	2.4
√1.3	1.5	18.0	40.3	17.11	27.5
√3.7	0.75	19.11	42.3		~~16.81~~ 14.85
59.62		18.25			~~8.17~~ 7.18
25.63		9.12	46.15	14.48	
~~4.19~~			74.48		
25.05			−25.05		
			27.74		
			25.04		
			26.91		

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Nov 24 1881 ⊙ = 17 89,2

⊙

16 2 12

−20 42

β Aquarii

21 25 22

−6 05

R. R. only

5 3 316

373

18.2

19.8

2269

8 56.72

Somewhat

doing good

ζ Aquarii

21 5 9

−0 54

	R	R
5 0	133	138
	184	188
	0.1	592
	2.2	310
	350	348
5	8,75	8,70

η Aquarii

22 38

+1 11

	R	R
0 0	168	16,7
	28,3	28,0
	7.3	6,3
	4.8	3,3
	572	543
0	14,30	13.58

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β Cephei
21 27 11
+70 3

		R	R
10	1	5,8	4,32
		19,2	5,82
		55,8	30,2
		49,8	27,9
		106	1625
	11	2,65	40,62

ε Pegasi
21 38 25
+9 20

		R	R
67	3	15	12
		10,2	1,58
		49,0	49,8
		53,4	52,6
		2341	2339
	52	58,52	58,48

~~22~~ B Aquarii
22 54 41
1-2 5-9

α Aquarii
22 26 24
+1 17 37

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Nova 24 1881 α = 17 +5,2

α Pegasi

22 5-8

+14 34

R R

35 4 1,1 16

9,2 10,3

4,80 4,80

49,9 50,0

2282 2299

38 57,03 57,48

γ Piscium Maj

23 47 35

+1 25 39

R R

40 1 13,5 0,8

31,6 17,9

14,2 0,0

5,7 5,1

650 98

11 16,25 2,45

Lost 2+1

2nd ?

ε Pegasi Maj

0 48 48

+12 32 24

R R

10 4 58,3 42,4

15,0 0,0

56,1 41,3

46,8 31,8

2362 1758

14 59,05 43,95

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1881phae.proj.1412B

α Andromedae
0 2
+28 26

γ Pegasi
07
+14 31

	R	R
40	0	233 231
		320 321
		8.5 9.5
		10.9 10.6
		760 753
40		1900 1882

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Dec. 7/8, 1881 C = 17 90.9

⊙

17 2 42
-22 48

δ Cass. B, Obs,
1 17 65
+59 37

	B		B		B
40 2	30,3	15 0	40.2	35 1	33.5
	37 6		46.4		
	18 8		27.7		
	21.0		30.3		
	10 7 7		14 4 6		
42	26.92	15	36.15		

Both limbs in δ & R.A. Seeing moderately good,

R. A. but lost circle readings by mistake.

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Dec. 8/9, 1881

⊙ 17 7 6
−2 2 54

B B

45 5 19.2 20 1 34.9
26.9 40.4
7.3 22.6
8.5 23.9
6.9 12.8
48 15.48 21 30.45

Both limbs in ♂ of R.A.
Seeing very fine; but
a little hazy.

☿ = 17 90.9 L.C.
☾ Ulr Maj. B. Obs.
12 48 47
+123 24

B B

50 4 20.0
38.4
21.2
11.5
9.1
54 22.78

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1881phae.proj.1412B

Dec. 9. 1881 C = 17 90.9

δ Cass. ~~Z.C.~~ B. Obs.

1 18 2

+6 9 37

B

35 1 37.1

48.4

30.2

24.0

13 9 7

36 34 9 2

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1881phae.proj.1412B

Dec. 9/10. 1881

⊙ B. Obs.

17 11 30

−22 5 9

C = 17 90.9

E Urs. Maj. L.C. B. Obs.

12 48 47

+123 24

	B	B	B
25 0	59.9	50 4 24.0	50 4 45.3
	4.9	31.3	3.1
	47.3	12.8	44.9
	49.9	14.0	33.4
	22 20	8 21	18 6.7
	25 55,50	54 20,52	54 46.68

1rst limb in R.A.
both limbs in δ
Seeing very bad.

Lost A−, δ−

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1881phae.proj.1412B

Dec. 10, 1881 C=17 90.9

δ Cass. B. Obs.

1 18 2

+ 59 36

B

35 1 40.1

52.2

32.3

26.2

15 08

36 37.70

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1881phae.proj.1412B

Dec 10/11 1881 C = 17 90,9

⊙ 17 15 54
−23 4

Virginis
13 18 58
−10 33

	R		R		B		B
55	3	16 8	30	2 06 8	45 0	4.1	33.9
		21 8		11 4		6.6	36.4
		2 2		4 9 8		45.8	16.4
		2 8		5 2,1		49,8	17,5
		436		04		1063	1042
	58	1090	32	0,10	45	26,58	26.05

Seeing bad.

I limb in R L
Both limbs in S

$A_6 = C$

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1881phae.proj.1412B

α Ursae Majoris

13 42 5²

+49 57

R

15 4 63

16.4

5 4,7

48,0

54

19 1.35

α Bootis

13 49 3

+19 0

R

10 4 20,2

27,8

3 9

4,4

563

14 14,08

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1881phae.proj.1412B

Dec. 15, 1881

C = 17 60.9

ε Ursæ Maj. L.C. B. Obs.

12 48 48

+123 24

B

50	4	35.1
		53.2
		36.4
		25.6
		1503
54	37.58	

Cel-wrong

C = 17 ~~60.9~~ 90.9

δ Cassiop.

1 18 9

+59 37

B B

35	1	3.3	1 29.2
		14.8	41.0
		55.0	21.5
		50.9	16.1
		1240	1078
36	31.00		26.98

A_2 & C result

α Arietis

2 0 33

+22 54

B

15	2	55.8
		8.4
		45.5
		45.1
		2148
17	53.70	

α Draco. L.C.

14 1 9

+1 15 3

B B R

10	2	36.4	2 8.1	7.3
		52.1	22.2	22.6
		34.4	5.6	6.0
		25.6	57.0	56.8
		1485	329	327
12	37.12		8.22	8.18

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1881phae.proj.1412B

Dec. 15, 1881 C = 17 90.9

β Arietis
1 48 9
+20 14

	B	B	R
55	3 15.3	4 30.0	30.1
	25.6	41.2	41.1
	4.0	19.1	20.2
	4.6	19.9	20.0
	4 95	11 02	11 14
58	12.38	27.55	27.85

γ Androm.
1 57 41
+41 46

	B	B	R
25	1 39.3	25 6.3	56.4
	51.1	8.5	8.8
	30.6	46.9	47.0
	26.4	43.2	43.7
	14 74	21 49	21 59
26	36.85	53.72	53.98

β Urs. Min L. C.
14 51 0
+10 55 22

	B	B	B	B	B
50	3 43.0	3 22.5	70	2 44.0	33.4
	59.5	38.5	24.0	0.8	50.5
	38.0	16.9	18	38.5	27.9
	27.0	6.9	5 15	28.3	18.0
	16 75	8 48	8 43	17 16	10 98
53	41.88	53 21.20	21.08	52 42.90	27.45

α Ceti
2 56 8
+3 38

	B	B	R
	20.2	35 0 34.2	33.9
	29.0	43.5	42.6
	5.2	20.3	19.8
	6.2	22.2	22.4
	6 04	12 02	11 87
	15.10	35 30.05	29.85

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1881phae.proj.1412B

Dec. 15-1881 Δ to C = 17 20.9

ε Corvi

12 3 54

+21 5

R

5 8 22.8
27.2
6.8
9.0
16 58
8 46.45

β Corvi

12 28 10

−22 45

R

55 0 8.3
13.4
5-2.1
54.8
12 8.6
55 32.15

ε Virginis

12 56 17

+11 36

B B R

35 1 54.0 2 58.4 58.3
1.0 5.4 5.5
38.0 42.0 41.2
40.2 44.5 44.0
7 32 10.3 9.0
37 18.30 52.58 52.25

δ Cassiop L.C.

1 18.9

+120 23

B

50? 1 25.8
39.4
20.2
10.0
10 5.4
51? 26.35

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1881phae.proj.1412B

Dec. 15, 1881 C=

ζ Virginis

12 35 40
−0 48
R

0 0 48
9.2
48.0
50.8
1128
0 28,20

ζ Virginis

~~31 2 33 1~~
~~12 48 48~~
~~+56 36~~
R

31 2 33 1
43.0
19.8
15.2
1111
37 27.78

Mean ζ Virginis R.A.

α Virginis

13 18 58
B −14 33 R

40 4 11.8 0 24 1 25.0
12.6 26.8 26.7
5.24 5.9 4.7
56.0 7.3 7.4
1328 24 1 23.8
4H 33,20 45 16,02 15.95

β Ursæ Min. U. C. B. Obs.

14, 57 0
+74 38
B B B

36.1 22.5 35.7 1 57.3
31.0 45.0 7.0
5.8 20.4 41.6
59.3 12.4 34.4
586 1135 2003
— 14.65 28,38 50.08

A 6 0 12 7 0 12 8 0 12 9 0

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1881phae.proj.1412B

15

Dec. 16, 1881

C = 17 90.9

⊙

ε Urs. Maj. B. Obs.

17 38.0

12 48 48

-23 21

+123 24

		B	B	B
15	1	17.3	45 4 14.1	50 4 46.4
		20.8	17.9	1.7
		58.2	55.1	40.4
		.09	56.8	31.1
		15.72	1439	1796
	16	39,30	49 35.98	54 44.90

Both limbs in δ & R.A.

Seeing very bad.

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1881phae.proj.1412B

δ Cass. B. Obs.
1 18 9
+59 37
B

35 1 38.5
47.4
25.4
20.8
13 2 1
36 33.02

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1881phae.proj.1412B

Dec. 16/17. 1881

⊙ B. Obs.

17 42 27

−23 24

B B

50	0	30.1	15 4 2.0
		33.8	7.2
		12.8	45.3
		15.9	47.2
		9 2 6	10 1 7
	50	23.15	19 25.42

Both limbs in δ. 1st in R.A.

Seeing poor.

c = 17 90.9

ζ Androm.

0 2 19

+28 26

B

45	0	48.9
		59.9
		38.2
		37.0
		1840
	45	46.00

Sort A−1

r Cassiop.

0 49 38

+60 5

B B B

5	3	24.7	4 20.2 32.2
		36.1	31.3 43.3
		13.0	86 20.1
		8.2	2.7 15.1
		820	628 1111
	8	20.50	9 15.70 27.78

δ Cassiop.

1 18 9

+59 37

B B B

35	0	39.8	1 42.1 55.6
		48.9	52.7 5.6
		26.8	30.9 44.0
		22.2	26.1 39.5
		1377	1518 847
	35	34.42	37.95 21.18

Sort 1st W

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1881phae.proj.1412B

Dec. 17, 1881

β Cassiop.

0 2 56

+58 30

	B	B	R
40	3 24.4	3 56.3	57.3
	36.3	7.9	7.6
	14.0	46.2	45.5
	8.6	40.3	40.2
	8.3 3	107	106
	43 20.82	43 52.68	52.65

C=17 90.9

γ Pegasi

0 7 11

+14 32

	B	B	R
40	0 20.2	1 42.8	41.8
	28.1	49.2	48.3
	5.0	26.2	26.3
	8.0	29.3	29.2
	6 1 3	275	256
	40 15.32	41 36.88	36.40

A, 2C

β Arietis

1 48 9

+20 14

	B	B	R
55	3 15.8	4 37.4	37.3
	24.1	46.2	55.8
	0.0	22.0	21.8
	2.3	24.0	24.2
	4 2 2	1296	1391
	58 10.55	59 32.40	34.78

γ Androm.

1 56 41

+41 46

	B	B	R
25	1 45.1	2 39	54.3
	56.0	4.1	5.1
	32.1	41.0	40.0
	28.7	37.3	38.2
	16 1 9	1963	1976
	26 40.48	49.08	49.40

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1881phae.proj.1412B

Dec. 17, 1881

α Arietis

2 0 33

+22 54

B

15 2 54.3

5.5

41.0

41.9

2027

17 50.68

Last A-1

C=17 90.9

β Urs. Min, L.C.

14 51 0

+10 5 22

B B B B

50 B 46.2 29.0 55.6 33.5

1.2 46.0 11.8 48.7

37.5 20.3 46.8 24.9

27.4 11.0 38.0 16.0

1723 1063 2122 1231

53 43.08 26.58 53.05 30.78

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Dec. 17. 1881

γ Persei

14 56

	B		B	R
5	4	58.1	1	30.8	31.7
		8.3		42.0	42.2
		46.0		19.5	19.4
		39.2		13.9	14.7
		21 16		1062	1080
	9	42.90	11	26.55	27.00

C = 17 90.9

ϵ Aurigæ

12 56 17

+1 36

		R	R
35	1	327	33.1
		420	412
		177	173
		206	201
	36	11.30	11.17

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Dec 17 1881 C = 17 89.0

①

17 46 53

−23 25

	R	R
15 − 4	320	50 3 27
	38.2	29.0
	18.5	8.3
	22.8	12.8
	111.5	72.8
	27.88	18.20

Both circles in ⌒
1st circle in R.A.
Diag. through hut-hory.

2 Cor 2

0 49 38

+60

	R	R
5 3	41.0	4 12.9
	13.2	25.7
	32.2	4.2
	27.7	59.4
	1546	1122
8	38.65	9 10.55

~~Jackson~~
~~1 56 41~~
~~+4 1 46~~

2 Aries

2 0 33

+22 54

	R	R
15 − 2	520	521
	3.5	36
	403	404
	42.0	423
	1978	1984
	29.45	49.60

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Dec. 18. 1881 c=17 89.0

S Cor
118 +29 37
R

35 0 59.3
10.2
50.0
45.8
225 3
35 56.32
Rij 2m S

B Aquilæ
489 +29 14
R R

55 4 30.2 33.3
45.5 45.7
23.0 23.2
25.2 25.0
128.9 129.2
59 32.22 32.30

B Cassiop. L.C.
0 2 56
+121 30
B

45 4 18.3
34.5
15.1
5.2
7.31
49 18.28

E Corvi
12 3 54
-21 57
B B R

5 3 36.0 4 33.9 33.9
42.3 40.0 40.3
21.6 19.5 19.8
24.2 21.9 22.0
1241 1153 1160
8 31.02 28.82 29.00

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1881phae.proj.1412B

Dec. 18. 1881

δ Corvi

12 23 37

−15 50

	B	B	R
0 2	43.3	B 54.0	54.3
	50.3	0.9	0.1
	29.8	40.2	40.0
	33.8	44.0	~~44.0~~ 44.0
	1572	1991	1994
2	39.30 3	49.78	49.85

C = 17 89.0

β Corvi

12 28 10

−22 45

	B	B	R
55 0	56.7	1 35.5	35.8
	36	42.9	42.8
	42.4	21.6	22.1
	46.2	25.1	25.2
	2089	5-1	59
55	52.22 56	31.28	31.48

Asec

δ Cass. L. C.

1 18 9

+120 23

	B
55 0	47.9
	3.2
	44.8
	35.8
	1917
55	47.92

α Virginis

13 18 58

−10 33

	B	B	R
40 4	10.8	0 24.3	24.9
	15.3	28.5	28.3
	55.8	9.5	8.2
	57.0	12.2	11.1
	1389	345	325
44	34.72	45 18.62	18.12

A-1 A9. A5.

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1881phae.proj.1412B

Dec. 18, 1881

γ Virginis

12 35 40

	B−0	B48	R
55 4	53.0	7.5	7.2
	0.3	14.1	13.3
	39.6	53.0	53.3
	40.3	55.0	53.7
	1932	2496	95
59	48.30	0.24	0.24

preceding star

C=17 89.0

ε Virginis

12 52 17

+11 36

	B	B	R
35 1	44.0	2581	58.0
	53.7	8.0	8.1
	30.0	444	44.0
	32.4	47.0	47.2
	1601	1755	173
36	40.02	37 54.38	54.32

β Urs. Min. U.C, B. Obs.

14 51 0

+74 38

	B	B	B	B
35 0	10.9	15.0	34.4	52.0
	23.4	26.3	46.3	3.8
	38.7	1.4	22.1	39.1
	54.0	55.5	16.4	33.1
	1470	382	1192	680
35	36.75	36 9.55	29.80	17.00

A_{+1} 345 A_0 A_{-1} 123

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1881phae.proj.1412B

Dec. 18/19. 1881 C=17 89.0

⊙

17 51 19
−23 26

B B
N 0 44.2 50 49.5
37.2 16.0
29.5 55.9
31.6 58.1
1555 2395
20 38.88 54 59.88

ε Urs. Maj.
12 48 48
+12 3 24

B B B
53 0 30.9 458.6 19.5
47.0 17.2 36.9
31.2 59.2 20.2
22.1 49.3 10.1
3280 108 2668

Both limbs in δ & R.A.
Seeing moderately good.

γ Androm
1 56 41
+41 46

B B R
25 1 32.2 2 57.9 55.0
45.6 7.2
23.9 45.3 44.9
20.1 41.2 41.3
1218 85 84
26 27 52.12 52.10
3045 28 2 52.11 81.66

α Arietis
2 0 33
+22 54

B
15 3 13.0
25.6
2.9
2.9
444
18 11.10

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1881phae.proj.1412B

Dec. 19, 1881 C = 17 89.0

δ Cassiop.
1 18 6
+5 9 37

	B
35 0	54.0
	4.5
	44.9
	39.9
	833
36.	2,08

β Arietis
1 48 9
+20 14

	B	B	R
55 8	10.9	43 11	31.7
	21.3	42.2	41.7
	59.0	19.7	19.8
	1.1	~~20.1~~ 21.2	22.0
	323	1142	1152
3	8,08	28.55	28,80
		4 28.67	

11
~~8,09~~ 8,59

α Draconis L.C.
14 1 9
+115 3

	B	
10 2	27.3	2' 1.3
	42,3	15.9
	24.7	57.9
	16.1	50.1
	1104	252
12	27,60	1,30

A6 + C

α Ceti
2 56 8
+3 38

	B	B	R
30 4	17.5	0 35.8	35.6
	27.7	44.7	44.5
	6.1	23.8	23.3
	9.1	28.9	27.7
	604	132	111
34	15,10	35 33.30	32.78
	~~59~~ 15.10	0 33.04	

7,754

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1881phae.proj.1412B

Dec. 19. 1881

α Virginis B. Obs

13 18 58

−10 33

B

45 0 26.1

29.2

10.5

13.1

789

45 19.72

C = 17 89.0

η Bootis B. Obs.

13 49 3

+19 0

A. R. only.

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1881phae.proj.1412B

Dec. 19/20. 1881

⊙ B. Obs.

17 55 46

−23 27

		B	B
50	4	7.2	20 2 59.4
		13.8	5.4
		55.3	45.2
		56.2	46.5
		2525	2165
	55	3.12	22 54.12

1st limb = R.A. Both in S
Seeing very steady but
very faint owing to hazy clouds.
2nd S less reliable than 1st

c = 17 89.0

δ Cass. U.C. B. Obs.

0 49 38

+60 5

		B	B
5	4	6.1	6.2
		19.0	18.8
		67.4	58.3
		52.3	51.9
		2558	2552
	9	3.95	3.80

δ Cass. L.C. B. Obs.

1 18 9

+120 23

		B	B
50	4	55.0	53.4
		12.9	12.8
		53.9	53.5
		43.8	43.8
		2256	2255
	54	56.40	56.38

η Urs. Maj. B. Obs.

13 42 58

+49 54

R.A. only.

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1881phae.proj.1412B

Dec. 20, 1881 C=17 89.0

γ Cass. L. C. B. Obs. ε Virginis B. Obs

0 49 38 12 56 17

+59 55 +11 34

B

20 2 5.6

22.0

2.8

54.0

24 4

22 6.10

R. A. only.

A_2 + C.

A_5 + C

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1881phae.proj.1412B

Dec $\frac{20}{21}$, 1881 ☾ = 17 89.0

☉ B. Obs.

18 0 13

−23 27

☾ Urs. Maj.; L.C. B. Obs.

12 48 48

+120 24

		B	B			B	B
50	4	22.3	20 2 57.4	50	4	25.3	26.0
		29.9	5.3			44.1	44.8
		9.2	44.7			26.5	25.7
		11.8	46.3			15.5	16.1
		7.32	21.37			11.14	11.26
	54	18.80	22 5 3.42		54	27.85	28.15

Both limbs in S. 1rst ″ in R.A.

Seeing extremely bad.

Lost 1rst ″ 2 w.

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1881phae.proj.14128

Dec. 21, 1881 C = 17 89.0

δ Cass. B. Obs.
1 18 9
+59 37

		B	B	B	B	B			B
30	2	30.6	39.3	43.0	49.1	50.0	35	1	43.7
		45.7	54.8	57.8	4.9	5.6			57.0
		23.1	32.2	35.4	42.1	42.9			35.9
		16.3	25.6	29.0	35.4	36.2			31.0
									1676
							36		41.90

Perhaps 1 taps too many for δ.

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1881phae.proj.1412B

Dec. 23, 1881 c=17 89.0

δ Cass. L.C. B. Obs.

1 18 9

+120 23

		B	B
5^h 5^m	0	8.4	8.4
		23.6	23.8
		5.2	4.9
		57.0	56.2
		342	933
	55	8.55	23.32

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1881phae.proj.1412B

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1881phae.proj.1412B

Dec. 23/24, 1881

⊙ B. Obs.

18 13 32

−23 25

C = 17 89.0

E Urs. Maj. L.C. B.Obs.

D 12 48 48

+12 3 24

		B	B			B	B
50	2	7.1	20 0 44.9	50	4	43.3	43.4
		11.8	51.7			59.7	0.0
		50.2	30.2			40.0	39.5
		53.9	31.2			29.2	29.2
		30	1580			1722	1721
52		0,75	20 39.50	54		43,05	43,02

Both limb in δ. 1rst in R.A.
Seeing extremely poor.

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1881phae.proj.1412B

Dec. 24. 1881 C=17 89.0

δ Cassiop. B. Obs.

1 18 9

+5-9 37

B B

35	1	40.9	41.1 ~~29.8~~
		51.5	50.9
		28.8	28.7
		23.7	23.7
		1449	1444
	36	36,22	36,10

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1881phae.proj.1412B

Dec. 30, 1881

δ Cass. B. Obs

1 18 9

+59 37

B

35	1	37.0
		50.0
		31.9
		27.8
		1467
	36	36.68

lost A+1

C=1.7 89.0

δ Cass. L. C. B, Gg

1 18 9

+120 23

B

50	4	53.8
		10,4
		54.0
		42.8
		2210
	54	55.25

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1881phae.proj.1412B

Dec. 31, 1881 C=17 89.0

δ Cassiop. B. Obs.

1 18 9
+59 37
B

35- 1 37.4
49.5-
30.2
24.9
14 20
36 35.50

lost A_{+1} 123

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1881phae.proj.1412B

Jan. ½, 1882 $\epsilon = 17\ 89.0$

⊙ B. Obs.

18 53 23

−22 53

	B		B
20 0	20.9	45 4	0.8
	24.2		6.2
	1.0		44.5
	3.7		45.2
	1698		967
20	42.15	49	24.18

1rst limb in R.A. Both in δ

Seeing very poor.

δ Cass. B. Obs.

1 18 9

+59 37

	B
35 1	39.8
	48.1
	25.9
	20.7
	1345
36	33.62

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1001phae.proj.14128

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1881phae.proj.1412B

Jan. 2/3. 1882 ⊙ = 17 89.0

⊙ B. Obs.

18 57 47

-22 47

	B		B
40	45.2	15 0	48.4
	49.1		51.5
	25.0		28.6
	28.0		30,6
	1473		391
41	36.82	16	9,78

1st limb in R.A. Both in δ

Seeing very bad.

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1001phae.proj.14128

Jan. 3/4 1882

⊙ B. Obs.

19 2 11

−22 41

		B		B
5	3	14.9	35 1	54.9
		17.7		59.2
		53.2		34.9
		56.1		37.3
		141.9		186.3
	8	35.48	36	46.58

1rst limb in R.A. Both in δ

Seeing extremely bad,

c=17 89.0

δ Cass. B. Obs.

1 18 9

+59 37

	B
35 1	32.6
	38.8
	16.3
	11.0
	98.7
36	24.68

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1881phae.proj.1412B

Jan. 4/5 1882 C=17 89.0

⊙ J B. Obs.

19 6 34

-22 34

B B

0 1 33.2 30 0 7.3

34.4 8.2

11.0 46.5

13.7 48.2

9 23 23 0 2

23,08 29 57,55

1rst limb in R.A. Both in δ

Seeing moderately good.

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1001phae.proj.14112B

Jan. 6/7. 1882

⊙ B. Obs

19 15 19

−2 2 19

		B		B
45?				
30	1	47.5	15 0	25.3
		50.8		28.7
		28.0		6.5
		32.0		10.8
		1583		713
	46?	39.58	15	17.82

1st limb ☆ in R.A. Both in δ

Seeing very good.

C=17 89.0

γ Cass. B. Obs

0 49 38

+60 δ−

		B
5	4	17.7
		27.7
		4.5
		59.4
		493
	9	12.32

δ Cassiop B. Obs.

1 18 9

+59 07

		B
35	1	35.2
		45.0
		22.2
		18.7
		1211
	36	30.28

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1881phae.proj.1412B

Jan. 9. 1882 @=17 89.0

& Urs. May 1, L.C. B. Obs, & Cass. B. Obs

12 48 48 1 18 9

+123 24 +59 37

B B B

55	0	35.4	50	47.8	35	1	35.4
		52.2		25.8			46.0
		33.9		6.8			24.2
		24.9		57.2			20.1
		1464		376			1257
55		36.60	54	9.40	36		31.42

Lost A_{-1}

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1881phae.proj.1412B

Jan. 9/10, 1882

⊙ B. Obs.

19 28 23

−21 54

		B	B
20	1	10.5	45 4 46.3
		15.1	51.3
		54.9	31.2
		57.7	32.5
		1.82	1613
	21	4.55	49 40.32

1st limb in R.A. Both in δ

Light clouds – seeing steady.

c = 17 83.9

ε Urs. Maj. L.C. B. Obs.

12 48 48

+123 24

		B	B
50	4	24.0	24.4
		41.8	42.0
		22.5	22.5
		12.0	12.2
		10 03	10 11
	54	25.08	25.26

δ Cass. B. Obs.

1 18 9

+59 37

		B
35	1	29.3
		39.3
		18.0
		14.8
		10 14
	36	25.35

Lost A_3

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1881phae.proj.1412B

4

Dec. 8, 1882 C = 17 85.3

α Persei ~~21 15~~ 21 15 45⁻ +62 5⁻

B	B	B
5 2 44.0	3 3.3	3 29.3
51.9	11.5	37.7
27.0	46.2	13.2
19.5	39.3	6.5
1424	2203	867
7 35.60	7 55.08	8 21.68

β Cephei 21 27 8 +70 3

B	B	B
10 0 2.2	34.1	14.1
9.9	42.5	23.0
44.8	16.4	56.1
38.3	9.3	45.0
952	1023	1422
10 23.80	25.58	11 35.55

Π^2 Cygni 21 42 26 +48 46

B	B
20 1 17.3	2 43.3
23.4	48.0
58.8	35.0
52.5	17.4
320	1447
26 8.00	27 36.18

μ Capricorni 21 46 52 −14 6

B	B
15 2 14.9	3 31.0
16.1	33.1
53.9	9.2
57.0	12.6
219	859
17 5.48	18 21.48

Rej.

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1881phae.proj.1412B

Dec. 4, 1882

74 Cygni

21 52 13

+39 53

R. A.

~~Rej~~ 1,

C = 17 85.3

11 Cephei

21 40 11

+70 46

R A.

α Aquarii

~~21 0 0~~

21 59 43 −0 54

B B

0 4 58.41 21.8

59.0 24.2

36.7 1.5

38 1.4

1899 489

4 47.48 6 12.22

θ Aquarii

22 10 36

−8 22

B B

30 3 20.9 4 38.8

20.9 39.0

58.8 16.6

58.4 15.9

390 1103

33 9.75 34 27.58

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1881phae.proj.1412B

Dec. 4. 1882 C=17 80:3

Morning

π Aquarii
22 19 15
+0 47

Draco
16
39
78
10

R.A.

12

R.A.

~~Chief~~

ζ Virginis
12 13 52 −8 1
B B
2 45.8 4 9.9
49.0 14.5
25.2 49.5
25.6 57.1
1456 40
12 36.40 14 1.00

Chief.

ν Virginis med.
12 35 40
−0 48

R.A.

ε Urs. Maj.
12 48 47
+56 36

R.A. Lost 1st W.

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1881phae.proj.1412B

Dec. 4, 1882

6 Cam. Ven.
12 19 59
+39 41

R.A.

c =
K Draco
12 28 26
+70 26
B B B

45	2	35.0	3 12.0	55.1
		44.9	22.8	5.3
		18.0	55.8	37.8
		9.3	46.7	30.1
		10 7 2	13 7 3	18 8 3
	47	26.80	48 34.32	47.08

12 Cam. Ven.
12 50 28
+38 57

R. A.

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1881phae.proj.1412B

Dec. 5, 1882

C = 17 80;3

2 Ceti

2 57 10

+3 38

ρ Persei

2 57 40

+38 23

		B	B
30	4	9.1	0 34.9
		16.6	31.9
		53.9	8.1
		55.8	8.9
		154	838
	34	3,85	2095

A − 1

R. A.

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1881phae.proj.1412B

Dec, 5, 1882

β Persei

3 0 32 +40 30

B B

40 2 20.0 3 38.2

31.0 491

8.3 25.5

1.4 19.7

6 07 1325

42 15.14 43 33.12

δ Arietis +19 17

3h 4m 1

∧

omission

C = 17 δ 5.3

α Persei

3 15 54

+49 26

B B

45 1 4.4 2 17.4

15.0 25.3

53.1 5.3

45.2 57.9

46 23 7 47 48 9

1881phae.proj.1412B

Dec. 5/6, 1882 C = 17 85,3

⊙ + Venus

16 52 52

−22 33

Ex. Therm. = 45.2
Barom. = 29.888
att. Therm = 44.5

B		B	B	B
40 3	47.9	55 0 59.7	1 42.7	4 1.8
	54.8	4.1	47.8	8.0
	33.2	43.3	28.2	46.9
	34.8	47.2	29.8	48.1
	1707	2143	1485	2248
43	42 68	55 53,58	56 37,12	58 56,20

Limb I of ⊙ in R.A.
Limb II of ⊙ A 769 A_1
Apparent upper limb of Venus ∫
Began to observe both limbs of venus in R.A. & ∫.
Found confusion and so observed only middle
B wire of ∫ for each limb. The first ∫ by venus comes
in Group A_71. Confusion of three or four wires A_66 in
R.A. near A.
Order of observation
⊙ R.A. I venus ∫ limb I venus R.A. Limb II
near A_1 ⊙ apparent upper limb. ⊙ II R.A.

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1881phae.proj.1412B

Dec. 6. 1882

β Cephei

21 27 8

+70 3

B B

10	0	16.8	10.2
		32.2	14.8
		9.3	5.29 less
		0.9	4.40 less
		59.2	23.19
	10	14.80	10 57.98

C = 17 85.3

74 Cygni

21 32 13

+39 5 3

☆

R. A only

21h 35m

Ex therm. = 42.0

Barom. = ~~29.886~~ 30.000

att. therm = 48.7

21h 36m

B = 30.000

T = 48.7

t = 42.0

11 Cephei

21 40 11

+70 46

π² Cygni

21 42 26

+48 46

B B

25	1	18.0	2 28.0
		31.2	40.6
		10.3	20.8
		3.8	13.9
		63 3	103 3
	26	15.82	27 25.82

group of 7 close wires in ☆

4.012 5.012 6.0

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1881phae.proj.1412B

Dec. 6, 1882 C = 17 85.3

λ Aquarii

21 59 43

β − 0 B 54

22h 5m

Ex. therm = 41.0

Barom. = 30.00

att. therm = 47.6

0	4	57.4	1	~~8~~ 138
		3.0		208
		44.4		1.3
		45.0		29
		2098		388
	4	52,45	6	9,70

π Aquarii

22 19 15

+0 47

		B		B
20	4	348	0	55.4
		43.4		3.3
		23.9		45.0
		22.9		45.2
		1250		2089
	24	31,25	25	52,22

λ Lacertæ

22 26 26

+49 41

		B		B
30	1	33.3	2	37.9
		47.2		52.4
		29.2		33.5
		20.8		24.9
		1305		1487
	31	32,62	32	37,18

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1881phae.proj.1412B

Dec. 6, 1882

θ Aquarii

22 10 36

−8 22

B B

30 3 20.3 43 59

25.1 403

7.0 228

7.0 223

594 1213

33 14.85 34 30.32

C = 17 85.3

γ Aquarii

22 15 34

−1 59

B B

10 0 37.4 (35.4 sline)

38.3 ? 33

24.2 40

19.9 45

1198

10 29.95

lost A+1

22h 30m

Ex therm = 40.0

Barom = 30,00

att therm = 46.8

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1881phae.proj.1412B

Dec. 12, 1882

K Cass. Circ. W. Russian Transit.

0 26 16 ζ Cass.

+62 17 30 22

-19 54 +53 14 -10 51

40 06
-19 54
9.53196 m sin φ S
9.66755
9.97326 cos φ S
0.33245

A B C D E

~~9.97326 cos φ~~
98441 m −0,73 A
.30571 +2.02 B
+2.15 C

-10 51
9.27471 m
9.77711
9.99217

C

549760 −31
621506 +164
~~9.99217~~
0.22289 1.67

Circle E.

Lens
0 5 2

9	10
17,3	23,8
19,1	22,3
1,64	1
18.20	22.05
	3.85
	+1.92

γ Cass.

0 49 34

+60 4 −17 41

−17 41

9.48252 m
9.69809
97898

B C D

97844 m −61
0.28069 +1.91
~~9.97898~~
30191 +200

β Androm.

1 3 6

+35 0 +7 23

+7 23

9.10893
9.91336
99638

B C D

9.19557 +16
.08302 1.21
~~9.99638~~
.08664 +1.22

Rej.
failed to
level cross-ways.

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Dec. 12, 1882

α Cass. Circle W.

~~π Androm.~~ 0h 40m

0 33 46 E W

+55 6 3 -13 30 18.8 22.0

-13 30 9.36819 19.3 19.6

9.74887

9.78783 1 16

B C D 9.61932 19.05 20.80

0.03896 d-.42

~~9.78783~~ =+1.09 1.75

0.25113 +1.71 +0.88

ζ Androm.

0 41 3

+23 38 +18 45

341 15 9.50710

9.96196

9.87632

B C D 9.54514

A=+.35 .01436

B=1.03 ~~7.27635~~

1.09 0.03804

h m

0 40 +.88

1 10 +.38

1 20 +.50

1 33 -.25

1 55 +.33

9

20

184

+37

.13

111

37

48

b=+1.05

T Piscium

1 5 8

+29 28 +12 55

+12 55 9.34934

9.93984

98887

B C D 940950 +.26

004903 +1.12

~~9.98887~~

060163 +1.38

level

10h 10m

E W

20.4 20.6

19.8 21.3

2 19

20.10 20.85

.75

+.38

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Dec. 12, 1882

Polaris

Circle E.

level

1 15 —

+ 88° 41′ 25″

313 47

C_1 C_2

- 46 18 37
- 46 13

9.855919 m
8.85902 m
9.83932
1.50017 m -31.63

9.83932
1.48030 +30.22
1.64058 43.75

	E	W
	20.3	21.0
	20.0	21.3
	3	3
	20.15	21.15
		1.00
		+ 0.50

For Polaris on Russian Transit a rattle before & after each wire

For meridian circle one rattle ~~before~~ after each wire & a long break for the wire.

R. T.

40 Cassiop.

1 29 4

+ 72 26

329 57

C

9.69963 m
9.47974
93731
02198 -1.66
.45757 2.87
~~9.93731~~
.52026 331

R. T.

ν Persei

1 30 44

+ 48 1

354 22

C

- 5 38

8.99194 m
9.82537
99750
9.16605 m .15
.17253 +41
~~9.99798~~
.17463 150

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M. C

Polaris

1 15 —

88° ~~36~~ 41' 25"

- 46 18 37

9.85919 n

8.35902

9.83932

150017

~~9.8 3 3 5 2~~

R. T.

2 Piscium

1 25 8

+14 44 + 27 39

+27 39 9.66658

9.98548

9.94734

B C D 9.68110

9.96186

~~9.94734~~

A = +48 .01452

B +.92

C +1.13

$A_{4\,012}\ 5^{-}_{012}\ 6_0$

For meridian circle a rattle follows each wire + a long break for the wire

R. T.

43 Cass.

1 33 35

+67 27

. . 334 56

- 25 04

9.62703 n

9.58375

85704

004328 -1.11

8.37329 +2.36

~~9.95704~~ 24

41625

level

0^h 35m

	E	W
	20.7	21.0
	21.6	20.3
	23	13
	21.15	20.65
	.50	
	−0.25	

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Dec. 12, 1882

M. C.

0 Piscium
1 3 —
+8 34

W. A. R. obs.

Reg'.

level R. T.
0h 40m

E	W
21.1	20.8
20.6	21.2
17	0
20.85	21.00
	.15
	+.07

M. C.
α Trian.
146 30
+29 0 +13 23

9.36449
9.94182
98804
9.42267 +27
.04622 +.11
~~9.98804~~

W. A. R. .05818 1.14

M. C.
ζ Piscium
ζ 147 30
+2 37

A lost 1st 3 wires

W. A. R.

+39 46

9.80595
9.99955
9.88573
9.80640 +.64
9.88618 +.77
~~9.88573~~

.15405 : 1.56

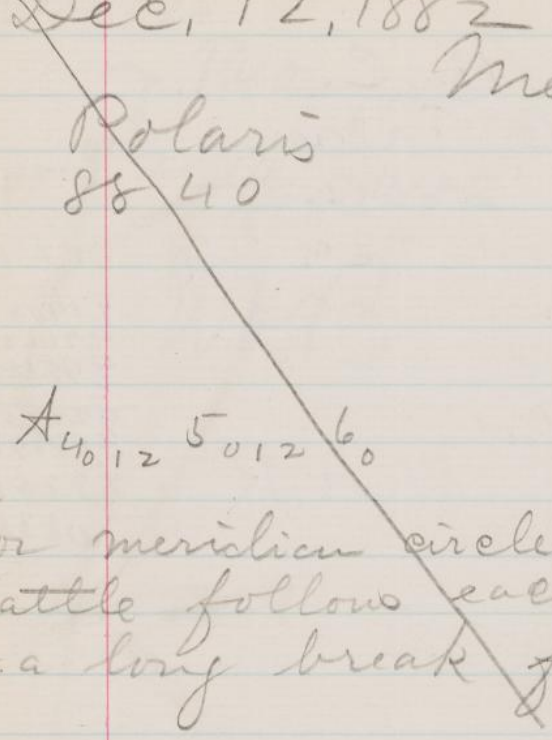
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Dec, 12, 1882

Meridian Circle

Polaris
88 40



For meridian circle a rattle follows each wire & a long break for the wire,

10.h 55m
level R.T.
E W
20.5 21.3
20.7 21.2
12
20.60 21.25
.65
+.33

M.C.
δ androm
1 56 —
+41 46 + 0 37

8.03192
9.87246
9.99987
8.85526
0.12731
9.99997
1.34 12034

W. A. R. +01
+1.34

+.64
+.79
1.56

1881phae.proj.1412B

Dec. 12, 1882

M.C.

α Arietis

2 0 —

+22 54 +19 29

9.52314
9.96435
9.7439
9.55809 +36
.01004 +1.03
9.99459 1.09
.03565

W. A. R.

M.C.

β Trian.

2 42 —

+34 26 +7 57

9.14085
9.91634
9.9958
9.22451 +17
.07947 +1.20
9.9958 1.21
.08366

W. A. R

θ Arietis

2 12 —

+19 21 +23 02

9.59247
9.97475
9.96352
9.61772 +41
9.98919 +.97
1.06
.02525

W. V. B.

ζ² Ceti

2 22 —

+7 56 +34 27

9.75258
9.99682
9.91625
9.75676 +57
9.92043 +83
.04118 101

W. V. B.

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Dre 12
γ Mainpue
2 10 −33 18
W. B.

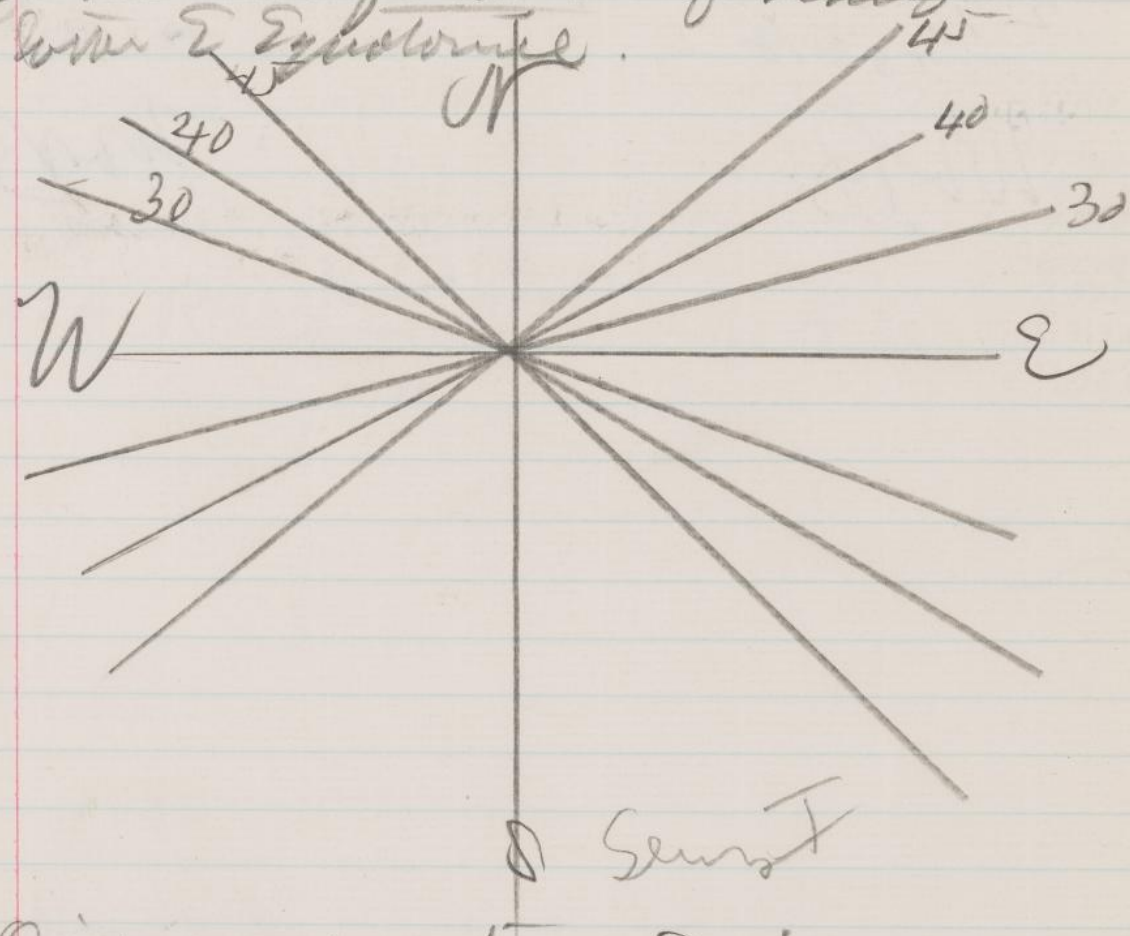
D Aurigæ
2 32 −
+42 27
WB

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Dec 13–14

Observations of diameter of Venus
between E Extremities.



Sun set

Order of observations Sun I
Venus apparently observed

30 40 45 30 40 45 & 21 45 40 30
p p p f f f & f f f f f

Sun begins about 16h 05m
observed about 16h 18m
Start Chron 01 - 16h 21m
Ten Observations

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Series II Hevae apparently between:
3 40 45 2 21 18 40 30 45 30 30
δ δ δ δ δ δ p p p χ χ δ

11 Sets.

Observed distinctly the new position observed.

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Dec. 14. 1882.

M.C.

W. Rus.

~~ζ Cephei~~

~~22 24 24~~

~~+57 49~~

M.C.

μ Pegasi

22 44 16

+23 58

M.C.

o Andromedæ

22 56 27

+41 41

M.C.

2 Peg.

22 58 50

+14 34

Ch. g.

P)

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Non R.T. Works: Dec 14 RT

B@N. Pisces Pegasi Σ Δ

Bi 30 75 23 11 0 23 14 45 182 217

23 7 33 +2 3 5 23 5 194 207

56 20 32 0 15 34 0 42 196 24

−14 7 1880 21.20

2.40

A B C D E A B C D E A B C D E +1.20

RT RT RT

C E. Pegasi Pegasi Aquila Σ Δ

23 15 29 23 26 3 23 31 45 199 203

+22 44 +4 43 +4 49 199.3 2.0

1535 30 46 34 0 34 12 13

11 43 1860 30.65

1.05

+.52

A B C D E A B C D E A B C D E

1.57

172

.86

b = +1

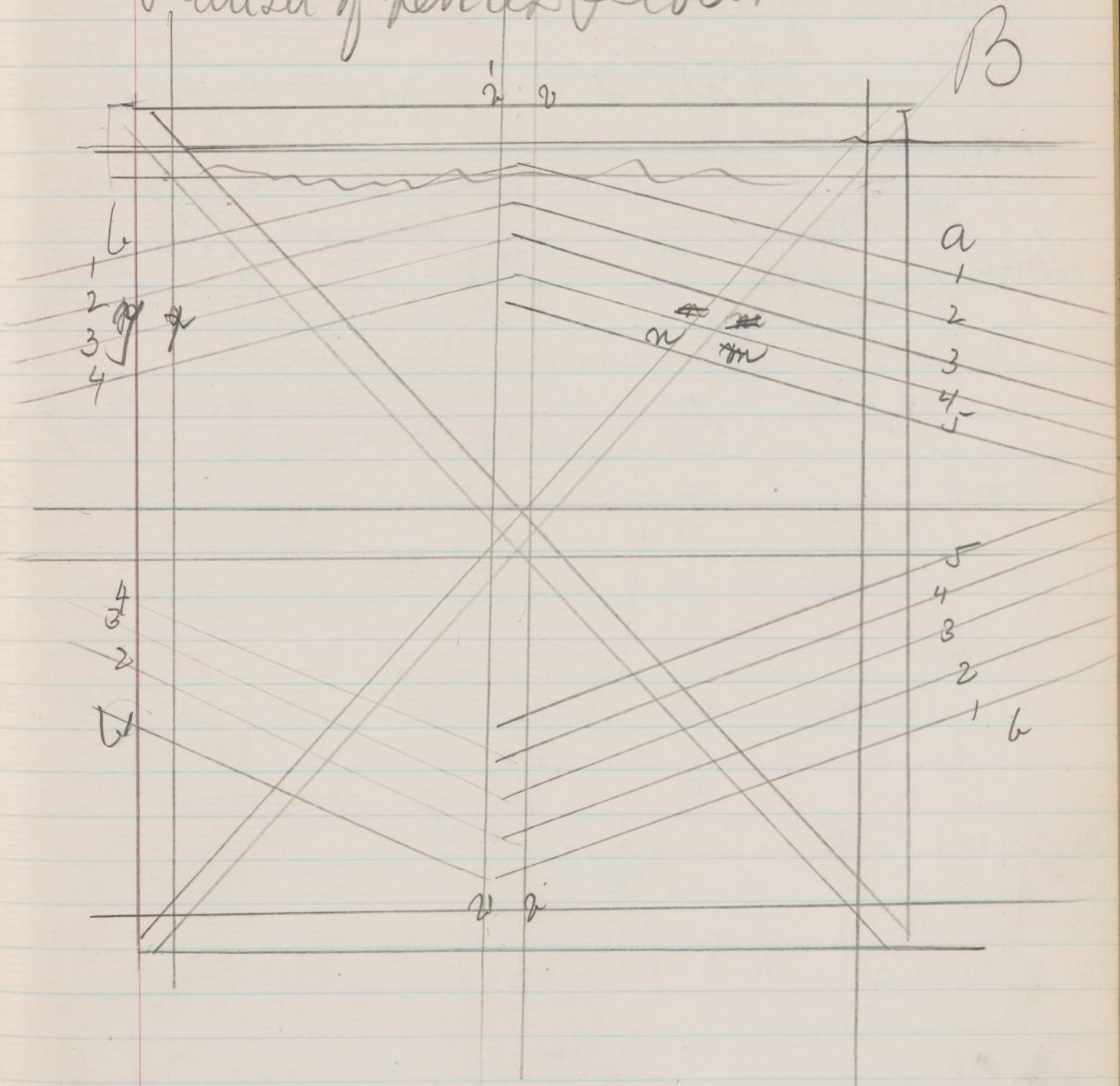
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Transit of Venus Plate.



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For form of plate see page 79.

Transit of Venus Dec 6 1882

Plate F p = pres. f = fut.

Position = B = North West corner apparent

Time	Sun 1	2	3	4	a	Venus m n	2 2'	a'	Obscura = Rayers
	1	2	3	4	3 p f	m p f	n p f	2 p - 2' p	1 p f
9	55 30		3				2		
		3	2	4			f		
9	59 0						2		
9	59 50				a	v	a.	v p	v' 3'
					2	p	2	f	f
10	2 30	v	a				a	v	
		2	2				2		
		p	p				p	p	
10		a 2			v	a	v	v	b'
10	4 20	3 p	2		p	2 f	f	p	2 p

3	a	a	v	v	v'	b	v'	v	b
	2	2	2			2			
	p	f	p	f	p	p	f	f	

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3 7 30 ~~a Sun~~ a
2
~~b 3 — 4~~

a 5 3-2-4 2 1
2

5 21 22 m/pf

3 11 0 S

Preceeding observations so broken
~~that~~ they are useless.
Plate taken out.

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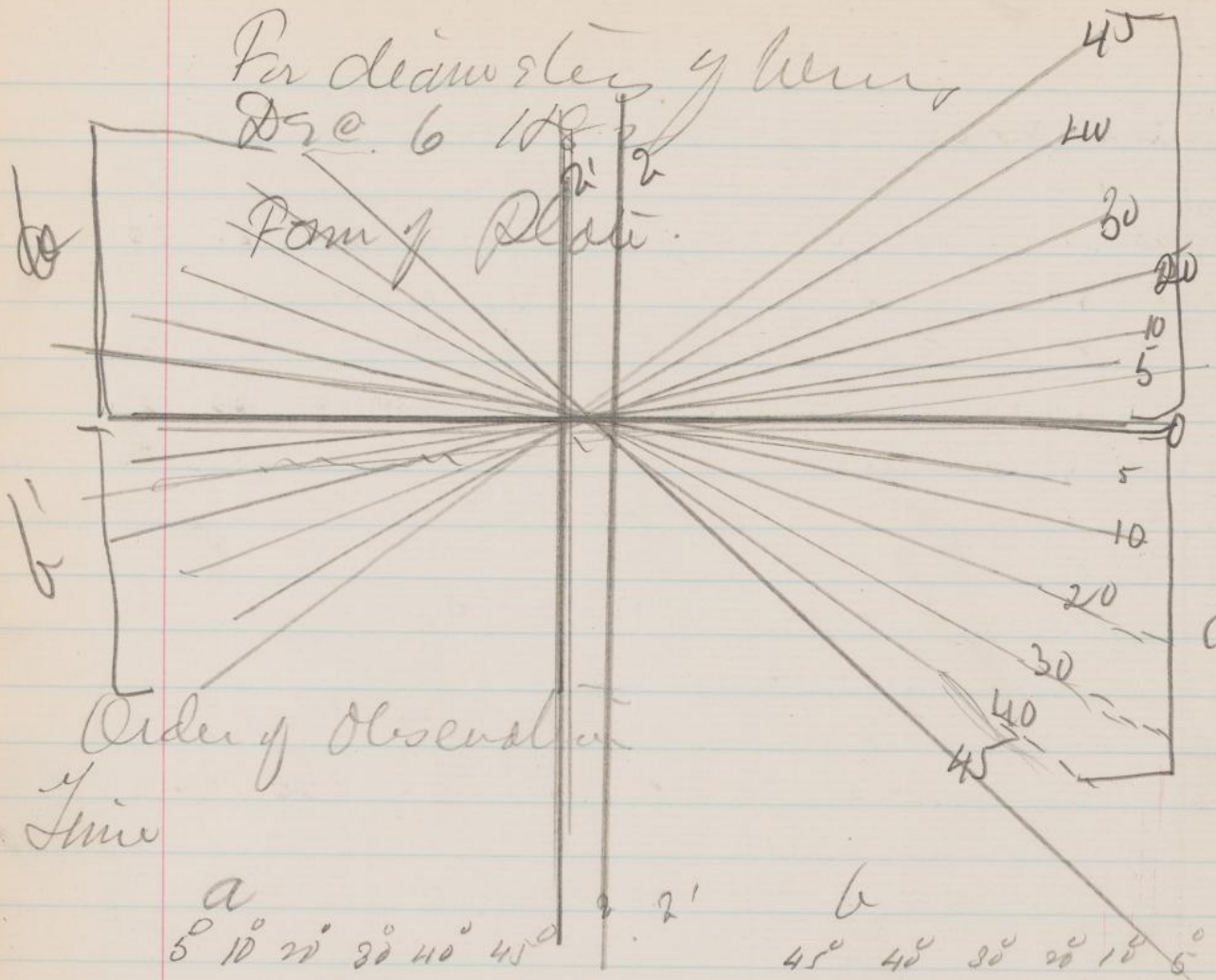
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For diameter of Sun
Dec. 6 10
Form of Plate.



Order of Observation
of Time

a 5° 10° 20° 30° 40° 45° 2 2' b 45° 40° 30° 20° 10° 5°

Instrument = Meridian Circle Observer =

h
+12 5 10 20 30 40 45 ν ν' 45 40 30 20 10 5
xx x 5 10 20 30 40 45 ν ν' 45 40 30 20 10 5
3 30 10 5 10 20
b b b
3 31 50 5 5
b b
30
a b
20 20 30 40 30 45 40 45 ν ν' 45 40 45 30 40 30/45
b b b b b b b b b b b b b b b b b b b
3 39 15 × × clouds

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3 40 0 20 20 clouds
p f

		20	20	30	30	V'	V²	45	45	30	30	20	20
		p	f	p	f	45 p	45 f	p	f	p	f	p	f
3	42 5	×	×	×	×	× ×	××	×	×	×	×	×	—
		20	20	30	30	45	45	V	V'	45	45	30	30	20	20
		p	f	p	f	p	f			p	f	p	f	p	f
3	44 45	×	×	×	×	×	×	pf	pf	×	×	×	×	×	×
	46 10	×	×	×	clouds										
	45 55	×	×	×	×	×	×	××	××	×	×	×	×	—	—
	49 15	×	×	×	clouds —										
	50 35	×	×	×	×	×	×	pf	pf	×	×	×	×	×	— clouds

		20	30	45	V	V'	45	30	20	
	52 5	× ×	××	××	××	××	××	××	— —	clouds
	54 0	××	××	××	××	××	××	××	— —	
	55 40	××	××	××	××	××	××	××	— —	
	57 20	××	××	××	××	××	××	××	— —	
	59 20	××	××	××	××	××	××	××	××	
4	0 10	××	××	××	××	××	××	××	××	

Changed Zero
Seeing good

4	5 0	××	××	××	××	××	××	××	××

S. C. C. j obs from here

	34 30	××	××	××	××	× 0	××	××	imperfect
	38 10	×							
	38 50	××	××	××	××	××	××	××	××
	40	××							

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		20	30	45	V	V'	45	30	20	
4	41 0	xx	xx	xx	xx	xx	xx	xx	x x	½ last sec early
	43 25	xx	xx	xx	xx	xx	xx	xx	x x	Contact broken during this set.
5	3 26	xx	x x	xx	x x	x x	x x	xx	x x	last one ½ second too early
	5 30	xx	x x	xx	x x	xx	xx	xx	xx	
	~~7 12~~									Set comps. but off parallel one two minutes late ½ set
	7 12	xx	xx	xx	xx	xx	xx	xx	xx	
	9 23	xx	xx	xx	xx	xx	xx	xx	xx	
	11 27	xx	xx	xx	xx	xx	xx	xx	xx	image unsteady outline of plan. wings
	13 41	xx	xx	xx	xx	xx	xx	xx	xx	image more steady unsteady
	15 42	xx	xx	xx	xx	xx	xx	xx	xx	

North of horizontal line

		20	30	45	V	V'	45	30	20	
4	4	~~xx~~								imperfect.
5	28 55	xx	xx	xx	xx	xx	xx	xx	xx	last top bad; estimated only
	38 43	xx	xx	xx	xx	xx	xx	xx	x	last of 20 imperfect also V'

Venus north of this set.

		20	40	Transit	Transit.	40	20	
5	45 5	xx	xx	xx	xx			
5	47 30	xx	xx	xx	xx	xx	xx	Set imperfect Images very unsteady Atmosphere boiling
	50 25	xx	xx	xx	xx	xx	xx	
	5							

W. A. Rogers, Obs.

		Series a'	B'		
5	55 0	xx	xx	xx	x
	57 50	xx	xx	xx	x

Same as 2 previous sets.

failure

imperfect

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W. A. Rogers, Obs.

Series A' & B'

S. L. Chandler, Jr.

Venus north

	10	Transit	Transit	10
6 h 49 m 30 s	x x	x x	x x	x x
~~6 20~~	x x	x x	x x	x x
8 30	x x	x x	x x	x x

→ a second early for this tap.

Venus South

6 11 46	x x	x x	x x	x x

→ unintentional rattle here

15 45 passing clouds.

17 5 x x x x x x x x → this tap ½ second early.

18 10 x x x x x x x

set probably complete, heard. or thirds one tap missing. Observer thinks set complete

W. A. Rogers Obs.

Venus ~~below~~ the Center

Obsvd

6 21 10 x x x x x x failed

New Series

	a	p	b		a	p	b		b	p	f
6 23 10	x	x			x	x	x	x	x	x	x
24 50	x	x			x	x	x	x	x	x	
26 20	x	x			x	x	x	x	x	x	
28 22	x										
29 35	x	x			x	x	x	x	x	x	
30 15	x	x			x	x	x	x			
32 10	x	x			x	x	x	x			
33 50	x	x			x	x	x	x			

may have got a 30 on previous sets instead of a 10

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		a p f	v p f	v' p f	b p f	
b 35	30	x x	x x	x x	x x	
36.	10	x x	x x	x x	x x	
37	50	x x	x x	x x	x x	

Seeing fair

New Series W. A. Rogers obs.

Venus below the centre.

6 39	50	x				failed
40	50	x x	x x	x x	x x	very windy
42	10	x x	x x	x x	x x	seeing variable
43	20	x x	x x	x x	x x	
44	30	x x	x x	x x	x x	
46	10	x x	x x	x x	x x	
47	15	x x	x x	x x	x x	
48	50	x x	x x	x x	x x	
50	0	x x	x x	x x	x x	seeing very bad
51	30	x x	x x	x x	x x	
53	10	x x	x x	x x	x x	

Seeing bad

New Series W. A. Rogers obs.

Venus above the centre.

		20 p f	30 p f	45 p f	v p f	v' p f	45 p f	30 p f	20 p f
7 1	50	x x	x x	x x	x x	x x	x x	x x	x x
3	10	x x	x x	x x	x x	x x	x x	x x	x x
5	10	x x	x x	x x	x x	x x	x x	x x	x x
6	50	x x	x x	x x	x x	x x	x x	x x	x x
8	10	x x	x x	x x	x x	x x	x x	x x	x x
10	2	x x	x x	x x	x x	x x	x x	x x	x x
11	30	x x	x x	x x	x x	x x	x x	x x	x x
13	3	x x	x x	x x	x x	x x	x x	x x	x x

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	20 pf	30 pf	45 pf	V pf	V' pf	45 pf	30 pf	20 pf
h 14 50	x x	x x	x x	x x	x x	x x	x x	x x
16 15	x x	x x	x x	x x	x x	x x	x x	x x
18 22	x x	x x	x x	x x	x x	x x	x x	x x

Seeing bad

New Series. W. A. Rogers, obs.

Venus below center.

	20 pf	30 pf	45 pf	V' pf				
21 30	x x	x x	x x	x x	x x	x x	x x	x x	
22 10	x x	x x	x x	x x	x x	x x	x x	x x	
24 20	x x	x x	x x	x x	x x	x x	x x	x	failure Seeing poorest yet
~~26~~ 25 2	x x	x x	x x	x x	x x	x x	x x	x x	
27 57	x x	x x	x x	x x	x x	x x	x x	x x	V1 comes before #5 f
28 30	x x	x x	x x	x x	x x	x x	x x	x x	reject V1
31 9	x x	x x	x x	x x	x x	x x	x x	x x	
32 21	x x	x x	x x	x x	x x	x x	x x	x x	reject V1
34 32	x x	x x	x x	x x	x x	x x	x x	x x	
35 50	x x	x x	x x	x x	x x	x x	x x	x x	

Seeing bad

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New Scrin S.C.C Obscurn. Venus North

		30	30	45	45	vr'	vr'	45	45	30	30	
19h		p	f	p	f	p	f	pf	f	p	f	p
39m	15s	x	x	x	x	xx	xx	x	x	x	x	
40	30	x	x	x	x	xx	xx	x	x	x	x	
41	50	x	x	x	x	xx	xx	x	x	x	x	last tap 1/4s early

Venus South S.C.C. Obs

		30		45		tr	tr	45		30		
43	40	x	x	x	x	xx	xx	x	x	x	x	
45	40	x	x	x	x	xx	xx	x	x	x	x	
47?	0	x	x	x	x	xx	xx	x	x	x	x	1st tap of 2nd tr came 3/10s early

Venus North

48	45	xx	x	x	xx	Failed —						
49	20	xx	x	x	xx	xx	xx	x	x	x	x	— 1st of 45 1/2s early
50	55	xx	x	x	xx	xx	xx	lost	x	x	x	— lost 1st of 45

Venus South

52	10	30		45		tr	tr	45		30		
52	40	x	x	x	x	xx	xx	xx		x	x	
54	10	x	x	x	x	xx	xx	xx		x	x	
54?	50	x	x	x	x	xx	xx	xx		x	x	

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Copy of Record of Observations with the
East Equatorial.

	a						b		
Jan	30°	45°	30°	45°	22'	22.	45°	30°	45°	30°
16 8 30	p	p	f	f	1	2	1	2	p	p	f	b
40 0	x	x	x	x	x	x	x	x	x	x	x	x
41 15	x	x	x	x	x	x	x	x	x	x	x	x
41 50												
42 30												
43 10												
43 45												
44 40												
45 25												
46 15												
47 0												
47 40												
48 30												

Seeing fair

Ch f.
"
"
"
"
"

New setting for pointers

Seeing getting worse

7 8 30	
9 8	
9 40	
10 30	
11 15	
11 55	
12 30	
13 15	

Seeing very unsteady

14 00	
14 30	

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Seeing for a and b'

Time	30°	45°	80°	45°	22°	22'	45°	30°	45°	80°
17 24 20	p	p	f	f			p	p	f	b
25 15										
25 45										
26 30										
27 15										
27 50										
28 30										
29 15										

Seeing very unsteady

30	0
80	45

Seeing for positions a and b

41	0
42	45

Seeing horrible.

43	25

Palne steadied near the close of the last observation.

44	20
44	45
45	25
46	10
46	55
47	35
48	20
17 49	00

Image of Venus boiling. Reject

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1881phae.proj.14128

Dec. 12 1882
M.C.
2 Andrew

Dec 13 — 14

Transit of Venus W. A. R. Dr.

Section I Venus South
" II " " North.

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1881phae.proj.1412B

Dec-14-15

Observations of declination of Venus
made E & W. with Fork.

Venus app. above

30 40 45 - 30 40 45 0 0. 45 - 40 30

16h 25m

X X X X X X X X X

Venus below

16 30 40 45 - 0 0' 45 - 40 30 45 - 40 30

X X X X X X X X X X

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1881phae.proj.1412B

Dec. 16, 1882

M.C.
α Androm.
0 2 18
+28 26

W.A.R.

M.C.
γ Pegasi
0 7 12
+14 31

W.A.R.

M.C.
Boy. 6
0 9 30
+76 17

W.A.R.

M.C.
ζ Ceti
0 13 22
−9 29

W.A.R.

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1881phae.proj.1412B

Dec. 16, 1882

Level

$0^h 20^m$

E	W
19.2	22.0
19.9	21.3
11	33
19.55	21.65
	2.10
	+1.05

C =

R. T. Circle W

K Cass.

0 26 16

−19 54

W. A. R

R. T.

o Cass

0 38 15

−5 15

W. A. R.

R. T.

ζ Androm.

0 41 3

341 15

W. A. R.

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1881phae.proj.1412B

Dec. 16, 1882

R. T.
ζ Cass.
0 30 22

−10 51

W. A. R.

R. T.
α Cass.
0 33 46

−13 30

W. A. R.

0h 45m Level

E	W
19.0	23.1
20	22.1
390	12
19.50	22.60
	3.10
	+ 1.55

R. T.
γ Cass.
0 49 34

−17 41

W. A. R.

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1881phae.proj.1412B

Dec. 16, 1882

$0^h 53^m$ Level

E	W
~~19.9~~	~~19.3~~
~~20.5~~	~~22.9~~
20.5	22.7
18.8	23.8
19.05	23.35
	4.30
	+ ~~2.15~~ 1.75

20.5 22.2
18.8 23.8
23.0

C E W
+1.05
+1.35
+1.75
+1.45
+1.

$0^h 55^m$ Reversed Transit

Circle E.

$0^h 58^m$ Level

E	W
20.2	22.2
18.6	24.0
388	62
19.40	23.10
	3.70
	+1.85

R. T.
β Androm
1 3 6

+7 23

W. A. R

R. T.
T Piscium
1 5 8

+12 55

W. A. R.

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1881phae.proj.14128

Dec. 16, 1882

Circle E.

R. T.

E Pisces

0 56 55

+35 8

W.A.R.

1h 0m

Level

E W

19.1 23.3

20.6 22.0

39.7 13

19.85 22.65 1/5

2,80

+1.40

R. T.-

Polaris

1 17 —

313 47

W.A.R.

M.C.

Polaris

1 17 —

+88 41

W. A. R

W.A.R Obs 1st 2 W

W.V.B " 3 4 W

W.A.R " 5 W

Long strokes for 3, + 4th

3, 10 h.

Wire for R. T.

4 strokes for 1st W.

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1881phae.proj.1412B

Dec. 16, 1882

14h 25m Levdl

E	W
21.0	22.0
19.9	23.7
09	17
20.45	22.85
	2,40
	+1,20

R. T.
2 Piscium
1 25 8 15

+27 39

W. A. R.

M. C.
43 Cass.
1 33 40
+67 27
42 23
25 4
334 56

W. A. R.

M. C.
ν Piscium
1 35 25
+4 54

W. A. R.

A

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1881phae_proj_1412B

R. T.
40 Cass
1 29 4

329 57

W. A. R. C.

R. T.
υ Persei
1 30 44

+354 22

W. A. R.

M. C.
φ Persei
1 36 20
+50 6

W. A. R

A

M. C.
o Piscium
1 39 15
+8 34

W. A. R.

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1881phae.proj.1412B

Dec. 16, 1882

1440 Level

E W

20.2 23.4

21.8 21.7

20 51

21.00 22.55

21. 155

1.78

β Arietis

1 48 15

+20 14

W.V.B.

c E.

1.85

1.40

1.20

1.48 = c E

c W

1.45 =

1.46

b = +.19

β Triang.

2 24 08

+34 26

W.V.B.

θ Arietis

2 11 40

+19 22

W.V.B.

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1881phae.proj.1412B

γ Androm
1 56 50
+41 46

W.V.B.

β Triang
21 2 Adiets
2 0 40
+22 54

W.V.B.

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1881phae.proj.1412B

Dec. 17. 1882 t=0

M.C.
η Pegasi
22 37 —
+29 35

W.A.R.

M.C.
λ Pegasi
22 40 48
+22 57

W.A.R.

Circle W. b=0 d
R.T.
Br. 3079
23 7 33
+56 20
−14 7

W.A.R.

Circle W.
R.T.
γ Piscium
22 11 —
+2 38
320 15

W.A.R.

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1881phae.proj.1412B

Dec. 17, 1882

M. C.

ν Cephei

22 45 26

+65 34

W.A.R.

M. C.

ο Androm.

22 56 33

+41 42

W.A.R.

Circle W. 6=2

R. T.

T Pegasi

23 04 45

+23 5

340 42

W.A.R.

Circle E

R. T.

υ Pegasi

23 19 27

+22 44

+19 09

W.A.R.

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1881phae.proj.1412B

Dec. 17, 1882

Circle E
R. T.
72 Pegasi
23 28 3
+ 30 40
11 43

W.A.R.

Circle E
R. T.
λ Androm.
23 31 45
+ 48 49
357 34

W.A.R.

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1881phae.proj.1412B

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1881phae.proj.1412B

Dec. 19. 1882
M. C.
12 Ceti
0 24 —
−4 37

W.V.B.

W.V.B. obs.
M. C.
π Androm
0 30 40
+33 4

A only

W.V.B.

M. C.
0 Cass.
0 38 15
+47 38

W.V.B.

M. C.
ζ Androm.
0 41 10
+23 38

W.V.B.

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1991phae.proj.14128

Dec. 19. 1882

M. C.
ε Androm.
0 32 25
+28 4

W.V.B.

M. C.
δ Androm.
0 33 —
+30 13

A only.

W.V.B.

M. C.
Polaris

W.V.B.
Middle 11 wires
2 rattles before &
after middle w.

R. T.
η Piscium
1 25 8
+27 39

W.V.B.

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1881phae.proj.1412B

Dec. 19, 1882

Level

R. T.
Polaris

E	W
21.0	20.4
19.0	22.6
~~20.00~~	30
20.00	21.50
	1.50
	+0.75

W.V.B.
B & D.

rattle before & after each wire.
Last 1st w. of D

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1001.phae.proj.14128

R. T.
43 Cass.
1 33 35

3 34 56

W.V.B.

D only -

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1881phae.proj.1412B

Dec. 20, 1882

Rej: 1st obs.
wrong star.

M.C.
π Androm.
0 30 40
+33 4

W.V.B.

M.C.
0 Cass
0 38 20
+47 38

W.V.B.

0h45m Level R.T.

E	W
19.0	22.1
20.6	20.4
396	25
19.80	21.25
	1.45
	+0.72

W.A.R.

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1001phae.proj.1412B

Dec. 20, 1882

M.C.
ε Androm.
0 32 30
+28 40

W.V.B.

M.C.
δ Androm.
0 33 10
+30 12

W.V.B.
A only — lost 1st & W.

Circle W
R.T.
γ Cass
0 49 34

−17 41

W.A.R.

0h 53m Level
E W
20.4 20.7
19.3 21.8
39.7 25
19.85 21.25
1.40
+0.70

C W
+7.2
+.70
+7.1
1=+.9

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1881phae.proj.14128

Dec. 20, 1882

R. T.
ε Piscium
0 5 56 5 5

324 52

W. A. R.

R. T.
β Androm.
1 3 10

352 37

W A. R.

Circle E.

R. T.
Polaris

313 42

W. A. R. obs of wires 1, 2, + 5 & W. V. B. obs of wire 3. + 4. 5 strokes for 1, 2, + 5. Long strokes for 3 + 4

M. C.
Polaris

+ 88 41

W. A. R.

A_{30} to 7_0

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1991phae.proj.1412B

R. T.
T Piscium
1 5 8

3 4 7 5

Reversed
1h 8m

Hit the eye-piece
after the reversal.

W. A. R.

R. T.
1h 23m Level
C W
21.9 19.7
19.2 22.1
11 18
20.55 20.90
.35
+0.18

R. T.
η Piscium
1 25 8

+27 39

W. A. R.

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1881phae.proj.1412B

Dec. 20, 1882

R. T. Circle C

40 Cass

1 29 41

354 22

C

W. A. R.

R. T.

ν Persei

1 30 44

354 22

W. A. R.

M. C.

o Piscium

1 39 15

+8 34

W. A. R.

Circle E

1945m Level R. T

E	W
19.5	22.1
21.9	19.8
14	19
20.70	20.95
	+.25
	+0.13

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1881phae.proj.1412B

Dec 20, 1882

R. T.
43 Caso
1 33 35

3 35 56

W. A. R.

M. C.
φ Persei
1 36 18
+50 6

W. A. R.

M. C.
α Trian.
1 46 30
+29 0

W. A. R.

M. C.
ζ Piscium
1 47 30
+2 37

last 1ms. w.

W. A. R.

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1881phae.proj.1412B

Dec. 20, 1882

Circle E

R. T.

1h 50m Level

E	W
21.9	20.0
19.3	22.3
12	23
20.60	21.15
	.55
	+0.28

Zn. C.

γ Andron.

1 56 45

+41 46

W. A. R.

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1881phae.proj.1412B

Dec. 20, 1882

14 58m Level R.A.

E	W
19.0	22.5
21.0	20.6
00	81
2000	21 5-5
	1 5-5
	+ 0.78

M.C.
ζ Arietis
2 0 40
+ 22 54

W.A.R.

+78
+.28
+13
+18

137
+.34
6=+04

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1881phae.proj.1412B

Dec. 21, 1882
Ciele E.
R. T.
η Piscium
1 20 8
+27 39

W. A. R.

R. T.
40 Cass -
1 29 4

329 57

W. A. R.

M. C.
ζ Persei
1 36 20
+50 6

A only

W. A. R.

M. C.
O Piscium
1 38 10
+8 34

W. A. R.

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1881phae_proj_1412B

Dec. 21, 1882
R. T.

v Persei
1 30 44

33-4 22

W. A. R.
last 1st ~~wr~~.

Circle E.
R. T.
43 Cass.
1 33 35

33 4 0-6

W. A. R.

M. C.
α Trian
1 46 25
+29 0

Rej — Clouds.

W. A. R.

Circle E.
1st 03m Level R. T.
E. W.
21.7 19.6
20.4 20.7
21 3
21.05 20.15
.90
-0.45

-12
-45
-57
-.27

b = -.04 = C. E
= +0 C W
-.02

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1881phae.proj.1412B

Dec. 21, 1882

M. C.
γ Androm-
1 56 —
+41 46

M. C.
L Arietis -
2 0 40
+22 54

W. A. R.

W. A. R.

A — Cost 1st W.

β Trianq —
2 2 40

Rej —

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1881phae.proj.1412B

Dec. 24
R. Corz.
0 26 16
-19 54

R. T. C. W. Nst Rms.
B. Corz
0 30 22
-10 57

B 34 - C. D.

B. C. D.

L. Corz.
0 33 46
-10 30

2 20
207 193
192 203
+3 396
195 1980
+15
+17

B. Anderson
0 41 3
34 15

B. C. D.

B. C. D.

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Cor R. C. N. Dreyer

Cor	E	N	Piscium	E	N
49 34	190	206	56 55	196	198
+7 41	23	191	324 52	15.3	20
	35.3	39.7		5	358
	19.65	19.85		19.45	19.90
		.20			.45
		+10			+2.2

Reversed. C E.

B Andrew	E	N	T Piscium	
1 36			1 58	
+7 23	202	192	+12 55	
	189	206		
	39.1	358		
	19.55	15.50		
		.35		
		+13		

B C D.

+7 +10 +13 / +10 +01

+07 +10 +22 +17 +14 B= +02

B C D.

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1881phae.proj.1412B

Polaris

~~133~~ 13 E W

313 42 198 197

204 190

402 187

2010 193

75

~~87~~

~~52~~

89

−.44

h = −.06

C

Polaris

M C.

A 40 41 ~~50~~ 51 52

λ Piscium

1 258

+27 39

B C D

40 Cassiopeiae

1 29 04

~~3 54 22~~

329 57

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1881phae.proj.1412B

Dec. 24 C.E

γ Persei 1 30 42
3 54 22

N.E
N.3
W3
6
20.3

N
152
193
1925
105
-.52

o Piscium 4B Com
1 39 15 13 35
+ 34 33 56

Bl. P

Lost.

M.C. N.N.R. Obs.

o Piscium
1 39 8
+8 34

A

ε Com.
4 53
+6 34

Lost

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1881phae.proj.1412B

γ Arietis
1 47 1
+18 42

β Arietis 52 Cassiopeiae
1 48 6 1 53 21
+20 13 +71 54

Sol.

δ Andromedae
1 56 3
+41 46

ν Arietis β Trianguli
2 0 30 2 2 29
+22 54 +34 26

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1881phae.proj.1412B

138 Dec. 24 1882

Observation of diameter of Venus with E. Eq.
W.A.R. Obs.

Venus South

I 16h 27m 30 40 45 30 40 45 20 45 40 30
b b b b b b b b b b

16 37 xxx xxx xxx xxx xxx

30 40 45 20 20 45 40 30 45 40 30
b b b Venus North b b b b b

16 52 xxx xxx xxx xx

Venus South

17 11 20 30 40 45 20 30 40 45 20 20 45 40 30 20
Venus.

Venus North

17 23 20 30 20 30 20 20 30 20
b b b b

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1881phae.proj.1412B

S. L. C. Observer.

Venus south

30 20 45 ν ν 45-40 30

f f f f f f ν

~~4 3~~ 10 obs.

Venus north

10 obs.

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1881phae.proj.1412B

Dec 25 1882

RT C.W.

B Y 3078
23 7 30
-14 7

γ Piscium
23 11
3 20 15

τ Pegasi
23 14 45
34 0 42

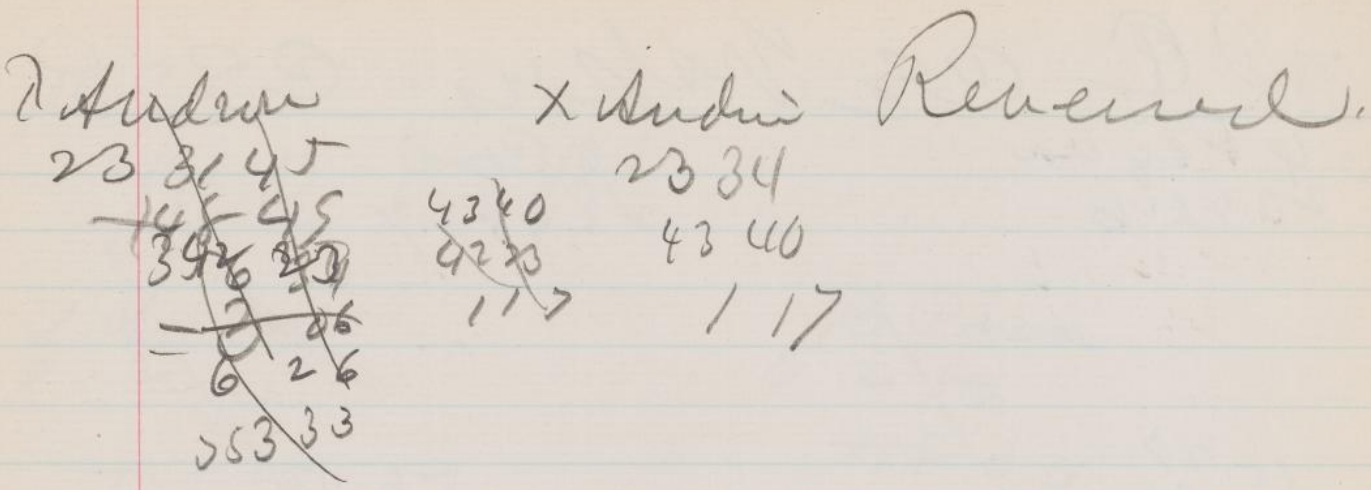
W
19.3 18.0
19.2 19.2
~~19.05~~ ~~19.00~~
19.25 9.10
15
-08

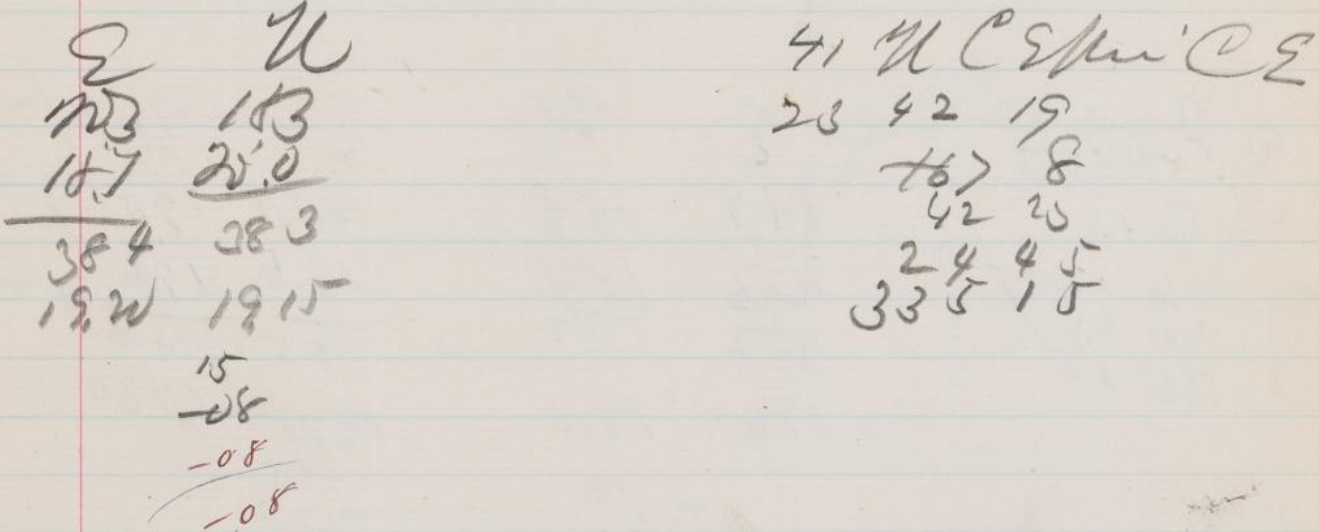
72 Pegasi
23 28 53
41 25
30 40
11 43
34 8 17

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1881phae.proj.1412B

Reversed.





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1881phae.proj.1412B

Dec 25

R A & Decl. C.E.

ψ Pegasi
23 46 26

ρ Cassi
23 48 27

14 27
42 23
23 56

56 10
42 23
14 27
345 33

ω Piscium
23 53 13
+6 12
42 23
36 11

Σ	M	Σ	M
189	185	190	190
203	184	195	196
392	182	385	186
19.60	19.10	19.25	1930
	−50	45	
	−25	−.22	
	1	−.25	
		−.24	

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1881phae.proj.14128

Dec 25

M. C. York

α Hydrae

0 2 15

+2 +26

β Corvi

0 2 50

+2 +30

22 Hydrae

0 4 9

+4 +25

γ Pegasi

0 1 1

+1 4 31

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1881phae.proj.1412B

Dec. 25 — N. R. Va., N. C.

12 Cyg
0 23 59
−4 37

x Cor 2
0 26 16
+62 16

π Andr
0 30 02
+33 4

σ Andr
0 02 59
+30 12

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1881phae.proj.14128

Dec. 26—27 7.A.R. Obs. drawn thin lenses with Eq.

Venus South

20 20 40 45 30 30 40 45 2 2 45 40 30 20
p p p p f f f f f f f f

10 & 12 Obs.

Venus North

20 30 2 2 30 20 30 20
f f f f p p f f

S.C.C. Obs. Venus with Eq.

Venus South

20 20 40 45 2 2 45 40 30 20
f f f f f f p p p p

1 = Eq. 5

5 lost lost
6 lost lost lost

After this 1 stroke for 2'

7 8 9 10 11 12 13 lost 40 f

Venus north

10 20 30 45 2 2 45 60 30. 20

Count-backs from end of series.

With W. Eq.
S.C.C. Obs.

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1981phae.proj.14128

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1881phae.proj.1412B

Dec 30, 1882

R. T. Circle E R. T.
E Piscium B Andron
0 56 55 1 3 6
+35 8 +7 23

W. A. R. W. A. R.

R. T. M. C.
Level 0 Piscium
14 5m 1 39 15
E W +8 34
20.1 19.6

W. V. B.

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1881phae.proj.1412B

Dec. 30, 1882

R.T.
Polaris

W.A.R. obs. 1 2 & 5
W.V.73. " 3 & 4
3 taps for 1, 2, & 5
long tap for 3 & 4

M.C.
Polaris

A_{30} to 7_0

W.A.R.

M.C.
α Trianq.
1 46 28
+29 0

W.V.73.

M.C.
γ Androm
1 56 45
+41 46

W.V.73

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1881phae.proj.1412B

Dec. 30, 1882

M. C.

~~α Trian.~~

~~1 46 25~~

~~+29 0~~

α Arietis

2h 0m 40 +22 54

W.V.B.

M. C.

~~β Andron.~~

~~+ 56 45~~

~~+41 46~~

β Trian.

2h 2m 40 +34 26

W.V.B.

M. C.

η Eridani

2 50 45

−9 22

W.A.R.

2h 55m R.T.

Level

E W

21.2 19.2

20.5 19.8

17 10

~~14~~ 19.50

20.85

1 35

− 0.68

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1881phae.proj.14128

Dec. 30, 1882

M. C.
η Persei
2 42 10
+55 24

W.A.R.

~~R.T.~~ M. C.
τ Persei
2 46 —
+52 17

W A.R

M. C.
α Ceti
2 56 10
+3 38

W.A.R.

M.C.
β Persei
3 0 40
+40 30

W.A.R.

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1881phae.proj.1412B

Dec. 30, 1882

Circle W. R. T.

3 Arietis

3 8 10

+20 37

338 13

W. A. R

A B C D E

3h 10m R. T.

& Level

E W

19.7 20.9

22.5 18.2

22 391

21.10 19.5-5

1.5-5

−0.78

3h 25m Level

E W

20.8 19.8

20.3 20.1

11 399

20.55 19.95

.60

−0.30

R. O.

ε Eridani

3 27 15

−9 5-2

307 45

W. A. R.

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1881phae.proj.14128

Dec 30, 1882

R. T.
α Persei
3 15 50
+49 26
+7 3

A B C D E

W. A. R

R. T.
2 H. Cam.
3 19 30
+59 31
17 8

B C D

W. A. R.

3h 30m
Reversed

Circle now
is W.

Circle W.
R. T.
Gr 716
3 32 —
+62 49
339 33

B. C. D

W. A. R.

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1881phae.proj.1412B

Dec. 30. 1882

R. T.
δ Persei
3 34 30
+47 24
354 59

B. C. D.

W. A. R.

3h38m R. T.
Level
E W
21.5 19.0
20.2 20.3
17 393
20.85 19.65
120
−0.60

R. T.
γ Eridani
3 52 28
−13 51
56 14

A B C D E

W. A. R.

R. T.
Gr 750
~~8 5~~
3 59 —
+85 14
317 9

B C D

W. A. R.

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1881phae.proj.1412B

Dec. 30, 1882

R. T.
4 Tauri
3 40 25
+23 44
18 39

R. T.
Z Persei
3 46 30
+31 32
10 51

B. C. D.

W. A. R.

A B C D E

W. A. R.

R. T.
3h 10m Level
E W
20.9 19.8
22 84 18.12
33 37 ~~17.9~~ 0
21.65 ~~21.85~~ ~~18.95~~ 19.00
~~290~~
~~1.45~~ 265
— 1.33

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1881phae.proj.1412B

After adjustment in azimuth and level.

Jan. 1

~~Dec. 3~~, 1882

Circle E

R. T.

Polaris

C only

long taps for each wire preceded & followed by rattles.

W.V.B.

M.C.

Polaris

A_4 to 5_2

lost 1st " tap.

W.V.B.

M.C.

β Arietis

1 48 —

+20 14

W.V.B.

M.C.

γ Arietis

2 32

+21 27

W.A.R.

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1001phae.proj.1412B

Jan. 1, 1883

M.C.
o Piscium
1 39 —
+8 34

W.V.B.

M.C.
δ Trian.
1 46 —

W.V.B.

M.C.
δ Ceti
2 33 30
−0 10

W.A.R.

M.C.
o Persei
2 36
+48 43

W.A.R.

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1881phae.proj.1412B

Jan 1, 1883 R.T.

M.C.

η Ceti

2 38 40

+9 37

E	W
20.0	21.2
21.1	20.2
41.1	41.4
20 55	20 70
	15
	+.07

W. A. R.

M.C.

η Persei

2 42 15

+5 5 25

W. A. R.

Lenel R.T.

E	W
19.4	21.9
21.1	20.2
05	21
20.25	21.05
	.80
	+.40

M.C.

48 H Cephei

3 5 25

+77 18

Rej.

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1001phae.proj.1412B

Jan. 1, 1883

M.C.
47 H. Cephei
2 50 —
+78 57

M.C.
β Urs. Min L.C.
14 51 —
+105 22

A_{40} to 6_0

W. A. R.

W. A. R.
A_{+1}

Three observations reduced give

W. N. B

$o = -2\ 34.52 + 15 - 09 - 2\ 35.01$
$34.80 + 05 - 35\ \ 35.15$
$34.83 + 37 - 23\ \ 35.06$

$6 = +848 + 36\ n = -63$
$47m + 2\ 35.07$
$n = \quad +33$
$2\ 34.74$

W. A. R.

$o = -2\ 34.81 + .39 - .18 - 2\ 34.99$
$34.88 + .00 + 0\ \ 34.88$
$34.64 + 1.14 - .52\ \ 35.16$
$34.84 + 1.17 - .08\ \ 35.02$
$34.59 + 1.45 - .67\ \ 35.26$

$+2\ 35.08$
$+37$
$+2\ 34.71$

$o = -2\ 7.43 + 43.57$

$o = +27.4 + 43.38$

$n = -.63$

	n	$47m + 2$
N. B	−.63	+2 34.74
W. A. R	−.46	34.71
	−.51	2 34.73

$o = -2\ 32.724510$

$o = +20.7 + 4.97$

$n = -.46$

$m = -24 + 61 = +37$

$a = \frac{\text{[illegible]} - n}{\text{[illegible]} - n \sec\varphi} = -16 + 68 = +.52$

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1881phae.proj.1412B

Jan 1 1883

n

	1873	1876	Mean	
Jan	+.4[s]	+.0	+.2	+.3[s]
Feb	+.3	−.1	+.1	+.4
Mar	+.3	−.1	+.1	+.4
Apr	+.1	−.2	−.1	+.2
May	−.1	−.4	−.2	+.1
Jun	−.3	−.7	−.5	−.2
Jul	−.4	−.8	−.6	−.3
Aug	−.4	−1.0	−.7	−.4
Sept	−.3	−.9	−.6	−.3
Oct	−.2	−.7	−.4	−.1
Nov	+.1	−.6	−.3	+.0
Dec	+.2	−.5	−.2	+.1
			−.3	

It showed the obs[n] = +.3[s] in order that the mean value for the year should be = 0

with h = −.18[s]

a = h tan φ − n sec φ

a showed be = obs[n] −.16 −.67 = −.83

Line a is now = +.52[s]

It must be Changed to +1.35[s]

1991phae.proj.1412B

Dec 1 1883

Diameter of Venus with Wm Eq.
Levingood.

10°	10°	v	v	10°	10°
pr	f.	b	b	pr	f.

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1881phae.proj.1412B

Dec- 21, 1882

M. C.
π Androm-
0 30 40
+33 4

M. C.
ε Androm-
0 32 20
+28 40

W. V. B.

W. V. B.

R. Y.
ζ Androm.

Rej. Obs.

R. Y.
$\overset{h}{0}\ \overset{m}{48}$ Sevel
E. W.
19.8 21.2
21.2 19.4
10 06
20.50 20.30
- 20
- 0.10

W. A. R.

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1991phae.proj.1412B

Dec. 21, 1882

M. C.
S Andrm -
0 33 10
+ 30 13

M. C.
0 Cass.
0 38 20
+48 38

N. O. B.

Amby — lost 1st w.

N. O. B.

Circle W.
R. T.
r Cass.
0 49 34
-17 41

W. A. R.

0h 5m 2 Level

E. W.
21.0 198
20.0 207
10 05
20.50 20.25
.25
-0.12 -10
-12
+25
W. A. R. +01

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1881phae.proj.1412B

Dec. 21, 1882

Circle W.

R. T.

E Piscium.

0 56 53

324 52

W. A. R.

R. T.

B Androm.

1 3 6

35-2 37

W. A. R.

Circle E.

R. T.

Level.

E. W.

21.2 19.6

19.1 21.8

03 14

20.15 20.70

.53

+0.28

Circle E.

R. T.

Polaris

1 15 —

313 42

W. A. R. obs of wires 1, 2, 4 5 —

W. V. B. " " " 3 4 4

5 strokes for wires 1. 2, 4 5

long " " " 3 4 4

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1991phae.proj.14128

Dec. 21 - 1882

Circle W.

R. T.

T Piscium

1 5- 8

347 5-

W. A. R.

Reversed -

1h 8m

M. C.

Polaris,

1 15- —

+88 41

W. A. R.

A3 to 7

1h 23m Circle E.

Level

E.	W.
20.1	20.9
21.1	19.6
12	7
20.60	20.35-
25-	
-0.12	

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1881phae.proj.1412B

Jan. 2, 1883

R.T. Circle E
Polaris

C 1 2 4 5
long breaks
W.V.B.

M.C.
Polaris

A_{41} to 5_2

lost 1st 2 taps
W V B

M.C.
β Arietis
1 48 11
+20 14

W.V.B.

M.C.
50 Cass
1 53 28
+71 51

lost A_{+1}
W.V.B.

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1881phae.proj.1412B

Jan 2, 1883

M.C.
μ Piscium
1 25 13
+14 45

W.V.B.

M.C.
ο Piscium
1 39 13
+8 34

W.V.B.

M.C.
α Draco. L.C.
14 1 13
+115 4

W.V.B.

M.C,
3' Ceti
2 6 48
+8 18

W.V.B.

Focus ~~very~~ bad in M.C. in all preceedg stars, especially on last star which was the only one on which it bothered me

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1881phae.proj.1412B

Jan. 2, 1883 Circ. W

R.T.
c Cass
2 19 24
+66 53
24 30

W.A.R.

B C D
lost 1st " w of B

R.T.
ζ² Ceti
2 21 56
+7 56
325 33

W.A.R.

R.T.
ν Arietis
2 32 56
+21 27
339 4

W.A.R.

R.T.
δ Ceti
2 33 29
−0 11
317 26

B C D
lost 1st " 2 w

W.A.R.

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1881phae.proj.1412B

Jan 2, 1883

2^h 2.5^m R. T.
Level

E	W
20.5	21.0
19.8	22.0
3	30
20.15	21.50
	135
	+ 0.68

R. T.
36 H Cass
2 26 56
+72 18
29 55

W. A. R.

~~R. T.~~

Rej.

R. T.
$2^h 38^m$ Level

E	W
19.2	22.1
20.8	20.9
00	30
20.00	21.50
	150
	+ .75

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1881phae.proj.1412B

Reversed

Jan. 2, 1883 (Circle E)

level after reversal

E	W
19.9	22.0
20.8	21.1
7	31
20.35	21.55
	120
	+.60

R. T. Circ E,
41 Arietis
2 43 6
+26 47
15 36

W. A. R.

R. T.
ρ Persei
2 57 41
+38 23
4 02

W. A. R.

R. T.
β Persei
3 03 4
+40 30
1 53

W. A. R.

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1881phae.proj.1412B

Jan. 2 1883

R. T.
47 H. Cephei
2 50 35
+78 57
323 26

W. A. R.

R. T.
α Citi
2 56 10
+3 38
38 45

W. A. R.

Changed the level at 3h 5m

R. T.
Level

E	W
22.0	19.8
21.2	20.7
32	5
21.60	20.25
135	
−0.68	

repeated

E	W
20.9	20.9
22.2	19.7
31	06
21.55	2030
125	
−0.62	

after changing

E	W
9.0	33.0
5.8	36.2
148	92
7.40	34.60
	27.20
	+13.60

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1881phae.proj.1412B

Jan. 2, 1883
Circle E

E	W
5.8	36.1
8.~~6~~	33.0
14 4	91
7.20	34,55
	27.35
	+13.68

R. T.
α Persei
3 15 58
+49 27
352 56

A B C D E
W. A. R.

R. T.
f Tauri
3 24 25
+12 32
29 51

W. A. R.

Reversed

R. T. Circle W.
ε Eridani
3 27 25
−9 51
307 46

C only

W. A. R.

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1881phae.proj.14128

Jan. 2, 1883

R. T.

o Tauri

3 18 31

+8 37

33 46

W. A. R.

R. T.

2 H Camel.

3 19 36

+59 32

342 51

lost.

V. 3430m Sewel

E	W
4.7	38.3
9.8	32.1
14.5	10.4
7.25	35.20
	27.95
	+ 13.98

~~3 3~~ R. T.

δ Persei

3 34 36

+47 25

5 12

W. A. R.

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1881phae.proj.1412B

Jan. 2, 1883

R. T.

5 H. Camel.

3 38 1

+70 58

28 35

W.A.R.

R. T.

η Tauri

3 40 32

+23 45

341 22

W.A.R.

M. C.

ζ Persei

3 46 47

+31 32

ζ hrs. min

15 48

101 51

W.A.R.

M. C.

ε Persei

3 50 0

+39 40

lost

W.A.R.

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1991phae.proj.14112B

Jan. 2, 1883

M.C.

T^6 Eridani

3 41 49

−23 36

R.T Circl. W.

Level

E	W
9.6	32.8
4.1	38.2
13.7	11.0
6.85	35.50
	+28.65
	+14.32

W.A.R.

M.C.

γ Eridani

3 52 34

−13 51

M.C

λ Tauri

3 54 11

+12 10

W.A.R.

W.A.R.

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1881phae.proj.1412B

Jan. 2, 1883
M.C.
Gr. 750
4 0 14
+ 8 5 15

~~30.0 10.4~~
~~30.0 10.2~~

Level
	W
30.0	10.4
30.0	10.2
30.00	10.30
19.70	
− 9.85	

A 30 to 7.

W.A.R.

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1881phae.proj.1412B

Jan 3, 1883

M. C.
Polaris

$A_{4,}$ to $5''_2$

W.V.B.

M. C.
α Piscium
1 25 13
+14 44

A_3 & C

W.V.B.

M. C.
δ Trianj.
1 46 25
+29 0

Chf ?

M. C.
γ Androm.
1 56 43
+41 46

W.V.B.

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1881phae.proj.1412B

Jan. 3, 1883

M.C.
υ Persei
1 30 49
+48 2

W.V.B.

M.C.
τ Ceti
1 39 13
−16 33

W.V.B.

M.C.
α Arietis
2 0 35
+22 55

W.V.B.

M.C.
β Triang.
2 2 35
+34 26

W.V.B.

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1881phae.proj.1412B

Jan. 3, 1883 Circle W

M.C.

55 Cass.

2 5 19

+65 58

R.T.

Cass

2 19 26

+66 53

24 30

W.V.B.

B C D

W.A.R.

R.T.

36 H. Cass.

2 26 56

+72 18

29 55

2h 30m R.T.

Level

E	W
17.9	22.1
19.6	20.7
175	28
18.75	21.40
	2.65
	+ 1.33

W.A.R.

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1881phae.proj.1412B

Jan. 3, 1883

R. T.
ζ^2 Ceti
2 21 56
+7 56
325 33

W. A. R.

R. T. Level
$2^h 25^m$
E W
18.6 21.7
18.7 21.6

18.65 21.65
3.00
+ 1.50

R. T.
ν Arietis
2 32 56
+21 27
339 4

W. A. R.

R. T.
σ Persei
2 36 13
+48 44
6 41

W. A. R.

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1881phae.proj.1412B

Jan. 3, 1883

Circle E.

Reversed

R. T.
Level after reversal

E	W
18.1	21.8
19.6	20,6
177	24
18.85	21.20
	2.35
	+1,18

2h 40m

Repeating

E	W
19,3	20.7
18,2	21.7
15	4
18.75	21,20
	2.45
	+1,22

R. T.
47 H. Cephei
2 50 35
+78 57
323 26

W. A. R.

R. T.
α Ceti
2 56 10
+3 38
38 45

W. A. R.

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1881phae.proj.1412B

Jan. 3, 1883

R. T.
41 Arietis
2 43 6
+26 47
15 36

24 47m Level

E	W
18.5	21.6
19.7	20.4
½	0
19.10	21.00
	1.90
	+0.95

W. A. R.

R. T.
ρ Persei
2 57 41
+38 23
4 0

34 0m R. T. Level

E	W
20.3	19.8
18.5	21.4
3 8 8	1 2
19.40	20.60
	1.20
	+0.60

W. A. R.

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1881phae.proj.1412B

Jan. 3, 1883

R.T.
β Persei
3 0 34
+40 30
1 53

Changed the level at $3^h 3^m$

W.A.R.

Bar in zenith over R.T. in the way.

R.T.
α Persei
3 15 58
+49 27
352 56

W.A.R.

R.T.
o Tauri
3 18 31
+8 37
33 46

W.A.R.

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1881phae.proj.1412B

Jan. 3, 1883

Circ. E. 3h 10m

R. T.
48 H Cephei
3 5 31
+77 18
325 5

R. T. Level

E	W
29.3	10.8
30.3	10.2
596	10
29.80	10.50
19.30	
− 9.65	

W. A. R.

R. T.
2 H Camel
3 19 36
+59 32
342 51

C

W. A. R.

R. T. 3h 23m Level

E	W
30.0	10.4
30.0	10.2
30.00	10.30
19.70	
− 9.85	

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1881phae.proj.1412B

Jan. 3, 1883

Circle E
R. T.
φ Tauri
3 24 25
+12 32
29 51

W.A.R.

Reversed

Circle W
R. T.
ε Eridani
3 27 25
-9 51
307 46

W.A.R.

R. T.
δ Persei
3 34 36
+47 25
5 12

W.A.R.

R. T.
5 H. Camel
3 38 1
+70 58
28 35

W.A.R.

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1881phae.proj.1412B

Jan. 3, 1883

3h 30m R. T.

Level

E	W
26.0	14.2
32.9	7.1
5 8 9	2 1 3
29.45	10.65
18.80	
−9.40	

Repeated

E	W
33.0	7.1
27.1	13.1
01	02
30.05	10.10
19.95	
−9.98	

R. T.

α Tauri

3 40 32

+23 45

341 22

W. A. R.

M. C.

ζ Persei

3 46 47

+31 32

W. A. R.

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1881phae.proj.1412B

Jan. 3, 1883

M.C,
ζ Urs. Min L.C
15 48
101 51

M.C.
ε Persei
3 50 0
+39 40

3 middle W.

W.A.R.

W.A.R.

M.C.
ζ Gr 750
4 0 141
+85 15

A_{3_0} to 7_0

W.A.R

after Mr. Clark finished the adjustment in azimuth + level, observed the level + found it to be +0.s01

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1881phae.proj.1412B

Jan. 3, 1883

M.C.
γ Eridani
3 52 34
−13 51

W.A.R.

M.C.
λ Tauri
3 54 11
+12 10

W.A.R.

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1881phae.proj.1412B

Jan. 4, 1883

Circ. W

R. T.
Level
E W
18.7 22.6
22.6 18.9
13 15
20.65 20.75
.10
+.05

W. A. R.

R. T.
Cass
2 19 26
+66 53
24 30

W. A. R.

67 Oct. M.C. 2d " Obs. W. V. 13.

R. T.
36 H. Cass
2 26 56
+72 18
29 55

C 345

W. A. R.

Level
E W
18.7 23.9
22.4 20.1
11 40
20.55 22.00
1.45
+0.72

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1881phae.proj.1412B

R. T.
ζ^2 Ceti
2 21 56
+7 56
325 33

W. A. R.

Level
E W
21.6 20.7
18.6 23.8
02 45
20.10 22.25
2.15
+1.08

R. T.
ν Arietis
2 32 56
+21 27
339 4

C 2345

W. A. R.

& R. T.
δ Ceti
2 33 29
−0 11
317 26

W. A. R.

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Jan. 4. 1883

Circ. W

R. T.

θ Persei

2 36 13

+48 44

6 41

Level

E	W
22.7	20,3
19.9	23.4
26	37
21.30	21.85
	.55
	+0,28

W. A. R.

Level

E	W
19.9	23.4
23.9	19.8
38	32
21.90	21.60
.30	
−0.15	

R. T.

47 H Cephei

2 50 55

+78 57

323 26

W. A. R.

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Reversed

Jan. 4, 1883

Level Circ. E

E	W
23.3	19.8
19.4	23.8
27	36
21.35	21.80
	.45
	+0.22

L

~~E W~~

~~19.9 23.4~~

R. T.

41 Arietis

2 43 6

+26 47

15 36

W. A. R.

R. T.

2 Ceti

2 56 10

+3 38

38 45

W. A. R.

R. T.

ρ Persei

3 57 41

+38 23

4 00

W. A. R.

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1881phae.proj.1412B

Jan. 4, 1883

R. T.
β Persei
3 0 34
+40 30
1 53

W.A.R.

Level
E W
24.1 19.6
19.8 23.9
39 35
21.95 21.75
20
-.10

M. C.
Tauri
3 24 25
+12 32

Chf.
W.A.R.

M. C.
ε Eridani
3 27 27
-9 51

W.A.R.

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1881phae.proj.1412B

Jan. 4, 1883

M. C.
48 H Cephei
3 5 31
+77 18
~~325 5~~

lost 1st ″ 2 w.

W.V.B.

M. C.
o Tauri
3 18 32
+8 37

W.A.R.

M. C.
δ Persei
3 34 36
+47 25

W.A.R.

M. C.
ρ Persei
3 37 18
+42 13

W.A.R.

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1881phae.proj:1412B

M. C.
n Tauri
3 40 34
+23 45

M. C.
9 H Camel.
3 47 14
+60 46

W. A. R.

W. A. R.

M. C.
δ Tauri
4 16 13
+17 16

M. C.
ε Tauri
4 21 49
+18 55

W. V. B.

W. V. B.

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1881phae.proj.1412B

M.C.
ζ Persei
3 51 25
+35 27

M.C.
λ Tauri
3 54 14
+12 9

W.V.B.

W.V.B.

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1881phae.proj.1412B

88
2

sec
88
28
24
72
212

88
1
20
171
247
312
599

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