KG
11366
v.561

1883ohma.proj.1565.

Polaris
Observations and Reductions
From Mar 22 1883 to Nov. 11 1883
B2

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

1883phae.proj.1565.

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

1883phae.proj.1565.

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

1883phat..proj..1383.

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

1883phae.proj.1565.

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

1883phmc.proj.1565.

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

1883phae.proj.1565.

Observations of Polaris from Mar 22 1883 to Nov 11 1883

1883 Mar. 22 Polaris.

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

1888phae..proj.1565.

2

1883 Mar. 23

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

1883phae.proj.1565.

1883 Mar. 24

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

1883phae.proj.1565.

4

1883 Mar. 25

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

1883phae.proj.1565.

1883 Mar. 26

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

1883phae.proj.1565.

6

1883 Mar. 25

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

1883phae.proj.1565.

1883 Mar. 29

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

1883phae.proj.1565.

1883 Mar. 21

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

1883phae.proj.1565.

1883 Apr. 1

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

1883phae.proj.1565.10

1883 Apr. 2

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

1883phae.proj.1565.

1883 Apr. 3/4

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

1883phae.proj.1565:

12

1883 Apr. 4

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

1883phae.proj.1565.

1883 Apr. 5/6

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

1883phae.proj.1565

14

1883 Apr. 8/9

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

1883phae.proj.1565.

1883 Apr. 9/10

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

1883phae.proj.1565.16

1883 Apr. 11/12

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

1883phae.proj.1565.

1883 Apr. 13/14

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

1883phae.proj.1565.

18

1883 Apr. 14
13

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

1883phae.proj.1565.

1883 Oct. 15/16

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

1883phae.proj.1565.

20

1883 Apr. 16
17

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

1883phae.proj.1565.

1883 Apr. 17
18

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

1883phae.proj.1565.

22

1883 Apr. 18

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

1883phae.proj.1565.

1883 Apr. 20

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

1883phae.proj.1565.

24

1883 Apr. 24

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

1883phae.proj.1565.

1883 Apr. 25

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

1883phae.proj.1565.

26

1883 Apr. 26

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

1883phae.proj.1565.

1883 Apr. 29

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

1883phae.proj.1565.

28

1883 Apr. 30

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

1883phae.proj.1565.

1883 May 6

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

1883phae.proj.1565.

30

1883 May 7

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

1883phae.proj.1565.

1883 May 9.

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

1883phae.proj.1565.12

1883 May 10

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

1883phae.proj.1565.

1883 May 11

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

1883phae.proj.1565

34

1883 May 12

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

1883phae.proj.1565.

1883 May 13

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

1883phae.proj.1565:

36

1883 May 15

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

1883phae.proj.1565.

1883 May 16

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

1883phae.proj.1565

38

1883 May 16

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

1883phae.proj.1565.

1883 May 14

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

1883phae.proj.1565.

40

1883 May 17

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

1883phae.proj.1565.

1883 May 18

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

1883phae.proj.1565.

12

1883 May 18

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

1883phae.proj.1565.

1883 May 24

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

1883phae.proj.1565

1883 May 25

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

1883phae.proj.1565.

1883 May 25

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

1883phae.proj.1565.16

1883 May 27

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

1883phae.proj.1565.

1883 June 2

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

1883phae.proj.1565

48

1883 Dime 4

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

1883phae.proj.1565.

1883 June 5

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

1883phae..proj..1565.

50

1883 Jones

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

1883phae.proj.1565.

1883 June 12

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

1883phae.proj.1565.

52.

1883 June 13

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

1883phae.proj.1565.

1883 June 14

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

1883phae.proj.1565.

1883 June 14

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

1883phae.proj.1565.

1883 June 10

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

1883phae.proj.1565

53

1883 June 15

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

1883phae.proj.1565.

1883 June 16

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

1883phae.proj.1565

58

1883 June 17

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

1883phae.proj.1565.

1883 June 20

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

1883phae.proj.1565.

60

1883 June 21

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

1883phae.proj.1565.

1883 June 22

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

1883phae.proj.1565.

1883 June 22

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

1883phae.proj.1565.

1883 June 23

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

1883phae..proj..1565.

64

June 24 1883

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

1883phae.proj.1565.

1883 June 25

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

1883phae.proj.1565.6

1883 June 28

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

1883phae.proj.1565.

1883 June 30

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

1883phae.proj.1565

68

1883 June 30

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

1883phae.proj.1565.

1883 July 1

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

1883phae.proj.1565.

70

1883 July 1

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

1883phae.proj.1565.

1883 July 2

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

1883phae.proj.1565.

72

1883 July 3

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

1883phae.proj.1565.

1883 July 4

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

1883phae..proj.1565.

74

1883 July 5

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

1883phae.proj.1565.

1883 July 6

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

1883phae.proj.1565.76

1883 July 6

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

1883phae.proj.1565.

1883 July 7

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

1883phae.proj.1565..

78

1883 July 9

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

1883phae.proj.1565.

1883 July 10

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

1883phae.proj.1565.

80

1883 July 10

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

1883phae.proj.1565.

1883. July 11

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

1883phae.proj.1565.62

1883 July 11

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

1883phae.proj.1565.

1883 July 12

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

1883phae.proj.1565.

84

1883 July 14

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

1883phae.proj.1565.

1883 Aug. 26

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

1883phae.proj.1565.

56

1883 Aug 27

11	15.7		3	40.6
	21.2	11 22.5		
	27.7		5	15.2
	48.5			
	54.1	11 53.5	6	39.4
	57.8			
12	17.1		8	5.6
	20.9	12 22.0		
12 21.98	28.0		9	32.8
	45.5			
	52.4	12 51.8	23	38.0
	57.6			
13	14.5		25	17.5
	21.7	13 21.1		
	27.2		26	33.8
	45.4			
	51.0	13 51.6	27	42.2
	58.5			
14	15.2		28	56.2
	21.0	14 21.1		
	27.0			
	44.2			
	51.0	14 51.2		
14 51.74	58.4			
15	15.0			
	21.5	15 21.7		
	28.7			
	47.0			
	53.0	15 53.1		
	59.2			
16	15.5			
	20.9	16 20.9		
	26.4			
	46.0			
	51.6	16 51.6		
	57.0			
17	15.7			
	20.0	17 20.0		
17 20.76	24.3			
	45.2			
	50.4	17 50.3		
	55.2			
18	15.6			
	20.5	18 21.0		
	27.0			
	43.5			
	49.1	18 49.5		
	56.0			
19	14.0			
	19.7	19 20.4		
	26.5			
	42.2			
	49.8	19 49.2		
19 49.06	55.5			
20	15.2			
	19.0	20 19.1		
	23.0			
	42.5			
	46.8	20 47.3		
	52.5			
21	12.6			
	18.3	21 18.3		
	24.0			
	40.3			
	48.3	21 47.3		
	53.4			
22	14.0	18.8		
	18.2	22 19.0		
22 18.00	24.3			
	41.3			
	48.0	22 47.4		
	52.8			
23	10.6			
	18.0	23 17.2		
	25.9			

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

1883phae.proj.1565.

1883 Aug. 31

	11	22.0		45	(59.3)
		27.8	11 27.2		
		31.7		46	23.7
		53.0			
		58.9	11 58.5	10	0.5
	12	3.6			
		22.0		23	58.4
		24.4	12 26.5		
12 26.40		33.0		26	14.0
		47.1			
		54.2	12 53.5	27	51.6
		59.2			
	13	19.3		29	10.8
		27.0	13 26.3		
		32.5		30	9.1
		44.0			
		54.8	13 54.5	31	22.8
	14	0.7			
		21.0		32	21.7
		25.3	14 25.8		
		31.0		33	34.9
		51.2			
		53.5	14 54.3	34	27.5
14 55.50		58.1			
	15	20.3		36	29.3
		27.9	15 26.9		
		32.6		37	26.0
		49.4			
		56.7	15 56.0		
	16	2.0			
		19.3			
		24.3	16 24.8		
		30.2			
		48.5			
		55.6	16 55.0		
	17	0.8			
		20.6			
		23.0	17 24.9		
17 25.26		31.0			
		52.8			
		55.2	17 55.3		
		56.8			
	18	21.0			
		25.0	18 25.5		
		30.4			
		50.5			
		55.8	18 55.6		
		59.6			
	19	19.4			
		25.1	19 25.3		
		31.3			
		50.6			
		57.0	19 57.0		
19 55.84	20	3.4			
		18.4			
		23.2	20 23.9		
		30.0			
		51.7			
		58.5	20 57.4		
	21	2.0			
		15.5			
		25.7	21 23.5		
		29.2			
		49.6			
		56.0	21 56.2		
	22	2.9			
		19.7			
		24.8	22 25.2		
22 25.08		31.0			
		49.0			
		56.3	22 55.6		
	23	1.5			
		19.9			
		24.9	23 24.9		
		30.0			

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

1883phae.proj.1565.

1883 Sept. 3

11	20.0		56	51.7	
	22.4	11 24.1			
	29.0		58	2.9	
	47.5				
	55.0	11 54.5	59	2.5	
12	0.9				
	18.9		10	4.4	
	24.7	12 24.6			
12 24.66	30.2		23	4.28	
	49.8				
	55.3	12 55.4	24	4.6	
13	1.2				
	18.0		25	5.58	
	25.6	13 24.7			
	30.4				
	49.6				
	54.1	13 54.1			
	58.7				
14	19.0				
	25.3	14 24.5			
	29.1				
	49.0				
	55.2	14 54.9			
14 54.16 15	0.5				
	17.3				
	22.5	15 22.9			
	29.0				
	48.6				
	54.3	15 54.4			
16	0.2				
	20.2				
	24.8	16 24.9			
	29.6				
	47.9				
	54.2	16 53.9			
	59.5				
17	17.6				
	22.4	17 23.3			
17 24.32	39.8				
	49.7				
	54.2	17 54.7			
18	0.2				
	20.2				
	24.2	18 24.8			
	30.0				
	49.0				
	53.5	18 54.1			
	59.9				
19	19.7				
	23.0	19 23.8			
	28.6				
	44.8	0.9			
19 52.86	50.2	19 52.7			
	57.6				
20	17.3				
	22.6	20 22.8			
	28.4				
	46.7				
	52.7	20 52.7			
	58.7				
21	17.3				
	23.2	21 23.3			
	28.3				
	47.8				
	53.3	21 53.2			
	58.4				
22	17.3				
22 2	21.6	22 23.1			
22 23.88	30.4				
	49.3				
	55.2	22 55.2			
23	1.0				
	18.2				
	24.5	23 24.6			
	31.2				

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

1883phae.proj.1565.

1883 Sept. 4

11	11	20.0		24	37.4
		23.7	11 24.1		
		28.7		26	18.0
		52.5			
		55.2	11 56.4	27	39.3
	12	1.4			
		20.3		28	39.0
		27.0	12 27.2		
12 25.94		34.4		29	35.5
		51.8			
		55.7	12 56.3	30	37.5
	13	1.3			
		21.3		31	49.2
		24.6	13 25.7		
		31.1		33	3.5
		53.7			
		57.3	13 57.5	34	1.8
	14	1.5			
		20.4		35	37.4
		25.6	14 27.0		
		34.1			
		49.2			
		54.8	14 54.4		
14 55.92		59.3			
	15	20.7			
		26.4	15 26.6		
		32.6			
		46.8			
		53.6	15 54.1		
	16	1.9			
		22.0			
		26.3	16 27.1		
		33.0			
		52.5			
		56.3	16 57.1		
	17	2.4			
		21.7			
		27.4	17 28		
17 26.40		31.2			
		50.3			
		56.0	17 56.6 (5.9)		
	18	1.5			
		19.9			
		25.0	18 25.1		
		30.3			
		52.4			
		57.0	18 57.5		
	19	3.2			
		20.7			
		26.5	19 26.0		
		30.7			
		51.5			
		56.2	19 56.2		
19 56.50	20	0.8			
		23.0			
		26.5	20 27.0		
		31.5			
		51.3			
		56.4	20 56.8		
		59.8			
	21	1.0			
		24.0	21 24.0		
		30.0			
		52.6			
		55.4	21 56.2		
	22	0.5			
		19.2			
		24.7	22 25.0		
22 25.00		31.1			
		51.2			
		56.2	22 56.2		
	23	1.2			
		17.0			
		23.1	23 23.6		
		30.6			

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

1883phae.proj.1565.

1883 Sept. 6

				4	5.9
				6	(58.0)
				7	4.0
				8	21.0
				9	24.7
	18	22.6			
		29.2	13 28.1	24	6.0
		32.4			
		52.6		25	31.3
		59.5	13 58.8		
	14	42.		26	40.8
		22.0			
		29.3	14 28.3	27	46.3
		33.7			
		50.3		28	37.1
		57.2	14 57.1		
	15	3.9		29	30.4
		24.8			
		30.0	15 30.1		
		35.6			
		53.6			
		57.8	15 57.6		
	16	14.			
		20.8			
		26.3	16 26.1		
		31.3			
		52.7			
		56.0	16.5 6.5 → 5.8		
	17	07.			
		20.3			
		27.4	17 27.5		
		34.1			
		50.7			
		56.3	17 56.5		
	18	22.			
		20.0			
		26.1	18 26.0		
		31.8			
		49.3			
		56.8	18 56.1		
	19	3.3			
		20.7			
		28.0	19 27.1		
		32.6			
		52.7			
		59.3	19 58.5		
	20	3.5			
		21.3			
		27.0	20 27.2		
		33.3			
		51.4			
		58.3	20 57.9		
	21	40.			
		17.8			
		24.0	21 25.0		
		33.3			
		53.6			
		58.3	21 58.4		
	22	34.			
		19.0	5.9		
		26.0	22 27.8 → 27.1		
		32.8			
		50.0			
		56.5	22 56.3		
	23	24.			
		22.7			
		27.0	23 27.5		
		32.7			

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

1883phae.proj.1565.

1883 Sept 7

11	27.2	1.2	9	50.2
	31.3	11 37.8		
	35.0		23	49.5
	56.1			
12	59	12 42.7	25	7.3
	10.2			
	27.0		26	23.0
	32.6	12 32.5		
	37.0		27	38.5
13	2.9			
	4.0	13 3.9	28	34.5
	4.8			
	24.5		29	39.0
	30.8	13 30.5		
	36.3		34	19.2
	56.5			
14	1.5	14 1.2	35	30.5
	5.6			
	23.3		36	30.0
	29.6	14 28.7		
	33.2		37	33.5
	54.2			
	59.9	15 0.6		
15	7.0			
	23.3			
	31.3	15 29.9		
	36.2			
	54.0			
	59.2	15 58.9		
16	3.5			
	23.7			
	30.3	16 29.2		
	33.7			
	50.3			
17	1.0	16 59.2		
	6.3			
	26.2			
	32.7	17 32.4		
	38.3			
	-			
	-			
	-			
	-			
18	30.2	18 33.4		
	36.9			
	56.1			
19	15	19 2.9		
	11.0			
	25.5			
	31.7	19 31.6		
	37.5			
	56.0			
20	0.1	20 0.5		
	5.3			
	25.0			
	31.6	20 30.4		
	34.7			
	53.6			
21	0.4	20 59.7		
	5.0			
	28.0			
	32.0	21 32.3		
	37.0			
	54.1			
22	2.6	22 2.4		
	7.4			
	24.5			
	28.8	22 29.5		
	35.2			
	56.1			
23	2.3	23 2.5		
	9.2			
	26.5			
	32.3	23 31.9		
	37.0			

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

1883phae.proj.1565.

1883 Sept. 9

	12	26.0		5	29.3	
		30.3	12 30.9			
		36.4		7	20.3	
		55.5				
	13	0.2	13 0.5	8	26.5	
		5.8				
		24.3		9	40.4	
		31.3	13 31.3			
13	31.58	38.3		24	51.3	
		56.2				
	14	2.5	14 2.7	26	48.0	
		9.3				
		27.0		28	10.8	
		31.9	14 32.5			
		38.6		29	23.4	
		56.0				
	15	1.3	15 1.8	30	49.4	
		8.2				
		23.5				
		27.8	15 29.3			
		36.6				
		51.8				
		58.4	15 59.5			
16	0.52	16	8.0			
		25.4				
		31.0	16 31.7			
		38.6				
		56.5				
	17	0.7	17 0.3			
		3.8				
		24.3				
		32.1	17 30.9			
		36.4				
		54.4				
		59.9	18 0.3			
	18	6.1				
		25.0				
		30.6	18 30.7			
18	31.06	36.5				
		55.4				
	19	1.6	19 1.3			
		6.9				
		26.4				
		32.0	19 32.1			
		37.8				
		55.5				
	20	0.7	20 0.9			
		6.4				
		25.3				
		30.0	20 30.4			
		35.9				
		58.7				
	21	1.5	21 0.7			
21	0.65	6.8				
		26.2				
		30.7	21 31.0			
		36.0				
		55.0				
	22	0.3	22 0.4			
		6.0				
		24.2				
		29.0				
		34.7	22 29.3			
		55.0				
	23	1.2	23 0.5			
		5.3				
		22.7				
		29.0	23 28.8			
23	29.52	34.8				
		55.0	53.5			
	23	1.2	59.3	23 4 0.5	23 4 59.3	
		5.3	24 5.2			
		22.7	26.8			
		29.0	32.5	28 4 28.5	24 5 31.6	
		33.6	35.6			

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

1883phae.proj.1565.

1883 Sept. 10

15 0.0
2.5 15 2.3
114

18 1.3
5.0 18 5.7
10.1

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

1883phae.proj.1565

1883 Sept. 11

20 29.5
22 40
23 45.5
24 55.1
26 28.4
28 11.0
29 31.7
31 6.4
32 42.0
33 53.3
35 58.6

18 —
39.2
—
27 32.1
35.2
40.2
29 50
65
80
30 33.3
37.3
42.6
—
—
—
32 47 27.9
3 37.0
46.5

19 0.4
5.0 19 5.5
11.0
30.0
34.2 19 34.7
40.0
59.3
20 4.7 20 5.2
11.6

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

1883phae.proj.1565.

1883 Sept. 26

13	11	–	56	53.0
		48.0		
		–	59	4.9
	12	10.8 –		
		15.0	12 15.3	0 22.3
		20.0 –		
		38.3		1 40.0
		43.8	12 43.7	
		49.0 –		2 38.7
	13	8.5		
		13.8	13 13.7	4 55.8
		18.8 –		
		–		6 32.5
		–		7 41.4
	14	7.0		
		13.8	14 15.1	8 46.5
		24.5 –		
		35.3		9 43.3
		46.0	14 45.3	
		51.7 –		24 0.7
	15	9.0		
		14.2	15 14.6	25 52
		20.5 –		
		36.2		25 59.0
		43.0	15 43.4	
		51.1 –		26 57.8
	16	8.8		
		16.2	16 15.8	27 54.0
		22.5 –		
		39.8		
		45.0	16 45.0	
		50.2 –		
	17	9.0		
		15.0	17 15.6	
		22.7 –		
		40.2		
		46.1	17 46.3	
		52.7 –		
	18	7.4		
		12.0	18 11.9	
		16.4 –		
		37.2		
		44.0	18 44.3 3.4	
		49.6 –		
	19	10.6		
		16.8	19 16.13	
		21.9 –		
		38.9		
		43.1	19 44.0	
		50.0 –		
	20	11.2		
		17.6	20 17.6	
		24.0 –		
		38.8		
		43.2	20 43.6	
		48.7 –		
	21	5.0		
		10.6	21 11.8	
		19.7 –		
		35.0		
		41.6	21 41.8	
		48.9 –		
	22	6.0		
		13.6	22 12.7	
		18.6 –		
		37.3		
		45.6	22 44.3	
		50.0 –		
	23	8.9		
		13.7	23 14.4	
		20.7 –		
		40.7		
		46.5	23 46.4	
		52.0 –		

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

1883phae.proj.1565.

1883 Sept. 27

13	11	37.8		52	28.8
		43.0	11 43.3		
		49.1		53	2.0
	12	9.0			
		16.2	12 15.2	54	(55.0)
		20.3			
		42.3		56	15.4
		47.0	12 47.4		
		53.0		57	21.5
	13	12.3			
		16.3	13 15.9	58	39.3
		19.0			
		—		0	6.5
		—			
		—		1	34.6
	14	10.7			
		16.5	14 15.2	2	57.0
		18.5			
		38.2		3	57.3
		43.3	14 43.6		
		49.3		5	3.8
		—			
		—		6	31.9
		—			
	15	36.9		7	(43.6)
		44.0	15 44.0		
		51.0		9	1.3.0
	16	7.7			
		12.5	16 13.1	10	22.4
		19.2			
		—			
		—			
		—			
	17	12.0			
		15.0	17 14.8		
		17.4			
		39.0			
		41.4	17 43.6 2.6		
		43.0			
		47.0			
		—			
		—			
		—			
	18	35.9			
		42.5	18 42.2		
		48.3			
	19	9.6			
		14.0	19 13.9		
		18.1			
		39.0			
		43.3	19 43.3		
		47.5			
	20	11.4			
		15.1	20 15.6		
		20.2			
		40.0			
		45.4	20 44.9		
		49.3			
	21	6.0			
		10.7	21 12.1		
		19.5			
		37.5			
		42.2	21 43.4		
		50.6			
	22	10.4			
		15.5	22 15.9		
		21.8			
		40.8			
		47.5	22 46.9		
		52.3			
	23	7.8			
		12.6	23 12.9		
		18.3			
		37.1			
		43.0	23 43.2		
		49.5			

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

1993phae.proj.1565.

1883 Oct. 1

53 21.8
54 13.6
54 55.1
55 37.5
56 2.2
57 13.2
58 44.6
59 38.5
0 30.3
1 37.8
2 36.0
3 42.4
4 44.0
24 9.0
33 11.2
34 2.1
34 58.2

2 41.4
46.2
51.4
4 31.7
32.3
22.7
- - - - - - - - -

2

23 9.3
14.6 23 1 50
21.0

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

1883phae.proj.1565.98

1883 Oct. 3

11	44.2		52	28.0
	51.5	11 51.2		
	57.8 -		54	48.2
12	16.3			
	22.5	12 22.0	55	59.0
	27.3 -			
	46.8		57	13.0
	50.6	12 51.5		
	57.0 -		58	23.0
13	17.3			
	22.1	13 21.7	59	34.3
	25.7 -			
	45.6		0	47.7
	58.0	13 50.8		
	56.7 -		1	56.2
14	13.5			
	19.3	14 19.0	2	58.1
	24.3 -			
	44.8		4	17.0
	50.7	14 51.2		
	58.1		5	18.4
15	16.2			
	21.6	15 22.2	6	24.2
	28.7 -			
	45.0		7	53.4
	51.7	15 51.4		
	57.4 -		9	18.0
16	15.0			
	21.3	16 20.9	10	42.6
	26.5 -			
	44.5		24	13.5
	49.4	16 50.1		
	56.4 -		25	22.2
17	16.3			
	21.8	17 22.1	26	13.1
	28.2 -			
	49.7		27	16.0
	54.6	17 54.9		
18	0.3 -		28	33.4
	-		29	24.6
	-			
	-		30	28.7
	-			
	-		31	45.0
	-			
	-		32	39.0
	-			
19	49.1		33	40.0
	53.5	19 54.6		
20	1.3 -			
	17.6			
	23.0	20 22.7		
	27.5 -			
	46.9			
	50.8	20 51.2		
	56.1 -			
21	15.2			
	23.4	21 22.5		
	29.0 -			
	46.5			
	51.9	21 52.5		
	59.0 -			
22	16.3			
	22.1	22 22.1		
	25.0 -			
	45.2			
	51.2	22 51.3		
	57.5 -			
23	16.0			
	22.4	23 22.5		
	29.1 -			
	47.7			
	53.5	23 53.6		
	59.6 -			

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

1883phae.proj.1565.

1883 Oct. 4

						52	34
						53	25.5
						55	38.5
			12	48.9		56	41.5
				52.0	12 52.9		
				57.9		57	56.0
			13	13.5			
				28.2	13 21.5	59	19.0
				27.7			
				44.2		D	48.9
				55.8	13 55.2		
2	49.3		14	1.6		2	36.0
	53.9			18.0			
3	0.5			33.1	14 23.3	3	47.2
4	19.2			28.7			
	23.2			46.7		4	50.8
	28.8			51.4	14 52.4		
5	49.8			59.0		6	14.2
	54.5		15	17.1			
6	0.1			32.0	15 22.7	24	42.2
	—			29.1			
	—			49.9		25	53.9
	—			53.6	15 54.1		
	—			59.6		26	56.6
	—		16	16.8			
	—			22.7	16 23.6	28	18.4
				31.3			
				46.6		29	24.2
				52.0	16 52.2		
				58.0		31	6.2
			17	16.5			
				21.3	17 22.3	33	17.5
				30.2			
				49.4		33	18.2
				52.5	17 53.8		
				58.6		34	21.7
			18	16.8			
				21.5	18 22.8	35	54.4
				30.0			
				47.2		37	4.8
				52.7	18 53.0		
				59.1			
			19	19.1			
				34.4	19 24.4		
				29.6			
				50.3			
				54.2	19 55.1		
			20	0.8			
				19.2			
				25.2	20 24.8		
				30.0			
				48.6			
				55.5	20 55.1		
			21	1.3			
				19.2			
				24.0	21 24.6		
				30.6			
				49.7			
				55.2	21 55.5		
			22	1.6			
				20.0			
				35.6	22 25.9		
				32.2			
				51.0			
				56.7	22 56.7		
			23	2.3			
				18.6			
				25.7	23 25.1		
				31.1			
				51.2			
				56.7	23 56.5		
			24	2.5			

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

1883phae.proj.1565.100

1883 Oct. 6

13 ♯

8 23.4
24 44.8
26 5.2
37 0 38.8
39 17.6
41 1.2
42 18.5
43 37.3

7 47.8
52.6
59.2

26 59.1
27 3.7
28 20.2
25.2
31.9
29 53.8
59.5
30 5.6
31 23.4
27.2
33.5
-
-
-

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

1883phae.proj.1565.

1883 Oct. 8

h	m	s
13	5	52.4
		57.3
		11.3
		48.7
		9.9
		20.3
		41.0
		13.2
		14.7
		48.1
		16.1
		42.8
		32.0
		24.7
		53.8
		29.7
		15.2
		2.7
		45.5
17	15.3	
		17 21.7
	28.1	
	50.6	
	56.5	17 56.9
18	3.6	
		18 25.3
	28.4	
	49.2	
	55.0	18 55.5
19	2.3	
		20 27.6
	34.0	
	57.2	
	57.6	20 57.6
21	4.0	
		21 56.2
22	2.0	
	13.2	
	22.1	22 21.9
	28.4	
	48.7	
23	18.6	
	24.8	23 25.0
	30.5	
	46.3	
	54.4	23 53.7
24	0.3	

5 52.9
57.3
1.3

7 21.7
26.8
32.6

26 57.2
58.9
1.7

29 49.4
56.8
30 2.3
31 24.0
28.4
30.6

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

102

Jan 5 L.C. -43.70 Subtract 1 m from all readings
-43.70
+ .54
1883 - Oct. 9.0

h m s					
13 29	21.3		29	15.9	
	24.3	29 26.0	30	31.6	
m 29 26.0	32.5		31	49.7	m s +6.1.24 27.24
10 32.2			34	13.5	
31	48		35	12.8 ×	
	56	31.5.5			
31 5.5	62		36	6.0	+5 1.03 -53
12 2.5 32	81.0				
	81.8	32 31.7	37	3.1	
32 31.7	32.4				
13 32.8 33	56.7		37	58.7	
	59.2	34 0.5			
34 0.5	5.5		39	2.4	
13 3.1			39	59.4	

13 17 28.39
~~13 17 57.52~~
Red to B.J. — .20
13 17 ~~57.32~~ 28.19

R.A. 13 17 58.19
17 28.19
π R.A. + 30.00

13 17 58.19
— 6.05
— 23.80
+ 0.00
— 1 36.39
— 2 6.14
15 52.05
15

17 18 53.8
60.0
58.9
57.4

δ = 88 41 23 U.C
δ = 91 18 37 L.C

13 17 58 57.52
+ .67
17 58.19
~~17 28.39~~
~~+29.80~~

sin δ 9.99989
cos δ 8.35920n
tan δ 1.64068n
Sin z -72 U.C
sin z 5.75 L.C

N.A. 1 h 15 m 52.079 s +88° 41' 5.91"
B.J. 15 51.879 41 5.90
N.A. — B.J. + 0.200 + 0.01

Red. to B.J. = — .20

618.38	-694.08	-722.18	-915.98	-974.28						
2.79125n	2.84141	2.85865	2.96189	2.98868						
1.26423	1.31439	1.33163	1.43487	1.46166						
47 15.42 ×	20.38	22.78	26.12 ×	31.78 ×	34.18	36.50	40.65	43.60	48.08	50.38
— 18.38	— 20.62	— 21.46	— 27.22	— 28.95						
46 57.04	59.76	1.32	58.90	2.83						
+91 35 51.37	48.59	47.03	45.45	45.52						

-48 54 20
1.81910
+ 228
1.82139

+ 66.28	+ 66.28	+ 66.28	+ 66.28	+ 66.28
+ 4.77	+ 6.01	+ 6.50	+ 10.46	+ 11.94
— 42	— 42	— 42	— 42	— 42
+ 70.63	+ 71.87	+ 72.36	+ 76.32	+ 77.80
+91 37 1.94 ×	0.46	59.39	5.77 ×	3.32
+ .46				
+91 37 2.40	0.92	59.85	6.23	3.78
18 38.90				
— 18 23.5 ×	22.0	20.9	27.3	24.9 ×
				— .8
				24.1

Those declinations and Circle Readings marked × are those that are used in the reduction of Ray

δ +91 37 3.32
Ray — 18 25.48
Rfl + .46
Red to 1883.0 + 15.20
B Circle — 18 9.82
δ L.C +91 18 53.50
δ U.C +88 41 6.50
Corr to U.C. -.77

1883phae.proj.1565.

L.C

1883 Oct. 10.0

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

1883phae.proj.1565

Q.C

1883 Oct. 14.0

1

0	1.9	24	8.5
9	16.4	27	17.0
11	7.3	29	12.0
24	23.8	31	7.0
25	15.5	33	24.5
36	51.2	34	45.0
38	20.8	36	32.8
39	23.0	37	55.2
40	31.2		

17 48.83
17 28.55
20.28
+ 67
20.95

17 48.83
+ 67
17 49.50
17 28 35
+ 21.15

26 435
472 — m
561 — 26 48.9 13 — 14 435 — 14 48.5
9 1.9 — 487
533
15 460 — 15 49.5
490
536
29 455
510
566 — 29 54.0 — 16
31 11.3 — 12 2.5
212
272 — 31 19.9
32 466 — 13 32.8
533
593 — 32 53.1
15 3.1

17 47.0
48.5
47.1
50.0

14^m	48.5	+ 3	0.6	17	49.1
15	49.5	+ 2	0.4		F 49.9

21 140
184 — 21 18.8
21 18.8 — 240
447
490 — 21 49.4
21 49.4 — 544
22 142
197 — 22 20.1
22 20.1 — 264
440
504 — 22 50.4
22 50.4 — 567
23 170
203 — 23 21.7
23 21.7 — 278
439
496 — 23 49.7
23 49.7 — 556

17^m 48.83

21	18.8	3	30.7	17	48.1
21	49.4	4	0.8		48.6
22	20.1	4	30.9		49.2
22	50.4	5	1.0		49.4
23	21.7	5	31.1		50.6
23	49.7	-6	1.2		48.5

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

1883phae.proj.1565.

L.C

1883 Oct. 15.0

0	1.9
9	16.4
11	7.3
24	23.8
25	15.5
36	5.2
38	20.8
39	23.0
40	8.2

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

1883phae.proj.1565

Q.C.

− 43.72
− 43.72
+ .53
− .06

1883 Oct. 15 16 15.0

0	32.8 ×
1	47.5 ×
3	11.0
4	32.7
9	29.6
10	32.7
27	34.2
28	45.7
30	4.0
30	52.9
31	56.8
33	10.8

m s
17 52.82
17 28.76
24.0 ×6
+ 67
24.73

13 17 54.14
− 4.50
− 23.17
+ 2.62
−1 36.68
−2 1.73
15 52.41

13 18.0 21.7 27.1 46.5 52.2
14 13 21.0 25.2 30.0
16 15.5 23.3 31.0 49.7 56.3
17 1.8 20.7 25.2 30.0 48.5 53.7
18 0.0 20.0 24.0 29.5 47.8 52.4 56.5
19 14.9 19.7 31.4 49.0 55.2
20 1.1 19.5 24.5 31.0 49.2 55.1
21 0.5

2 48.0 2
52.0
57.6 2 52.5 (5)
4 15.7 15 3.1
21.2
28.5 4 21.8 (4)
13 32.8

8 47.7
52.0
57.0 8 52.2 (1)
9 1.9

17 55.6
54.6
54.1

48.8
10.0
12.3
48.8
52.17

13	22.3	+4	30.9	17	53.2		13 22.3
13	53.3	4	0.8	17	54.1		13 53.3
14	25.4	3	30.7	17	56.1		14 25.4
16	23.3	1	30.3	17	53.6		16 23.3
16	55.9	1	0.2	17	56.1		16 55.9
17	25.3	+0	30.1	17	55.4		17 25.3
17	54.1	—		17	54.1		17 54.1
18	24.5	−0	30.1	17	54.4		18 24.5
18	52.2	1	0.2	17	52.0		18 52.2
19	22.0	1	30.3	17	51.7		19 22.0
19	55.1	2	0.4	17	54.7		19 55.1
20	25.0	2	30.5	17	54.5		20 25.0
20	54.9	3	0.6	17	54.3		20 54.9

17 52.82 53.47
+ 67 + 67
53.49 54.14
17 28.56
+ 24.93
25.58

+ 1040.67 + 1008.97 + 882.47
3.01731 3.00389 2.94570
1.49185 1.47843 1.42024
46 39.82 × 39.90 × 40.70
+ 31.03 + 30.09 + 26.32
47 10.85 9.99 7.02
35 37.50 38.36 41.33

− 580.75 − 652.23
2.76399 2.81440
1.23853 1.28894
47 19.25 22.75
− 17.32 − 19.45
47 1.93 3.30
35 46.42 45.05

28 14.5
20.0
26.5 28 21.0 (3)
29 45.3 10 32.2
53.7
58.5 29 52.5 (3)
31 18.5 12 2.5
25.3
31.5 31 25.1 (2)
32 47.0 13 32.8
53.4
58.3 32 52.9 (1)
−15 3.1

− 48 54.58
1.81920
+ 1860
1.83782

+ 6884	+ 6884	+ 6884
+ 13.55	+ 12.74	+ 9.74
− 49	− 49	− 49
+ 81.90	+ 81.09	+ 78.09
+91 36 59.40 ×	59.45 ×	59.42
+ 46		
36 59.86	59.91	59.88
18 36.3		
−18 23.6 ×	23.6 ×	23.6
− 8	− 8	
24.4 ×	24.4 +	

17 52.82 53.47

+ 6884	+ 6884
+ 4.22	+ 5.32
− 44	− 44
+ 72.62	+ 73.72
36 59.04	58.77
36 59.50	59.23
36.3	36.3
23.2	22.9
− 8	
24.0	

+91 36 59.42
− 18 24.57
+ 46
+ 17.80
− 18 6.31
+91 18 53.11
+88 41 6.89
− 77
6.12

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

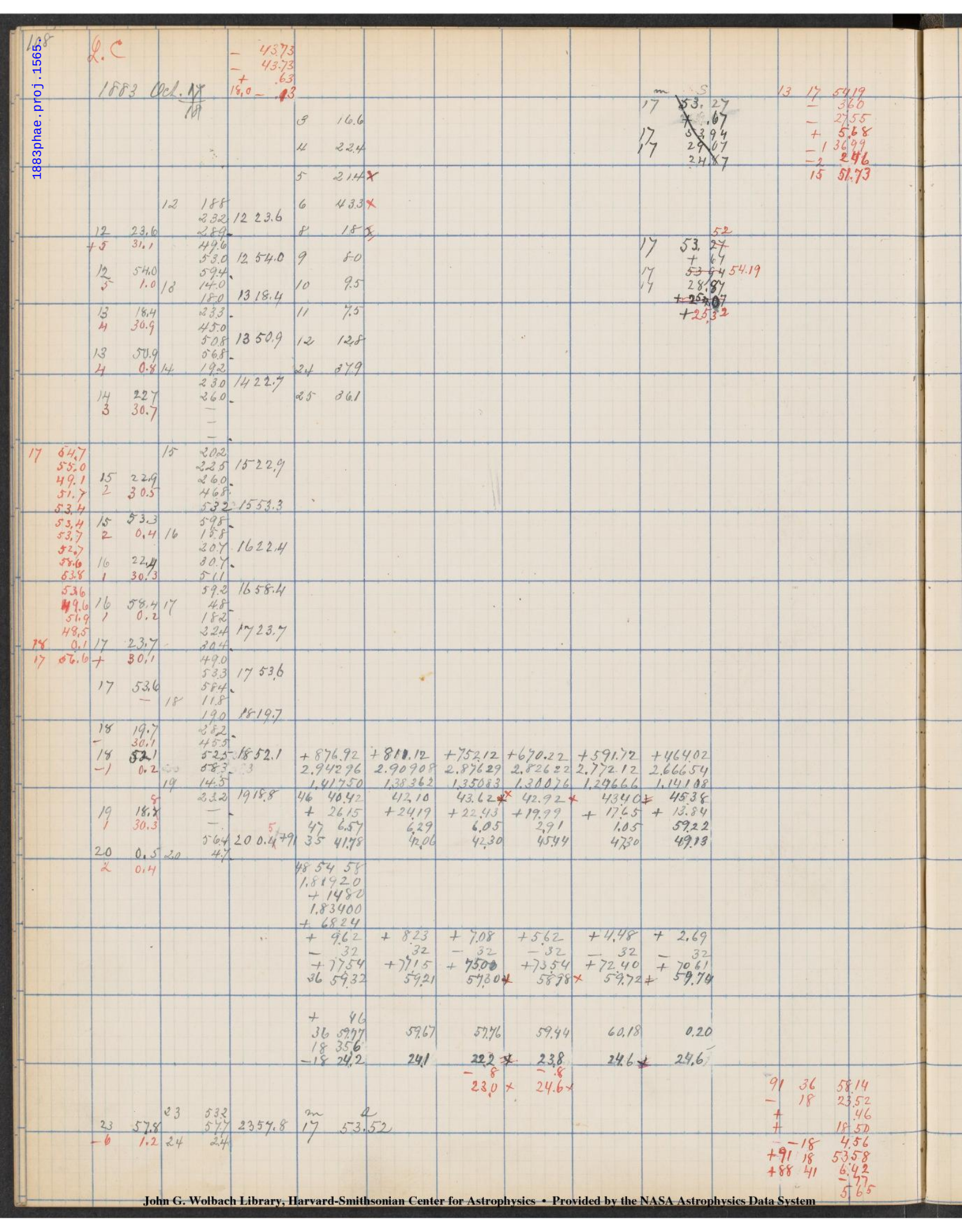
1883phae.proj.1565.

L.C.

1883 Oct. 16

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

1883phae.proj.1565



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

1883phae.proj.1565.

L. C.

− 43.75
− 43.75
+ .58
1883 Oct. 21/22 22.0 − .00

24	18.2
25	16.1 ×
26	9.0
27	26.0 ×
28	25.5 ×
29	19.4
30	33.9
31	57.1
33	9.2
34	13.2

17 55.54
+ .67
17 56.21
17 29.15
~~26.66~~
T − Ra + 27.06

13 17 56.21
− 2.28
− 25.38
+ 1.00
− 1 37.27
− 2 4.93
15 51.28

14 20.3 5.7
26.1 14 26.1
14 25.7 30.8
3 30.7 47.4
53.2 14 53.2
14 53.2 59.0
17 56.4 3 0.6 15 16.5
53.8 19.9 15 20.8
51.3 15 20.8 26.0
51.7 2 30.5 46.0
56.5 51.7 15 51.3
56.0 15 51.3 56.3
55.5 2 0.4 16 22.4
56.3 26.3 16 26.2
56.0 16 26.2 30.0
56.4 1 30.3 52.2
58.6 54.5 16 55.8
54.1 17 6 55.8 17 0.7
55.7 1 0.2
55.3
56.4
56.5
56.7

18 47.5
55.7 57.0 18 55.7
18 57.0 19 2.5
1 0.2 20.9
26.6 19 26.6
19 26.6 32.4
1 30.3 51.2
54.0 19 56.4 + 9
19 56.4 20 4.0
2 0.4 20.4
27.0 20 26.9
20 26.9 33.3
2 30.5 54.0
59.3 20 59.2
20 59.2 21 4.2
3 0.6 15.9
26.1 21 24.8
21 24.8 32.5
3 30.7 50.2
56.0 21 56.5
21 56.5 22 3.2
4 0.8 20.0
25.9 22 26.2
22 26.2 32.7
4 30.9 51.6
57.5 22 57.4
22 57.4 23 3.0
5 1.0 21.8
31.0 23 29.6
23 29.6 36.0
5 31.1 50.7
56.0 23 56.9
23 56.9 24 4.1
6 1.7

− 382.66	− 440.56	− 493.46	− 570.46	− 629.96	− 683.86	− 758.36
2.58281	2.64400	2.69325	2.75622	2.79931	2.83497	2.87988
1.05735	1.11854	1.16779	1.23076	1.27385	1.30951	1.35442
47 14.15	14.98 ×	19.12	21.88 ×	24.65 ×	28.70	31.25
− 11.41	− 13.14	− 14.71	− 17.01	− 18.79	− 20.39	− 22.62
47 2.74	1.84	4.41	4.87	5.86	8.31	8.63
35 45.61	46.51	43.94	43.48	42.49	40.04	39.72

48 54 24
1.81910
+ 1700
1.83610
+ 68.56

+ 1.83	+ 2.43	+ 3.05	+ 4.07	+ 4.97	+ 5.85	+ 7.20
− .12	− .42	− .42	− .42	− .42	− .42	− .42
+ 69.97	+ 70.57	+ 71.19	72.21	+ 73.11	+ 73.99	+ 75.34
36 55.58	57.08 ×	55.13	55.69 ×	55.60 ×	54.03	55.06
+ .46						
36 56.04	57.54	55.59	56.15	56.06	54.49	55.52
18 34.0						
− 18 22.0	23.5 ×	21.6	22.2 ×	22.1 ×	20.5	21.5
			− 8	− 8		
			23.0	22.9		

m s
17 55.54

91 36 55.64
− 18 22.96
+ .46
+ 20.10
− 18 2.40
+91 18 53.24
+88 41 ~~6.36~~ 6.76
− .77
~~5.59~~ 5.99

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

110

L.C.

1883 Oct 22/23 23.0

Tm 17 m 56.81 / 56.54 / + 67 / 57.48 / 29.27 / 28.21 (struck through)

11 57.0 / 58.4 — 11 58.6 — 3 28.4 — 11 58.6 +6 1.2 17 59.8
12 0.4 / 19.2 — 6 47.3
27.3 / 32.0 — 12 26.2 — 8 27.7 — 12 26.2 5 31.1 57.3
51.3 / 57.1 — 12 57.0 — 25 9.0

17 56.81 / + 67

13 2.5 — 26 54.1 — 12 57.0 5 1.0 58.0

Tm + 12 17 57.48 / 29.076 / + 28.412

20.3 / 24.4 / 30.2 — 13 25.0 — 13 25.0 +4 30.9 55.9
51.8 / 59.0 — 13 58.0
14 3.2 — 13 58.0 4 0.8 58.8
18.4 / 23.2 / 28.3 — 14 23.3' — 14 23.6 (3) 3 30.7 54.0

5 53.0 / 57.5 — 5 57.5
6 2.1 — 12 2.5
7 20.3 / 26.6
30.5 — 7 25.8
8 49.7 — 10 32.2
56.2 — ~~56.4~~
9 3.2 — 8 56.4
9 1.9

17 22.3 / 27.5 / 32.2 — 17 27.3 — 17 27.3 +0 30.1 57.4
18 0.0
17 58.0
58.3
50.5 / 55.8 / 59.4 — 17 55.2 — 17 55.2 — 55.2

20 20.7 / 26.2 / 31.8 — 20 26.2 — 20 26.2 2 30.5 55.7
51.8 / 56.7 — 20 56.7
21 1.7 — 20 56.7 3 0.6 56.1

22 25.8 / 27.3 / 29.8 — 22 27.6 — 22 27.6 4 30.9 56.7
48.1 / 51.8 / 56.0 — 22 52.0 — 22 52.0 5 1.0 51.0

23 53.0 / 57.8 — 23 58.0
24 3.2 — 23 58.0 6 1.2 56.8

17 m 56.81 s

1883phae.proj.1565.

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

1883phae.proj.1565.

L.C.

1882 Oct. 27/28 2.79

17 52.80
+.67
53.47
28.18
25.29

17 52.80
+.67
17 53.47
17 28.18
+ 25.29

				14	15.6			
					20.7	14	21.3	
		14	21.3		37.5			
		3	30.7		52.8			
17	52.0				53.6	14	53.7	
	54.3	14	53.7		54.7			
	52.0	3	0.6	15	15.7		2.5	
	52.3				23.2	15	23.7	
	52.4	15	22.5		38.5			
		2	30.5		47.4			
					53.0	15	51.9	
		15	51.9		55.3			
		2	0.4	16	16.1			
					22.3	16	22.1	
		16	22.1		28.0			
		1	30.3					

17 52.80

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

1883phae.proj.1565.

L.C.

1883 Oct. 29

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

L.C.

1883 Oct. 31.9 = nov 1

- 43.79
- 43.79
+ .58
- .00

0 49.1
1 53.4 ×
2 55.0
4 36
4 51.7
5 46.9
6 44.0
7 44.2
8 53.7
10 0.5
11 47.7
24 23.6
26 23.3
27 21.0
28 15.1
29 3.7
30 1.2
31 2.9
32 4.9
33 14.3
34 12.3

12 13.0
21.8
12 20.3 25.2
5 31.1 43.7
49.0
12 48.9 54.1
5 1.0 13 11.6
14.2
13 16.1 22.5
4 30.9 44.4
48.8
13 48.9 53.6
4 0.8 14 8.9
16.2
14 16.7 25.0
3 30.7 43.6
49.0
14 49.4 55.5
3 0.6 15 11.8
~~10.5~~ 15.0
15 16.5 32.7
2 30.5 41.5
45.0
15 45.8 51.0
2 0.4 16 11.2
19.4
17 51.1 16 19.1 26.7
49.9 1 30.3 43.0
47.0 48.0
49.7 16 48.1 53.2
47.4 1 0.2 17 14.8
50.0 19.0
47.0 17 19.3 24.0
46.2 30.1 39.2
49.4 44.2
48.3 17 46.1 54.9
49.4 — 18 14.6
46.1 19.0
49.4 18 19.5 25.0
49.1 30.1 45.0
47.5 49.0
49.0 18 49.3 54.0
49.9 1 0.2 19 11.3
49.7 17.6
47.6 19 17.8 24.5
1 30.3 44.4
48.6
19 49.4 55.1
2 0.4 20 14.3
19.9
20 20.4 27.0
2 30.5 45.0
49.0
20 50.3 57.0
3 0.6 21 14.0
18.8
21 18.3 22.1
3 30.7

17 48.61
+ .67
49.28
26.04
21.24

17 49.28
17 27.84
+ 21.44

13 17 49.28
+ 0.78
- 25.40
+ 1.00
- 1 35.96
- 2 0.58
15 48.70

+ 1019.51	+ 955.21	+ 893.61	+ 825.01
3.008839	2.98010	2.95115	2.91646
1.48293	1.45464	1.42569	1.39100
46 44.20	44.35 ×	43.72 ×	44.50 ×
+ 30.40	+ 28.49	+ 26.65	+ 24.60
47 14.60	12.84	10.37	9.10
+91 35 33.75	35.51	37.98	39.25

48 55 6
1.81920
+ 261
1.82181
+ 6634

+ 13.01	+ 11.42	+ 9.99	+ 8.52
- 30	- 30	- 30	- 30
+ 79.05	+ 77.46	+ 76.03	+ 74.56
36 52.80	52.97 ×	54.01	53.71

+ 55			
36 53.35	53.62	54.56	54.26
18 30.4			
- 18 22.9	23.1	24.1 ×	23.9 ×
	- .8		
	23.9		

91 36 52.97
- 18 24.04
+ 55
+ 23.70
- 17 59.79
+91 18 53.18
+88 41 6.82
- .77
6.05

m s
17 48.61

386
4.07
.52
3.540
0.255
36.31
5.396
.77
.68

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

1883phae.proj.1565.

1883phae.proj.1565.

L.C.

1883 Nov. 29

T-RA

17 52.38
+1.67
17 53.05
17 27.65
+25.40

17 53.05
17 27.65

17 52.38 corr

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

1883phae.proj.1565.

L.C

1883 Nov. 4,9

				11	43.2	11	13.8							
					49.0									
					55.8	11	32.8	11	49,3	6	1,2	17	50,5	
				12	16.0									
					23.4	24	7.0							
					29.6			12	23.0	5	31.1		54.1	
					46.6	25	51.0							
					51.8									
					58.0	27	8.8	12	53.1	5	1.0		53.1	
				13	18.0									
					22.8	28	37.9							
					27.4			13	22,7	4	30.9		53.6	
					46.0	30	11.0							
26					52.2									
					57.2	33	21.0	13	51.8	4	0.6		52,0	
				14	1.0									
					21.0	34	47.3							
					27.7			14	21.2	3	30.7		51.9	
					42.5	36	27.3							
					49.0									
					54.8	38	21.8	14	48.8	3	0.6		49.4	
				15	14.7									
					21.0	39	46.0							
					26.0			15	20.6	2	30.5		51.1	
					—	41	31.7							
					—									
					—	43	35.3							
				16	16.0									
					20.4									
					27.8			16	21.4	1	30.3		51.7	
					46.0									
					52.2									
				17	0.5			16	52.9	1	0.2		53.1	
					~~1.8~~									
					23.0									
					—									
					~~44.3~~									
					—									
26	48.2				—									
	52.7			18										
	59.6	26	53.5		18.6									
28	19.5	9	1.9		—									
	26.0				45.0									
	31.0	28	25.5		49.7									
29	48.6	10	32.2		55.7			18	50.1	1	0.2		49.9	
	56.6			19	15.4									
	22.2	29	55.8		19.6									
	—	12	2.5		26.5			19	20.5	1	30.3		50.2	
	—				45.7									
	—				51.3									
32	50.2				57.7									
	56.4			20	16.9			19	57.6	2	0.4		51.2	
	3.0	32	56.5		22.6									
		15	3.1		29.2			20	22.9	2	30.5		52.4	
					43.5									
					49.6									
					57.3			20	50.1	3	0.6		49.5	
				21	17.8									
					25.8									
		17	51.4		30.0			21	24.5	3	30.7		53.8	
			53.3		46.2									
			~~53.3~~		51.2					4	0.8			
			53.4		56.2			21	51.2				50.4	
				22	16.0									
					22.8					4	30.9			
					28.3			22	23.0				52.1	
					44.2									
					53.3			22	50.2					
					—									
				23	18.0									
					24.2									
					31.0			23	24.4	5	31.1		53.3	
					46.3									
					52.7									
				24	0.4			23	53.1	6	1,2		51.9	

m 17 s 51.98

m 17 s 57.98 + .67

17 52.65

17 ~~57.42~~ 25.23

17 52.65

17 27.21

+ 25.434

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

1883phae.proj.1565.

126

L.C.

1883 Nov. 5.9

−	43.80
−	43.80
+	.48
−	.06

		11	48.9
			49.6
11	49.5		50.0
6	1.2	12	11.3
	1.		12.4
12	12.3		13.3
5	37.1		37.8
			43.0
12	43.4		49.3
5	1.0	13	12.5
			17.0
13	16.7		20.7
4	30.9		35.3
			44.2
13	42.8		49.0
4	0.8	14	9.1
			13.3
14	14.1		19.8
3	30.7		37.8
			42.8
14	43.7		50.4
3	0.6	15	9.3
			15.0
15	15.0		20.8
2	30.5		40.6
			44.2
15	44.6		49.0
2	0.4	16	6.8
			13.0
16	13.1		19.4
1	30.3		40.0
			46.4
16	45.6		50.5
1	0.2	17	7.0
			15.0
17	14.3		21.0
	30.1		40.1
			44.8
17	44.8		49.6
		20	10.9
			15.0
20	16.1		22.3
2	30.5		40.0
			46.6
20	46.1		51.7
3	0.6	21	11.1
			16.0
21	16.5		22.3
3	30.7		40.7
			47.4
21	47.1		53.2
4	0.8	22	11.5
			15.5
22	15.9		20.8
4	30.9		39.6
			43.0
22	44.6		51.2
5	1.0	23	11.2
			16.0
23	16.4		22.1
5	31.1		39.7
			46.5
23	45.9		52.5
6	1.2		

17
50.7
43.4
44.4
47.6
43.6
44.8
44.3
45.5
45.0
43.4
45.8
44.4
44.8
45.6
46.5
45.8
46.3
45.0
43.6
45.3
44.7

45.21

3	43.5
5	28.2
6	20.4 ✗
7	26.4
8	30.7
9	57.4
11	30
24	31.4
25	45.2 ✗
26	34.5
27	58.7
29	2.4
30	1.7
31	48.9

17 45.21
+ .67
45.88
27.11
18.77

17 45.88
17 26.91
+ 18.97

13 17 45.88
+ 2.38
− 21.02
+ 2.63
− 1 35.03
− 1 51.04
15 54.84

+841.71	+737.01	+684.81	+618.81	+554.51	− 406.19	− 479.99
2.92516	2.86747	2.83557	2.79156	2.74391	2.60873	2.68123
1.39970	1.34201	1.31011	1.26610	1.21845	1.08327n	1.15577n
46 45.72	46.72	48.08	48.20	49.25	47 16.28	47 20.05 ✗
+ 25.10	+ 21.98	+ 20.42	+ 18.45	+ 16.54	− 12.11	− 14.31
47 10.82	8.70	8.50	6.65	5.79	4.17	5.74
+91 35 37.53	39.65	39.85	41.70	42.56	44.18	42.61

48 54 52
1.81920
− 32
1.81888
+ 65.90

					+ 65.90	+ 65.90
+ 8.87	+ 6.80	+ 5.73	+ 4.79	+ 3.85	+ 2.06	+ 2.88
− .34	− 34	− 34	− 34	− 34	− 46	− 46
+ 74.43	+ 72.36	+ 71.29	+ 70.35	+ 69.41	+ 67.50	+ 68.32
36 51.96	52.01	51.14	52.05	51.97	51.68	50.93 ✗
+ 58					26	57
36 52.54	52.59	51.72	52.63	52.55	52.26	51.51
18 28.5						
−18 24.0	24.1	23.2 ✗	24.1	24.0	23.8	23.0 ✗
						− .8
						23.8

17 45.21

+91 36 50.93
− 18 23.04
+ .58
+ 25.60
− 17 56.86
+91 18 54.07
+88 41 5.93
− .77
5.16

31

32

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

1883phae.proj.1565.

L.C.

1883 Nov. 6.9

− 43.81
− 43.81
+ .70
− .06

~~30~~	~~570~~	
31	405	
33	181	✗
34	224	✗
35	392	+
36	11.3	
36	58.4	
38	0.3	
38	48.6	
39	444	
40	414	

17 57.10
+ 67
57.77
~~36.74~~
25.03

17 51.77
17 26.54
+ 25.23

13 17 51.77
+ 2.67
− 30.67
+ 2.63
− 1 34.66
− 2 0.01
15 50.76

31 18.7
23.4
30.8 31 24.3
32 40.6 13 32.8
54.8
0.1 32 53.8
15 3.1

−829.40 −927.00 −991.30 −1068.10
2.91876 2.96708 2.99620 3.02861
1.39330 1.44162 1.47074 1.50315
47 37.40 42.12 ✗ 46.10 ✗ 50.65 ✗
− 24.74 − 27.64 − 29.56 − 31.85
47 12.66 14.48 16.54 18.80
+91 35 35.69 33.87 31.81 29.55

17 51.5
50.7
2 2
m s
17 51.10

48 54 0
1.81900
+ 632
1.82532
+ 6688
+ 8.61 + 10.75 + 12.30 + 14.28
− 52 − 52 − 52 − 52
+ 7497 + 7711 + 7866 + 8064
36 50.66 50.98 50.47 50.19 ✗

+ 60
36 51.26 51.58 51.07 50.79
18 28.1
18 23.2 23.5 × 23.0 × 22.7 ✗
− 8
23.5

+91 36 50.19
− 18 23.26
+ 60
+ 26.00
− 17 56.66
+91 18 53.53
+88 41 6.47
− 77
5.70

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

1883phae.proj.1565

M. & C.

+ 43.81
+ 43.81
+ .51
− .06

1883 Nov. 7.4

h m s
1 10 59.3
11 48
110
338
373
41.0
593
12 40
108
280
333
388
565
13 20
10.6
32.0
36.3
44.0
59.3
14 35
11.8

5 19.3 X
9 35.8

11	5.0	6	1.2	17	6.2
11	37.4	5	31.1		8.5
12	4.7	5	1.0		5.7
12	33.4	4	30.9		4.3
13	2.0	4	0.8		3.8
13	37.4	3	30.7		8.1
14	4.9	3	0.6		5.5
					421

17 5.82
− 4.67
17 5.15
17 26.54
− 21.39

17 5.15
17 26.34
− 21.19

1 17 5.15
+ 2.94
+ 22.34
− 2.63
− 1 34.46
− 1 18.81
− 15 53.34
17

m s
17 5.82

17 7.0
4.3
4.8
16.1

δ = +88 41 30
Z = −46 18 42
Z = − .72

+70652 +45022
2.849 12 2.65323
1.32366 1.12777
24 10.12 × 6.25
− 2107 − 1342
23 49.35 52.83
+88 58 59.00 55.52

46 17 28
1.77940
+ 1707
1.79647
+ 6258 + 62.58
− 625 − 2.53
− 84 − .82
+ 5549 + 59.23
+88 59 54.49 × 54.75

+ 57
59 55.06 55.32
41 32.0
−18 23.1 × 23.3

88 59 54.49
− 18 22.73
+ 57
− 26.10
−18 48.26
+88 41 6.23

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

L. C

1883 Nov. 7.9

− 43.81
− 43.81
+ .51
− .072

		13 11	41.2		1	47.6
			45.9			
	11	46.0	51.0		3	32.2
17 47.2	6	1.2 12	4.3			
			10.6		4	41.7 ×
	12	12.0	21.1			
42.1	5	30.1	39.2		5	51.0
			47.2			
	12	46.7	53.6		6	56.0
47.7	5	1.0 13	8.7			
			18.2		8	12.7
47.7	13	16.8	28.5			
	4	30.9	39.4		9	26.2
			44.4			
47.1	13	46.3	55.0		10	29.5
	4	0.8 14	10.1			
			13.3		24	13.5
44.2	14	13.5	17.2			
	3	30.7	40.8		25	37.0
			44.5			
45.3	14	44.7	48.8		26	31.5
	3	0.6 15	2.5			
			9.6		27	30.5
~~39.7~~	15	9.2	15.5			
	2	30.5	36.3		29	40.0
			50.3			
	15	48.9 16	0.2		32	30.4
49.3	2	0.4	18.4			3
			23.5		33	20.0
	16	23.2	27.8			
~~50.5~~	1	30.3	44.5		34	8.5
			49.9			
	16	50.1	56.0			
50.3	1	0.2 17	8.1			
			15.4			
	17	14.4	19.7			
44.5		30.1	39.7			
			43.2			
44.0	17	44.0	49.0			

m	s				
17	45.21		13	17	45.88
	+ .67			+	3.00
17	45.88			−	22.34
17	~~26~~.34			+	~~30.7~~.88
+	19.54			− 1	34.46
				− 1	~~50.73~~ 52.92
17	45.88			15	~~55.15~~
17	26.14				52.96
+	19.74				

					+95761	+85301	+78351	+71421
					2.98119	2.93095	2.89404	2.85383
		19	43.7		1.45573	1.40549	1.36858	1.32837
			47.5		46 46.78	50.25	51.72 ×	50.55
	19	48.1	53.0		+ 28.56	+25.44	+23.37	+ 21.30
47.7	2	0.4 20	6.8		47 15.34	15.69	15.09	11.85
			16.6	+91	35 33.01	32.66	33.26	36.50
	20	15.8	24.0					
46.3	2	30.5	39.7		48 54 53			
			44.5		1.81920			
	20	45.3	51.8		+ 1480			
44.7	3	0.6 21	7.0		1.83400			
			15.2		+ 6823			
	21	15.3	23.7		+ 11.47	+ 9.10	+ 7.68	+ 6.41
44.6	3	30.7	42.9		− 36	− 36	− .36	− 36
			48.0		+ 79.34	+ 76.97	+ 75.55	+ 73.28
	21	47.8	52.6		36 52.35	49.63	48.81 ×	49.78
47.0	4	0.8 22	11.6					
			14.6		+ 60			
	22	15.5	20.3		36 52.95	50.23	49.41	50.38
44.6	4	30.9	36.2		18 27.8			
			43.6					
	22	43.0	49.2		−18 25.1	22.4 ×	21.6	22.6 ×
42.0	5	1.0 23	9.6			− 8	− .8	
			15.8			23.2	22.4 ×	
	23	15.5	21.0					
44.4	5	31.1	40.0		m s			
			46.3		17 45.21			
	23	45.8	51.0					
44.6	6	1.2						

91 36 48.81
− 18 22.73
+ 60
+ 26.30
− 17 55.83
+91 18 52.98
+88 41 7.02
− .77
6.25

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

1883phae.proj.1565.

1883phae.proj.1565.

120

L.C.

1883 Nov. 11.9

					11	37.0		2	3.3										
						42.0													
						47.8		3	5.6	11	42.3	6	1.2	17	43.5				
					12	5.6													
						12.0		4	2.5										
						20.8				12	12.8	5	31.1		43.9				
						38.5		5	14.4										
						42.6													
						52.1		7	8.7	12	44.4	5	1.0		45.4				
					13	9.0													
						13.2		8	1.8										
						20.9				13	14.4	4	30.9		45.3				
						38.0		9	6.5										
2	38.5					42.1													
	42.2					48.7		10	8.2	13	42.9	4	0.8		43.7				
	51.4	2	44.0	14		7.2													
4	6.3	15	3.1			14.5		24	0.2										
	12.6					21.2				14	14.3	3	30.7		44.5				
	19.2	4	12.7			38.4		25	25.8										
5	37.0	13	32.6			42.1													
	41.1					50.1		26	22.5	14	43.5	3	0.6		44.1				
	49.7	5	42.6	15		7.6													
7	11.8	12	2.5			12.8		27	46.7										
	14.7					19.0				15	13.1	2	30.5		43.6				
	20.2	7	15.6			38.8		28	(550)										
8	44.1	10	32.2			46.8													
	46.4					53.3		30	10.9	15	46.0	2	0.4		46.4				
	50.5	8	47.0	16		10.6													
		9	1.4			15.8		32	16.4										
						21.8													
						—		32	42.6	16	16.1	1	30.3		46.4				
						—													
		17	47.1			—													
			45.5			—													
			45.1			—													
			47.8			—													
			48.9			—													
						—													
			47.4			—													
			48.8			—													
			49.2			—													
			47.5			—													
			46.9			—													
						—													
26	42.5					—													
	49.0					—													
	56.3	26	49.3			—													
28	16.5	9	1.9			—													
	21.0					—													
	25.4	28	21.0			—													
29	47.0	10	32.2			—													
	51.4				20	18.8													
	56.7	29	51.7			20.0													
31	14.0	12	2.5			21.7				20	20.2	2	30.5		49.7				
	20.0					40.7													
	27.0	31	20.3			46.9													
32	44.3	13	32.8			53.8				20	47.1	3	0.6		46.5				
	49.6				21	10.0													
	56.0	32	50.0			16.8													
		15	3.1			21.7				21	16.2	3	30.7		45.5				
						37.4													
						46.7													
						51.3				21	45.2	4	0.8		44.4				
					22	12.4													
						17.8													
						23.3				22	17.8	4	30.9		46.9				
						41.3													
						47.0													
						54.3				22	47.5	5	1.0		46.5				
					23	9.1													
						17.7													
						34.1				23	17.0	5	31.1		45.9				
						40.8													
						46.6													
						53.0				23	46.6	6	1.2		45.4				

m s

17 46.12
+ .67
17 46.79
17 24.91
+ 21.88

82
17 46.79
17 24.91
+ 22.09
11

m
17 46.15

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

1883phae.proj.1565.

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

1883phae.proj.1565.

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

1883phae.proj.1565.

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

1883phme.proj.1565.

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