

KG  
11365  
100

B.29

No. 29.

*Reduction of Gravities*  
Nov. 28. 1857. to Feb. 23. 1858.

Sold by T. Groom & Co., Stationers, India Building, 92 State St., Boston.



KG 11365.100



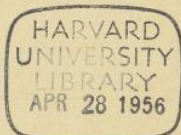








KG-11365,100







1857. Nov. 28

1857phae.proj.

A.U.		"		Ill. Fan		"		"							
$\gamma$ Piscium		$\pi$ Piscium		$\beta$ Aretis		Moon 10		Apr 1							
	13.7		55.0		8.2		47.1		28.0						
	17.3		58.7		12.0		50.7		31.8						
	20.8		2.1		11.9		54.3		31.2						
	24.3		5.6		19.1		57.9		38.7						
1	24	28.1	1	30	9.3	1	47	23.0	1	59	1.9	1	59	42.8	1
		104.2			130.7			78.2			212.9			176.1	
					10.7						271.38				
1	24	20.84	1	30	2.14	1	47	15.64	1	58	54.48	1	59	35.30	1



Nov. 28

A. V.

ell. S ant

Apr 2.

"Gausendi"

67 Ceti

5<sup>2</sup> Ceti

μ Antaris

36.2

41.9

15.0

57.4

42.2

39.7

41.8

18.8

1.0

46.0

43.7

49.2

22.1

4.4

49.6

47.0

52.9

25.6

8.0

53.2

1 58

50.8 2

0

56.7 2

10

79.1 2

21

11.7 2

34

57.0

217.4<sup>4</sup>

246.7

110.6

82.5

248.0

22.5

1 59

43.52<sup>48</sup> 2

0

49.34 2

10

22.1 2 2

21

4.50 2

34

49.60

1857. Nov. 28

A. H.

M. E. and

38 Aries

11 Aries

24.3

42.9

2.10

1.35

37.9

46.6

2.15

1.30

41.4

50.3

2.20

1.25

44.8

53.8

2.25

1.20

2 37

48.5

2

41

57.4

2.30

1.15

206.9

251.0

2.35

1.10

2 37

41.28

2

41

50.20

2.40

1.05



Dec. 1.

A. H.

Ill. East

 $\epsilon$  Pegasi

16 Pegasi

 $\alpha$  Aquarii $\phi$  Tauri $\nu$  Tauri

30.0

52.9

47.2

56.0

7.6

33.8

56.8

50.9

0.0

11.4

37.3

0.1

54.2

3.8

15.2

40.7

4.2

57.7

7.7

18.7

44.3

8.2

1.4

11.8

22.9

186.1

122.6

211.4

79.3

75.8

2.6

271.4

19.3

37.22

0.52

54.28

3.86

15.16

1857. Dec. 1.

A. H.		" "		M. East		" "		" "	
x Tami		Moon 110		J Orionis		1 Semino		x Saigae	
8.5		55.8		4.1		47.9		37.8	
9.3		59.8		7.8		51.8		42.0	
12.9		3.8		11.2		55.6		45.7	
16.3		7.9		14.4		59.1		49.5	
20.1	5	12.0	5	18.2	5	3.2	6	53.2	23
64.1		139.3		55.7		217.6		228.7	
		19.3				277.6			
28	5	3.86	5	11.14	5	55.52	6	45.74	23



Dec. 2.

H. P. 7.

Ill. East

 $\alpha$  Piscium $\alpha$  Andromedae $\gamma$  Pegasi

19.2

20.2

13.4

23.0

24.0

16.8

26.3

28.2

20.7

29.5

31.9

24.0

33.3

36.0

27.8

131.3

140.3

102.7

26.26

28.06

20.54

1857. Dec. 3/4.

A.H.

M. Earl

α Virginis		γ Mus Maj.		α Bootis			
	59.2		8.1		26.6		
	2.8		14.1		30.3		
	6.2		19.3		34.0		
	9.8		24.6		37.7		
13	18	13.4	13	42	30.2	14	9
	91.4		96.7		170.0		
13	18	6.28	13	42	19.34	14	9
					34.00		



Dec. 4

A. U.

Ill. E. are

"

"

A' C. Li

1857	17.9	0.8	32.8	0.8	31.1	5.14	9.2	8.8	13.1
1858	1.7	0.8	36.3	0.8	35.0	2.88	12.9	8.15	16.8
1859	5.2	2.8	39.8	0.8	38.4	5.52	16.2	5.25	20.1
1860	8.7	1.8	43.2	1.8	41.8	1.12	19.4	2.85	23.8
1861	12.1	1.3	46.8	1.3	45.5	1.88	23.0	1.55	27.4
1862	85.6	2.8	198.9	1.05	192.2	2.08	80.7	0.25	101.2
1863	5.12	1.3	39.78	1.3	38.44	1.1	16.14	1.05	20.24

1857. Dec. 4

A. H.

Ill. East-

1857phae.	18.3	5.0	41.7	51.0	3.0	38.9
	21.8	5.5	48.4	54.6	6.6	39.4
	25.2	5.2	52.2	58.0	9.9	42.9
	28.4	5.5	55.5	1.3	13.3	46.3
31	32.3	5.3	59.3	5.2	17.0	50.0
	126.0	5.0	260.6	170.1	49.8	214.5
31	25.20	5.3	52.12	58.02	9.96	42.90



Dec 4.

A.U.

Ill. Fair

a Aulis

9.9	2.1	51.1	2.1	27.3	1.2	23.3	1.1	36.2	0.1	26.2
9.4	2.1	54.5	2.0	31.2	1.1	26.9	1.1	40.0	1.0	29.8
2.9	2.2	58.4	1.9	35.0	1.1	30.2	0.1	43.4	0.1	32.1
6.3	0.8	1.8	2.1	38.7	1.2	33.7	1.1	46.8	1.1	36.6
0.0	1.0	49.2	1.4	42.7	2.1	37.4	2.1	50.5	2.1	40.2
5.5	1.1	172.2	1.1	174.9	1.1	151.1	2.1	216.9	1.1	161.9
0.0	1.0	48.2	1.4	49.8	2.1	30.30	2.1	43.38	2.1	33.18

1857. Dec. 4

A. H.

J. H. Fair

5.25	57.0	2.25	13.7	5.25	58.5	5.25	27.4	1.25	47.9	
2.25	0.6	2.25	17.7	5.25	1.9	2.25	30.9	2.25	51.4	
1.25	3.9	2.25	21.0	5.25	5.1	5.25	34.1	2.25	54.8	
2.25	7.3	2.25	24.6	5.25	8.8	5.25	37.9	2.25	58.0	
2.25	10.9	2.25	27.8	2.25	12.2	2.25	41.8	2.25	28	2.0
2.25	79.7	2.25	104.8	2.25	86.5	2.25	172.5	2.25	214.1	
2.25	3.94	2.25	20.96	2.25	5.30	2.25	34.50	2.25	227	54.82



Dec 4.

A. H.

Ill. Ear

Cili

1855

9	2.40	6.6	0.55	32.3	1.20	14.1	3.30	38.9	2.00	38.0					
4	1.80	10.3	1.10	36.0	1.50	18.2	3.50	42.0	1.70	41.7					
8	2.20	13.8	1.20	39.2	1.80	21.8	3.80	45.6	2.10	45.0					
0	2.60	17.0	1.30	42.1	2.10	25.0	4.10	49.0	2.50	48.5					
2	3.00	20.92	1.40	46.2	2.40	28.8	4.40	52.42	2.90	52.1					
1	3.40	68.6	1.50	196.2	2.70	108.3	4.70	227.9	3.30	225.3					
32	23.8	20	13.72	2	37	39.24	2	36	21.66	2	40	45.58	2	42	45.06

1857. Dec. 4.

A. H.

Ill. East

15.8	2.28	36.6	29.1	12.0	24.6
19.1	0.50	40.0	32.9	18.1	28.1
22.9	0.10	43.4	36.2	18.9	31.8
26.1	0.20	46.8	39.8	22.3	35.0
30.0	2.52	50.4	43.3	26.0	38.6
114.7	2.55	217.2	181.3	94.7	158.1
22.94	2.10	46.44	48.36	36.26	50.8
				18.94	52.0
					31.62



Dec. 4

A. H.

Alt. Ear

α Ceti

6	9.6	35.8							
1	13.2	39.4							
8	16.6	42.9							
0	19.9	46.1							
6	23.7	49.9	57						
1	28.0	214.2							
6	36.6	42.84	57						

1857. Dec. 7/8

A. H.

Alt. East

1857phae.pr

A. R.			" "			" "			" "			" "		
c Leonis			x Leonis			p Leonis			p Hyd. et Crat.			Moon 10		
		39.8			58.1			49.1			31.1			28.7
		43.5			1.8			53.1			34.9			32.1
		46.9			5.1			56.9			38.2			35.9
		50.1			8.6			0.4			41.4			39.3
10	53	54.0	10	58	12.2	11	7	4.3	11	12	41.8	11	19	43.0
		234.3			85.8			163.8			191.4			179.0
					25.8			283.8						
10	53	46.86	10	58	5.16	11	6	56.76	11	12	38.28	11	19	35.80



Dec. 7/8

All. East

A.U.

v Louis

v Louis

v Virginia

>		54.8			57.2			34.1
1		58.2			0.7			37.9
9		1.7			4.2			41.6
3		5.0			7.1			44.9
0	11	21	8.8	11	30	11.3	4	43
0			128.1			80.9		207.1
			5.5			20.9	11?	
80	11	21	1.70	11	30	4.18	4	43
								41.42





1857phae.proj...100H

J. K.

1857phae.proj...100H

1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
1857	1857	1857	1857	1857	1857	1857	1857	1857	1857

1857	1857	1857	1857	1857	1857	1857	1857	1857	1857
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1857. Dec. 10/11

A. H.

Ill. Ear

 $\alpha$  Virginis

" Moon 110

"  $\gamma$  Bootis

58.5

2.0

10.6

2.1

5.8

14.4

5.7

9.3

18.0

9.1

12.9

21.4

13 18

12.8

13

34

16.7

13

48

21.3

88.2

46.7

89.7

28.2

13 18

5.64

13

34

9.34

13

48

17.94



Dec. 1/12

A.U.

Ill. Ear

A. A.		"		"		ε Bootis		
α Bootis		M over 110						
	21.9			18.3			1.0	
	29.8			21.9			5.1	
	33.2			21.9			9.2	
	37.0			29.6			13.0	
14	9	40.8	14	20	33.4	14	39	17.0
	166.7				129.1			40.3
14	9	33.34	14	20	21.82	14	39	9.06







1857. Dec. 18

A. U.

M. East

	49.4			7.6			20.6			7.8		28.9	
	53.2			11.2			24.2			11.2		32.4	
	56.6			14.8			27.8			14.7		31.9	
	0.1			18.1			31.2			18.2		39.2	
3 058 4	3.7	3	10	21.7	3	17	31.0	3	20	21.8	3	43.1	3
1.111	163.0			73.4			138.8			73.7		179.5	
35013	56.60	3	10	14.68	3	17	27.76	3	20	14.74	3	31.90	3



Dec. 18.

A. H.

M. East

"   
 η Tami

"

"

"

1855

9		34.5		17.8		29.0		37.8		24.0					
4		38.6		21.7		32.8		41.1		27.6					
9		41.8		25.4		36.0		44.4		31.0					
2		45.1		29.3		39.2		48.0		34.1					
1	3	29	49.3	3	29	33.0	3	41	43.0	3	43	51.8	3	46	38.0
5		209.7		127.2		180.0		223.1		158.1					
20	3	29	41.94	3	39	21.44	3	41	36.00	3	43	44.62	3	46	31.02





1.02	2.5	3.35	0.0	3.35
• 1.02	5.0	10.0	1.0	10.0
1.02	7.5	15.0	1.5	15.0
1.02	10.0	20.0	2.0	20.0
1.02	12.5	25.0	2.5	25.0
1.02	15.0	30.0	3.0	30.0
1.02	17.5	35.0	3.5	35.0
1.02	20.0	40.0	4.0	40.0
1.02	22.5	45.0	4.5	45.0
1.02	25.0	50.0	5.0	50.0
1.02	27.5	55.0	5.5	55.0
1.02	30.0	60.0	6.0	60.0
1.02	32.5	65.0	6.5	65.0
1.02	35.0	70.0	7.0	70.0
1.02	37.5	75.0	7.5	75.0
1.02	40.0	80.0	8.0	80.0
1.02	42.5	85.0	8.5	85.0
1.02	45.0	90.0	9.0	90.0
1.02	47.5	95.0	9.5	95.0
1.02	50.0	100.0	10.0	100.0
1.02	52.5	105.0	10.5	105.0
1.02	55.0	110.0	11.0	110.0
1.02	57.5	115.0	11.5	115.0
1.02	60.0	120.0	12.0	120.0
1.02	62.5	125.0	12.5	125.0
1.02	65.0	130.0	13.0	130.0
1.02	67.5	135.0	13.5	135.0
1.02	70.0	140.0	14.0	140.0
1.02	72.5	145.0	14.5	145.0
1.02	75.0	150.0	15.0	150.0
1.02	77.5	155.0	15.5	155.0
1.02	80.0	160.0	16.0	160.0
1.02	82.5	165.0	16.5	165.0
1.02	85.0	170.0	17.0	170.0
1.02	87.5	175.0	17.5	175.0
1.02	90.0	180.0	18.0	180.0
1.02	92.5	185.0	18.5	185.0
1.02	95.0	190.0	19.0	190.0
1.02	97.5	195.0	19.5	195.0
1.02	100.0	200.0	20.0	200.0
1.02	102.5	205.0	20.5	205.0
1.02	105.0	210.0	21.0	210.0
1.02	107.5	215.0	21.5	215.0
1.02	110.0	220.0	22.0	220.0
1.02	112.5	225.0	22.5	225.0
1.02	115.0	230.0	23.0	230.0
1.02	117.5	235.0	23.5	235.0
1.02	120.0	240.0	24.0	240.0
1.02	122.5	245.0	24.5	245.0
1.02	125.0	250.0	25.0	250.0
1.02	127.5	255.0	25.5	255.0
1.02	130.0	260.0	26.0	260.0
1.02	132.5	265.0	26.5	265.0
1.02	135.0	270.0	27.0	270.0
1.02	137.5	275.0	27.5	275.0
1.02	140.0	280.0	28.0	280.0
1.02	142.5	285.0	28.5	285.0
1.02	145.0	290.0	29.0	290.0
1.02	147.5	295.0	29.5	295.0
1.02	150.0	300.0	30.0	300.0
1.02	152.5	305.0	30.5	305.0
1.02	155.0	310.0	31.0	310.0
1.02	157.5	315.0	31.5	315.0
1.02	160.0	320.0	32.0	320.0
1.02	162.5	325.0	32.5	325.0
1.02	165.0	330.0	33.0	330.0
1.02	167.5	335.0	33.5	335.0
1.02	170.0	340.0	34.0	340.0
1.02	172.5	345.0	34.5	345.0
1.02	175.0	350.0	35.0	350.0
1.02	177.5	355.0	35.5	355.0
1.02	180.0	360.0	36.0	360.0
1.02	182.5	365.0	36.5	365.0
1.02	185.0	370.0	37.0	370.0
1.02	187.5	375.0	37.5	375.0
1.02	190.0	380.0	38.0	380.0
1.02	192.5	385.0	38.5	385.0
1.02	195.0	390.0	39.0	390.0
1.02	197.5	395.0	39.5	395.0
1.02	200.0	400.0	40.0	400.0
1.02	202.5	405.0	40.5	405.0
1.02	205.0	410.0	41.0	410.0
1.02	207.5	415.0	41.5	415.0
1.02	210.0	420.0	42.0	420.0
1.02	212.5	425.0	42.5	425.0
1.02	215.0	430.0	43.0	430.0
1.02	217.5	435.0	43.5	435.0
1.02	220.0	440.0	44.0	440.0
1.02	222.5	445.0	44.5	445.0
1.02	225.0	450.0	45.0	450.0
1.02	227.5	455.0	45.5	455.0
1.02	230.0	460.0	46.0	460.0
1.02	232.5	465.0	46.5	465.0
1.02	235.0	470.0	47.0	470.0
1.02	237.5	475.0	47.5	475.0
1.02	240.0	480.0	48.0	480.0
1.02	242.5	485.0	48.5	485.0
1.02	245.0	490.0	49.0	490.0
1.02	247.5	495.0	49.5	495.0
1.02	250.0	500.0	50.0	500.0
1.02	252.5	505.0	50.5	505.0
1.02	255.0	510.0	51.0	510.0
1.02	257.5	515.0	51.5	515.0
1.02	260.0	520.0	52.0	520.0
1.02	262.5	525.0	52.5	525.0
1.02	265.0	530.0	53.0	530.0
1.02	267.5	535.0	53.5	535.0
1.02	270.0	540.0	54.0	540.0
1.02	272.5	545.0	54.5	545.0
1.02	275.0	550.0	55.0	550.0
1.02	277.5	555.0	55.5	555.0
1.02	280.0	560.0	56.0	560.0
1.02	282.5	565.0	56.5	565.0
1.02	285.0	570.0	57.0	570.0
1.02	287.5	575.0	57.5	575.0
1.02	290.0	580.0	58.0	580.0
1.02	292.5	585.0	58.5	585.0
1.02	295.0	590.0	59.0	590.0
1.02	297.5	595.0	59.5	595.0
1.02	300.0	600.0	60.0	600.0
1.02	302.5	605.0	60.5	605.0
1.02	305.0	610.0	61.0	610.0
1.02	307.5	615.0	61.5	615.0
1.02	310.0	620.0	62.0	620.0
1.02	312.5	625.0	62.5	625.0
1.02	315.0	630.0	63.0	630.0
1.02	317.5	635.0	63.5	635.0
1.02	320.0	640.0	64.0	640.0
1.02	322.5	645.0	64.5	645.0
1.02	325.0	650.0	65.0	650.0
1.02	327.5	655.0	65.5	655.0
1.02	330.0	660.0	66.0	660.0
1.02	332.5	665.0	66.5	665.0
1.02	335.0	670.0	67.0	670.0
1.02	337.5	675.0	67.5	675.0
1.02	340.0	680.0	68.0	680.0
1.02	342.5	685.0	68.5	685.0
1.02	345.0	690.0	69.0	690.0
1.02	347.5	695.0	69.5	695.0
1.02	350.0	700.0	70.0	700.0
1.02	352.5	705.0	70.5	705.0
1.02	355.0	710.0	71.0	710.0
1.02	357.5	715.0	71.5	715.0
1.02	360.0	720.0	72.0	720.0
1.02	362.5	725.0	72.5	725.0
1.02	365.0	730.0	73.0	730.0
1.02	367.5	735.0	73.5	735.0
1.02	370.0	740.0	74.0	740.0
1.02	372.5	745.0	74.5	745.0
1.02	375.0	750.0	75.0	750.0
1.02	377.5	755.0	75.5	755.0
1.02	380.0	760.0	76.0	760.0
1.02	382.5	765.0	76.5	765.0
1.02	385.0	770.0	77.0	770.0
1.02	387.5	775.0	77.5	775.0
1.02	390.0	780.0	78.0	780.0
1.02	392.5	785.0	78.5	785.0
1.02	395.0	790.0	79.0	790.0
1.02	397.5	795.0	79.5	795.0
1.02	400.0	800.0	80.0	800.0
1.02	402.5	805.0	80.5	805.0
1.02	405.0	810.0	81.0	810.0
1.02	407.5	815.0	81.5	815.0
1.02	410.0	820.0	82.0	820.0
1.02	412.5	825.0	82.5	825.0
1.02	415.0	830.0	83.0	830.0
1.02	417.5	835.0	83.5	835.0
1.02	420.0	840.0	84.0	840.0
1.02	422.5	845.0	84.5	845.0
1.02	425.0	850.0	85.0	850.0
1.02	427.5	855.0	85.5	855.0
1.02	430.0	860.0	86.0	860.0
1.02	432.5	865.0	86.5	865.0
1.02	435.0	870.0	87.0	870.0
1.02	437.5	875.0	87.5	875.0
1.02	440.0	880.0	88.0	880.0
1.02	442.5	885.0	88.5	885.0
1.02	445.0	890.0	89.0	890.0
1.02	447.5	895.0	89.5	895.0
1.02	450.0	900.0	90.0	900.0
1.02	452.5	905.0	90.5	905.0
1.02	455.0	910.0	91.0	910.0
1.02	457.5	915.0	91.5	915.0
1.02	460.0	920.0	92.0	920.0
1.02	462.5	925.0	92.5	925.0
1.02	465.0	930.0	93.0	930.0
1.02	467.5	935.0	93.5	935.0
1.02	470.0	940.0	94.0	940.0
1.02	472.5	945.0	94.5	945.0
1.02	475.0	950.0	95.0	950.0
1.02	477.5	955.0	95.5	955.0
1.02	480.0	960.0	96.0	960.0
1.02	482.5	965.0	96.5	965.0
1.02	485.0	970.0	97.0	970.0
1.02	487.5	975.0	97.5	975.0
1.02	490.0	980.0	98.0	980.0
1.02	492.5	985.0	98.5	985.0
1.02	495.0	990.0	99.0	990.0
1.02	497.5	995.0	99.5	995.0
1.02	500.0	1000.0	100.0	1000.0

Dec. 18. 1857.

A. U.

Ill. E. au

" " " "  
p' Eridani

		36.6			40.0			36.3			2.8			50.3
		40.0			43.8			40.0			6.2			54.0
		43.6			47.2			43.3			9.6			57.4
		47.0			50.8			46.6			13.0			0.8
3	47	50.8	3	51	54.5	3	59	50.4	4	4	16.8	4	6	4.4
		218.0			236.3			216.6			48.4			166.9
3	47	43.60	3	51	47.26	3	59	43.32	4	4	9.68	4	7	57.38



Dec. 18

A.U.

All. Fare

3	20.1	205	49.8	18.0	53.1	0.5	27.8		
4	23.8	205	53.3	21.6	57.2	2.2	31.2		
4	27.1	205	56.7	25.0	0.7	5.0	34.7		
8	30.8	205	0.0	28.8	4.3	2.5	38.1		
4	34.4	4 12	3.9	4 18	32.1	40 20	7.8	4 21	41.7
6	136.2	100	163.7	128.5	123.2	50	173.1		
8	27.24	4 11	56.74	4 18	28.10	4 20	0.64	4 21	34.70

Dec. 18. 1857.

A. H.

Ill. Par

Tami

2.0	1.52	2.9	0.81	31.3	8.22	26.2	31.05	7.7
5.8	5.12	6.2	2.55	34.7	8.52	29.8	2.85	11.0
9.2	5.0	9.8	0.15	38.1	8.22	33.2	1.05	14.6
12.8	5.2	13.1	2.25	41.8	0.8	36.7	2.05	18.0
16.4	4.2	16.8	4.55	45.2	4.5	40.2	4.25	21.8
46.2	5.35	48.8	1.35	191.1	1.38	166.1	5.25	73.1
9.24	4.22	9.76	4.15	31.22	4.12	33.22	4.1	14.62



Dec. 18.

A. H.

"

Ill. Ear

	50.9		55.8
	54.2		59.4
	57.9		2.9
	1.2		6.1
4	47	4	49
	4.8		9.9
	169.0		134.1
4	46	4	49
	57.80		2.82

1857. Dec. 19

H.P.T.

Ill. Wier

5 Pegasi

2 Aquarii

21.7

43.0

29.6

46.4

33.1

50.0

36.7

53.2

21 37

40.1

22

58

56.7

165.2

249.3

21 37

33.04

22

825

49.86



Dec 21.

A.U.

Ill. Wms

Moon 10

γ Aquarii

λ Aquarii

x Pis. Aus.

59.1

16.2

28.1

59.9

3.2

19.9

28.8

4.1

6.7

23.2

32.2

8.1

10.2

26.6

38.8

12.1

22 14

14.0

22 28

30.3

22 40

39.2

22 50

16.2

92.6

116.2

161.1

100.4

33.6

40.4

22 14

6.72

22 28

23.24

22 40

32.22

22 50

28.08





1857phae.proj..100H

1857phae.proj..100H

1857phae.proj..100H

1857phae.proj..100H

1857phae.proj..100H

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1857phae.proj..100H

1857phae.proj..100H

1857. Dec.  $\frac{22}{23}$

Ill. Wm

A. H.

x Cor. Br.

"  
" *L. serpentina*

51. 18

28.4

55.7

32. 3

155

30.7

3.4

321

15 29

7.4

15

37

42.8

177.18

178.3

小 28

28

59.5

15、

37

31.66



Dec. 23. 1857.

H. M. 9. 8

A. U.

Ill. Wm

Moon 10

d. Piscium

30.4	0.55	30.4	0.55	0.55	0.55	0.55	0.55	0.55	0.55
34.1	2.12	34.0	2.12	2.12	2.12	2.12	2.12	2.12	2.12
—	1.11	37.5	1.11	1.11	1.11	1.11	1.11	1.11	1.11
41.5	1.54	41.0	1.54	1.54	1.54	1.54	1.54	1.54	1.54
23.50	48.2	13	44.1	1.05	1.05	1.05	1.05	1.05	1.05
155	2.11	187.4	2.11	2.11	2.11	2.11	2.11	2.11	2.11
185	62.5	13	37.48	2.11	2.11	2.11	2.11	2.11	2.11

1857. Dec. 24.

1857phae.proj...

A. H.			" "			M. W.			" "					
44 Piscium			Moon 10			e Piscium			5' Piscium			40 Ceti		
		20.5			3.0			16.7			32.0			56.1
		24.2			6.6			20.3			35.8			0.0
		27.5			10.0			23.7			39.1			3.4
		31.0			13.1			27.0			42.7			6.8
0	18	34.6	0	39	17.2	1	1	30.7	1	6	46.2	1	10	10.4
		137.4			50.3			118.4			145.8			77.1
														17.1
0	18	27.52	0	39	10.06	1	1	23.68	1	6	39.16	1	10	3.42



Dec. 25

A.M.		Ill. Wm												
2 Piscium		" Piscium		" Moon 10		8 Arietis		" Arietis						
	47.5		6.3		25.7		0.9		48.9					
	51.1		10.0		29.3		4.9		52.9					
	54.6		13.5		32.9		8.5		56.2					
	58.2		17.1		36.4		12.0		—					
0	56	1.7	1	24	20.9	1	32	40.1	1	47	15.8	1	50	3.8
		213.1			67.8			184.4			42.1			
		273.1												
0	55	54.62	1	24	13.56	1	32	32.88	1	47	8.42			

Dec. 27. 1857.

Ill. W. R.

U. P. 7.

Piscium

"  
Polaris

48.1

52.0

51.3

58.9

2.3

217.0

4

7

9

11

59.9

13.8

30.9

47.0

51 5.40



Dec. 27

A.H.		" "		Old. Phase		" "	
S Arietis		S Arietis		S Arietis		Moon 10	
19.4	0.21	49.4	0.22	58.4	0.21	—	1.08
23.3	0.22	48.3	0.21	2.2	0.21	—	2.48
26.9	0.25	52.0	0.25	6.0	0.21	38.2	1.08
30.7	0.18	51.6	0.21	—	0.21	42.1	0.21
2 51 33.9	3.15 3	58.3	3.15 3	7 13.2	3.15 31	46.3	
134.2	0.18	219.6	0.21				

2 51 26.84 3.05 3 51.92 0.21 0.21 2.48 1.08

857, Dec. 28.

Ill. West

A.M.

11 Jani			4 Jani			2 Jani			Moon 10			Saniendi		
	30.7			16.0			59.9			19.0			26.1	
	34.6			19.9			3.7			23.0			30.3	
	38.1			23.4			7.3			27.0			—	
	42.0			27.1			10.8			31.1			38.2	
3	32	—	3	39	31.0	4	28	14.8	4.52	39	31.2	4	36.41	42.1
					117.4			96.2	2.215		191.3			
								36.2						
			3	39	23.48	4	28	7.24	4.1	39	27.06			



Dec. 28

A.M.

Ill. West

2 Aurigae

β Tauri

γ Aurigae

57.2

32.6

41.9

° 1.7

36.0

46.1

5.8

39.9

50.1

9.9

43.8

54.1

4 48

14.0

5

17

47.7

5

28

58.4

88.6

199.4

250.6

26.6

4 48

5.72

5

17

39.88

5

23

50.12







1857. Dec. 31.

Oll. West

A.H.

2 Jani

2 Jani

32.3

59.3

36.2

3.6

39.8

6.6

43.3

10.1

4 20 47.0 4 28 13.8

198.6

92.8

4 20 39.72 4 28 6.56



1858 Jan. 4.

1858 Jan. 4.

A.U

Ill. Wm

 $\mu$  Gemini $\gamma$  Gemini

34.3

42.8

38.1

46.8

41.9

50.0

45.5

53.6

6 14

49.4

6

29

57.1

209.2

250.4

6 14

41.84

6

29

50.08

1858. Jan. 7.

Ill. War

A. H.

$\gamma$  Piscium

"  
v Piscium

3.8

13.4

7.5

17.0

11.0

20.4

14.6

23.9

1 24 18.3 1 34 27.3

58.2

102.0

1 24 11.04 1 34 20.40



Jan. 7/8.

A. H.

Ill. Wm

Moon T10

4722 B. A. C.

λ Virginis

12.3

48.1

36.2

16.3

48.5

39.3

19.6

52.3

43.2

23.0

55.8

46.4

14 3

27.0

14

7

59.7

14

11

50.2

98.2

261.4

215.3

14 3

19.64

14

7

52.28

14

11

43.06

Jan. 1/12. 1858.

A. H.

Oll. W.

S Ophiuchi

α Scorpii

2.2

49.4

5.9

53.4

9.3

57.1

12.8

0.9

16 7

16.4

16

21

4.9

46.6

165.7

16 7

9.32

16

20

57.14



Jan. 12

H.P. 7.

M. W. R.

 $\alpha$  Andromeda $\gamma$  Pegasi

10.0

3.4

13.9

7.1

17.8

10.7

21.7

14.2

0 1 21.80

6

17.9

89.2

53.3

0 1 17.84 0

6

10.66

Jan. 13/14. 1858

All. Wm

A. H.

$\alpha$  Lyrae

11.7

16.3

20.5

24.9

18 32 29.6

103.0

18 32 20.60



Jan. 18

A. H.

Oll. Wm

 $\gamma$  Eridani $\epsilon$  Tauri $\alpha$  Tauri

31.7	26.9	53.8
31.3	30.8	57.8
38.9	34.3	1.1
42.4	37.9	4.7
3 31 51 46.3	4 20 41.7	4 28 8.3
144.6	171.6	121.7
3 31 38.92	4 20 34.32	4 28 1.14

1838. Jan. 19.

A.H.

Alt. Mer

		3.1			27.2			26.4			4.6		21.0	
		6.8			30.8			30.2			8.2		28.7	
		10.0			34.1			33.6			11.6		32.0	
		13.8			37.8			36.8			14.9		35.5	
2	36	17.4	2	40	41.0	2.8	42	40.6	2.10	44	18.6	2.33	46	39.0
		51.1			170.7			167.6			57.9		160.2	
2	36	10.22	2	40	34.14	2.1	42	33.52	2.11	44	11.58	2.2	46	32.04



Jan. 19

A.H.

Hl. Wm

"

Ceti

17.8	0.8	13.1	58.3	24.4
21.6	4.2	17.0	2.0	28.2
24.8	7.7	20.3	5.3	31.5
28.0	11.0	23.8	8.9	34.0
2 48 31.9 2 50 14.7 2 52 27.3 2 51 12.4 2 57 38.9				
124.1	38.4	101.1	86.9	157.5
2 48 24.82 2 50 7.68 2 52 20.34 2 51 5.38 2 57 31.50				

858. Jan. 19.

A.H.

U. W. W.

40.9	58.9	12.0	11.7	58.9
44.5	2.4	15.7	11.4	2.7
48.0	6.0	19.1	18.8	5.9
52.4	9.2	22.5	22.1	9.3
56.9	12.9	26.2	21.8	13.0
61.3	17.2	29.5	25.1	17.2
65.8	21.5	32.8	28.4	21.5
70.2	25.8	36.1	31.7	25.8
74.6	30.1	39.4	35.0	30.1
79.0	34.4	42.7	38.3	34.4
83.4	38.7	46.0	41.6	38.7
87.8	43.0	49.3	44.9	43.0
92.2	47.3	52.6	48.2	47.3
96.6	51.6	55.9	51.5	51.6
101.0	55.9	59.2	54.8	55.9
105.4	60.2	62.5	58.1	60.2
109.8	64.5	65.8	61.4	64.5
114.2	68.8	69.1	64.7	68.8
118.6	73.1	72.4	68.0	73.1
123.0	77.4	75.7	71.3	77.4
127.4	81.7	79.0	74.6	81.7
131.8	86.0	82.3	77.9	86.0
136.2	90.3	85.6	81.2	90.3
140.6	94.6	88.9	84.5	94.6
145.0	98.9	92.2	87.8	98.9
149.4	103.2	95.5	91.1	103.2
153.8	107.5	98.8	94.4	107.5
158.2	111.8	102.1	97.7	111.8
162.6	116.1	105.4	101.0	116.1
167.0	120.4	108.7	104.3	120.4
171.4	124.7	112.0	107.6	124.7
175.8	129.0	115.3	110.9	129.0
180.2	133.3	118.6	114.2	133.3
184.6	137.6	121.9	117.5	137.6
189.0	141.9	125.2	120.8	141.9
193.4	146.2	128.5	124.1	146.2
197.8	150.5	131.8	127.4	150.5
202.2	154.8	135.1	130.7	154.8
206.6	159.1	138.4	134.0	159.1
211.0	163.4	141.7	137.3	163.4
215.4	167.7	145.0	140.6	167.7
219.8	172.0	148.3	143.9	172.0
224.2	176.3	151.6	147.2	176.3
228.6	180.6	154.9	150.5	180.6
233.0	184.9	158.2	153.8	184.9
237.4	189.2	161.5	157.1	189.2
241.8	193.5	164.8	160.4	193.5
246.2	197.8	168.1	163.7	197.8
250.6	202.1	171.4	167.0	202.1
255.0	206.4	174.7	170.3	206.4
259.4	210.7	178.0	173.6	210.7
263.8	215.0	181.3	176.9	215.0
268.2	219.3	184.6	180.2	219.3
272.6	223.6	187.9	183.5	223.6
277.0	227.9	191.2	186.8	227.9
281.4	232.2	194.5	190.1	232.2
285.8	236.5	197.8	193.4	236.5
290.2	240.8	201.1	196.7	240.8
294.6	245.1	204.4	200.0	245.1
299.0	249.4	207.7	203.3	249.4
303.4	253.7	211.0	206.6	253.7
307.8	258.0	214.3	209.9	258.0
312.2	262.3	217.6	213.2	262.3
316.6	266.6	220.9	216.5	266.6
321.0	270.9	224.2	219.8	270.9
325.4	275.2	227.5	223.1	275.2
329.8	279.5	230.8	226.4	279.5
334.2	283.8	234.1	229.7	283.8
338.6	288.1	237.4	233.0	288.1
343.0	292.4	240.7	236.3	292.4
347.4	296.7	244.0	239.6	296.7
351.8	301.0	247.3	242.9	301.0
356.2	305.3	250.6	246.2	305.3
360.6	309.6	253.9	249.5	309.6
365.0	313.9	257.2	252.8	313.9
369.4	318.2	260.5	256.1	318.2
373.8	322.5	263.8	259.4	322.5
378.2	326.8	267.1	262.7	326.8
382.6	331.1	270.4	266.0	331.1
387.0	335.4	273.7	269.3	335.4
391.4	339.7	277.0	272.6	339.7
395.8	344.0	280.3	275.9	344.0
400.2	348.3	283.6	279.2	348.3
404.6	352.6	286.9	282.5	352.6
409.0	356.9	290.2	285.8	356.9
413.4	361.2	293.5	289.1	361.2
417.8	365.5	296.8	292.4	365.5
422.2	369.8	300.1	295.7	369.8
426.6	374.1	303.4	299.0	374.1
431.0	378.4	306.7	302.3	378.4
435.4	382.7	310.0	305.6	382.7
439.8	387.0	313.3	308.9	387.0
444.2	391.3	316.6	312.2	391.3
448.6	395.6	319.9	315.5	395.6
453.0	399.9	323.2	318.8	399.9
457.4	404.2	326.5	322.1	404.2
461.8	408.5	329.8	325.4	408.5
466.2	412.8	333.1	328.7	412.8
470.6	417.1	336.4	332.0	417.1
475.0	421.4	339.7	335.3	421.4
479.4	425.7	343.0	338.6	425.7
483.8	430.0	346.3	341.9	430.0
488.2	434.3	349.6	345.2	434.3
492.6	438.6	352.9	348.5	438.6
497.0	442.9	356.2	351.8	442.9
501.4	447.2	359.5	355.1	447.2
505.8	451.5	362.8	358.4	451.5
510.2	455.8	366.1	361.7	455.8
514.6	460.1	369.4	365.0	460.1
519.0	464.4	372.7	368.3	464.4
523.4	468.7	376.0	371.6	468.7
527.8	473.0	379.3	374.9	473.0
532.2	477.3	382.6	378.2	477.3
536.6	481.6	385.9	381.5	481.6
541.0	485.9	389.2	384.8	485.9
545.4	490.2	392.5	388.1	490.2
549.8	494.5	395.8	391.4	494.5
554.2	498.8	399.1	394.7	498.8
558.6	503.1	402.4	398.0	503.1
563.0	507.4	405.7	401.3	507.4
567.4	511.7	409.0	404.6	511.7
571.8	516.0	412.3	407.9	516.0
576.2	520.3	415.6	411.2	520.3
580.6	524.6	418.9	414.5	524.6
585.0	528.9	422.2	417.8	528.9
589.4	533.2	425.5	421.1	533.2
593.8	537.5	428.8	424.4	537.5
598.2	541.8	432.1	427.7	541.8
602.6	546.1	435.4	431.0	546.1
607.0	550.4	438.7	434.3	550.4
611.4	554.7	442.0	437.6	554.7
615.8	559.0	445.3	440.9	559.0
620.2	563.3	448.6	444.2	563.3
624.6	567.6	451.9	447.5	567.6
629.0	571.9	455.2	450.8	571.9
633.4	576.2	458.5	454.1	576.2
637.8	580.5	461.8	457.4	580.5
642.2	584.8	465.1	460.7	584.8
646.6	589.1	468.4	464.0	589.1
651.0	593.4	471.7	467.3	593.4
655.4	597.7	475.0	470.6	597.7
659.8	602.0	478.3	473.9	602.0
664.2	606.3	481.6	477.2	606.3
668.6	610.6	484.9	480.5	610.6
673.0	614.9	488.2	483.8	614.9
677.4	619.2	491.5	487.1	619.2
681.8	623.5	494.8	490.4	623.5
686.2	627.8	498.1	493.7	627.8
690.6	632.1	501.4	497.0	632.1
695.0	636.4	504.7	500.3	636.4
699.4	640.7	508.0	503.6	640.7
703.8	645.0	511.3	506.9	645.0
708.2	649.3	514.6	510.2	649.3
712.6	653.6	517.9	513.5	653.6
717.0	657.9	521.2	516.8	657.9
721.4	662.2	524.5	520.1	662.2
725.8	666.5	527.8	523.4	666.5
730.2	670.8	531.1	526.7	670.8
734.6	675.1	534.4	530.0	675.1
739.0	679.4	537.7	533.3	679.4
743.4	683.7	541.0	536.6	683.7
747.8	688.0	544.3	539.9	688.0
752.2	692.3	547.6	543.2	692.3
756.6	696.6	550.9	546.5	696.6
761.0	700.9	554.2	549.8	700.9
765.4	705.2	557.5	553.1	705.2
769.8	709.5	560.8	556.4	709.5
774.2	713.8	564.1	559.7	713.8
778.6	718.1	567.4	563.0	718.1
783.0	722.4	570.7	566.3	722.4
787.4	726.7	574.0	569.6	726.7
791.8	731.0	577.3	572.9	731.0
796.2	735.3	580.6	576.2	735.3
800.6	739.6	583.9	579.5	739.6
805.0	743.9	587.2	582.8	743.9
809.4	748.2	590.5	586.1	748.2
813.8	752.5	593.8	589.4	752.5
818.2	756.8	597.1	592.7	756.8
822.6	761.1	600.4	596.0	761.1
827.0	765.4	603.7	599.3	765.4
831.4	769.7	607.0	602.6	769.7
835.8	774.0	610.3	605.9	774.0
840.2	778.3	613.6	609.2	778.3
844.6	782.6	616.9	612.5	782.6
849.0	786.9	620.2	615.8	786.9
853.4	791.2	623.5	619.1	791.2
857.8	795.5	626.8	622.4	795.5
862.2	799.8	630.1	625.7	799.8
866.6	804.1	633.4	629.0	804.1
871.0	808.4	636.7	632.3	808.4
875.4	812.7	640.0	635.6	812.7
879.8	817.0	643.3	638.9	817.0
884.2	821.3	646.6	642.2	821.3
888.6	825.6	649.9	645.5	825.6
893.0	829.9	653.2	648.8	829.9
897.4	834.2	656.5	652.1	834.2
901.8	838.5	659.8	655.4	838.5
906.2	842.8	663.1	658.7	842.8
910.6	847.1	666.4	662.0	847.1
915.0	851.4	669.7	665.3	851.4
919.4	855.7	673.0	668.6	855.7
923.8	860.0	676.3	671.9	860.0
928.2	864.3	679.6	675.2	864.3
932.6	868.6	682.9	678.5	868.6
937.0	872.9	686.2	681.8	872.9
941.4	877.2	689.5	685.1	877.2
945.8	881.5	692.8	688.4	881.5
950.2	885.8	696.1	691.7	885.8
954.6	890.1	699.4	695.0	890.1
959.0	894.4	702.7	698.3	894.4
963.4	898.7	706.0	701.6	898.7
967.8	903.0	709.3	704.9	903.0
972.2	907.3	712.6	708.2	907.3
976.6	911.6	715.9	711.5	911.6
981.0	915.9	719.2	714.8	915.9
985.4	920.2	722.5	718.1	920.2
989.8	924.5	725.8	721.4	924.5
994.2	928.8	729.1	724.7	928.8
998.6	933.1	732.4	728.0	933.1
1003.0	937.4	735.7	731.3	937.4
1007.4	941.			



Jan. 19

A. N.

Ch. Wren

у Тами<sup>и</sup>

20.2	26.2	54.4	9.1	20.3
22.9	29.7	58.1	13.0	24.1
27.2	33.0	1.6	11.8	27.4
30.7	36.4	4.9	20.5	30.8
34.2	39.9	8.7	24.4	34.2
136.2	161.2	127.7	83.8	136.9
27.24	33.04	1.54	16.76	27.38

1857. Jan. 19.

A.U.

Ill. Wue

		"		"		"		"	
						Same Son j' Eridani		j' Eridani	
29.0	15.2	27.8	57.8	31.4					
32.7	18.9	31.3	1.3	71.0					
36.0	22.3	34.8	4.9	38.7					
39.4	28.9	38.2	8.6	42.1					
43.1	29.4	41.7	12.3	46.0	3				3
180.2	111.7	173.8	84.9	193.2					
43	46	47	50	51	3				3
26.04	22.34	34.76	4.98	38.64	3				3



Jan. 19

A.U.

M. West

		27.8			53.9			41.7			11.3			40.9
		31.3			57.4			41.3			15.0			44.8
		34.8			0.9			48.8			18.7			48.2
		38.2			4.4			52.2			22.0			52.0
3	59	41.9	4	4	8.0	4.21	5	51.8	4.22	7	21.8	4.21	11	51.2
		174.0			124.6			243.8			92.8			241.2
3	59	34.80	4	4	0.92	4.21	5	48.76	4	7	18.56	4.21		48.24

Jan. 19 1858.

A. 26.

J. C. W. W.

	44.8	2.11	44.8	2.11	44.8	2.11	19.0	2.11
	48.2	0.0	48.2	0.0	48.2	0.0	22.8	0.0
	52.0	0.0	52.0	0.0	52.1	0.0	26.1	0.0
	55.3	0.0	55.3	0.0	55.5	0.0	29.3	0.0
4 11	19.0	4 11	59.0	4 11	19.0	4 11	32.1	0
	219.3	2.11		2.11	219.3	2.11	130.3	0
4 11	51.86	2.11	42.519	2.11	51.98	4 11	26.06	0



Jan. 20.

A.U.

J. L. Warr

Moon TO		♄ Piscium		♅ Piscium	
	54.8		24.1		40.6
	58.5		28.2		43.8
	1.9		31.1		47.1
	8.5		35.0		50.6
0 24	9.3	0 41	38.7	0 55	54.3
	130.0		157.9		235.8
	10.0				
0 24	2.00	0 41	31.58	0 55	47.14

858. Jan. 21.

A. H.

Ill. West

S Piscium		20 Ceti		2 Piscium		2 Piscium		5' Piscium	
	24.2		50.6		39.9		8.6		24.3
	28.0		54.0		43.4		12.3		28.0
	31.4		57.5		46.9		15.8		31.4
	34.9		1.0		50.3		19.1		34.8
0 41	38.3 0	46	4.6 0	55	54.0 1	1	22.8 1	6	38.3
	156.8		167.7		234.5		78.6		156.8
			287.7						
0 41	31.36 0	46	57.54 0	55	46.90 1	1	15.72 1	6	31.36



Jan. 21.

A. U.

Ull. Wren

Moon TO	"	"	"	"
94 Piscium	$\gamma$ Piscium	$\pi$ Piscium	$\nu$ Piscium	
12.4	6.8	58.4	39.9	8.1
16.3	10.5	2.1	43.5	11.9
20.0	14.0	5.7	46.9	19.1
23.7	17.7	9.3	50.5	18.8
1 14 27.2	19 21.3	1 24 13.0	1 28 54.1	1 34 22.3
99.6	70.3	88.5	234.9	76.2
		28.8		
1 14 19.92	1 19 14.06	1 24 5.70	1 28 46.98	1 34 15.24

1858. Jan. 22.

Ill. West

A. H.

"

"

"

"

94 Piscium	$\gamma$ Piscium	$\alpha$ Piscium	$\nu$ Andromedae	Moon TD
6.0	57.8	58.8	40.2	46.2
9.9	1.7	2.4	44.2	50.0
13.4	5.1	5.8	47.8	53.8
17.6	8.5	9.1	51.5	57.4
19 20.8	24 12.4	38 12.8	49 51.22	8 1.2
67.1	85.5	88.9	228.9	208.6
	25.5	28.9		218.6
19 13.42	24 5.10	38 5.78	49 47.78	7 53.72



Jan. 22.

M. W.

A. H.		"		"		"	
$\xi^2$ Ceti		$\mu$ Arietis		38 Arietis		$\pi$ Arietis	
	41.7		26.6		16.8		27.2
	45.4		30.2		22.5		31.2
	48.9		34.0		26.0		34.1
	52.2		37.8		29.3		38.0
2 20	56.0	2 34	41.4	2 37	33.2	2 41	45.1
	244.2		170.0		129.8		173.0
2 20	48.84	2 34	34.00	2 37	25.96	2 41	34.60

1858. Jan. 23.

A. H.

M. Wen

A. H.		"		"		"		"	
A. H.		A. H.		Moon TT		9 Tauri		17 Tauri	
	26.7		9.8		53.0		41.3		31.0
	30.3		13.6		57.0		45.2		34.9
	33.9		17.2		0.8		49.0		38.7
	37.3		21.0		4.7		52.8		42.2
2	41	2	51	3	6	28	56.6	36	46.2
	169.3		86.5		123.8		244.9		193.0
					3.8				
2	41	2	51	3	6	28	48.98	36	38.60



Jan. 23

A.U.

H. W. W.

27 Jani

47.1

54.4

55.1

58.9

2.9

210.8

271.8

5.16

Jan. 24, 1858

Ill. Wine

H.P.T.

8 Airtin

17 Tami

22 Tami

Moon TO

		33.6		30.8		57.8		10.3	
+	1	37.4		34.2		1.5		14.4	
	"	41.0		38.0		5.4		16.1	
	"	44.5		41.9		9.1		22.2	
3	3	48.3	3	46.0	3	13.2	4	26.3	4
		204.8		190.9		87.0		91.3	
						27.0			
3	3	40.96	3	38.18	3	5.40	4	16.26	4



Jan. 25

A.H.

Del. War

Tami		Anigae		Tami		Moon <sup>(cloudy)</sup> 70	
	47.2		47.9		40.6		53.3
	51.0		52.1		44.3		57.3
	54.7		56.2		48.0		1.8
	58.4		0.3		51.8		5.8
4	34	2.2	4	48	4.8	4	54
	213.5		161.3		240.1		128.1
	273.5		281.3				8.1
4	33	50.70	4	47	56.26	4	54
					48.02		17
							1.62

1858. Jan. 30.

Ill. War

A. H.

A. H.		A. H.		A. H.		A. H.		A. H.		A. H.	
1	47	49.6	11.7	53.5	15.9	57.1	19.1	60.8	22.3	64.6	27.2
		165.6	97.6								
1	46	57.12	19.52								



Jan. 3/32

A. U

 $\alpha$  Lyrae

6.2

11.3

11.3

19.7

18 32 24.2

76.7

18 32 15.74

Ill. Mean

1858. Feb. 1

Ill. War

A. H.

 $\beta$  Arietis $\alpha$  Arietis

49.1

11.3

53.0

15.2

56.6

19.0

0.1

22.8

1 47

4.0

1

59

26.7

162.8

95.0

1 46

56.561

59

19.00



Feb. 3.

A. H.

M. W. Put

α Jami

48.1	48.9	12.3	53.8	36.8
51.8	52.3	16.0	57.2	40.4
55.5	55.8	19.3	0.8	43.9
59.0	59.0	22.9	4.1	47.1
4 5 28 2.8 4 32 2.9 4 42 26.2 4 45 7.8 4 46 51.0				
217.2	218.9	96.7	123.7	219.2
4 27 55.44 4 31 55.78 4 42 19.34 4 45 0.74 4 46 43.84				

Feb. 3. 1888.

A. H.

Ill. Wm

		41.9			13.6			46.0			34.9		11.0
		41.6			17.1			44.5			38.3		14.8
		49.0			20.5			48.0			41.8		18.2
		52.4			24.0			51.3			45.1		21.7
4	48	56.0	4	51	27.3	4	54	54.9	4	58	48.8	5	21.2
		244.9			102.5			239.7			208.9		90.9
4	48	48.98	4	51	20.50	4	54	47.94	4	58	41.78	5	18.18



Feb. 3

A.M.

Ill. W. C.

	52.8		20.8		28.8		47.9		56.0
	56.1		24.4		32.4		51.3		54.8
	59.8		27.9		35.9		54.8		58.0
	3.1		31.3		39.3		58.3		1.6
5 5 8	6.9	5 5 9	34.95	12	42.95	16	2.0	5 5 18	5.1
	179.1		139.3		179.3		214.3		170.5
5 5 7	59.82	5 5 9	27.865	12	35.865	15	54.86	5 5 17	58.10

Feb. 3, 1858

A. H.

J. L. Wm

J. O. riouin

26.0	22.2	34.9	47.3	30.8	30.2
29.7	38.5	51.0	34.4	33.8	
32.9	42.0	54.3	37.8	37.2	
36.3	41.3	57.8	41.1	40.7	
40.0	49.0	1.3	44.9	44.2	
164.9	209.7	211.7	189.0	186.1	
32.98	41.94	54.34	37.80	37.22	



Feb. 3

A. H.

Ill. Wm

α Orionis

2	10.3	17.6	9.2	6.3	31.1
8	14.6	21.4	12.9	10.0	34.8
2	17.3	24.9	16.2	13.3	38.2
7	20.9	28.2	19.8	16.9	41.8
2	24.4	31.9	23.2	20.4	45.3
1	86.9	124.0	81.3	66.9	191.2
2	17.38	24.80	16.26	13.38	38.24





Feb. 5

A. U.  
ε Tauri

Ill. Warr

" α Tauri

20.4

47.5

24.2

56.2

27.8

54.8

31.4

58.2

4 20

35.0

4

28

2.0

138.8

217.7

4 20

27.76

4

27

54.74

Feb. 6, 1858.

A. H.

"

Ill. Wm

"

"

 $\mu$  Gemini

"

		56.2			39.5			38.0			22.8			53.1
		59.7			43.1			38.7			26.8			56.8
		3.3			46.4			42.2			30.5			0.0
		6.8			49.9			45.6			34.0			3.3
5	56	10.2	5	59	53.5	6	8	49.2	6	14	37.9	6	18	7.6
		136.2			232.4			210.7			152.0			120.8
5	56	3.24	5	59	46.48	6	8	42.14	6	14	30.40	6	18	0.16



Feb. 6.

A.U.

Ill. Wm

1	55.1	46.8	17.7	7.8	19.9
2	58.8	50.2	21.4	11.1	23.7
3	2.0	52.8	24.9	14.8	26.9
4	5.5	57.3	28.2	18.0	30.0
5	8.8	1.2	31.8	21.6	33.9
6	130.2	209.1	124.0	73.3	174.4

6	21	2.04	6	25	53.82	6	31	24.80	6	34	14.60	6	35	26.88
---	----	------	---	----	-------	---	----	-------	---	----	-------	---	----	-------

Feb. 6, 1858

J. C. Wm

A. H.

a Can. Maj

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"

"

54.2	48.2	17.2	18.5	21.1
58.2	49.0	21.0	19.0	24.5
1.7	52.4	24.3	22.3	28.2
5.2	58.7	27.8	21.8	31.6
6 39 9.2	6 41 59.4	6 46 31.4	6 49 29.3	6 50 31.2
128.5	261.7	121.7	111.9	140.5

6 39 1.70 6 41 52.34 6 46 24.34 6 49 22.38 6 50 28.12



Feb. 6.

A. H.

Ill. Wane

1	13.6	3.7	5.35	2.75	2.80	2.85
5	17.2	7.0	6.20	2.75	2.80	2.85
2	20.5	10.3	6.80	2.75	2.80	2.85
6	24.0	13.9	7.50	2.75	2.80	2.85
2 6 52	27.6	17.4	8.20	2.75	2.80	2.85
5	102.9	52.3	9.80	2.75	2.80	2.85
2 6 52	20.58	10.46	9.80	2.75	2.80	2.85

Feb. 10. 1858.

A. H.

Ill. Ear

		10.8		28.4		32.2		8.7		50.2	
		14.6		42.1		36.0		12.1		53.8	
		17.8		45.4		39.3		15.4		57.1	
		21.2		49.0		42.9		19.0		0.7	
4	51	25.3	4	52.5	4	46.3	5	22.7	5	4.0	5
		89.7		227.4		196.7		77.9		168.8	
4	51	17.94	4	45.48	4	38.34	5	15.88	5	57.16	5



Feb. 10

A. U

Ill. Ear

2		18.2	33.90	26.9		41.6		22.2	23.4
8		21.8		—		49.0		21.9	27.0
1		25.5	.78	33.8		52.4		29.0	30.6
7		29.0	.72	37.1		51.9		32.8	33.9
5	9	32.6	$\frac{74.20}{12}$	41.2	5	58.2	17	36.2	37.3
		127.1				262.1		146.1	152.2
6	5	21.42			5	52.42	17	29.22	30.44

Feb. 10. 1858

A. U.

Ill. Ear

♂ Orionis

1857

	32.4		44.9		28.3		53.2		27.5					
	36.0		48.3		22.2		56.9		31.2					
	39.4		51.9		31.7		0.2		39.7					
	42.9		51.2		39.0		3.8		38.2					
5	22	46.6	5	24	39.0	5	27	42.9	5	31	7.3	5	32	41.6
	197.3		219.3		178.1		121.4		173.2					

5	22	39.46	5	24	51.86	5	27	35.62	5	31	0.28	5	32	34.64
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7d.10.

A.U

Ill. Ears

x Orionis

1	8.0	15.4	7.0	3.9	28.9
2	11.5	19.0	10.7	7.2	32.9
3	14.9	22.1	14.0	10.9	36.0
4	18.2	24.8	17.2	14.1	39.3
5	21.8	29.3	21.0	17.8	42.0
6	24.4	31.2	24.9	21.9	44.6
7	27.8	34.0	28.8	25.8	47.2
8	31.1	36.8	32.7	29.7	49.8
9	34.5	39.6	36.6	33.6	52.4
10	37.9	42.4	40.5	37.5	55.0
11	41.3	45.2	44.4	41.4	57.6
12	44.7	48.0	48.3	45.3	60.2
13	48.1	50.8	52.2	49.2	62.8
14	51.5	53.6	56.1	53.1	65.4
15	54.9	56.4	60.0	57.0	68.0
16	58.3	59.2	63.9	60.9	70.6
17	61.7	62.0	67.8	64.8	73.2
18	65.1	64.8	71.7	68.7	75.8
19	68.5	67.6	75.6	72.6	78.4
20	71.9	70.4	79.5	76.5	81.0
21	75.3	73.2	83.4	80.4	83.6
22	78.7	76.0	87.3	84.3	86.2
23	82.1	78.8	91.2	88.2	88.8
24	85.5	81.6	95.1	92.1	91.4
25	88.9	84.4	99.0	96.0	94.0
26	92.3	87.2	102.9	99.9	96.6
27	95.7	90.0	106.8	103.8	99.2
28	99.1	92.8	110.7	107.7	101.8
29	102.5	95.6	114.6	111.6	104.4
30	105.9	98.4	118.5	115.5	107.0
31	109.3	101.2	122.4	119.4	109.6
32	112.7	104.0	126.3	123.3	112.2
33	116.1	106.8	130.2	127.2	114.8
34	119.5	109.6	134.1	131.1	117.4
35	122.9	112.4	138.0	135.0	120.0
36	126.3	115.2	141.9	138.9	122.6
37	129.7	118.0	145.8	142.8	125.2
38	133.1	120.8	149.7	146.7	127.8
39	136.5	123.6	153.6	150.6	130.4
40	139.9	126.4	157.5	154.5	133.0
41	143.3	129.2	161.4	158.4	135.6
42	146.7	132.0	165.3	162.3	138.2
43	150.1	134.8	169.2	166.2	140.8
44	153.5	137.6	173.1	170.1	143.4
45	156.9	140.4	177.0	174.0	146.0
46	160.3	143.2	180.9	177.9	148.6
47	163.7	146.0	184.8	181.8	151.2
48	167.1	148.8	188.7	185.7	153.8
49	170.5	151.6	192.6	189.6	156.4
50	173.9	154.4	196.5	193.5	159.0
51	177.3	157.2	200.4	197.4	161.6
52	180.7	160.0	204.3	201.3	164.2
53	184.1	162.8	208.2	205.2	166.8
54	187.5	165.6	212.1	209.1	169.4
55	190.9	168.4	216.0	213.0	172.0
56	194.3	171.2	219.9	216.9	174.6
57	197.7	174.0	223.8	220.8	177.2
58	201.1	176.8	227.7	224.7	179.8
59	204.5	179.6	231.6	228.6	182.4
60	207.9	182.4	235.5	232.5	185.0
61	211.3	185.2	239.4	236.4	187.6
62	214.7	188.0	243.3	240.3	190.2
63	218.1	190.8	247.2	244.2	192.8
64	221.5	193.6	251.1	248.1	195.4
65	224.9	196.4	255.0	252.0	198.0
66	228.3	199.2	258.9	255.9	200.6
67	231.7	202.0	262.8	259.8	203.2
68	235.1	204.8	266.7	263.7	205.8
69	238.5	207.6	270.6	267.6	208.4
70	241.9	210.4	274.5	271.5	211.0
71	245.3	213.2	278.4	275.4	213.6
72	248.7	216.0	282.3	279.3	216.2
73	252.1	218.8	286.2	283.2	218.8
74	255.5	221.6	290.1	287.1	221.4
75	258.9	224.4	294.0	291.0	224.0
76	262.3	227.2	297.9	294.9	226.6
77	265.7	230.0	301.8	298.8	229.2
78	269.1	232.8	305.7	302.7	231.8
79	272.5	235.6	309.6	306.6	234.4
80	275.9	238.4	313.5	310.5	237.0
81	279.3	241.2	317.4	314.4	239.6
82	282.7	244.0	321.3	318.3	242.2
83	286.1	246.8	325.2	322.2	244.8
84	289.5	249.6	329.1	326.1	247.4
85	292.9	252.4	333.0	330.0	250.0
86	296.3	255.2	336.9	333.9	252.6
87	299.7	258.0	340.8	337.8	255.2
88	303.1	260.8	344.7	341.7	257.8
89	306.5	263.6	348.6	345.6	260.4
90	309.9	266.4	352.5	349.5	263.0
91	313.3	269.2	356.4	353.4	265.6
92	316.7	272.0	360.3	357.3	268.2
93	320.1	274.8	364.2	361.2	270.8
94	323.5	277.6	368.1	365.1	273.4
95	326.9	280.4	372.0	369.0	276.0
96	330.3	283.2	375.9	372.9	278.6
97	333.7	286.0	379.8	376.8	281.2
98	337.1	288.8	383.7	380.7	283.8
99	340.5	291.6	387.6	384.6	286.4
100	343.9	294.4	391.5	388.5	289.0

Feb. 10, 1855

A.U.

Ill. Case

50.9	58.6	38.0	1.0	14.0
54.3	58.7	41.4	8.1	17.1
57.9	2.1	41.0	4.8	21.0
1.5	5.3	48.7	11.3	24.2
52 1.1 5 51 9.0 5 59 52.2 6 9 18.0 6 10 28.0				
169.7	130.1	221.3	40.2	104.7
51 57.94 5 55 2.02 5 59 45.06 6 9 8.04 6 10 20.94				



Feb. 10

A. H.

M. E. au

 $\mu$  Geminae

1.00	21.1	1.00	54.1	1.00	48.4	1.00	17.6	1.00	16.6
1.00	25.1	1.00	57.4	1.00	48.9	1.00	21.2	1.00	20.1
1.00	28.9	1.00	1.1	1.00	52.5	1.00	24.8	1.00	23.4
1.00	32.4	1.00	4.3	1.00	55.8	1.00	28.0	1.00	27.0
6.9 14	36.5	6.9 21	8.0	6.9 21	59.8	6.9 27	31.8	6.9 31	30.6
1.00	144.0	1.00	124.9	1.00	262.4	1.00	123.4	1.00	117.7

6.9 14	28.80	6.9 21	0.98	6.9 21	52.48	6.9 27	24.68	6.9 31	23.54
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Feb. 10. 1858.

A. H.

Ill. East

x Can Maj

6.4	53.0	44.0	16.2	14.1
10.0	57.0	47.8	19.8	17.7
13.3	6.4	51.0	23.1	21.1
16.7	4.0	54.3	26.6	24.3
20.2	8.0	58.0	30.2	28.0
66.6	122.4	258.1	115.9	105.2
34	39	41	46	49
13.32	0.48	51.02	23.18	21.04



Feb. 10

A. U.

"

Ill. East

"

1		20.0		12.3		2.4			
2		23.6		18.9		6.0			
1		27.0		19.2		9.1			
3		30.3		22.6		12.8			
0	6	50	34.0	6	52	26.4	6	58	16.2
2			134.5			46.4			46.5
4	6	50	26.58	6	52	19.28	6	58	9.30

Feb. 16. 1858

A. H.

Ill. West

I. Arctis

a. Puzi

26.2

3.8

20.1

9.0

33.6

14.1

37.1

19.3

3 3 41.0 3 14 24.9

168.0

71.1

3 3 33.60 3 14 14.22



1857phase proj. 100H

Feb. 24<sup>th</sup>

A. U.

Ill. Wier

$\alpha$  Aquilae

44.7

48.3

51.8

55.2

19 43 58.9

218.9

19 43 51.78

Feb. 22, 1858.

A. H.		M. West									
$\beta$ Tauri		$\gamma$ Aurigae		$\epsilon$ Orionis		$\alpha$ Orionis		$\iota$ Geminorum			
	13.1		23.2		55.1		23.8			23.6	
	17.2		27.3		58.8		27.2			27.4	
	21.0		31.3		2.2		30.9			31.0	
	25.0		35.3		5.7		34.4			34.7	
5	17	29.0 5	23	39.8 5	29	9.3 5	47	37.9 5	51	38.7	5
	105.3		156.9		131.1		154.2			155.4	
					11.1						
5	17	21.06 5	23	31.38 5	29	2.22 5	47	30.84 5	51	31.08	5



Feb. 22.

A. U.

Ill. Wier

Moon 10

28.4

32.8

36.9

40.9

45.1

184.1

36.82





















1857phae.proj..100H