1885phae.proj.1622

KG
11366
1.618

Fundamental Stars
Observations and Reductions
From Oct. 11. 1885 to Feb. 1. 1886
B 3.

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1885phae.proj.1622

W. C. DEMAIN & SON,

STEAM PAPER RULERS,

AND DEALERS IN BLANK MUSIC PAPER.

8 HAWLEY AND 9 ARCH STREET.

☞ Passenger Elevator at 51 MILK STREET. Freight Elevator on ARCH STREET.

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$i = +4^\circ\ 55'\ 56''$ Same Oct 1 1885 to Dec Applied to Circle Readings

log c 8.93599 " " " "

log 15 tan i 0.11208 " " " "

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1885phae.proj.1622.

Oct. 11 – 1885

| | | |

1885phae.proj.1622

9.67018

α Cephei +.189

h m s −.34
21 15 50.
+62° 6'
−19 43

16	40.1		38.0	17	4.7	2	4.3		19.4	2	46.4			6	15.0	7	35.0		46.2	7	9.1
	43.0		42.2		8.9		7.4		24.0		50.4				17.6		37.1		50.2		13.2
	47.3		46.8		13.2		10.7		28.2		54.9				20.0		40.7		53.7		17.2
	50.0		51.3		17.7		14.1		33.0		59.2				22.4		43.8		57.8		20.8
	53.4		55.7	4680	22.0		18.0		37.0	28.32	3.9				24.9		46.5		1.7	53.92	24.6
					26.4						8.5				27.3						28.5
			48.6		30.7				30.7		12.6				29.8				47.8		32.4
			52.6		35.0				34.6		17.0				32.3				51.5		36.2
			57.4		39.8				39.4		21.6				34.8				55.4		40.0
			4.6						43.6										59.0		
			6.3	5730					48.0	39.26									3.0	5534	
			4410		198.4				7.58		34.5				224.1				4926		232.0
16	46.76	17	22.050	17	22.044	2	10.90	3	3.790	3	3.833	6	24850	6	24900	7	40.62	7	24630		24.667

17 22.047
−.033

17 2201
15 5325 − 88.786
+1 2876 − .07
50.07
− 3.18
−1 3202
15 4299
5011

3 3.811
−.033
3 3.778
1 3480
+1 2598 − 88.780
− .08
30.76
− 4.04
−1 329 x2
1 3086

6 24869
−.019
6 24.85
4 5608
+1 2877 − 8880
− .02
52.84
− 3.24
−1 32.16 06
4 52.66
79

8 24648
−.028
8 2462
6 5575
+1 2887 − 8880
− .06
51.87
− 3.88
−1 32.74
6 51.88

9.78226

58 3418 +3529 1.54765
+ 21.38 1.32991
58 55.56

50 5040 +5291 1.72354
+ 31.91 1.50389
51 22.31

9.78035

9.84051

26 1230 +4403 1.64375
+ 3050 1.48426
26 4280

+62
23 5279
−19 43 42
1.31490
+ 533
1.32023
+20.90
− .28
+ .00
+ 20.62
+62 24 13.41

+62
31 2604
−1951 26
1.31800
+ 778
1.32578
+ 21.14
− .63
+ .00
+ 20.54
+62 31 46.58

+57
56 555
−15 16 4
1.19640
+ 811
1.20451
+ 16.01
− .48
+ .00
+ 15.53
+57 56 21.08

Oct 11
Reg −17

Reg	+	.21	−17	44.03		+	.21	−17	44.03		+	.16	−17	44.03							43.3
Ref	24	13.6	+	21		31	46.8	+	.21		56	21.2	+	.16							44.2
Reduction Plan	6	29.3	−	35.00		14	2.8	−	33.40		38	37.6	−	33.20							43.2
Sum		443	−18	1882			44.0	−18	17.22			43.6	−18	17.07							45.6
S 18850	5	54.3	5	54.59		13	29.4	13	29.36		38	4.4	38	4.01							44.3
																					44.0
																					43.6
																				− 17	44.03

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1885phae.proj.1622.

Oct. 12 - 1885

66270
9.64775

+ 1.98

α Cephei
h m s
20 27 38
+62° 37'

9.42507
+.368

73 Draco.
h m s − 53
20 32 54
+74° 34' − 02
− 32 11 + 50

α Cygni
h m s
20 37 31
+44° 53'

9.87953
+.86

γ Cygni
h m s +.03
20 52 54
+40° 44'
+1 39

30 10.3
12.0
15.0
17.0
19.6

33 46.4
50.3
56.6
1.2
8.3

33 14.1
22.3
30.7
38.0
45.9 30 20
18.7
26.8
34.7
42.4
49.4 34 40

34 0.9
9.0
16.9
24.6
31.9
40.9
48.1
55.5
3.3

54 17.8
20.7
23.3
25.7
27.4

30 0.3
32 3.2
33 6.0
34 8.5 3 153
+ 21.774
41.8 24924
44.0
46.6
49.4
52.0 4666
− 21774
49 81 24886

54 44.0
16.9
19.7
22.4
25.0
27.7
30.4
33.2
35.8
225.1

29 46.0
50.7 46.000
55.2 − 32130
− 32874
13.503

6460 291.1

30 14.78 29 10.126 33 56.56 34 32.300 34 32.233 54 22.98 54 24905 54 25.011

10.126
29 13.503
10.035
10.088
20 29 13.47
27 41.20
28.89
+1 32.27 My.

34 32.268
− .057
34 32.21
33 3.01
+1 29.20
0.85

− 89.20
− .07
00
− 2.16
−1 31.43
33 0.78

54 24.958
− 021
54 24.94
52 85.67
+1 29.27
53.18

− 89.22
− .02
− 2.49
−1 31.73
52 53.21

9.53715

29 1.58 − 6465 − 11105/n 30 49.48 +35.71 1.55279
+ 12.30 1.08994
31 1.78

9.99161

20 57.48 +1.98 0.29667
+ 1.94 0.28828
20 59.42

+74°
51 46.57

−32 12 27
1.55940
+ 569
1.56509

+36.74
− .18
+ 00
+36.56
+74 52 23.13

+41
1 48.93

+1 38 41
0.21850
+ 466
0.22316

− 1.67
− .00
+ .00
− 1.67
+41 1 47.26

+ .32
52 23.4
34 12.6
−18 10.8

− .02 −17 43.31
1 47.2 − .02
44 3.0 − 33.70
−17 44.2 −18 17.03
43 29.3 43 30.23

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1885phae.proj.1622

9.89534 +.79

61 Cygni +.07
h m s
21 1 46
+38°12'
+4 11

9.32960 +4.587

Br. 2777 −.58
h m s
21 7 48
+77°40'
−35 17

9.15293n ×.696

1 H Draco. −.83
h m s
21 20 36
+98°10'
81 49 27
−5547

9.88489 +.84

74 Cygni +.04
h m s
21 32 22
+39°54'
+2 29

3 9.6 / 11.2 55.8 / 13.0 55.7 / 16.1 55.7 / 18.9 55.7 / 32.5 / 35.0 / 37.6 / 40.4 / 43.0 37.70 − 20.997 = 16.703
53.2 / 55.7 / 58.3 / 0.9 55.725 + 20.997 = 16.722 / 151.6
3 13.76 3 16.712 3 16.844
3 6.2 / 9.0 / 11.8 / 14.3 / 17.0 / 19.5 / 22.0 / 24.7 / 27.1
7 4.0 / 6.7 / 9.6 / 13.1 / 15.1 / 16.6 / 22.0 / 25.7
7 10.85 / 10 15.80
41.1 / 44.3 / 48.0 / 51.2 / 54.0 4.72 / 3.74 / 46.2 / 49.0 19.76 / 52.5 35.70 / 58.0 / 59.7 52.68 / 99.60
8 57.0 / 0.8 / 4.3 / 6.8 / 9.8 3.74 / 13.2 / 16.7 / 19.6 / 23.1 / 26.2 19.76 / 28.2 / 32.8 / 36.0 / 39.2 / 42.3 3.570
24 29.0 / 29.4 / 32.2 / 34.2 / 36.1
23 31.5 / 45.0 / 24 1.0 / 1.45 0.750 / 29.0 − 114.025
24 31.44 72 4.042
33 30.3 / 32.5 / 34.3 / 36.0 / 38.2
34 25.2 / 28.9 / 31.0 / 32.7 / 34.5 / 36.8
33 37.26 / 34 31.82
26.0 / 28.6 / 31.3 / 34.0 / 36.7 31.32 / 9.0 / 12.0 / 14.2 / 17.0 / 19.7 14.38 / 10.570
33 42.0 / 44.8 / 47.5 / 50.2 / 52.8 / 55.5 / 58.3 / 1.0 / 3.8 / 259
33 52.850 / 33 52.878

3 16.778 − .020 = 3 16.76 / 1 47.43 + 15 / + 1 29.33 .18 = 44.48
− 89.22 / − .02 / − 2.95 / −1 32.19 / 1 44.57

9 19.820 − .072 = 9 19.748 / 7 50.54 / + 1 29.31 = 46.82
− 89.23 / − .09 / − 3.73 / −1 33.05 / 7 46.80

22 4.725 / 4.617 + .108 = 22 4.725 / 20 35.86 / +1 29.37 = 36.38
− 89.24 / − .14 / + 1.02 / −1 28.36 / 20 35.92 / 20 36.47

33 52.864 − .020 = 33 52.84 / 32 23.40 / + 1 29.44 = 2040
− 89.24 / − .02 / − 3.02 / −1 32.26 / 32 20.58

0.00742

53 18.02 +3.02 / + 3.07 / 53 21.09
0.48001 / 0.48742
25 0.85 +128.47 / + 35.49 −.5648 / 24 36.34 / 25 53.58 − 15.62 = 25 37.98
+38 29 27.26
+4 11 2 / 0.62450 / + 440 / 0.62890 / − 4.25 / − .00 / + .00 / − 4.25 / +38 29 23.01
+77 57 1201 57 11.37 / −35 17 15 −35 16 22 / 1.60990 1.60970 / + 414 + 414 / 1.61404 1.61384 / +41.12 +41.10 / − 1.88 − 0.36 / + .00 + .00 / + 39.24 + 40.74 / +77 57 51.25 57 52.11 / +77 57 51.68
− .04 −17 43.31 / 29 23.0 − .04 / 11 39.2 − 35.80 / 43.8 −18 29.15 / 11 3.4 −18 5.386 / 11 3.86
+ .85 −17 43.31 / 57 52.0 + .35 / 140 10.0 − 35.80 / 420 −18 17.96 / 39 35.0 39 8.372

9.44168

2.10847 / 1.75189n / 1.56015 / 1.19357n
55 34.30 − 14.727 / + 27.08 / 56 61.38
+98 26 46.97
− 55.46 42 / 1.92660 / + 388 / 1.93048 / +85.21 / + 1.86 / + .00 / +86.87 / +98 28 13.84
+ .57 −17 43.31 / 28 14.3 + .51 / 49 27.1 − 32.10 / 78 42.2 18 14.90 / 10 0.8 9 58.94 / 50 1.06 / +90 / 1.96

9.26453n

2.16811n / 1.43264
11 16.78 +18.60 / − 35.28 −38.96 / 10 41.50
+40 12 6.85
+2 29 1 / 0.39750 / + 311 / 0.40061 / − 2.51 / − .41 / + .00 / − 2.92 / +40 12 3.93
− .02 −17 43.31 / 12 3.9 − .02 / 54 22.6 − 33.20 / 41.3 −18 16.53 / 53 49.4 53 47.40

9.99697

1.26451 / 1.59062n / 1.26648 / 1.54759n

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Oct. 12 - 1885

	9.81882	9.95591	9.92546	9.72843
	+1.14	+.47	+.64	+1.58
	Π^2 Cygni	16 Pegasi	π Pegasi	γ Cephei
	h m s	h m s	h m s	h m s
	21 42 34	21 47 52	22 4 54	22 6 53
	+48° 44′	+25 23	+32° 37′	+57 39
	−6 24	+17 0	+9 46	−15 16
	−.11	+.29	+.17	−.26

43	24.0		34.1	43	52.8	49	13.7		59.3	49	13.0	5	16.0		16.3	5	30.6	7	39.0		46.5	8	9.4	
	26.0		37.1		56.0		15.7		1.5		15.4		18.0		18.6		33.2		41.7		50.5		13.4	
	29.0		40.1		57.0		17.2		4.0		17.7		19.8		21.2		35.7		44.1		54.2		17.2	
	32.0		43.4		2.0		18.8		6.1		20.0		21.5		23.4		38.0		46.7		58.0		21.3	
	33.2		46.5	40.24	5.0		20.4		8.6	3.90	22.2		22.7		25.7	21.04	40.8		49.4		1.6	5.16	24.7	
	34.6				8.2						24.7						43.0						28.8	
			24.0		11.2				35.9		26.8				55.2		45.4				48.0		32.2	
			27.2		14.6				38.0		29.1				57.5		47.9				52.0		36.6	
			30.0		17.6				40.3		31.4				59.8		50.2				55.4		40.2	
			33.2						42.5						2.4						59.6			
			36.4	30.16					45.0	4.34					4.8	5.94					3.2	5.64		
		10.40		4.74				44.24		200.3				80.98		364.8				49.80		223.8		
43	29.80	44	52.00	44	5.267	49	17.16	49	22.120	49	22.256	5	19.60	5	40.490	5	40.533	7	44.18	8	24.900	8	24.867	

		44	5.234			49	22.188			5	40.512			8	24.884					
			−.023				−.017				−.019				−.029					
	21	41	5.21			49	2.217			5	40.49			8	24.86					
		42	35.98			47	52.84			4	36.07			6	55.73					
					−89.25				−89.26								−89.27			
		+1	29.23		−.02	+1	29.33		−.01					+1	29.13		−.03			
			32.73		.50		49.80							6	51.87					
					−3.26				−3.04								−3.86			
					−1 32.52				−1 32.31								−1 33.16			
					42 32.69				47 49.86								6 51.70			

			9.93090				0.06799				0.03754				9.84051					
17	27.00	+35.43	1.54937	41	6.78	+5.03	0.70157	27	21.05	+20.91	1.32035	26	13.65	+40.70	1.60959					
	+30.22		1.48027		+5.88		0.76956		+22.80		1.35789		+28.19		1.45010					
17	57.22			41	12.66			27	43.85			26	41.84							

+49°				+25				+32				+57								
4	51.13			41	35.69			55	4.50			56	6.51							
−6	24.49			+16	58.51			+9	45.5			−15	16.2							
	0.81116				1.24510				0.99550				1.19640							
	+.259				+.233				+.156				+.156							
	0.81369				1.24743				0.99706				1.19796							
	+6.51				−17.68				−9.93				+15.77							
	−.34				−.01				−.11				−.40							
	+.00				+.00				+.00				+.00							
	+6.17				−17.69				−10.04				+15.37							
+49	4 57.30			+25	41 18.00			+32	54 54.46			+57	56 21.88							

	+.07	−17	43.31		−.18	−17	43.31		−.10				+.16	−17	43.31					
4	57.4	+	.07	41	17.8	−	.18	54	54.4			56	22.0	+	.16					
47	13.3	−	33.70	23	34.2	−	30.50	37	22.7			38	37.8	−	33.40					
	41.1	−18	16.94		43.6	−18	13.99		31.7				44.2	−18	16.55					
46	39.6	46	40.36	23	3.7	23	4.01					38	4.4	38	5.33					

Oct. 12

Reg − 17	44.2
	43.8
	42.0
	41.3
	44.1
	43.6
	44.2
	−17 43.31

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Oct. 14 – 1885 – 9.83861 | 9.42553 | 985037 | 9.87953

O¹ Cygni +105
h m s −.07
20 10 1
+46° 24′ +.01
− 4 1 +.00

73 Draco +3.6x²
h m s −.53
20 32 57
+74° 33′
− 32 10

α Cygni +1.00
h m s −.04
20 37 31
+44° 53′
− 2 30

ξ Cygni +.86
h m s +.03
20 52 54
+48° 44′
+1 39

11	36.2	11	23.8			32	47.4	15.2		34	2.1	38	44.0	33.9		38	51.3	53	53.3	58.7		54	14.8
	39.2		26.9				51.0	22.7			9.7		46.0	36.9			54.3		55.0	1.5			17.6
	41.9		29.8				57.5	30.5			17.8		47.7	39.7			57.2		57.0	4.1			20.5
	43.7		32.8				2.0	38.6			25.2		50.0	42.8			0.3		59.3	6.6			23.1
	46.0		35.6				7.8	46.5	30.70		33.0		52.8	45.7	39.80		2.9		1.7	9.5	4.08		25.7
			38.6								40.7						6.0						28.5
			41.6					19.2			48.7			20.5			8.8			42.1			31.4
			~~44.7~~					27.2			55.9			23.4			11.6			44.8			34.0
								34.9			3.7			26.2			14.6			47.4			36.8
								42.5						29.1						50.2			
								50.4	34.84					32.02	26.24					53.0	41.50		
			229.1					6.554			296.8			6.04			27.0			51.58			23.24
11	41.40	11	32.729			32	57.14	34	32.770	34	32.978	38	48.10	39	3.020	39	3.000	53	57.26	54	25.790	54	25.822

		11	32.729							34	32.874					39	3.010					54	25.806
			−.022								−.057						−.022						−.020
	20	11	32.71							34	32.82					39	2.99	−.07				54	25.79
		10	2.64							33	2.82					37	33.08	−.12				52	55.65
				−	90.0	3						−	90.0	3			~~2.99~~	−	90.0	3			− 90.0
		+1	30.07	+	.01			+1	30.00			+	.04			+1	2.991	+	.01		+1	30.14	+ .01
			0.64						0.85								30.72						53.18
				−	2.50							−	1.97					−	2.36				− 2.47
				−1	32.03	2						−1	31.97	6				−1	32.39	8			−1 32.48
				10	0.68	9						33	0.85	6				37	30.61	1			52 53.33

9.95069 | 9.53761 | 9.96745 | 9.99161

41	9.15	−8.67	0.93802	30	53.62	+95.73	1.98105	12	8.80	+14.91	1.17348	20	31.18	+28.55	1.45561								
−	7.74		0.88871	+	33.01		1.51866		+13.67		1.13593		+28.80		1.44722								
41	1.41			31	26.63			12	22.47			20	59.18										

+46				+74				+45				+41											
41	46.94			51	21.72			10	25.88			1	49.14										
−4	1.7			−32	11.22			−2	30.4			+1	38.15										
	0.60700				1.55910				0.40070				0.21630										
	− 704				− 655				− 639				− 589										
	0.59996				1.55255				0.39431				0.21041										
	+3.98				+35.69				+2.48				−1.62										
	− .03				− 1.28				− .06				− .22										
	+ .00				+ .00				+ .00				+ .00										
	+ 3.95				+ 34.41				+ 2.42				− 1.84										
+46	41 50.89			+74	51 56.13			+45	10 28.30			+41	1 47.33										

	+ .04	−17	44.21		+ .32	−17	44.21		+ .02	−17	44.21		− .02	−17	44.21								
41	50.9	+	.04	51	56.4	+	.32	10	28.3	+	.02	1	47.3	−	.02								
24	8.5	−	34.10	34	12.9	−	35.90	52	45.5	−	34.40	44	32	−	33.90								
−17	42.4	−18	18.27		43.5	−18	19.79		42.8	18	18.59		44.1	−18	18.13								
23	34.4	23	32.62	33	37.0	33	36.34	52	11.1	52	9.71	43	29.3	43	29.20								

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1885phae.proj.1622.

Oct-14-1885 9.79256 9.81076 9.89375

3 X Lacertae +1.26 7 Lacertae +1.18 10 Lacertae +.80

h m s −.16 h m s −.13 h m s +.07

22 19 4 22 26 35 22 34 8

+51°40′ +49°42′ +38°28′

−9 17 −7 19 +3 55

20 12.0 2.5 20 23.0 27 53.0 27 54.4 35 4.7 13.3 35 29.1

14.5 6.0 26.0 55.0 57.4 6.4 16.0 31.9

16.5 9.4 29.4 56.8 41.741.7 0.8 7.7 18.6 34.2

19.0 12.7 32.8 59.2 41544.7 3.8 9.3 21.2 37.0

21.5 16.2 9.20 36.0 1.0 41.447.8 41.533 7.0 11.2 24.0 18.62 39.6

39.4 10.3 42.2

58.0 42.8 26.2 13.4 55.6 45.0

59.3 46.0 29.3 16.7 58.3 47.6

2.4 49.2 32.5 19.8 0.8 50.7

5.8 35.6 3.2

9.32.56 38.9 32.50 6.0 078

7.176 324.6 03 63.2 7940 356.8

20 16.70 20 35.880 36.067 27 57.00 28 7.016 28 7.022 35 7.86 35 39.700 39.656

20 35.924 28 7.019 35 39.678

−.025 −.025 −.020

22 20 35.95 28 6.99 35 39.66

19 6.04 26 37.05 34 9.66

− 90.01 − 90.01 − 90.21

+1 29.91 +1 29.94 +1 30.00 + .01 + .01 + .61

2.31 33.27 6.10

− 3.73 − 3.78 − 3.56

−1 33.73 −1 33.78 −1 33.56

19 2.22 26 33.21 34 6.10

9.90464 9.92284 0.00583

25 13.42 +19.27 1.28488 23 0.15 +10.02 1.00087 36 47.90 +31.82 1.50270

+ 15.47 1.18952 + 8.39 0.92371 + 32.25 1.50853

25 28.89 23 8.54 37 20.15

+51° +49 +38

57 19.46 59 39.81 45 28.20

−9 17 3 −7 19 16 +3 54 32

0.97370 0.86920 0.59490

− 360 − 357 − 309

0.97010 0.86563 0.59181

+9.33 +7.34 −3.91

− .10 − .03 − .27

+ .00 + .00 + .00

+9.23 +7.31 − 4.18

+51 57 28.69 +49 59 47.12 +38 45 24.02

+ .10 −17 44.21 + .08 −17 44.21 − .04 −17 44.21

57 28.8 + .10 59 47.2 + .08 45 24.0 − .04

39 43.8 − 32.80 42 7.4 − 32.40 27 38.1 − 31.20

450 −18 16.91 45.8 −18 16.53 45.9 −18 15.45

39 11.0 39 11.78 41 29.0 41 30.57 27 6.9 27 8.57

Oct-14

Reg −17 42.4

43.5

42.8

44.1

45.0

45.8

45.9

−17 44.21

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1885phae.proj.1622

Oct. 17 - 1885 9.78788 9.88489 9.66270

ψ Cygni +1.29 — γ Cygni +.84 — O Ceph's +1.93 — β Del +.25

h m s −.17 — h m s +.04 — h m s −.34 — h m s +.47

19 52 37 — 20 18 7 — 20 27 38 — 20 32 11

+52° 9 +.08 — +39° 54' — +62° 37' — +14° 12'

−9 46 +.00 — +2 29 — −20 14 — +28 11

55	0.1		38.9	53	59.0	19	27.7		13.0	19	29.4	28	14.8		28.0	28	55.0			22.1	32	35.0	
	1.8		42.1		2.4		29.7		15.6		31.6		18.3		32.0		59.0			24.2		37.0	
	4.7		45.6		5.5		32.0		18.3		34.4		22.0		36.3		3.5			26.3		39.2	
	6.3		49.0		9.1		34.0		20.6		37.0		24.8		41.3		7.9			28.6		41.4	
	9.0		52.3	4558	12.6		35.6		23.7	18.24	39.7		28.3		45.5	3662	12.3			30.7	26.38	43.5	
					16.0						42.6						17.0					45.6	
			32.5		19.2				55.8		45.1				39.3		21.2			56.2		47.7	
			36.0		22.6				58.6		47.7				43.9		25.8			58.3		49.8	
			39.2		26.0				1.1		50.4				48.2		30.2			0.5		52.0	
			42.5						3.8						52.7					2.7			
			45.9	3922					6.6	1.18					57.1	4622				4.7	0.48		
			24.80		11.34				7.942		35.79				24.84		11.19			8.66		3.12	
55	4.38	54	12.400	54	12.600	19	31.80	19	39.710	19	39.767	28	21.64	29	12.420	29	12.433			33	43.430	33	43.467

				−.025						−.020						−.033						−.016	
				54	12.500					19	39.738					29	12.426					33	43.444
				54	12.8747					19	39.72					29	1239					33	43.43
				52	4095					18	8.20					27	40.97	−10				32	11.79
						−	91.66					−	91.66					−	91.66				− 91.66
				41	31.32	+	.10			41	31.52	+	.07			41	31.72	+	.15			41	31.64 + .02
					52						6.10						52						9.36
					39.40	−	1.55					−	2.10				39.04	−	1.93				− 2.43
						−1	3311					−1	3369					−1	3344				−1 3407
						52	3936					18	6.03					27	3895				32 9.36

9.89996 — 9.99697 — 9.77478

57	18.58	−5788	1.71500	21	010	+7.94	0.89982	27	5142	+50.79	1.70578												
	− 41.21		1.61496	+	7.88		0.89679	+	30.24		1.48056												
56	37.37			21	7.98		28	21.66															

+52				+40				+62															
26	10.98			11	40.37			54	26.69														
−9	44 57			+2	28 44			−20	14 25														
0.99	540			0.39	660			1.32	700														
	+ 204				+ 204				+ 204														
0.99	744			0.39	864			1.32	904														
	+9.94				− 2.50				+21.33														
	− .72				− .02				− .58														
	+ .00				+ .00				+ .00														
	+ 9.22				− 2.52				+ 20.75														
+52	26 20.20			+40	11 37.85			+62	54 47.44														

+	.10	−17	4462			−	.02	−17	4482			+	.21	−17	4462								
26	20.3	+	.10			11	37.8	−	.02			54	42.6	+	.21								
8	36.3	−	34.40			53	54.1	−	33.50			37	4.1	−	36.60								
−17	44.0	−18	18.9262				437	−18	18.14				43.5	−18	21.01								
8	1.9	8	+.28			53	20.6	53	19.71			36	27.5	36	26.73								
			1.56						20.01						26.7								

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Oct. 17 – 1885

	61 Cygni	β Cephei	74 Cygni	π² Cygni
	9.89534	9.53266	9.88489	9.81882
	+.79	+2.75	+84	+1.14
	+.07	−.46	+.04	−.11
	h m s	h m s	h m s	h m s
	21 11 46	21 27 10	20 32 22	21 42 34
	+38° 12′	+70° 4′	+39° 54′	+48° 47′
	+4 11	−27 41	+2 29	−6 24

| | | |

1885phae.proj.1622.

Oct-17-1885

9.72843

16 Pegasi +0.48"

h and S +.29

21 47 52

+25° 23'

+17 0

ζ Cephei +1.58

h m s −.26

22 6 53

+57° 39'

−15 16

1.7	49	15.2	7	41.8	48.8	8	11.5
3.8		17.6		44.7	52.4		15.5
6.0		19.8		47.0	56.4		19.5
8.3		22.0		49.1	0.2		23.2
10.76	100	24.4		52.7	4.056	36	27.0
		26.5					31.1
38.1		29.0			50.3		34.9
40.3		31.3			54.2		38.6
42.6		33.6			58.2		42.7
44.9					1.8		
47.2	42.620				5.9	58.08	
48.72		2194			54.44		22440
49 24.360	49	24.378	7	4706	8 27.220	8	27.111

49	24.369		8	27.166	
	−.017			−.028	
49	24.35		8	27.14	
47	52.76		6	55.58	
+1	31.59	−91.66	+1	31.56	−91.66
	49.80	+.04		51.87	+.13
		−2.96			−3.71
		−1 34.58			−1 35.24
		47 49.77			6 51.90

9.84051

26 ~~1332~~ 1332 +40.11 1.60325

+27.78 1.44376

26 ~~3860~~ 91.10

+57 ~~25~~

56 9.75

7.25

−15 16 5

1.19640

+.204

1.19844

+15.79

−.39

+.00

+15.40

+57 56 ~~25.15~~ 22.65

+.16 −17 ~~44.62~~ 44.32

56 ~~25.3~~ +.16

38 ~~38.8~~ 38.8 −34.40

~~44.65~~ 44.4 −18 18.86

38 4.4 38 ~~6.27~~ 3.77

4.09

Oct 17

Reg −17

44.0	
43.7	
43.5	
46.3	
43.4	
45.2	
44.4	
~~46.5~~	44.0
−17	44.~~62~~
	.32

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Oct-18-1885

9.33987

Q Cygni	K Cephei +4.45	β Delphi +.25	α Delphi +.28
h m s	h m s −.57	h m s +.47	h m s +.45
20 10 1	20 12 45	20 32 11	20 34 19
+46 24	+77° 22′ −.04	+14° 12′	+13° 31′
	−34 59 +.00	+28 11	+26 52
6Aq			

14	59.4	13	39.7		55.2	33	22.7		35.6	35	31.2		43.9						
	2.0		43.1		58.5		25.0		37.6		33.3		46.0						
	5.8		46.2		2.2		27.1		39.8		35.3		48.1						
	8.8		49.3		5.2		28.2		42.0		37.5		50.4						
	11.6		52.3	46.12	8.1	1.84	31.3	27.06	44.1	36.3	35.38		52.5						
				1.84					46.2				54.6						
			47.26		11.6		57.0		48.2		5.5		56.8						
			45.87	1.70	14.7		58.0		50.4		7.4		59.0						
			49.0		17.7		1.0		52.5		9.6		1.1						
			52.3	33.42	20.8		3.2				11.7								
			55.2	48.96	23.7	17.70	5.3	1.10			13.4	9.62							
			58.04		26.9		8.16		36.4		10.500		22.4						
15	5.52				29.9		33	44.080	33	44.044	35	52.500	35	52.489					
					33.7														
					36.8														
					39.8	33.42													

		14	17.608				33	44.062				35	52.494						
			−.070					−.016					−.016						
	20	14	17.54				33	44.05				35	52.48						
		12	45.10				32	11.77				84	20.20						
					−92.282				−92.283					−92.234					
		+1	32.44		−.18		+1	32.28	−.01			+1	32.28	−.01					
			44.56		.00			9.36					17.78						
					−0.54				−2.41					−2.42					
				−1	32.954				−1 34.665					−1 34.687					
				12	44.54	60			32 29.40					34 17.82	1				

(cos δ 15 (sin i)

9.45195

Corr. Read.	Tan IIS	Log Tan IIS	43 31.38	−47.91	1.68043n
Rin			− 13.56		1.13238n
Corr. Corr. Read.			43 17.82		

Corr. Read.
Rin
Corr. Corr. Read.

+77°
39 30.53

−34 58 45
1.60490
− 107
1.60383

+40.16
− .27
+ .00
+ 39.89
+77 40 10.42

+ .35	−17	43.28	
40 10.8	+	.35	
22 28.0	−	35.80	
−17 42.8	−18	18.73	
21 52.2	21	51.69	

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1885phae.proj.1622.

Oct-18-1885 9.85037 | 9.13813 | 9.89544 | 9.33018

α Cygni +1.00 | 76 Draco +7.22 | 61 Cygni +79 | B 2777 +4597

h m s −.04
20 87 31
+44°33'
−2 30
36.0 53.6

h m s −.64
20 50 57
+82.6
−39 43

h m s +07
21 1 46
+38°11'
+4 12

h m s −.58
21 7 48
+77°39'
−35 16

38 27.0 | 38 39.0 | 56.3 | 49 56.5 | 51 26.0 | 50.8 | 2 45.6 | 2 53.5 | 3 9.2 | 10 6.2 | 8 43.8 | 57.9
28.3 | 41.8 | 58.3 | 58.0 | 30.8 | 55.6 | 48.2 | 56.0 | 11.8 | 12.0 | 47.1 | 3.0
30.2 | 44.9 | 2.2 | 59.6 | 35.7 | 0.2 | 50.1 | 58.7 | 14.1 | 18.6 | 50.0 | 6.4
32.0 | 47.8 | 5.2 | | 40.3 | 5.1 | 52.0 | 1.5 | 17.1 | 24.7 | 52.9 | 9.1
34.2 | ~~43.5~~ 41.90 | 8.1 | | 46.0 35.76 | 10.2 0.38 | 53.7 | 40 58.72 | 19.6 | 32.2 | 57.0 50.16 | 12.0 6.08
 | | 11.2 | | | | | | 22.5 | | 480 6.08 | 16.3
 | 22.6 | 14.0 | 53 31.0 | 6.0 0.38 | 15.4 | | 35.5 | 25.0 | | 51.4 22.62 | 19.4
 | 25.5 | 17.0 | | 10.8 25.74 | 20.6 | | 38.1 | 27.4 | | 57.9 | 22.6
 | 28.5 | | | 16.6 | 26.0 | | 40.7 | 30.3 | | 58.0 38.46 | 25.8
 | 31.2 | | | 21.0 50.68 | 31.0 | | 43.5 | | | 1.3 54.72 | 29.0 22.62
 | 34.2 2840 | | | 26.3 16.14 | 35.7 25.74 | | 46.1 40.78 | | | | 31.8
38 30.34 | 39 1.030 | 46.9 | 49 58.03 | 42.870 | 40.3 | | 39.50 | 17.73 | | 11.2.04 | 35.2
 | 5.150 | 5.211 | 53 31.00 | | 45.7 | 2 49.92 | 3 14.750 | 3 19.700 | 10 18.94 | | 38.6
 | | | | | 50.6 | | | | | | 41.6
 | | | | | 56.2 | | | | | | 45.1 38.46
 | | | | | 0.6 50.68 | | | | | |

39 5.180 | 52 25.740 | 3 19.725 | 9 22.408
−.022 | −.111 | −.020 | −.072
39 5.16 −.07 | 52 25.63 | 3 19.70 | 9 22.34
37 32.98 +.2 | 50 53.04 | 1 47.31 +.15 | 7 49.96
−92.254 | −92.285 | −92.276 | −92.287
+1 32.18 −.04 | +1 32.59 −.29 | +1 32.47 −.03 | +1 32.38 −.18
30.72 | 50.69 | 24 44.48 | 46.82
−2.26 | −2.35 | −2.83 | −3.14
−1 34.54 | −1 34.60 89 | −1 35.18 2 | −1 35.60 59
37 30.64 2 | 50 50.73 4 | 1 44.57 8 | 7 46.74 5

9.96245 | 9.25021 | 0.00752 | 9.44226

11 49.05 +3.484 | 1.54208 | 58 33.42 +14.7.71 | 2.16941 | 52 49.65 +29.50 | 1.47422 | 25 51.25 −56.53 | 1.75228n
+31.95 | 1.50453 | +26.28 | −65.26 | 1.81465n | +30.32 | 1.48174 | −15.65 | 1.19454n
12 21.00 | | 58 59.70 | | 1.41962 | 53 19.97 | | 25 35.60 |
			1.06486			
	59 12.55					
	−11.61					
	59 0.94					
+45		+82		+38		+77	
10 27.35		23 48.65	23 47.41	29 28.38		57 12.75	
−2 30 27		−39 43 43	−39 43 3	+4 10 34		−35 16 25	
0.40180		1.67960	1.67940	0.62380		1.60970	
−58		−34	−34	−8		+4	
0.40122		1.67926	1.67906	0.62372		1.60974	
+2.52		+47.78	+47.76	−4.20		+40.71	
−.33		−1.62	−.32	−.24		−.36	
+.00		+.00	+.00	+.00		+.00	
+2.19		+46.16	+47.44	−4.44		+40.35	
+45 10 29.54		+82 24 34.81	24 34.85	+38 29 23.94		+77 57 53.10	
	+82 24 34.83					
+.02 −17 4328 | | +.40 −17 4328 | | −.04 −17 4328 | | +.36 −17 4328 | |
10 29.6 +.02 | | 24 35.2 +.40 | | 29 23.9 −.04 | | 57 53.5 +.36 | |
52 45.8 −34.70 | | 6 51.9 −35.90 | | 11 39.8 −36.40 | | 40 11.1 −36.10 | |
43.8 −18 17.96 | | 43.3 −18 18.78 | | 44.1 −18 19.72 | | 42.4 −18 19.02 | |
52 11.1 52 11.58 | | 6 16.0 6 16.05 | | 11 3.4 11 4.22 | | 39 35.0 39 34.08 | |

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1885phae.proj.1622.

Oct-18-1885 9.67018

+1.89

α Cephei −.34

h m s
21 15 50
+62° 6'
−19 43

m	s	m	s	s
16	27.2	16	41	7.7
	39.8		45.6	12.0
	33.8		51.0	16.4
	38.0		54.5	21.0
	40.0		58.9	50.02 25.4
				30.0
			51.6	34.2
			56.4	38.3
			0.6	43.0
			5.2	
			9.5	0.86

50.88 2280

16 33.76 17 25.40 17 25.333

3

17 25.366

− .033

21 17 25.333

15 52.96

+1 32.37 − 92.287

50.07 − .08

.00

− 289

−1 35.25.4

15 50.08

9

9.78226

58 23.50 +51.63 1.71290

+ 31.27 1.49516

58 54.77

+62°

23 53.58

−19 43 53

1.31500

+ 23

1.31523

+2066

− .60

+ .00

+2006

+62.24 13.64

Oct 18

Reg −17 42.8

43.8

43.3

44.1

42.4

43.3

−17 43.28

+ .21 −17 43.28

24 13.8 + .21

6 30.5 − 36.20

−17 43.3 −18 19.27

5 54.3 5 54.37

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1885phae.proj.1622.

Oct 19 1885

9.72863

9.89375

11 Pegasi +.64

3 Cephei +1.58

10 Lacertae

9 Pegasi +.57

22 4 54
+32 37

22 6 13
+57 38
−1 5 15
−.26
+.06
+.00

22 34 8
+38 28
+3 55
+.80
+.07

22 37 39
+29 38
+12 45

History Sim.

5	34.0	7	34.2	7	49.6		12.8	35	25.6	35	16.2		32.4			38	49.2		3.4
	36.6		37.2		53.6		16.6		27.2		18.6		34.6				51.6		5.9
	39.0		29.6		57.4		20.6		28.0		21.5		37.1				54.0		8.0
	41.6		41.9		1.2		24.4		30.6		24.2		39.8				56.6		10.7
	43.8		45.0		5.0	57.36	28.2		32.3		26.7	21.44	42.6				58.7	54.02	13.0
	46.2						32.0						45.1						15.4
	48.8				51.2		35.8				58.3		47.8				27.2		17.7
	51.2				55.0		39.6				0.9		50.3				29.6		20.1
	53.6				58.9		43.6				3.3		53.1				32.0		22.5
					2.7						6.0						34.2		
					6.8	58.92					8.9	3.48					36.5	31.90	
	39.48				56.28		25.36				84.92		38.24				25.92		
5	43.867	7	39.58	8	28.140	8	28.178	35	28.94	35	42.460	35	42.489			39	12.960	39	12.967

22

5	43.867					8	28.159					35	42.474					39	12.964
	−.019						−.029						−.020						−.018
5	43.85					8	28.13					35	42.45					39	12.95
4	38.96					6	55.52					34	4.49					37	40.09
								−	93.00					−	93.02			−	93.02
+0	47.89					+1	32.61	+	.09			+1	32.96	+	.05			+	.03
							51.87						6.10						
								−	3.65					−	3.39			−	3.36
								−1	36.56					−1	36.36			−1	36.35
								6	51.57					34	6.09			37	36.60

9.84071

0.00583

26	6.52	+48.58	1.68646	37	8.28	+13.53	1.13130				
	+33.66		1.52717		+13.71		1.13713				
26	40.18			37	21.99						

+57

56	8.17										
−15	16	10									
1.19650											
	+25.7										
1.19907											
	+15.81										
	−.58										
	+.00										
	+15.23										
+57	56	23.40									

+38

45	21.36										
+3	54	52									
0.59560											
	+25.7										
0.59817											
	−3.96										
	−.04										
	+.00										
	−4.01										
+38	45	22.36									

+	.16	−17	43.78			−	.04	−17	43.78		
56	23.6	+	.16			45	22.3	−	.04		
38	39.2	−	34.80			27	38.8	−	31.90		
−17	44.4	−18	18.42				43.5	−18	15.72		
38	44	55	4.98			27	6.9	27	6.64		
		38									

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Oct 19 1885

α Pegasi

22h 59m 8s
+14 35

9.41908
+3.67
−.54

π Cephei

h m s
23 4 17
+74 47
−32 24

Cr 3077

h m s
23 7 48
+56 33
−14 10

9.74132
+1.51
−.24

τ Pegasi

h m s
23 14 59
+23 7
+19 16

9.96365
+43
+.33

| | | |

1885phae.proj.1622.

γ Cephei

23 34
+76 34

Ch f.

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1885phae.proj.1622

Oct 20 UT 9.33987 | 9.88489 | 9.87953 | 9.89534

	κ Cephei	χ Cygni	ν Cygni	61 Cygni
	+4.45	+.84	+.86	+.79
	h m s	h m s	h m s	h m s
	20 12 45 −.57	20 18 7 +.04	20 52 54 +.03	21 1 46 +.07
	+77 22 +.08	+39 54	+40 14	+38 12
	−34 59 +.00	+2 29	+1 39	+4 11

15 11.4 | 13 41.0 | 13 58.3 | 19 19.1 | 14.6 | 19 30.7 | 53 51.8 | 1.7 | 54 18.2 | 2 49.4 | 54.7 | 3 10.5
12.2 | 43.9 | 59.0 | 20.6 | 17.3 | 33.4 | 53.4 | 4.5 | 21.0 | 50.7 | 57.4 | 12.9
12.8 | 46.7 | 2.2 | 22.3 | 20.2 | 36.1 | 55.7 | 7.3 | 23.6 | 52.3 | 0.0 | 15.6
50.1 | 5.5 | 23.9 | 22.7 | 39.0 | 57.0 | 10.0 | 26.3 | 53.9 | 2.6 | 18.3
52.8 46.90 | 8.6 2.32 26.8 | 25.4 20.04 | 41.5 | 58.9 | 12.7 7.24 | 29.0 | 56.2 | 5.2 59.98 | 20.9
43.4 2.32 | 11.7 | 44.3 | 31.9 | 23.5
46.7 18.00 | 14.8 | 57.5 | 46.8 | 45.3 | 34.5 | 36.8 | 26.2
50.2 | 18.0 | 0.3 | 49.7 | 48.0 | 37.1 | 39.4 | 28.6
52.8 33.76 | 21.3 | 3.0 | 52.3 | 50.7 | 39.9 | 41.8 | 31.4
55.44 9.70 | 24.2 18.00 | 8.4 2.96 | 53.5 | 58.45 0.78 | 44.5 | 47.1 41.92

9.068 | 27.5 | 8.200 | 37.38 | 58.02 | 26.15 | 41.90 | 18.79
15 12.13 | 30.5 | 19 22.54 | 19 41.800 | 19 41.533 | 53 55.36 | 54 29.010 | 54 29.167 | 2 52.50 | 3 20.950 | 3 20.878
33.7
36.9
40.2 33.76

14 18.136 | 19 41.516 | 54 29.088 | 3 20.914
−.070 | −.020 | −.020 | −.020
20 14 18.07 | 19 41.50 | 54 29.07 | 3 20.89
12 44.93 | 18 8.12 | 52 35.57 | 1 27.26 +15
− 93.48 | − 93.49 | − 93.52 | − 93.52
+1 33.14 + .36 | +1 33.28 + .07 | +1 33.50 + .07 | +1 33.63 + .06
44.56 .00 | 6.10 | 53.18 | 48 44.48
− 0.37 | − 2.02 | − 2.39 | − 2.78
−1 33.49 | −1 35.44 | −1 35.84 | −1 36.24
12 44.58 | 18 6.06 | 52 53.23 | 1 44.65

9.45195 | 9.99697 | 9.99161 | 0.00742

43 30.65 −53.99 | 173231 | 10 20 4782 +18.98 | 1.27830 | 20 25.65 +33.73 | 1.52802 | 52 30.30 +28.41 | 1.45347
− 15.28 | 1.184276 | + 1885 | 1.27527 | + 33.08 | 1.51963 | + 28.90 | 1.46089
43 15.57 | 21 6.67 | 20 58.73 | 53 19.20

+77° | +40 | +41 | +38
39 32.78 | 11 41.68 | 1 49.62 | 29 29.15

−34 58 45 | +2 28 32 | +1 38 10 | +4 10 34
1.60490 | 0.39602 | 0.21630 | 0.62380
− 144 | − 136 | − 86 | − 78
1.60346 | 0.39464 | 0.21544 | 0.62302

+40.13 | −2.48 | −1.64 | −4.20
− .34 | − .10 | − .31 | − .21
+ .00 | + .00 | + .00 | + .00
+39.79 | −2.58 | −1.95 | −4.41
+77 40 12.57 | +40 11 39.10 | +41 1 47.67 | +38 29 24.74

+ .36 −17 44.56 | − .03 −17 44.56 | − .02 −17 44.56 | − .04 −17 44.56
40 12.9 + .36 | 11 39.1 − .03 | 1 47.6 − .02 | 29 24.7 − .04
22 28.1 − 35.90 | 53 54.2 − 33.60 | 44 36 − 34.30 | 11 39.9 − 36.50
−17 44.8 −18 20.10 | 449 −18 18.19 | 44.0 −18 18.88 | 44.8 −18 21.10
21 52.2 21 52.47 | 53 20.6 53 20.91 | 43 29.3 43 28.79 | 11 3.4 11 3.64

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| | | |

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1885
Oct 22 Murray

+1.91

2 Uhr Mag.

10 56 38
+62 22
−19 59

m	s
10	57 54.4
	58.8
	3.3
	7.9
	12.2
	16.6
	21.0
	25.5
	30.0
	10.97
58	12.189
	58 12.189
	5 −.033
10	58 12.16
10	56 37.30
	+1 34.86
	37.44

+1.39

γ Uhr Mag.

11 47 48
+54 20
−11 57

m	s	s
48	46.0	7.3
	49.8	10.9
	53.0	14.2
	56.7	18.1
	4.3	53.16 21.6
	2	
	48.6	25.0
	46.2	28.6
	49.7	32.0
	52.3	35.4
	56.7	49.70
	42.86	193.1
49	21.430	49 21.456
	49 21.443	
	−.026	
	49 21.42	
	47 46.44	
	+1 34.98	
	46.69	

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1885 Oct 26 9.87953 — 9.89534 — 9.32960 — 9.81882

ν Cygni +.86 — 61 Cygni — B02777 — π² Cygni +1.14

+.03 +.07 −.58 −.11

20 52 54 +40 44 +1 39 — 21 1 46 +38 12 +4 11 — 21 7 42 +7 7 40 −35 17 — 21 42 34 +48 47 −6 24

+.07 +.00

55 48 66 10.3 12.8 15.6 — 54 5.2 8.0 10.8 13.2 16.0 10.64 — 54 21.6 24.2 27.0 29.7 32.2 — 4 1.6 2.6 3.4 — 2 57.9 0.5 3.3 5.8 8.2 3.14 — 3 13.6 16.4 18.9 21.4 24.3 26.8 29.6 32.2 34.7 — 7 49.6 51.0 52.4 53.6 54.3 — 8 49.1 58.2 8.5 17.9 27.8 8.30 — 8 47.1 56.8 6.7 16.3 25.7 35.4 45.4 54.7 40 — 44 27.4 29.9 32.6 34.9 37.0 — 41.2 44.2 47.3 50.7 53.64 40 — 43 59.9 3.0 6.0 9.3 12.5 15.6 18.6 21.6 24.9

48.5 51.2 54.0 56.8 — 40.0 42.5 45.1 47.7 — 24.2 33.4 42.4 52.7 — 31.3 34.6 37.4 40.6

39.5 54.00 — 50.4 45.14 — 20 42.54 — 43 37.52

6464 — 4828 — 51.24 — 232.1 — 2492 — 111.4

55 10.02 — 54 32.320 — 54 32.289 — 4 2.47 — 3 24.140 — 3 24.211 — 7 52.18 — 9 25.620 — 9 25.789 — 44 32.36 — 44 124.60 — 44 123.78

54 32.304 — 3 24.175 — 9 25.704 — 44 12.419

−.020 — −.020 — −.072 — −.023

54 32.28 — 3 24.16 — 9 25.63 — 44 12.40

52 5.43 — 1 47.13 + 15 — 7 49.15 — 42 35.63

41 36.85 — 96.88 + .06 — 41 37.03 — 96.89 + .05 — 41 36.48 — 96.90 + .32 — 41 36.77 — 96.94 + .08

53.18 — 00 — 36.88 — 44.98 — 46.82 — 32.73

− 2.25 — −1 39.07 — 52 53.21 — − 2.65 — −1 39.49 — 1 44.67 — − 2.33 — −1 38.91 — 7 46.72 — − 2.90 — −1 39.76 — 42 32.64

9.99161 — 0.00742 — 9.44168 — 9.93090

21 — 3

28 34.12 −37.72 1.57657 — 57 58.70 −38.29 1.58309 — 25 8.32 +.9352 1.97090 — 18 12.80 −1.994 1.29973₂₀ — 1.23063₂₀

− 37.50 — 1.56818₂₀ — − 38.75 — 1.59052₀ — + 25.86 — 1.41258 — − 17.01 — 17 55.79

20 57.12 — 57 19.75 — 25 34.18

3

+41° 8′ 51.23 — +38 29 28.60 — +77 57 14.17 — +49 4 52.56

+1 38.39 18 — +4 11.43 — −35 17.8 — −6 24.3

0.2 67.0 21.0 + 602 — 0.62570 + 614 — 1.60980 + 626 — 0.81020 + 695

0.22772 — 0.63184 — 1.61606 — 0.81715

− 1.69 — −4.28 — +41.31 — +6.56

− .38 — − .39 — − .99 — − .11

+ 02 — + 02 — + .00 — + .00

− 2.07 — − 4.67 — +40.32 — + 6.45

+41 1 49.16 — +38 29 23.93 — +77 57 54.99 — +49 4 59.01

− .02 −17 43.70 — − .05 −17 48.76 — + .38 −17 48.70 — + .07 −17 48.70

4 49.2 − .02 — 29 23.9 − .05 — 57 54.9 + .38 — 4 59.1 + .07

44 3.9 − 34.60 — 11 40.3 − 36.90 — 40 12.2 − 37.20 — 47 15.2 − 35.60

−17 45.3 −18 18.32 — 4 36 −18 20.65 — 427 −18 20.52 — 439 −18 19.23

43 29.3 44 30.86 — 11 3.4 11 3.28 — 39 35.0 39 33.97 — 46 39.6 46 39.78

43

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1885 Oct 26

20 Cephei

22 1 32 | 9.66851 | +1.90 | −.34

+62 13 | −19 50 | A30 57.0

s	m	s	m	s	m	s	m	s	m	s
3 25.4	3 2.2	27 51.8	4.16	28 1.1	46 41.0	26.6	46 57.2	57 42.5	57 51.0	
26.7	6.9	54.0	45.0	4.3	46.0	32.0	2.0	44.2	53.9	
28.4	11.0	56.4	48.1	7.4	51.2	36.9	7.1	46.6	56.3	
29.6	15.6	58.3	51.4	10.6	54.6	42.3	11.7	48.8	59.0	
31.0	20.0	0.6	54.6	48.14 13.7	57.6	47.0	36.960 17.2	50.5	2.0	56.440
			+25.510	16.7		+39.941	22.0		+22.104	
		29 1.8		20.0	48 29.0		26.9	58 47.2		
		2.9		23.1	32.0		31.9	49.8		
		3.9		26.6	37.9		36.8	52.3		
		5.0			42.4			54.5		
		6.4			47.6			57.0		

3 28.22	3 11.140	27 56.27	28 13.650	123.5	46 52.08	47 16.901	152.8 47 16.978	57 46.52	58 13.784			
		29 4.60		28 13.722	48 37.66			58 52.16				
	3 11.140			28 13.698			47 16.959			58 13.784	58 18.544	
	− .033			− .023			− .037			− .021	− .021	
	3 11.11			28 13.68			47 16.92			58 13.76	58 18.52	
	1 34.27			26 36.80			45 39.93			56 41.52	56 41.52	−.9702
		− 96.96			− 96.99			− 97.01				
	+1 36.84	+ .13		+1 36.88	+ .08		+1 36.99	+ .15		+1 32.24	+1 37.00	+ .06
	30.76	.80		33.27			35.27				37.86	
		− 3.51			− 3.53			− 4.66				−.366
		−1 40.34			−1 40.44			−1 41.52				−1 40.62
		1 30.77			26 33.24			45 33.40				56 37.90

Oct 26 | 9.78059 | 9.92284 | 9.72814 | 9.98508

51 30.22	−17.08	1.23249	22 52.08	+17.48	1.24254	28 5 46.25	+26.88	1.42943	21 30.90	+32.02	1.50542	
− 10.31		1.01308	+ 14.63	−.30	1.70157m	+ 14.37	−80.70	1.90687m	+ 30.94	−33.62	1.52460m	
51 19.91			23 7.71		1.16538	29 10.62		1.15757	22 51.84		1.49050	
					1.62441m			1.63501m			1.51168m	
			23 48.48			29 53.60			22 34.20			
			− 42.11			− 43.15			− 32.48			
			23 7.37			29 10.45			22 1.72			
+62°		+49			+65			+42				
31 28.44		59 40.64	59 40.98		53 37.73	53 37.90		0 46.51	0 46.63			
−19 50 46		7 19 23	−7 18 27		−23 13 20	−23 12 22		+0 39 12	+0 40 18			
1.31770		2.86930	0.86840		1.39270	1.39240		9.81700	9.82900			
+ 728		+ 763			+ 796			+ 810				
1.32498		0.87693	0.87603		1.40066	1.40036		9.82510	9.83710			
+21.13		+ 7.53	+ 7.52		+ 25.16	+ 25.14		− 0.67	− 0.69			
− .07		− .08	− .68		− .15	− 1.33		− .28	− .31			
+ .00		+ .00	+ .00		+ .00	+ .00		+ .00	+ .00			
+21.06		+ 7.45	+ 6.84		+ 25.01	+ 23.81		− 0.95	− 1.00			
+62 31 49.50		+49 59 48.09	59 47.82		+65 54 27.4	54 1.71		+42 0 45.56	0 45.63			
		+49 59 47.96			+65 54 22.2			+42 0 45.60				
+ .22	−17 43.70	+ .09	−17 43.70		+ .26	−17 43.70		− .01	−17 43.70			
31 49.72	+ .22	59 48.0	+ .09		54 2.4	+ .26		0 57.4	45.6 − .01			
14 58	− 36.40	42 3.5	− 34.50		36 18.4	− 34.20		43 1.2	− 32.20			
−17 43.9	−18 19.88		44.5	−18 18.11		440	−18 17.64	56.2	13.4	18 15.91		
13 29.4	13 29.62	41 29.0	41 29.85		35 44.2	35 44.58		42	29.0	444	42 29.69	

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9.41908 +3.67 — 9.67633 +1.85 — 9.35209 +4.33

π Cephei −.54 — 4 Cast −.33 — χ Cephei −.57

23 4 17 +74 47 −32 24 — 23 19 47 +61 40 −19 17 — 23 34 42 +77 0 −34 37

5 8.0 9.9 11.3 — 5 26.2 34.5 42.2 50.4 58.4 6.0 14.0 21.8 29.4 — 20 58.6 54.7 56.2 57.0 22 32.9 37.2 40.4 44.4 46.8 — 21 8.3 12.9 17.3 21.4 26.1 30.1 34.4 38.8 43.3 — 35 17.2 24.0 32.3 37.7 46.0 38 16.4 26.9 33.2 40.8 46.2 — 35 46.8 56.1 5.6 15.0 24.0 32.6 42.0 50.7 0.3

7 27.0 28.4 29.7 30.9 32.0

5 9.73 7 29.60 — 5 58.100 6 58.100 — 20 55.38 22 40.34 — 21 23.226 25.844 — 35 31.441 38 32.70 — 21.31 36 23.678

5 58.100 −.058 5 58.04 4 21.24 41 36.80 14.52 — 21 25.844 −.023 21 23.81 19 48.89 41 36.92 43.94 — 26 23.678 −.069 36 23.61 34 46.73 41 36.88 38.10

— 97.04 + .26 — 6.72 −1 43.50 4 14.54 — — 97.05 + .13 — 4.95 −1 41.87 19 43.94 — — 97.07 + .30 — 8.63 −1 45.40 34 38.21

9.53116 — 9.78841 — 9.46417

18 56.90 +48.37 — 1.68458 — 1.48373 — 1.71800
+ 16.43 −9.150 — 1.96142 — 1.87246 — 2.11066
19 13.33 — 1,21574 — 1,27214 — 1,18217
1.49258 — 1.66057 — 1.57483

25 8 30.15 + 3046 — 5 34.08 +52.24 — 25 26 34.88 − 45.77 0 49.11 — 6 25.88 − 37.57 5 48.31

19 42.70 − 31.09 19 11.61 — 26 34.88 − 45.77 0 49.11 — 6 25.88 − 37.57 5 48.31

+75 3 35.02 3 36.74 — +61 56 59.49 56 59.24 — +77 16 59.06 17 0.04

−32 23 19 1.56240 +827 1.57067 — −32 22 33 1.56220 1.57047 — −19 16 46 1.30410 +843 1.31253 — −19 15 42 1.30370 1.31213 — −34 36 42 1.59950 +867 1.60767 — −34 35 50 1.59880 1.60747

+37.21 −.33 +.50 +36.88 — +37.19 −1.16 +.50 +36.03 — +20.54 −.21 +.00 +20.33 — +20.52 −1.25 +.00 +19.27 — +40.52 −.32 +.00 +40.20 — +40.50 −1.99 +.00 +38.51

+75 4 11.90 +75 4 12.34 — 4 12.77 — +61 57 19.82 +61 57 19.16 — 57 18.51 — +77 17 39.26 +77 17 38.90 — 17 38.55

Oct 26
Reg −17 45.3 43.6 42.7 43.9 43.9 44.5 44.0 44.4 42.6 42.4 43.4
−17 43.70

+.36 4 12.7 46 30.1 426 45 57.1 — −17 43.70 + .36 − 33.00 −18 16.34 45 56.00 — +.22 57 19.4 59 37.0 424 39 5.1 — −17 43.70 + .22 − 31.90 −18 15.38 39 3.78 — +.38 17 39.3 57 55.9 434 59 25.5 — −17 43.70 + .38 − 30.40 −18 13.72 59 25.18

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1885phae.proj.1622.

1885 Oct 27 9.81076 +1.18 +.80

7 Lacertae

22 26 35 +49 42 −7 19 −.13 +.01 +.00

9.93912 +.57

γ Pegasi +.22

22 37 39 +29 38 +12 45

9.96413 +.42

λ Pegasi +.33

22 41 2 +22 58 +19 25

9.61606 +2.20

ε Cephei −.39

22 45 37 +65 36 −23 13

27 39.5 40.3

28 30.7 57.7 53.0 54.0 55.2

27 39.90 28 5.292

28 1.4.177

28 1.41 14.0 13.9 13.9 550 48.682 +25511

1.4 45 7.5 10.7 141

700 14000

39 20.2 22.3 22.7 25.5 27.3

39 23.80

38 53.5 55.9 58.3 0.6 3.0 58.26

31.5 33.8 36.2 38.4 40.0 36.18

3444

39 7.7 10.0 12.5 14.7 17.0 19.8 22.0 24.4 26.7

1548

39 17.200

42 27.3 29.0 30.6 32.3 34.0

42 30.64

42 17.6 19.9 22.1 24.3 26.7 22.12

5 53.5 55.6 57.9 0.2 2.4 57.92

8004

42 40020

42 31.0 33.4 35.7 37.9 40.0 42.1 44.5 46.7 49.0

0.3

42 40.033

46 3.2 6.7 10.4 13.6 18.0

47 5.7.2 55.7 1.0 4.0 7.3

46 10.38 47 39.84

47 0.6 3.9 +16.642

31.0 32.6 34.0 35.7 37.3 3412 −16.642

17.242 17478

5.8 7.5 9.2 10.7 12.2 9.08 +8.321 17.401

14.2 15.7 17.3 19.1 20.5 17.36

22.4 24.0 25.6 27.4 29.1 25.70 −8.321 17.379

28 14086 −.023 28 1406 26 3677 +1 37.29 33.27

39 17.210 −.018 39 1719 37 39.98 +1 37.21 36.73

42 40.026 −.017 42 40.01 41 2.73 +1 37.28 59.54

47 17.372 −.037 47 17.34 45 39.89 +1 37.45 35.27

− 97.26 + .01 .00 − 3.50 −1 40.75 26 33.31

− 97.26 + .01 − 3.25 −1 40.50 37 36.69

− 97.27 + .00 − 3.19 −1 40.46 40 59.55

− 97.27 + .02 − 4.62 −1 41.87 45 35.47

9.92284

22 37.70 +34.19 23 6.32 −38.83

1.53390 1.58917n 1.45674 1.51201n

0.05120

0.81889n 0.87009

0.07621

0.97267 1.05288

9.72814

1.82601 1.62808n 1.55415 1.35622n

6 25.38 +9.39 + 11.29 6 36.67

27 16.42 −6.59 − .41 27 9.01

28 35.15 +66.99 + 35.82 29 10.97 −42.47

29 34.02 − 22.71 29 11.31

23 39.68 − 32.51 23 7.17

+49 59 42.03 59 41.18

−7 19 38 0.86950 + 151 0.87101

−7 18 36 0.86850 0.86801

+49 59 49.15 +49 59 48.65

+7.43 −.31 +.00 +7.12

+7.38 −.41 +.00 +6.97

+29 55 39.34

+12 45 0 1.11490 + 175 1.11665

+29 55 26.25

−13.08 −.01 +.00 −13.09

+23 16 11.68

+19 24 9 1.30710 +186 1.30896

+23 15 51.29

−20.37 −.02 +.00 −20.39

+65 53 37.38

−23 13 41 1.39290 +192 1.39482

+65 54 1.25 +65 54 1.36

+24.82 −.95 +.00 +23.87

−23 12 42 1.39250 1.39442

+24.80 −.37 +.00 +24.43

54 1.47

−17 43.46 + .09 59 48.7 42 3.6 −17 45.1

−17 43.46 − .15 55 26.1 37 43.1 43.0 37 11.9

−17 43.46 − .22 15 51.1 58 8.3 428. 57 38.5

−17 43.46 + .26 54 1.6 36 18.6 43.0 35 44.2

− 34.60 −18 17.94 41 29.0

− 31.20 −18 14.81 37 11.44

− 29.80 −18 13.48 57 37.81

+ 34.46 −18 17.60 35 48.76

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9.41908 — +3.67 — π Cephei — −.54

23 4 17
+74 47
32 24

6 39.4
433
49.5
550
8.4

5 27.0
29.7
32.3
34.5
37.5 32.22

39.9
42.7
45.3
47.7
50.9 45.30

19.4 45.30
22.3 58.54
24.0 11.75
27.1
30.0 24.56

53.4
56.3
58.5
1.1
3.4 58.54

9 0.0
1.9
5.5
8.4
11.4

10 19.2
22.0
24.7
27.0
30.0

292.37

6 50.12

6.5
9.5
11.7
14.0
17.0 11.75

9 5.441
10 24.56

5 58.474
− .058
5 58.42
4 21.19
+1 37.23
14.52

− 97.27
+ .04
− 6.67
−1 43.90
4 14.52

19 30.20 — 51.65
− 17.55
19 12.65

1.71307n
1.24423₂

32 30.70
+ 15.13
32 45.83

323 24.98
− 41.34
32 43.64

+.75
3 35.70

−32.22.46
1.56230
+ 233
1.56463

+36.70
− .36
+ .00
+36.34
+75 4 12.04

+56
50 25.2
−14 9 45
1.16230
+ 233
1.16463

+14.61
− .11
+ .00
+14.50
+56 50 17.02
+56 50 17.74

+ .36 −17 43.46
4 12.4 + .36
46 30.4 − 33.30
42.0 −18 16.40
45 57.1 45 55.64

+ .16 −17 43.46
50 17.9 + .16
32 33.5 − 33.10
44.4 −18 16.40
32 0.4 32 1.34

9.74132 — +1.51 — B Cassiopeiae — −.24

23 7 48
+56 33
−14 10

9 11.9
15.5
19.1
23.0
26.6
30.3
34.2
37.5
41.7

9
9 23.68
9 26.644

9 26644
− 027
9 2662
7 4944
+1 37.18
44.88

− 97.27
+ .02
− 4.56
−1 41.81
7 44.81

9.85340
1.32634
1.76298m
1,17974
1.61638₂

32 30.70 +21.20
−57.94

9.53116
1.71307m
1,24423₂

9.94404 — +1.54 — α Andromedae — +.24

0 2 30
+28 28
+13 55

444
46.7
49.0
51.5
53.8 44.080
+18.769

3 58.4
0.7
3.0
5.6
7.8
10.1
12.7
14.7
17.2

4 7.849
4 7.800

70.2

4 7.816
− 018
4 7.80
2 30.50
+1 37.30
26.65

− 97.27
+ .01
− 3.85
−1 41.12
2 26.68

34 26.22 −41.92
− 28.34
33 57.88

+58
48 50.47
−16 7 50
1.22150
+ 344
1.22494

+16.79
− .13
+ .00
+16.36
+58 49 6.83

+ .19 −17 43.46
49 7.0 + .19
31 23.5 − 28.10
43.5 −18 11.37
30 55.4 30 55.46

9.71788 — +1.643 — Bleaas — −.28

0 3 6
+58 31
− 16 8

5 21.5
23.6
27.2
30.1
34.0

17.1 9.2
16.8 12.9
16.8 16.8
17.1 21.0
— 16.950
− 31.594

4 45.356

9.82996
1.62242m
1.45238₂

4 45.455 41.6
45.2 45.2
45.3 49.2
45.3 53.2
45.3 57.1
45.6 1.4

22
4 45.366

4 45.361
− 029
4 45.33
3 8.09
+1 37.24
2.71

− 97.28
+ .02
− 5.38
−1 42.64
3 2.69

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1885phae.proj.1622

1885
Oct 27 9.98584
+.26
♂ Pegasi
+.47
0 7 22
+14 33
+27 50

8 31.3 384 8 574
325 405 534
343 427 555
360 450 576
376 471 42.5 598
1.9
126 40
147 6.2
169 8.2
190
210 16.84

11959 5380
8 3434 8 59795 8 59.798

8 59786
− .016
8 59770
7 3344
+1 37.33 − 97.28
18.86 + .00
.00
− 3.58
−1 40.86
7 18.91

0.09792

30 58.60 +25.45 1.40569
+ 31.89 1.50361
31 30.49

+14°
51 17.86

+27 48 43
1.48240
+ 350
1.48590

− 30.61
− .08
+ .00
− 30.69
+14 50 47.17

Oct 27
Reg − 17

− 31 − 17 43.46
50 46.9 − .31
33 3.0 − 24.10
43.9 − 18 7.87
32 38.9 32 39.30

45.1
43.0
42.8
43.0
42.0
44.4
43.5
43.9
− 17 43.46

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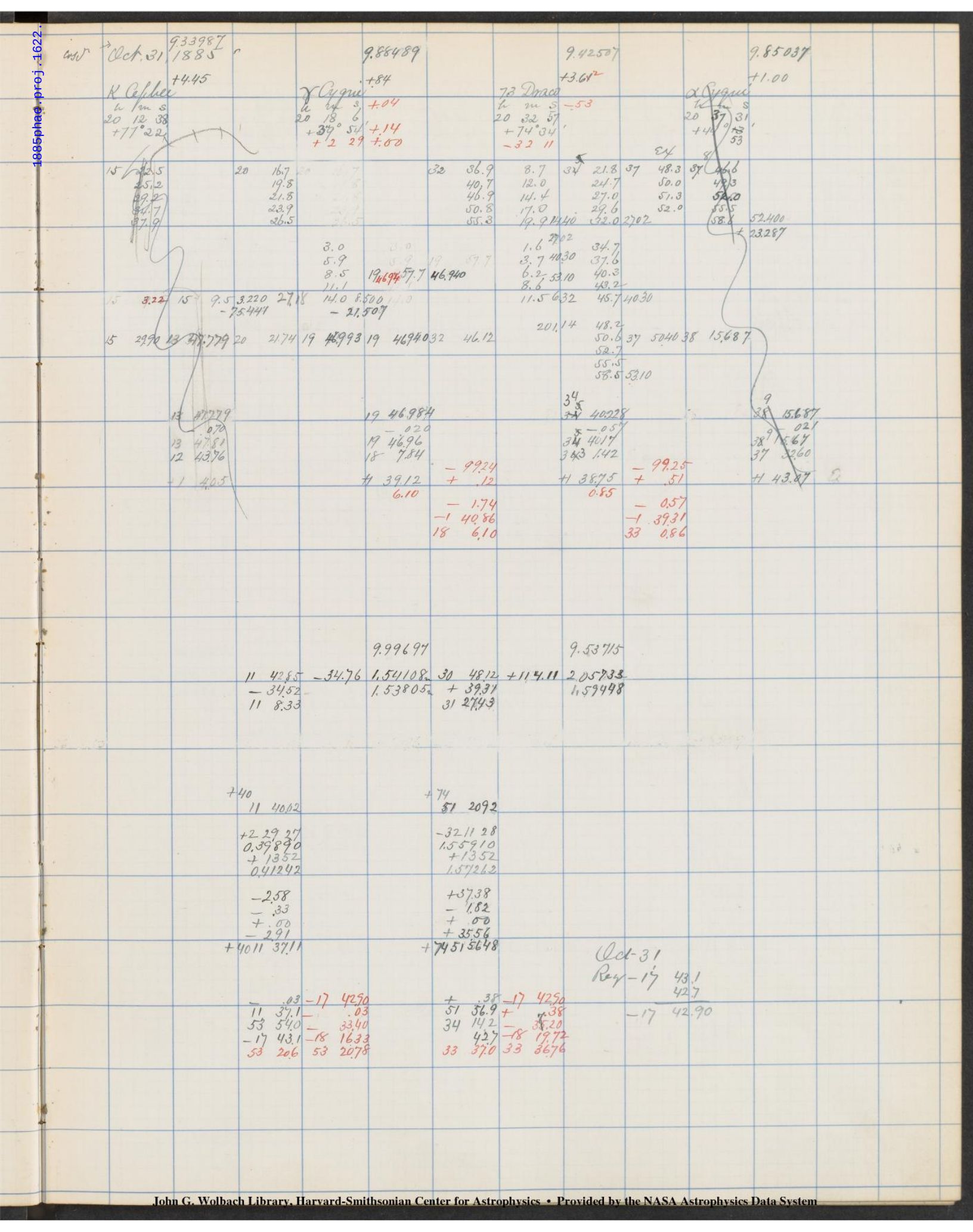
1995phae.proj.1622



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1885phae.proj.1622

Nov 4 1885

κ Cephei — 9.88489 — +445 — +.84

h m s
20 12 39
+77° 22'

χ Cygni — +.04

h m s
20 18 06
+39° 54' +.18
+2 29 +.00

61 Cygni — 9.89534 — +.79 — +.07

h m s
21 1 46
+38° 12'
+4 11

B² 2777 — 9.32960 — +4.59 — −.58

h m s
21 7 46
+77° 40'
−35 17

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1885phae.proj.1622.

Nov 4 1885 9.67018

δ Cephei +1.89

in the S -.34

21 15 50

+62° 6'

-19 43

18m 20.0
23.4
28.2
32.0
35.9

17 59.0
3.2
7.6
12.3
16.6 79440
- 33262

18 27.90 17 32.478

17 32.478
- 033
17 32.44
15 52.24
+1 4020 - 180.55
50.07 + .34
-2.17
-1 42.38
15 50.06

9.78226

59 29.82 -55.42 1.74367n
-33.57 1.52593n
58 56.25

+62
23 52.10

-19 42 46
1.31450
+ 795
1.32245

+21.01
- .69
+ .00
+20.32

+62 24 12.42

Nov 4
Req - 17 43.1"
41.8
41.0
40.6
-17 41.62

+ 26 -17 41.62
24 12.7 + .26
6 32.1 - 37.80
406 -18 19.16
5 54.3 5 53.26

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1885phae.proj.1622

Nov 9 1885 9.85037 9.99742 9.94404 9.71788

α Cygni +1.00 ω Piscis +11 α Andrm +54 B. Cass +1.67 SEE KEY P

h m s −.04 h m s +.59 h m s +.24 h m s −.28

20 37 31 23 53 27 0 2 30 0 3 6

+44° 53′ +.087 +6° 14′ +28° 28′ +58° 31′

−2 30 +.07 +36 9 +13 55 −16 8

38 56.3 — 39 13.5 49.6 55 2.0 49.5 4 3.6 460.1 42.2 54

58.1 541 48.2 7.0 51.7 4.2 51.7 6.2 50.3 46.4

0.2 513 51.3 10.2 53.9 6.2 54.3 8.5 504 50.4

1.6 513 54.2 55.8 8.2 56.4 10.6 50.3 54.2

2.7 513 57.1 51.250 57.8 53.76 10.3 58.9 54.160 14.0 50.3 58.2 13.9

+ 23.287 12.4 + 18.769 15.2 50.3 2.1 17.8

22.7 14.5 17.6 50.3 6.1 21.7

24.8 16.6 20.0 26.3

26.7 18.7 22.4

28.8

30.9 26.78 29.92 1920

− 31.594

38 59.78 39 14.537 39 15.10 15600 2054 93.1 118.1

55 10.270 55 10.344 4 12.929 4 13.122 4 50.326 4 50.286 54

.650

39 14.537

− .022

39 14.515 63 −07

37 32.37 −12

−102.48 6

+1 42.26 33 + .087

30.72 60

− 1.65

−1 44.08 4

37 30.45

57.59

55 10.307 4 13.058 4 50.303

− .046 − .018 − .029

55 10.029 4 13.04 4 50.27

53 27.65 2 30.39 3 7.86

+1 42.64 −102.58 60 +1 42.65 −102.63 60 +1 42.41 −102.63 61

24.35 + .01 26.65 + .04 2.71 + .811

− 3.30 − 3.74 − 5.15

−1 45.58 9 −1 46.38 0 −1 47.65 5

53 24.42 0 2 26.74 3 2.62

9.96245

8.75

12 46.25 + 14.76 1.16909

+ 13.54 1.13154

12 59.79

25.29

+45°

10 26.06

−2 30 7

0.400 70

− 127

0.39943

+ 251

− .06

+ 60

+ 2.45

+45 10 28.51

+ 03 −17 42.70

10 28.5 + .03

52 45.8 − 34.70

−17 42.7 −18 17.37

52 11.1 52 11.14

Nov 9

Reg − 17 42.70

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1885phae.proj.1622.

Nov 10. 1885 9.87953

χ Cygni +.86

h m s +.03

20 52 54

+40° 44' +.07

+1 39 +.00

61 Cygni

h

21 1.47

+38° 11'

Nov 9 1885 9.30887

4 H Draco

h m s

13 8 51

+101° 45'

78 15

−59 22

* −4.81

−.86

54 14.3 10.9 54 38.1 27.2

16.7 13.6 38.3 30.1

18.6 16.3

20.7 19.0

23.1 22.0 16.36

38.6 41.3

54.5 38.2 43.6

57.3 38.4 46.6

59.7 38.1 49.0

2.6

5.3 5988

7 46.0

55.4

5.7

15.9

25.7

35.7

46.0

55.5

6.1

772.0

8 25.778

54 38.174

−.020

54 38.15

52 53.07

+1 43.08

53.18

− 103.14

+ .06

− 1.89

+1 44.97

52 53.18

8 25.778

+.076

8 25.85

6 43.01

+1 42.84

47.98

− 102.55 61

− .38 .34

+ 4.97

−1 38.07 87.98

6 47.87

9.99161

20 39.92 +1949 1.28981

+ 19.12 1.28142

20 59.04

+41

1 49.31

+1 38 24

.21720

+ 427

.22147

−1.66

− .10

+ .05

−1.76

+41 1 47.65

− .03 −17 43.80

1 47.6 − .03

44 3.8 − 34.50

−17 43.8 −18 18.33

43 29.3 25.22

43

Nov 10

Reg − 17 43.80

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1885phae.proj.1622

Nov 11. 1885 9.32960 +4594

Bo 2777
h m s −.58
21 7 46
+77° 40' +.06
−35 17 +.52

α Cephei
h m s
22 15 51
+62° 6'
No Obs.

9.81076 +1.18

7 Lacertæ
h m s −.13
22 26 36
+49° 42'
−7 19

9.93912 +.57

η Pegasi
h m s +.22
22 37 40
+29° 38'
+12 45

7 8.2 13.7 19.4 23.2 30.8

8 525 2.0 11.5 21.5 30.6 40.6 50.2 59.8 9.6

28 2.4 4.5 7.6 10.0 12.4

550 57.8 547 54.7 547 54.6 1.0

28 7.4 10.6 14.0 17.0 20.4

5475.0 + 25511 23.4 26.6 29.8 33.0

38 58.3 0.4 1.7 3.7 6.6

0.1 2.2 4.6 7.0 9.4 4660 + 18.983

39 14.0 16.4 18.7 21.1 23.3 25.8 28.2 30.6 33.0

42

7 19.06

9 278.3 30.922

28 7.38

28 20.261

182.2 28 20.244

39 1.948

39 23.643

211.1 39 23.456

42

9 30.922 −.072 9 30.85 7 42.46 41 43.49 46.82

−10381 +.27 .00 −0.64 −1 44.18 7 46.67

28 20.249 −.024 28 20.225 26 36.40 41 43.82 33.27

−10382 +.07 −3.13 −1 46.88 26 33.34

39 23.518 −.018 39 23.50 37 39.73 41 4377 36.73

−103.83 +.03 −3.00 −1 46.80 37 36.70

9.44168

24 55.18 +13.186 + 36.46 25 31.64

2.12011 1.56179

9.92284

28 5565 +12.87 + 10.77 23 6.42

1.10958 1.03242

26 4280 +21.58 + 24.28 27 7.08

0.05120

1.33405 1.38525

16 + 16

25 1088

24 4985

+77° 57 16.71

−35 17 21 1.60990 +.184 1.61174

+40.90 −1.98 +.00 +38.92

+77 57 55.63

+49 59 41.93

−7 19 20 0.86920 +.359 0.87279

+7.46 −.05 +.00 +7.41

+4959 49.34

+29 55 41.27

+12 44 27 1.11460 +.396 1.11856

−13.14 −.11 +.00 −1.325

+29 55 28.02

+23 16

+19 1.32 + 1.31

−20 − + −20

+23 15

+49 57 56.1 40 13.3 −17 42.8 39 35.0

−17 43.63 +.49 −38.30 −18 21.44 39 34.19

+.11 59 41.4 42 5.3 441

−17 43.63 +.11 −36.30 −18 19.82 41 29.0

−.19 55 27.8 37 43.6 442 37 11.9

−17 43.63 −.19 −31.70 −18 15.52 37 12.50

15 58 57

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9.96413 +.42

λ Pegasi
h m s +.33
22 41 2
+22 58
+19 25

9.41954 +.367

π Cephei
h m s −.54
23 4 16
+74°46'
−32 23

9.94404 +.54

α Aurigæ
h m s +.24
0 2 29
+28°28'
+13 55

9.71788 +1.643

β Cas
h m s −.28
0 3 6
+58°31'
−16 8

42 38.7 406 424 438 430 — 59.7 2.0 4.1 6.3 8.7 4160 −17921 57.7 → 42 4210

42 37.4 39.7 42.0 44.4 46.4 48.5 50.9 53.1 55.3 → 42 46.239

5 56.8 1.7 7.7 12.7 18.2 → 42 46.411

6 7.42

5 3.7 480 4.1 5.63 4.2 4.2 4.0 11.8 3.9 19.6 3.9 27.5 3.9 35.3 → 6 3.957

4 50.8 53.1 55.6 57.8 0.2 55.50 +18.769 → 4 14.269

4 14.3 4.9 14.3 7.3 14.2 9.5 14.1 11.8 14.1 14.1 → 4 14.206

4 42.0 45.0 47.9 51.0 53.8 5 49.6 52.2 54.2 56.7 59.7 → 4 47.94 5 54.48

4 35.4 39.6 44.0 47.6 52.6 55.4 59.4 3.2 7.3 → 463.5 → 4 51.500

42 46.354 −.017 42 46.33 41 2.51 +1 43.82 59.54 → 42 46.411

6 3.957 −.057 6 3.90 4 20.26 +1 43.64 14.52 → 6 7.42

4 14.234 −.018 4 14.22 2 30.37 +1 43.85 26.65 → 4 14.269

4 51.500 −.029 4 51.47 3 7.82 +1 43.65 2.71 → 4 51.500

−10383 +.02 −.297 −1 4678 40 59.55

−10383 +.22 −5.74 −1 49.35 4 14.55

−10384 +.03 −3.72 −1 4753 2 26.69

−10384 +.10 −5.11 −1 4885 3 2.62

0.07621

16 3060 +4.25 → 16 34.25

0.62839 × 19 = 1042 − 1.17 = 19 9.25 → 4 1945 → +23 16 14.10

9.53162 0.53908 0.07070

33 5298 +2.41 33 55.39 → 34 36.88 − 42.58 33 54.30 → +58 48 52.96 → +58 49 9.86 → +58 49 9.91

+3.56 −.298

9.82996 0.55145 1.79920 0.38141 1.62916

+19 24.15 1.30710 +.406 1.31116 → −20.47 −.00 +.00 −20.47 → 15 53.63 → −.28 15 53.35 → 58 8.7 → 44.7 → 57 38.5

−3223.6 1.56230 +.494 1.56724 → +36.92 −.00 +.00 +36.92 → +75 4 16.02 → +46 4 16.48 → 46 33.6 → 429 → 45 57.1

−16 8.23 1.22180 +.606 1.22786 → +16.90 −.00 +.00 +16.90 → +58 49 9.86 → +58 49 9.91

−16 7.39 1.22140 1.22746 → +16.88 −.97 +.00 +15.91 → 49 9.96

−17 4363 +.24 49 10.1 31 26.9 → 31.50 → −18 14.89 → 30 55.4

−17 4363 +.46 → −18 19.67 → 45 56.35

−17 4363 +.24 → −31.50 → −18 14.89 → 30 55.02

Nov 11

Reg −17 42.8 44.1 44.2 44.7 42.9 43.1

−17 43.63

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1885phae.proj.1622

Nov 11 1885 9.30887

−4.81

4H Draco

α δ s −.86

0h 6 50

+101° 45'

78 15

−59 22

9 2.5
8.0
14.8
22.8
33.6

8
26.7 16.6
26.1 26.1
27.2 37.3
26.8 47.0
27.3 57.7
27.2 7.7

9 28.5
37.7
48.0
58.0
6.1 48.460
− 81.023

9 16.34 8 27.437 8 26.883

8 27.160
+.076
8 27.236
6 43.17
71 44.07

9.42095

21 2240 −4918 1.69179
− 12.96 1,112744
21 9.44

+102
1 38.91

59 20 54
1.98612
+606
1.992718
+98.21
+ .27
+ .00
+ 98.48
+102 3 17.39

+ 73
3 18.1
45 9.9
−18 8.2

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1885phae.proj.1622.

Nov 12 1885

9.66270

+1.93

o Cephei

h m s
20 27 40 −.35
+62° 37' +10
−20 14 +00

9.98652

+.25

B Cephei

h m s
20 32 12 +.47
+14° 12'
+28 11

9.42507

+.361

73 Draco

h m s
20 33 0
+74° 34'

9.87964

+.66

γ Cygni

h m s
20 52 58 +.03
+40° 43'
+1 40

28 32.0 38.8 29 5.8
34.5 43.2 10.1
37.6 47.8 14.7
41.4 52.2 19.2
56.8 47.760 23.5
35.874 28.0

— 33 —

36 10.4 — — —
14.0 — — —
23.8 — — —
26.6 — — —
31.7 — — —

54 6.5 12.0 54 28.2
8.3 14.6 30.8
10.3 17.2 33.6
12.2 20.0 36.3
13.5 22.8 17.32 39.0
41.7

30 23.8 32.6 8.3 55.4 57.5 53.4 53.4 44.3
26.4 37.0 10.3 55.4 59.7 45.7 58.0 47.3
29.4 41.4 12.5 55.6 2.0 45.8 1.3 45.750 1.0 5.00
31.7 14.7 55.5 4.0 — 62.002 3.5
35.4 16.8 12.520 64 0.86
−17.020

212.3

28 36.38 29 23.634 29 23.589 33 55.500 33 55.475 36 20.68 34 43.748 54 10.16 54 39.090 54 39.022 78.18 35 1.2
30 29.34

29 23.604 33 55.488 34 43.748 54 39.056
−.034 −.016 −.057 −.020
29 23.57 23 55.47 34 43.69 54 39.04
27 39.76 +10 32 11.34 33 0.40 52 55.02
+1 43.87 −104.13 +1 4413 −104.13 +1 43.29 +.09 +1 4400 −104.14
39.64 +.19 9.36 +.02 53.18 +.09
60 −1.98
−0.72 −1 4609
−1 44.66 32 9.38
27 38.91

9.77478

9.99172

27 51.58 +4.727 1.67413 32 0.12 .9693 20 29.70 +28.90 1.46090
+ 28.11 −6.574 1.81783 + 28.35 1.45262
28 19.69 1.44891 20 58.05
1.59261

29 208
− 32.14
28 22.94

+62 +41
54 28.66 54 25.41 1 50.30

−20 14 24 −20 13 15 +1 38 14
1.32700 1.32650 0.21630
+144 +144 +144
1.32844 1.32794 0.21774

+21.30 +21.28 −1.65
− .49 − 96 −.23
+.00 +.00 +.00
+.2081 +.2032 −188
+62 54 49.47 54 45.73 +41 1 48.42

+ 30 −17 43.48 − .03 −17 43.48
54 49.8 46.0 + 30 1 48.4 − .03
37 3.8 − 36.30 44 3.6 − 34.30
−17 46.0 −18 19.48 44.8 −18 17.81
42.2 36 26.25 43 29.3 43 30.61
36 27.5

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1885phae.proj.1622

Nov 12 1885 9.89544 9.32960

+79 +4.587

61 Cygni

h m s +.07

21 1 47

+38° 11'

+4 12

B.2777

h m s −.58

21 7 46

+77° 40'

−35 14

3 60 4.7 3 20.5 11 33.2 8 52.5

80 7.4 23.2 44.7 2.4

92 10.0 26.0 52.4 12.0

108 12.7 28.4 59.3 21.2

131 15.2 10000 30.9 8.7 30.8

+20991

33.7 40.9

36.3 50.4

39.0 0.4

41.6 8.6

3 9.42 3 30.991 3 27.96 11 52.06 9 280.2 31.133

3 31042

−020

3 31.02

1 46.76 +15

+1 4426 −104.14 +1 4370 −104.14

44.48 +.08 46.82 +.46

−2.28 −0.54

−1 46.34 −1 44.22

1 44.68 7 46.84

0.00752 9.44168

58² 5788 +2162 1.33486 2.14900

+2200 1.34238 1.59068

5×3 19.88

+38° +77

29 28.47 57 17.30

+4 10 42 −35 16 6

0.62400 1.60960

+144 +144

0.62544 1.61104

−4.22 +4084

−.13 −2.26

+.00 +.00

−4.35 +38.58

+38 29 24.12 +77 57 55.88

Nov 12

Rey − 17 42.2

44.8

43.8

43.1

−17 43.48

−.06 −17 43.48 +.50 −17 43.48

29 24.1 −.06 57 56.4 +.50

11 40.3 −36.90 40 13.3 −38.30

43.8 −18 20.44 43.1 −18 21.28

11 3.4 11 3.68 39 35.0 39 34.60

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1885phae.proj.1622.

Nov 15 1885 9.42507 9.85037 9.87953

73 Draco +3.61² α Cygni +1.00 ν Cygni +.86

h m s −.53 h m s −.04 h m s +.03

20 32 57 20 37 31 20 52 54

+74° 34′ ~~+.15~~ +.14 +44° 53′ +40° 44′

−3 2 11 ~~+.02~~ −2 30 +1 39

35 21.5 34 44.8 44.8 38 51.6 48.3 39 5.5 55 7.5

22.7 45.2 47.8 54.4 51.1 8.7 9.0

23.5 44.5 49.9 44.83 58.0 54.0 11.2 11.1

52.7 58.4 56.9 14.4 13.0

55.4 0.2 59.8 57.402 17.2 15.8

20.2

57.6 34.5 23.3 54 56.2

0.0 37.7 25.8 59.0

2.9 57720 40.6 28.9 1.6

5.5 12.917 43.3 4.5

7.9 42503 46.2 40.46 7.3 1.720

−21.774

10.7 3448 1552

35 22.57 13.3 38 56.12 39 17.240 39 17.222 55 11.28 54 39.946

16.3 10.740

−25.835

44905

34 44847 39 17.231 54 39.946

−.057 −.022 −.020

34 44.79 39 17.21 54 39.93

33 0.15 57 32.22 −.07 52 54.96

−12

−105.17.13 −105.17.13 −105.18.14

+1 4464 +.54.51 +1 4499 −12 +.15.14 +1 4497 +.13.12

0.85 45.11.05 53.18

+ 0.0 30.72 − 1.50 − 1.78

+ 0.70 −1 46.52.49 −1 46.83.0

−1 43.98.2 37 30.69 52 53.16

33 0.86 73 3

7

9.53715 9.96245 9.99161

31 40.95 −37.72 1.57657 12 2.15 +21.11 1.32449 21 30.15 −31.33 1.49596

−12.99 1.11372 + 19.36 1.28694 − 30.73 1.48757

31 27.96 12 21.51 20 59.42

+74 +45 +41

51 20.39 10 26.84 1 48.93

−32 10 35 −2 30 14 +1 39 14

1.55890 0.40100 0.22070

+.768 +.778 +.807

1.56658 0.40878 0.22877

+36.86 +2.56 −1.69

−.20 −.12 −.27

+.00 +.00 +.00

+36.66 +2.44 −1.96

+74° 51 57.05 +45 10 29.28 +41 1 46.97

+ 49 −17 43.70 + .04 −17 43.70 − .03 −17 43.70

51 57.5 + .49 10 29.3 + .04 1 46.9 − .03

34 13.8 − 36.80 52 45.4 − 34.30 44 34 − 34.10

−17 43.7 −18 20.01 43.9 −18 17.96 43.5 −18 17.83

33 57.6 33 37.04 52 11.1 52 11.32 43 29.3 43 29.14

Nov 15

Reg −17 43.7

43.9

43.5

−17 43.70

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1885phae.proj.1622

Nov 16 1885 9.42507 9.85049 9.90750

+3.68²

73 Draco +100 α Cygni +.73 ν Cygni +52 32 Vulpic

h m s −.53 h m s −.04 h m s +.11 h m s

20 32 57 +14 20 37 31 20 42 57 20 49 40

+74° 34' +.52) +44° 52' +36° 5' +27° 38'

−3 2 11 −2 29 +6 18

α 1, b 8, δ 260 Subt.

34 16.6 39 55.5 39 5.8 44 7.2 17.3 44 32.5 51 17.6

19.2 57.7 8.6 8.7 19.8 35.0 19.9

21.6 59.7 11.6 10.3 22.4 37.7 22.2

24.3 1.6 14.5 12.0 24.9 40.0 24.5

26.9 21720 4.2 17.6 14.5 27.4 42.7 26.8

+25835 20.5 45.3 29.2

29.7 47555 23.2 58.0 47.9 31.3

32.2 26.2 0.6 50.4 33.7

34.6 29.0 3.2 53.0 36.2

37.8 5.8

39.8 34720 40.74 8.3 3.18

12917

42.4 47639 241.4

45.1 39 59.7439 17.450 39 17.444 44 10.54 44 42770 44 42722 51 26.822

47.6

50.5

52.7 47.66

−42.60

34 47.618 39 17447 44 42746 51 26.822

−.057 −021 −019 −018

34 47.56 44.96 39 1743 44 4273 51 2681

33 0.07 37 32.19 −42 −.07 42 57.46 44 41.46

−105.4×0 −105.4×0 −105.4×0 −105.4×1

41 4749 + .51 41 45.24 + .14 +1 4527 + .10 +1 4535 + .47

4489 .60 36 55.75 39.56

0.85 + 0.78 30.72 − 1.47 − 1.71 − 1.90

−1 44.121 −1 46.743 −1 4703 −1 47.23 4

83 .447 37 30.69 42 55.70 49 39.58 7

0.845 .70 2

9.96257 0.01958

13 1.12 −42.29 1.62624 .59 45.90 +31.21 1.49429

− 38.80 1.58881 + 3265 1.51387

12 22.32 0 18.55

+45 +36

10 26.13 22 29.80

−2 29 15 +6 17 30

0.39810 0.80270

+1013 +1013

0.40823 0.81283

+2.56 −6.50

−.49 −.25

+.00 −.00

+2.07 −6.75

+45 10 28.20 +36 22 23.05

Nov 16

Reg − 17 42.8"

43.7

−17 43.25

+ .04 −17 43.25 − .10 −17 43.25

10 28.2 + .04 22 23.0 − .10

52 45.4 − 34.30 4 39.3 − 32.70

−17 42.8 −18 17.51 43 7 −18 16.05

52 11.1 52 10.69 4 6.6 4 7.00

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1885phae.proj.1622.

9.87953
+86

ν Cygni
4h m s +.03
28 52 54
+40° 44'
+1 39

54	2.7	13.0	54	29.3
	4.5	15.8		32.0
	6.5	18.5		34.8
	8.3	21.3		37.4
	11.2	23.8	18.48	40.3
				43.0
		56.5		45.6
		59.3		48.2
		2.0		51.2
		4.6		
		7.4	196	

8044 3618

54 6.64 54 40220 54 40.200

54 40210
020
54 4019
52 5493
41 4526 — 1054 = 1
53.18 + .12
— 1.75
-1 47.05 4
52 53.17 5

9.99161
+3357 1.52595
1.51756

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1885phae.proj.1622.

Nov. 17 1885

73 Draco

9.42507 +3.67²

9.85137 +1.00

N Cygni

9.92094 +.66

E Cygni

9.87964 +.86

K Cygni

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1885phae.proj.1622.

9.89534 +.79

61 Cygni
h m s +.07
21 1 46
+38° 12'
+4 11

9.32960 +4.597

BS 2777
h m s −.58
21 7 43
+77° 40'
−35 17

9.93912 +.57

η Pegasi
h m s +.22
22 37 37
+29° 38'
+12 45

9.96413 +.42

λ Pegasi
h m s +.33
22 41 2
+22° 58'
+19 25

2 59.7 1.6 3.7 5.5 7.6
3 6.0 8.7 11.3 13.9 16.4 11.26 21.7 24.4 27.0 29.6 32.2 34.8 37.4 40.0 42.7
48.0 50.6 53.0 55.9 58.5 53.20
7 2.9 8.3 13.7 20.0 26.3 11 48.3 54.8 6.0 12.7 22.0
7 55.0 4.6 14.8 24.0 34.0 14.480 +77248 52.7 3.0 12.6 22.7 31.5 41.1 51.3 0.5 10.4
38 52.7 54.3 56.3 57.6 59.5
39 1.5 3.8 6.2 8.6 11.0 6.22 15.8 18.0 20.4 22.7 25.3 27.6 30.0 32.4 34.9 39.6 41.7 43.9 46.4 48.9 44.10
42 35.6 37.7 39.5 41.3 43.0
42 25.6 27.8 30.0 32.4 34.7 30.10 37.2 41.6 43.6 45.9 48.0 50.1 52.6 54.8 57.0 1.4 3.7 6.0 8.1 10.4 6.12

3 3.62 | 6446 32230 | 2898 32200 | 7 14.24 12 4.76 | 9 31.728 | 2858 31.756 | 38 56.08 | 5032 25.160 | 2271 25.233 | 42 39.52 | 9622 48.110 | 4328 48.089

3 32285 −.020 3 32.20 1 4666 +1 45.54 39 44.48 +15 − 105.587 + .11 − 2.18 −1 47.654 1 44.55 6

9 31.747 −.072 9 31.68 7 4684 +1 45.484 46.82 − 105.587 + .64 − 0.02 −1 4496.5 7 467.2 3

39 25196 −.018 39 2518 37 3963 +1 45.55 36.73 − 105.670 + .08 − 2.90 −1 48.432 37 36.75 6

42 48.100 −.017 42 48.08 41 242 +1 45.66 59.54 − 105.61 + .06 − .288 −1 4843 41 −065 40 59.65

0.00742 | 1.45637 1.46379 | 24 53.20 + 38.03 25 31.23 | + 137.53 − 153.01 | 9.44168 | 2.13840 2.18472n 1.58008 1.62640n | 26 34.85 + 32.76 27 7.61 | + 29.12 | 0.05120 | 1.46419 1.51539 | 6 25.62 + 10.23 6 35.85 | + 8.58 | 0.07621 | 0.93349 1.00970

52 52.10 + 2909 53 21.19 + 28.60

26 14.18 − 42.31 25 31.87

+38 29 27.16 | +4 10 36 0.62380 +858 0.63238 | −4.29 −.22 +.00 −4.51 | +38 29 22.65

+77 57 17.12 | −35 17 23 1.60990 +874 1.61864 | +41.56 −2.18 +.00 +39.38 | +77 57 56.50 +77 57 53.92

57 16.48 | −35 16 2 1.60960 1.61834 | +41.53 −2.66 +.00 +38.87 | 57 55.35

+29 55 40.74 | +12 44 19 1.11450 +1097 1.12547 | −13.35 −.20 +.00 −13.55 | +29 55 27.19

+23 16 12.50 | +19 24 10 1.30710 +1110 1.31820 | −20.81 −.02 +.00 −20.83 | +23 15 51.67

− .07 29 22.6 − 07 11 40.0 − 36.60 426 11 3.4 | −17 42.58 − 07 −18 1923.5 11 3.40

+ .56 57 55.5 40 13.4 421 39 35.0 | −17 42.58 + 56 − 38.40 −18 20.42 39 35.50

− .21 55 27.0 37 44.0 43.0 37 11.9 | −17 42.58 − .21 − 32.10 −18 1489 37 12.30

− .32 15 51.3 58 8.7 426 57 38.5 | −17 42.58 − 32 − 30.20 −18 1310 57 38.57

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1885phae.proj.1622

Nov 17 1885 9.41908 9.74132 9.58859 9.94404

+3.67 +1.51 +2.38 +.54

π Cephei

h m s
23 4 17
+74° 47'
−32 24

−.54

Bo 3077

h m s −.25
23 7 48
+56° 33'
−1 4 10

41 H Cephei

h m s −.42
23 42 28
+67° 11'
−2 4 48

α Andromedæ

h m s +.24
0 2 30
+28° 28'
+1 3 55

4 5.0 9.3 14.7 20.4 26.6
4 46.5 54.2 2.4 9.7 18.0
33.7 41.4 49.0 57.4 5.4
2,160 62.864
7 (44.3 50.8 56.7 3.2 8.8)
8 56.9 0.6 4.3 8.2 11.9
19.4 23.2 26.8 30.6 34.3
4.380 +29.934
43 52.5 55.3 59.0 3.7 9.5
38.0 42.0 45.7 49.5
45 27.7 31.2 34.7 39.4 44.2
43 54.4 59.9 5.7 10.5 16.0 21.1 26.5 31.7 37.0
3 52.4 57.6 57.0 59.5 1.8
6.4 8.7 11.1 13.5 15.9
57.06 +18.769
18.2 20.4 22.8 25.3

12.9 21.0 28.8 36.7
9 15.2 17.9 21.6 24.5 27.2
21.28
463
10 30.3 32.8 35.8 38.0 41.1
3560
9 21.28
10 35560

4 15.20
6 5.024
6 5.144
9 34.314
9 34.389
3095
45 35.44
44 15.422 1388 1428 867
4 15.829
4 15.811
1423

6 5.104 − .058 6 5.505 4 1985 +1 45.20 14.52
− 10.562 + .51 .00 − 5.33 −1 5044 4 1461

9 34.364 − 028 9 3434 7 48.92 +1 45.92 44.88
− 105.62 + .21 − 4.04 −1 49.45 7 44.89

44 15.422 867 − 038 44 15.383 42 30.28 +1 45.10 4507 4552 24.93
+.03 − 105.63 + .33 − 5.35 −1 5065 42 25.18

4 15.817 − .018 4 1580 2 30.30 +1 45.50 26.65
− 105.63 + .08 − 3.65 −1 49.28 2 26.60 .54

9.53116 9.85340 9.70067

18 30.10 + 37.34 19 7.44
+109.90
2.04100 1.57216
32 34.05 + 9.34 32 43.39
+13.08 − 61.24
1.11691 1.78704 0.97031 1.64044
54 46.42 + 7.74 54 54.16
+15.12 − 80.02
1.18808 1.90320 0.88875 1.60387

33 26.28 − 43.70 32 42.58
55 33.22 − 40.17 54 53.05

+75 3 40.91
+56 50 4.96 50 5.77
+67 27 54.19 27 55.30

−32 23 46 1.56250 +1160 1.57410
−14 9 42 1.16220 +1160 1.17380
−14 8 50 1.16180 1.17340
−24 47 30 1.42470 +1224 1.43694
−24 46 43 1.42450 1.43674

+37.51 − 1.67 + .00 + 35.84
+14.92 − .04 + .00 +14.88
+14.91 − .94 + .00 +13.97
+27.35 − .04 + .00 +27.31
+27.34 − 1.24 + .00 +26.10

+754 16.75
+56 50 19.84 +56 50 19.79
50 19.74
+67 28 21.50 +67 28 21.45
28 21.40

+ .52 4 17.3 46 34.6 42.7 45 57.1
−17 42.58 + .32 − 37.50 −18 19.56 45 57.19
+ 24 50 20.0 32 36.8 43.2 32 0.4
−17 42.58 + .24 − 36.40 −18 18.74 32 1.05
+ 40 28 21.8 10 39.3 42.5 10 4.3
−17 42.58 + .40 − 35.60 −18 17.18 10 4.27

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1885phae..proj..1622.

9.71767
+1.6483

β Cass
h m s
0 3 8
+58° 32'
-16 9

-.28

5 23.0
25.7
28.0
30.4
34.7

4 532 45.3
530 49.0
530 53.2
530 56.9
529 0.8
53.0 4.8
53.1 8.9

16.5
20.6
24.8
28.6
32.4 2458
-31.609

5 28.36 4 529.71 53.029

4 53.006
- .029
4 5298
3 767
+1 4531 — 105.634
2.71 + .23

- 4.96
-1 5038 7
3 268
1

9.82975

34 1958 — 3535 1.54839n
- 2389 1.37814n
33 5569

+58
48 5266

-16 7 56
1.22160
+1268
1.23428

+17.15
- 31
+ 00
+1684
+58 49 9.50

+ 27 -17 42.58
49 9.8 + 27
31 28.0 — 32.60
41.8 -18 14.91
30 55.4 30 54.59

Nov 17
Rey -17 42.5"
42.8
42.5
42.7
42.6
42.1
43.0
42.6
42.7
43.2
42.5
41.8

-17 42.58

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1885phae.proj..1622

Nov 28.1885 9.41954 +3.67 | 9.74151 +1.51 | 9.94417 +.54 | 9.71788 +1.663

11 Aquilae

h m s
23 4 13
+74° 46'
−32 23

−.54 +.36 +.00

95 Aq

6 52.8 58.9 5.3 9.0 16.8

6 − 10 03 | 3.3 | 8.0 8.8 8.8 | 6.9 8.9 | 10.4 14.0 | 8.530 11.2 | 16.4 19.0 21.6 23.8 26.3 | 21.420 −13.083 8.337 | 29.2 32.2 34.7 36.9 39.8 | 34.560 −26166 8.394

7 456

6 8420 − .058 6 8.36 H 19.05 +1 4931 14.52 | −110 62 + 1.32 .00 − 4.53 −1 53.83 4 . 1453

Br 3077

h m s
23 7 42
+58° 32'
−1 4 9

−.25

9 1.3 5.2 8.4 12.2 16.1 | 8.64 | 1.2 4.8 8.6 12.2 16.0 | 8.56 | 7720 | 9 38.600

9 24.8 27.8 31.2 34.8 38.6 | 42.3 | 46.2 49.9 53.8 | 3494 | 9 38.822

9 38.711 − 028 9 3868 7 48.62 +1 50.06 44.88 | −110.62 + .54 − 3.74 −1 53.82 7 44.86

α Cephei

h m s
0 2 24
+28° 26'
+1 3 57

+.24

3 57.0 59.1 1.7 4.2 6.6 | 20.7 11.3 20.7 13.7 20.7 16.0 20.7 18.4 20.7 20.7 | 1.720 + 18.763

4 20.483

4 20.592 − .018 4 20.57 2 30.16 +1 50.41 26.65 | −110.65 + .19 − 3.51 −1 53.97 2 26.60

4 20.700

β Cassiopeiae

h m s
0 2 59
+58° 31'
−16 8

−.28

5 18.8 20.5 21.9 23.2 26.2

5 22.124

29.2 25.2 29.2 29,2 28.8 32.8 29.4 37.3 | 29.150 −31.594

4 57.536

4 41.5 45.5 49.3 53.6 57.6 | 1.5 | 5.2 9.2 13.0

516.4

4 57.437 − .029 4 57.41 3 7.40 +1 50.01 2.71 | −110.65 + .59 − 469 −1 54.75 3 2.66

4 57.378

9.53162

19 2885 − 5614
− 19.09
19 9.76

1.74927 | 33 3.20 − 31.01
1.28089 | − 22.14
32 41.06

9.85359

1.49150
1.34509

9.82996

34 11.08 − 24.68
− 16.68
33 54.40

1.39235
1.22231

+75°
3 38.59
−32 22 47
1.56230
+ 2216
1.58446
+38.41 − .43 + .00 + 37.98
+75 4 16.57

+56
50 7.29
−14 9 13
1.16200
+ 2216
1.18416
+ 15.28 − .24 + .00 + 15.04
+56 50 22.33

+58
48. 53.95
−16 8 5
1.22160
+ 2314
1.24474
+ 17.57 − .15 + .00 + 17.42
+58 49 11.37

+ .61 −17 41.89 | 4 17.2 + .61 | 46 35.9 − 38.80 | −17 41.3 −18 20.08 | 45 57.1 45 56.49

+ .28 −17 41.89 | 50 22.6 + .28 | 32 37.7 − 37.30 | 44.9 −18 18.91 | 32 0.4 32 3.42

+ .32 −17 41.89 | 49 11.7 + .32 | 31 29.6 − 34.20 | 42.1 −18 15.77 | 30 55.4 30 55.60

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9.30887n
−4.81
4 H Draco
h m s −.86
12 6 44
+101 45'
78 15
−59 022

9.77694
+1.34
ξ Cass
h m s −.19
0 30 31
+53° 15'
−10 52

9.74868
+1.48
κ Cass
h m s −.23
0 33 56
+55° 54'
−13 31

9. 9.82844
+1.10
O Cass
h m s −.09
0 38 16
+47° 39'
−5 16

8 59.8 9 11.7 32 11.3 31 54.5 15.0 35 39.3 39.6 39 35.7 39 43.3 1.8
2.0 22.2 13.7 58.0 18.7 41.5 43.3 37.6 46.3 4.9
6.9 31.7 16.9 1.4 22.2 45.0 47.0 40.1 49.4 7.9
9.0 42.0 19.2 4.9 25.5 47.2 50.6 42.0 62.6 11.0
12.7 52.0 3196 21.0 8.5 146 29.0 49.5 54.2 44.3 55.7 4446 14.0
− 81023 32.8 + 29431 57.8 17.1
49.8 36.1 16.4 1.7 32.4 20.3
53.2 39.4 20.0 5.4 35.4 23.4
56.6 42.9 23.5 9.0 38.3 26.4
0.0 27.3 41.4
3.5 5662 31.0 2364 44.6 3842
− 29431

9 6.08 32 16.42 32 29.040 32 29.067 35 44.503 35 54.204 35 54.289 39 39.943 40 2.788 40 126.8
5808 261.6 488.6 1.940 14.089

8 10.937 32 29054 35 54246 40 14.011
+ .075 − .025 − .027 39 − .023
8 11.01 32 2903 35 5422 39 13.99
6 44.75 30 38.82 34 407 38 2365
+1 26.26 +1 50.21 − 110.67 +1 50.15 − 110.67 +1 5034 − 110.67
34.08 + 48 59.11 + .53 19.15 + .40
− 4.74 − 4.96 − 4.58
−1 54.93 −1 55.10 −1 54.77
30 34.10 33 59.12 38 19.22

9.42095n 9.88902 9.86076 9.94052

20
10 5290 − 5514 1.74414n 48 47.15 +1263 1.10140 18 1952 + 9.75 0.98950 25 55.10 +3407 1.53237
+ 14.54 1.16242 + 9.78 0.99042 + 708 0.84976 + 2971 1.47289
+ 7.44 48 56.93 10 26.60 28 24.81
21 5

+102 +53 +56 +47
1 4091 33 5142 12 21.75 57 2354
−5921 23 −10 53 29 −13 31 57 −5 21
1,986 26 1,04450 1,14180 0.72 670
+ 2335 + 2420 + 2446 + 2459
2,069 61 1,06870 1,16626 75129
+1024 +11.71 +14.66 +5.64
+ .33 − .04 − .03 − .31
+ .00 + .00 + .00 + .00
+ 10284 + 11.67 + 14.63 + 5.33
+1023 2348 +5334 3.09 +5612 36.38 +4757 28.87

+ .97 + .21 −17 4.189 + .26 −17 4.189 + 10 −17 4.189
3 24.4 34 2.9 + .21 12 36.6 + .26 57 290 + .10
45 146 16 21.2 − 31.50 54 553 − 3210 39 47.0 − 29.90
18 9.8 41.7 −18 1318 41.3 −18 1373 42.0 −18 1169
15 49.7 15 49.91 54 23.2 −44 2265 39 17.0 −39 1718
54 39

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1885phae.proj.1622

Nov 28 1885 9.96196

+.44

Ψ Andron

h	m	s
0	41	11

+.32

+23° 38'

+18 45

42	50.6	42	46.4	59.9
	52.7		48.5	2.0
	54.3		50.9	4.3
	56.7		53.0	6.5
			55.3	5082 8.9
				11.1
			22.5	13.4
			24.6	15.7
			27.0	18.0
			29.0	
			31.5	2692
			1774	79.8
42	5358	43	8.870	43 8.867

43 8.868

− .017

43 8.85

41 18.33

+1 5052 −110.67

1461 + .16

00

− 3.72

−1 54.23

41 1462

0.07404

25 38.78 +15.29 1.18441

+ 18.13 1,25845

25 53.88

+23°

56 54.47

+18 43 20

1.29030

+2472

1,31502

−20.65

− .05

+ 00

− 20.70

+23 56 33.77

− .36 −17 41.89

56 33.4 − .36

38 53.5 − 24.60

39.9 −18 685

38 28.9 38 26.92

Nov 28

Reg −17

	"
	41.3
	44.9
	42.1
	41.7
	41.3
	42.0
	39.9
−17	41.89

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1885phae.proj.1622.

Nov 29 1885 9.53301 9.88489 9.81882 9.95591

β Cephei +2.75 74 Cygni +.84 11 Cygni +1.14 16 Pegasi +.47

h m s −.46 h m s +.04 h m s −.11 h m s +.29

21 27 8 21 32 18 21 42 30 21 47 47

+70° 33' +.52 +39° 54' +2 29 +48° 47' −6 24 +25° 23' +1 7 0

29 33.0 37.0 40.5 44.3 48.5 | 28 36.8 39.0 40.7 43.1 45.0 47.0 48.8 50.7 53.4 55.0 | 34 48.7 50.1 51.0 53.4 55.0 | 34 32.3 34.6 37.5 40.0 | 44 19.3 21.0 22.3 25.5 27.0 | 44 25.2 28.6 31.5 34.0 37.7 | 49 11.9 13.2 14.8 16.2 17.9 | 49 20.0 22.5 24.8 27.1 29.4 33.7 36.0 38.2 40.5 42.7 45.2 47.4 49.7 52.0

29 40.66 | 34 51.643 | 44 23.02 | 49 14.80 | 49 42.910 | 49 42.822

29 1.120 −.041 29 1.08 27 11.29 +1 49.79 10.42 | 34 13.242 −.020 34 13.22 32 22.36 +1 55.86 20.40 | 44 25340 −.023 44 2532 42 34.71 +1 5061 3273 | 49 42.866 −.017 49 42.85 47 52.03 +1 50.82 49.80

9.64509 | 9.99697 | 9.99090 | 0.06799

1 56.02 −39.54 / 1.59704 / 1.24213 | 11 14.82 −38.40 / 38.13 / 10 39.69 | 1.58433 / 1.58130 | 17 54.68 +2.32 / +.198 / 17 56.66 | 0.36549 / 0.29639 | 40 39.81 +28.07 / +32.83 / 41 12.63 | 1.44824 / 1.51623

−17.46 / 1 38.56

+70 21 9.79 | +40 12 8.66 | +49 4 51.69 | +25 41 35.72

−27 40 20 / 1.47980 / +19.14 / 1.49894 | +2 29 2 / 0.39750 / +19.20 / 0.41670 | −6 24 21 / 0.81060 / +19.45 / 0.83005 | +16 58 24 / 1.24490 / +19.58 / 1.26448

+31.55 / −.27 / +.00 / +31.28 | −2.61 / −.40 / +.00 / −3.01 | +6.76 / −.05 / +.00 / +6.76 | −18.39 / −.16 / +.00 / −18.55

+70 21 41.07 | +40 12 5.65 | +49 4 58.45 | +25 41 17.17

+ .52 −17 42.20 / 21 41.6 + .52 / 3 59.6 − 38.20 / −17 42.0 −18 19.88 / 3 21.4 3 21.19

− .05 −17 42.20 / 12 5.6 − .05 / 54 23.4 − 34.60 / 42.2 −18 16.25 / 53 49.4 53 49.40

+ .13 −17 42.20 / 4 58.6 + .13 / 47 15.7 − 36.10 / 42.9 −18 18.17 / 46 39.6 46 40.28

− .33 −17 42.20 / 41 16.8 − .33 / 23 34.3 − 30.60 / 42.5 −18 13.13 / 23 3.7 23 4.04

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1885phae.proj.1622

Nov 29 1885 9.66827 9.92546 9.72863 9.81091

20 Cephei +1.90 | 11 Pegasi +.64 | 4 Cephei +1.58 | 7 Lacertae +1.18

20 Cephei: h m s −.34; 22 1 28; +62° 14'; −19 51

11 Pegasi: h m s +.17; 22 4 50; +32° 37'; +9 42

4 Cephei: h m s −.26; 22 6 49; +57° 38'; −15 15

7 Lacertae: h m s −.13; 22 26 31; +49° 41'; −7 18

20 Cephei				11 Pegasi				4 Cephei				7 Lacertae			
2	28.6	2	39.1	5	58.0	5	41.3	8	11.5	8	6.0	27	44.7	28	55.0
	32.4		43.6		59.5		(86.4)		14.7		10.0		48.2		58.0
	35.2		48.2		1.6		41.4		16.7		13.8		51.0		1.2
	37.4		52.6		4.0		43.8		20.7		17.9		53.8		4.1
	41.6		56.5		5.3		46.3		24.4		21.7		58.3		7.5
			4800				41375				1388				1.16
			23.5				1.3				+ 30821				
			27.9				3.6								
	49.6		32.3				6.2								45.9
	54.3		36.6				8.4								48.7
	58.15		41.2				11.0								52.0
	3.0														55.2
	7.2		5852				25.7		2088						58.5

20 Cephei				11 Pegasi				4 Cephei				7 Lacertae			
			46.52				10.6				403.9				5.322
2	35.043	2	23260	6	1.68	6	1.128	6	1.178	8	17.608	44.701	44.878	27	50802
		3	23.411											28	26.610
			210.7												239.6
														28	26.622

3 23.335 | 6 1.153 | 8 44819 | 28 26.616

3 23.335
− .033
3 2330
1 3289
+1 5041
30.76 − 111.32 + .99 + .00 − 2.13
−1 5246
1 3084

6 1.153
− .019
6 1.13
4 5521
+1 5.92

8 44819
− .029
8 4479
6 5417
+1 5062
5187 − 111.32 + .82 − 2.30
−1 5280
6 51.99

28 26.616
− .024
28 26.59
26 3514
+1 5065
3327 − 111.33 + .61 − 2.67
−1 5339
26 33.20

9.78035 | 9.84071 | 9.92299

50 50.72 + 48.30 1.68395
+ 29.13
51 20.05
1.46430

−0.53 9.72428

26 2360 + 2722 1.43489
+ 18.86
26 42.46
1,27560

22 3648 + 3582 1.55413
+ 30.88
23 6.98
1.47712

+62°
31 2830
−19 51 25
1.31800
+ 1983
1.33783
+ 21.79
− .53
+ .00
+ 21.24
+6231 49.54

+57
56 589
−15 15 52
1,19630
+ 1996
1,21626
+ 1645
− .18
+ .00
+ 1624
+5756 2216

+49
59 4184
−7 19 40
0.86960
+ 2035
0.88995
+ 7.76
− .35
+ .00
+ .741
+4959 49.28

Nov 29
Reg −17 42.0
42.2
42.9
42.5
42.0
40.1
43.7
−17 42.20

+	.39	−17	4220	+	.30	−17	4220	+	.15	−17	4220				
31	49.9	+	.39	56	225	+	.30	59	49.4	+	.15				
14	1.9	−	38.50	38	42.4	−	38.00	42	5.1	−	36.70				
	420	−18	2031		40.1	−18	1990		43.7	−18	1875				
13	29.4	13	2923	38	4.4	38	226	41	29.0	41	30.53				

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1885phae.proj.1622

Dec 2 1885 9.77677

ζ Cas +1.34

h m s −.19
0 30 32
+53° 16' +.39
−10 53 +.02

9.74868

ν Cas +1.48

h m s −.23
0 34 17
+55° 54' +.39
−13 31 +.02

9.43053

21 Cas +3.58

h m s −.53
0 38 3
+74° 22' +.39
−31 59 +.02

9.96196

υ Androm +.44

h m s +.32
0 41 12
+23° 38' +.39
+18 45 +.02

| | | |

1885phae.proj.1622

Dec 2 1885 9.69765

+1.74

γ Cas

R m s

0 49 45

+60° 6'

-17 43

-.30

52 2.6
5.8
9.1
11.9
15.2

51 44 40.1
439 43.9
442 48.3
443 52.6
443 56.7
444 1.0

8.6
13.0
17.4
21.8
25.7 17.30
-33.10

52 8.92 51 44.200 51 44.267

51 44.233
-.631
51 44.20
49 51.89
+1 52.31 -112.83
46.39 + .68
.80
- 5.50
-1 57.65
49 46.55

9.80973

4
59 32.70 -2869 1.39252m
- 15.93 1.20225n
59 16.77

+60° 31.58
23 34.16

-17 42 43
1.26460
+2136
1.28596

+19.32
- .15
- .04
+19.09
+6023 ~~13.5~~
50.67

Dec 2
Reg-17

433
415
414
401
42.7
-17 41.80

+ .35 - 17 41.80
23 ~~53.6~~ 51.0 + 35
6 8.3 - 31.20
~~45.3~~ 42.7 * 18 12.65
5 38.02
5 37.1

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1885phae.proj.1622

Dec 3 1885

α Androm

h m s
0 8 24
+28° 27'
+13 56

9.94410
+.54
+.24
+.40
+.00

β Cas

h m s
0 3 1
+58° 31'
−16 8

9.71788
+1.643
−.28

γ H Draco

h m s
12 6 44
+78° 75'
−59 22

9.30887
−.481
−.86

γ Cass

h m s
0 30 32
+53° 16'
−10 53

9.77677
+1.34
−.19

3 4 0.0 234 14.0 5 25.2 4 44.2
2.3 233 16.3 27.0 48.4
4.6 234 18.7 30.0 52.1
7.0 233 21.0 32.8 56.2
9.3 235 23.5 36.7 0.1
4.640
+18.767

24.0 4.32
27.7 8.0
31.6 11.9
35.8 16.0
39.6 31.740
−31.594

8 19.3 32 1.7 31 57.1 17.7
22.7 4.6 0.7 21.5
9.0 9.0 25.6 8.1 4.2 24.7
9.4 12.8 28.9 9.8 7.8 28.3
9.5 16.3 9.30 32.7 2584 11.5 11.2 4.20 31.6
3 35.2
10.2 2584 36.3 52.4 38.5
13.5 42.70 39.7 55.7 42.0
16.9 59.86 42.6 59.0 45.5
20.5 46.1 2.4
23.9 17.80 48.8 42.70 5.7 59.14
53.0 6.324 2850
56.5 32 7.14 32 31.620 32 31.667
59.9
3.2
6.7 59.86

4 23.407 4 23.380 5 30.34 5 0.146 5 0.122

4 23.394
− .018
4 .2338
2 .3010
+1 .5328 − 113.50
.2665 + .22
− 3.45
−1 .5678
2 .2665

5 0.130
− .030
5 0.10
3 7.29
+1 .5281 − 113.50
2.71 + .86 +.65
− 4.58
−1 .5742
3 2.68

8 .42940
+ .075
8 .4301
6 .4528
+1 .5753 − 113.50
.4798 − 1.92
+ 2.70
−1 .5272
6 .5029

32 31.644
− .025
32 31.62
30 38.71
+1 .5291 − 113.52
.3408 + .54
− 4.63
−1 .5761
30 34.01

9.82996

34 14.15 −30.21 1.48015 21 1670
− 20.42 1.31011
33 53.73

9.88885

48 35.15 +24.50 1.38917
+ 18.97 1.27802
48 54.12

+58
48 54.62
−16 8 2
1.22160
+786
1.22946
+16.96
− .23
− .04
+ 16.69
+58 49 11.31

+53
33 54.23
−10 53 41
1.04470
+872
1.05342
+11.31
− .15
− .04
+ 11.12
+53 34 5.35

+ .34 −17 42.70
49 11.6 + .34
31 30.1 − 34.70
−17 41.5 −18 17.06
30 53.4 30 54.25

+ .23 −17 42.70
34 5.6 + .23
16 21.7 − 32.01
439 −18 14.47
15 49.7 15 50.88

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1885phae.proj.1622

Dec 3 1885 9.74868

+1.148

α Cass

½ 2 33 s − .23
0 58 57
+55° 54'
− 13 31

S doubtful

36	38.8	35	20.4		42.1
	40.2		23.7		46.0
	43.6		27.9		49.8
	45.2		31.6		53.2
	47.9		35.1	27.74	57.0
					0.4
			19.2		4.2
			22.8		7.9
			26.5		11.7
			30.2		
			336	26.46	
			11420		5123
36	43.14	35	57180	35	56.922

35 57011
.027
35 5698
34 3.96
+1 5302 − 113.52
59.11 + .59
.00
− 4.85
−1 5778
33 5920

9.86076

9 8.68 −46.13 1.66398
− 33.48 1.52474
8 35.20

+56
14 13.15
−13 33 7
1.14240
+ 889
1.15129

+14.17
− 53
− .04
+1.360
+56 14 26.75

Dec 3
Reg −17 41.5
43.9
−17 42.70

7 28
14 27.0
54 553
19 31.9

1885phae..proj..1622

Dec 6 1885 9.67042 9.53301 9.88489 9.98588

α Aquilae +1.89 | ζ Aquilae −.46 | 74 Cygni +.04 | γ Pegasi +.26

α Aquilae: h m s −.34 | 21 15 47 | +62° 5′ +.40 | −19 42 +.00

ζ Aquilae: h m s −.46 | 21 27 28 | +70° 8′ | −27 40

74 Cygni: h h s +.04 | 21 32 18 | +39° 54′ | +2 29

γ Pegasi: h m s +.47 | 0 7 16 | +14° 32′ | +27 51

| | | |

1885phae.proj.1622

Dec 6 1885 9.74868 +1.48 — α Cass — −.23 — 9.82844 +1.10 — ρ Cass — −.09 — 9.96196 +.44 — γ Androm. — +.32 — 9.69787 +1.74 — χ Cass. — −.30

h m s: 0 33 56 | +55° 54′ | −13 31 — 0 38 45 | +47° 39′ | −5 16 — 0 41 11 | +23° 38′ | +18 45 — 0 49 43 | +60° 5′ | −17 42

| | | |

1885phae.proj.1622

Dec 7, 1885 9.35263 9.74868 9.82844 9.96196

γ Aphei +4.33 x Cass −.23 O Cass −.09 ν Androm +.44

h m s −.57 h m s h m s +.32

23 34 36 0 33 56 0 38 16 0 41 11

+76° 59′ +.41 +55° 54′ +47° 39′ +23° 38′

−34 36 +.00 −13 31 −5 16 +18 45

| | | |

1885phae.proj.:1622

Dec 7. 1885 969787

γ Cass +1.74

h m s
0 49 43
+60° 5'
−17 42

− .30

8.88606

43 H Ceplei +13.14

h m s
0 53 5
+85° 38' 56
−4 3 16

− .69

9.91336

B Androm +.70

h m s
1 3 14
+35° 0'
+7 23

+ .13

No Ephemeris
τ Piscium
ν Piscas

h m s
1 5 16
+29° 28'

| | | |

1885phae.proj.1622

Dec. 8 - 1885 - Reject this date, too gone

9.67018	9.92546	9.72863	9.79272
+1.89	+.64	+1.58	+1.26
α Cephei	η Pegasi	ζ Cephei	3 Lacertæ
h m s	h m s	h m s	h m s
21 15 57	22 4 32.	22 6 49.	22 18 59.
+62° 6	+32° 37'	+57° 38'	+51° 39'
−19 42	+9 46	−15 15	−9 16

17 55.6		6	41.9	8	50.0	8					
0.0			44.2								
		31.7 31.7	46.7								
		32.2 34.7	49.3								
		32.3 37.2	320) 51.7			50.0	50.0				
			54.3			49.9	53.7			21.1	4.4
133	17 46.8 55.6	6.2	56.5	13.2		50.3	58.0	21.0		1.4	8.0
17.1	46.8 0.0	8.8	59.0	17.4		50.0	1.5	24.0		1.0	11.0
22.0	46.8 4.4	11.0	1.4	20.8		50.1	5.3	27.2		0.7	14.0
26.5		13.6		23.0				31.0			
31.0	22.10	16.0	11.12	28.7	21.020			33.7	27.380		
	−35.262				−30.821				−26.593		
		10.319	4650								
17 46838	17 46800	6 51.595	6 51.667	8 50.199		8 50.060		21 0.787		21 1.050	

	17 46.813		6 51.631			8 50.129				21. 0.918	
	− .033		− .019			− .029				− .025	
	17 46.78		6 51.61			8 50.10				21 0.89	
	15 50.84		4. 55.05			6 53.87				19 45.9	
	+1 55.94		+1 56.56			+1 56.23				+1 56.30	

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1885phae.proj.1622

1885 Dec 10 Mornings. 8.35439 n

−44.21

Polaris 2.6.

h m s
1 16 14
+88° 42' 15

a_2 to l_0 a_{11} 421

| | | |

1885phae.proj.1622

Dec 11 1885

9.66851

			+1.14				+.47				+1.90		
			π^2 Cygni				16 Pegasi				20 Cephei		
			h m s				h m s				h m s		
			21 42 31				21 47 47				22 1 28		
			+48° 46'				+25° 23'				+62° 13'		
			47 19.7			49 27.2	49 40.9			2 45.5	12.4		
			22.9			29.5	43.2			50.0	17.0		
			25.9			31.7	45.5			54.4	21.1		
			29.1			34.0	47.7			59.0	25.6		
			32.3			36.4	31.76 50.0			3.3	54.44 30.1		
			35.6				52.3			~~5.0~~ 6.0	34.5		
			38.4			3.7	54.6			7.0	38.8		
			41.4			6.2	56.8			5.3	43.4		
			44.7			8.2	59.1			10.3	47.6		
						10.4							
						12.8	8.26			14.5	5.42		
										8			
			290.0			10002	450.1			5986	270.5		
			47 32.222			49 50.010	49 50.011			3 29.836	3 30.056		
										936			
												9	
			47 32.222				49 50.010				3 29.9X3		
			−.023				−.017				−.033		
			44 32.20				49 49.99				3 29.96		
			42 34.41				47 57.86				1 32.41		
			+1 57.79				+1 58.13				+1 57.85		

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1885phae.proj.1622

Dec 12 Hr 9.74151 | 9.96370 | 9.67656 | 8.35439

Br 3077 +1.51 −.24 | T Pyasi +.43 +.33 | 4 Leas −.33 | 8 Leon +44.21 −.72

23 7 42 +56 32 −14 9 | 23 14 54 +23 6 +19 17 | 23 19 41 +61 39 −19 16 | 1 16 14 +88 42 −46 19 15

| | | |

1885phae.proj.1622

9.99582 — 9.48252 — 9.96878 — 9.81926

ζ² Ceti +.14 — 36 H Cass. +3.13 — ν² Aquilæ +.39 — θ Persei +1.14

+.57 — −.50 — +.36 — −.11

2 22 0 / +7°56' / +34 27 — 2 27 2 / +72°14' / −29 56 — 2 32 14 / +21°28' / +20 55 — 2 36 17 / +48°44' / −6 21

23 47.6 49.7 51.5 52.7 53.9 — 23 44.2 46.4 48.6 50.6 53.0 — 56.8 59.0 1.0 3.2 5.3 — 27 53.6 57.5 2.8 6.8 11.8 — 28 6.4 13.0 20.5 26.2 32.8 — 47.1 54.0 0.3 7.2 14.2 — 34 33.3 34.8 36.4 38.4 41.0 — 34 11.2 13.6 15.5 17.7 20.0 — 37 38.4 40.4 43.0 45.2 47.0 — 37 53.5 56.4 59.7 2.9 5.9 — 12.0 15.3 18.4 21.7 24.8

4856 — 7.2 9.3 11.3 13.4 — 20.6 27.2 34.9 41.6 — 1978 — 22.0 24.4 26.5 28.9 — 43.5 46.0 49.7 52.7 — 27.8 31.0 34.2 37.1

17.6 19.7 21.8 24.0 — 54.6 1.8 8.4 15.4

25.9 — 21.80 — 22.2 — 8.68 — 55.9 — 41.56

1036 — 465 — 2846 — 127.1 — 1798 — 49.24 — 222.3

23 5.108 — 24 5.180 — 24 5.167 — 28 2.50 — 29 14.230 — 29 14.122 — 34 36.78 — 34 19.978 — 37 42.80 — 38 24.620 — 38 24.700

24 5.174 — 29 14.176 — 34 19.978 — 38 24.660

−.016 — −.050 — −.017 — −.023

24 5.516 — 29 14.13 — 34 19.96 — 38 24.64

22 6.53 — 29. 16.94 — 32 21.48 — 36 26.61

−118.64 — −118.64 — −118.64 — −118.64

+1 58.63 — +.06 — +1 57.19 — +1.28 — +1 58.48 — +.16 — +1 58.03 — +.47

2.70 — 7.21 — 17.21 — 20.92

−3.83 — −9.73 — −4.27 — −5.69

−2 2.41 — −2 7.09 — −2 2.75 — −2 3.86

22 2.75 — 27 7.04 — 32 17.21 — 36 20.78

0.10790 — 9.59460 — 0.08086 — 9.93134

7 14.72 — +14.09 — 1.14891 — 46 0.55 — +7.68 — 1.85540 — 37 0.20 — −16.80 — 1.22531 — 19 47.92 — +41.86 — 1.62180

+ 18.06 — 1.25681 — + 28.18 — 1.45000 — − 20.24 — 1.30617 — + 35.74 — 1.55314

7 32.78 — 46 28.73 — 36 39.96 — 20 23.66

+8 — +72 — +21 — +49

15 15.57 — 36 19.62 — 46 8.39 — 2 24.69

+34 24 59 — −29 56 15 — +20 54 44 — −6 22 28

1.59580 — 1.52050 — 1.34240 — 0.80850

+ 3461 — + 3465 — + 3470 — + 3479

1.63041 — 1.55515 — 1.37710 — .84329

−.4270 — +.3590 — −23.83 — +6.97

− .01 — − .81 — − .05 — − .48

− .02 — − .01 — − .02 — − .05

−.4273 — +.3508 — −23.90 — +6.44

+8 14 3284 — +72 36 54.70 — +21 45 44.49 — +49 2 31.13

− .75 — −17 42.14 — + .65 — −17 42.14 — − .47 — −17 42.14 — + .14 — −17 42.14

14 32.1 — − .75 — 36 55.4 — + .65 — 45 44.0 — − .47 — 2 31.3 — + .14

56 50.4 — −12.00 — 19 13.4 — −22.60 — 28 2.9 — −14.40 — 44 46.9 — −18.80

41.7 — −18.89 — 42.0 — −18.09 — 41.1 — −17.57 — 45 4.8 — −18.080

56 38.4 — 55.6 37.95 — 18 50.8 — 18 50.61 — 27 48.5 — 27 47.48 — 44 28.1 — 44.3033

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1885phae.proj.1622.

Dec 12 1885 9.78658 9.28190

+1.29 +5.14

γ Persei 47 H Cephei

h m s −.17 h m s −.60

2 46 2 2 50 43

+54 17' +78° 58'

−9 54 −36 35

47 25.7 47 37.0 57.2 51 41.0 52 17.2

27.5 40.4 0.8 46.6 28.3

31.1 43.9 3.9 51.7 40.8

33.0 47.1 7.3 1.0 50.5

36.1 50.4 4376 10.9 6.7 2.4

14.8 13.4

30.9 17.8 24.5 245

34.3 20.8 34.6 346

37.6 24.5 45.4 454

40.9

4443762

2138 980 559.1

47 3068 48 10.690 48 0.889 51 5140 53 2.122

48 10.780 53 2122

−025 −080

48 10.76 53 204

46 12.55 51 537

−118.65 −118.65

+1 58.21 + .53 H 5667 + 2.11

6.49 00 50.60

− 6.06 − 14.77

−2 4.18 −2 11.31

46 6.58 50 5073

9.89866 9.39398

46 59.40 +40.10 1.60314 7 30.38 +7.72 1.84954

+ 31.75 1.50180 + 17.52 1.24352

47 31.15 7 47.90

+52° +79

35 17.20 15 0.45

−9 55 17 −36 34 46

1.00316 1.63050

+ 3494 + 3494

1.03804 1.66544

+10.92 +46.28

− .42 − .51

− .02 − .02

+10.48 +45.75

+52 35 27.68 +79 15 46.20

Dec 12

Reg −17 40.5

42.8

41.9

43.3

41.7

42.0

41.1

44.4

42.6

41.1

−17 42.14

+ .22 −17 42.14 + .79 −17 42.14

35 27.9 + .22 15 47.0 + .79

17 45.3 − 18.20 58 59.1 − 20.70

42.6 −18 0.12 41.1 −18 2.05

17 27.1 17 27.56 57 45.2 57 44.15

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1885phae.proj..1622.

Dec 14 Morning

+2.14

α Draconis

h m s
14 1 15
+64° 56'

2	25.8		55.0
	30.3		59.9
	35.4		4.6
	40.2		9.6
	45.5	35.44	14.6
			19.4
	43.4		24.0
	48.2		29.0
	53.0		33.8
	57.9		
	2.9	53.08	
	28.52		1299
3	14.260	3	14.483

3	14.346	
	−036	
3	1431	
1	14.93	
	+1 5938	

Dec 14 Morning

+.36

α Bootis

h m s
14 10 22
+19° 47'

12	4.5		17.6
	6.7		19.7
	8.9		22.0
	11.0		24.4
	13.3	8.88	26.5
			28.7
	39.5		30.9
	41.8		33.0
	44.0		35.2
	46.2		
	48.4	43.98	
	52.86		238.0
12	26.430	12	26.444

12	26.437	
	−016	
12	2642	
10	26.33	
	+2 009	

+3.63

Bl. Illum.

h m s
14 51 3
+79° 38'

51	38.4		25.3
	46.4		33.0
	54.1		40.5
	1.7		48.4
	9.5	54.02	56.2
			4.0
	42.6		11.7
	50.4		19.2
	58.2		27.0
	6.0		
	13.7	58.18	
	11220		5053
52	56.100	52	56.144

52	56.122	
	−085	
52	56.04	
50	57.25	
	+1 58.79	

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DEC 15 1885

9.35263

9.58889

9.97705

9.91336

χ Cephei +4.33

41 H Cephei +2.38

φ Pegasi +.33

B Androm +.70

h m s −.57
23 34 36
+76° 59′ +.35
−34 36 +.00

h m s −.42
23 42 22
+67° 10′
−24 47

h m s +.41
23 46 35
+18° 29′
+23 54

h m s +.13
1 3 14
+3° 50′
35 0
+7 23

37 20.2 / 27.6 / 33.6 / 40.5 / 47.0

20.4 / 23.4 / 26.1 / 29.7 / 32.7 / 35.4 / 38.6 / 42.1 / 45.3 / 48.3 / 57.3 / 54.8 / 57.8 / 0.5 / 3.4

43 10.0 / 13.6 / 16.8 / 20.6 / 26.1

43 35.6 / 40.7 / 46.0 / 51.5 / 57.0 / 0.7 / 5.9 / 11.3 / 16.6 / 22.0

48 17.6 / 19.2 / 20.7 / 22.4 / 23.7

48 19.9 / 22.0 / 24.3 / 26.5 / 28.7 / 34.3 / 39.7 / 44.6 / 50.0 / 54.8 / 56.9 / 59.0 / 1.8 / 3.3

4 49.0 / 50.4 / 52.3 / 54.3 / 56.0 / 43.8 / 46.1 / 48.3 / 50.3

4 56.9 / 59.4 / 1.9 / 4.4 / 7.0 / 37.2 / 39.6 / 42.0 / 44.5 / 47.2

12.2 / 14.6 / 17.1 / 19.8 / 22.1 / 24.6 / 27.1 / 29.7 / 32.3 / 42.10

36 109 13.9 / 11.5 17.6 1120 / 32.7 2646 / 26.1 4616 / 28.8 2428 / 41.6 1192

6.6 / 9.6 / 12.7 / 15.5 / 18.3 / 26.46 / 41.94 / 57.56 / 12.54 / 41.94 / 11.30 / 59.06

37 33.78

5746 / 43 17.42 / 44 28.730 / 2596 / 44 28.844 / 48 20.72 / 8.334 / 48 41.670 / 3748 / 48 41.644 / 5240 / 4402 / 5 22.010 / 1995 / 5 22.167

36 41.940 − 069 = 36 41.871 / 34 42.94

44 28.787 − 838 = 44 28.775 / 42 29.06

48 41.657 − 016 = 48 41.641 / 46 41.26

5 22.088 − .015 = 5 22.073 / 3 21.74

−120.51 / +1 58.93 / 38.10 / +1.52 / .00 / −4.84 / −2 3.83 / 34 38.04

−120.51 / +1 59.69 / 24.93 / +.83 / −4.13 / −2 3.81 / 42 24.94

−120.52 / 38.26 / +.12 / −3.00 / −2 3.40 / 46 38.24

−120.56 / 17.71 / +.24 / −4.03 / −2 4.35 / 3 17.72

9.46471

9.70097

0.08908

0.02544

5 / 8 59.38 / − 15.11 / 5 44.27 / −51.84 / 1.71466 / 1.17937

54 16.38 / + 35.84 / 54 52.22 / +71.35

1.85339 / 1.55436

4 / 35 53.45 / + 25.71 / 38 19.16 / 5 / +20.94

1.32098 / 1.41006

3 21.90 / + 31.48 / 3 53.38 / +29.69

1.47261 / 1.49805

+77° 17 4.08 / −34 36 17 / 1.59890 / + 2340 / 1.62230 / +41.91 / − .32 / − 01 / + 41.58 / +77 17 45.66

+67 27 56.13 / − 2448 0 / 1.42490 / +2348 / 1.44838 / +28.08 / − .99 / − 04 / +27.05 / +67 28 23.18

+18 47 29.19 / +23 52 37 / 1.40630 / + 2356 / 1.42986 / − 2691 / − .07 / − .65 / −27.03 / +18 47 2.16

+35 18 54.97 / +7 21 6 / 0.87100 / +2459 / 0.89559 / − 7.86 / − 23 / − .03 / − 8.12 / +35 18 46.85

+ .76 −17 42.32 / 17 46.4 + .76 / 0 4.1 − 39.20 / −17 41.7 −18 20.76 / 59 25.5 59 24.90

+ 56 −17 42.32 / 28 23.7 + .56 / 10 42.1 − 37.80 / 41.6 −18 19.56 / 10 4.3 10 3.62

− .55 −17 42.32 / 47 2.6 − .55 / 29 19.1 − 25.70 / 43.5 −18 8.57 / 28 53.4 28 53.59

− .17 −17 42.32 / 18 46.7 − .17 / 1 4.5 − 26.20 / 42.2 −18 8.69 / 0 38.3 0 38.16

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1885phad.proj.1622

8.35430

+44.22

Polaris

−.72

1 16 14

+88° 42' 16"

−46 19

20 14.5 19 2.6

36.9

20 4.2

20 14.50 19 34.567

19 34.567

−677

19 3389

17 48.41

+1 4548

16 3644

−120.57

+ 1548

− 71.97

−7 57.06

16 36.83

9.80716

+1.20

Perseus

−.13

1 36 24

+50° 6'

−7 43

37 49.8 38 0.3 19.8

51.5 3.8 22.8

53.8 7.0 26.2

55.6 10.2 29.3

58.7 13.4 6.94 32.6

35.7

52.3 39.0

55.3 42.3

58.4 45.6

1.4

4.7 58.42

6536 2933

37 53.78 38 32680 38 32589

38 32.634

−024

38 3261

36 32.45

+2 0.16

27.36

−120.58

+ .42

− 5.09

−2 5.25

36 27.36

8.46638

1.60130₂

0.06768₂

23 5682 −39.93

− 1.17

23 5565

9.91924

7

58 4212 +38.85 1.58939

+ 32.26 1,50863

58 1438

8

+88

58 5270

−4618 19

1.77960

+2475

1.80435

+63.73

− .02

− .04

+63.67

+88 59 56.37

+50

24 3397

−7 44 34

0.89270

+2510

0.91880

+8.29

− .41

− .03

+ 785

+50 24 41.82

+ 96 −17 42.32

59 57.3 + .96

42 16.1 − 32.30

41.2 −18 1366

41 43.8 41 42.71

+ .17 −17 42.32

24 42.0 + .17

6 58.3 − 26.60

437 18 8.75

6 31.7 6 33.07

Dec 15

Reg −17 " 41.7

41.6

43.5

42.2

41.2

43.7

−17 42.32

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(Dec 16 1885 * 9.91336 see three pages ahead) 8.35430 9.80716

β Androm +.70 Blaric +4422 ζ Persei +420

h m s +.13 h m s −.72 h m s −.13

1 3 14 1 16 14 1 36 24

+35° 0' +34 +88° 42' 16" +50° 6'

+7 23 +.00 −46 19 −7 43

4 55.8 4 57.4 12.5 22 14.3 19 30.0 19.300 37 54.9 38 0.6 20.0

57.7 59.6 15.0 17.8 39.7 29.3 57.3 3.8 23.2

59.1 2.3 17.5 19.7 26 32.6 31.8 59.4 7.3 26.4

1.0 4.8 19.9 21 4.0 32.8 1.8 10.4 29.8

3.3 7.3 228 22.4 32.5 30.9 5.6 13.7 716 33.0

25.0 22 3.8 31.8 36.1

37.6 27.6 52.3 39.4

40.1 30.1 55.6 42.4

42.4 32.6 58.8 45.9

45.1 1.6

47.7 4258 5.0 5866

4486 202.6 6582 296.2

4 5938 5 22430 5 22511 22 17.27 19 32.130 37 59.80 38 32910 38 32.911

31.700

5 22.470 19 32.130 38 32.910

− .019 −677 − .024

5 2245 19 30431.45 38 3289

3 21.73 17 4764 36 32.44

+2 0.72 −120.95 +1 4278 −120.96 +2 0.045 −120.97

17.71 + .24 16 36.44 + 1.03 2736 + .41

+ .00 − 71.20 − 5.08

− 4.02 −2 57.13 −2 5.64

−2 4.73 16 3229 36 27.25

3 17.72 34.32

0.02544 8.46638 9.91924

3 2985 +2.309 1.36342 24 025 −16.17 2.22055 57 4775 +3.311 1.51996

+ 24.48 1.38886 − 4.86 0.68693 + 27.49 1.43920

3 54.33 23 55.19 58 15.24

+35° +88 +50

18 54.02 58 53.16 24 33.11

+7 21 14 −46 18 16 −7 44 28

0.87110 1.77960 0.89360

+ 2538 + 2550 + 2611

0.89648 1.80510 0.91971

− 7.88 +6.384 + 8.31

− .14 − .34 − .30

− .03 − .04 − .03

− 8.05 +6.346 + 7.98

+35 18 45.97 +88 59 56.62 +50 24 41.09

− .17 −17 41.97 + .96 −17 41.97 + .17 −17 41.97

18 45.8 − .17 59 57.6 + .96 24 41.3 + .17

1 4.5 − 2620 42 16.3 − 3250 6 58.4 − 2676

−17 41.3 −18 8.34 41.3 −18 1351 4.39 −18 8.50

6 38.3 0 37.63 41 43.8 41 43.11 6 31.7 6 32.59

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1885phae.proj.1622

9.94383 +54

β Tauri +.24

h m s
5 18 57
+28° 31'
+13 52

9.97257 +37

New Star +.38

h m s
5 49 2
+20° 9'
+22 14

9.90120 +.76

θ Aurigae +.09

h m s
5 51 49
+37° 12'
+5 11

9.98538 +.26

ν Orionis +.46

h m s
6 0 57
+14° 47'
+27 36

20	34.7	20	43.8		57.9	50	38.2	50	43.3		56.5	53	40.0	53	33.3		48.8	2	46.2	2	44.7		57.4
	37.0		46.1		0.2		39.7		45.5		58.8		42.3		35.7		51.1		48.0		46.6		59.3
	39.1		48.5		2.6		41.2		47.7		0.9		44.5		38.5		54.0		49.6		48.9		1.4
	40.3		50.8		4.9		42.4		50.0		3.2		45.7		41.1		56.4		52.0		51.0		3.7
	42.0		53.3	48.50	7.3		43.6		52.2	4774	5.2		47.6		43.5	3842	59.3		53.5		53.1	4886	5.8
					9.6						7.3						1.6						8.0
			21.4		12.0				18.5		9.5				14.7		4.3				18.7		10.0
			23.6		14.5				20.5		11.8				17.2		6.8				20.8		12.3
			25.9		16.7				22.6		13.9				19.7		9.4				23.0		14.4
			28.2						24.8						22.2						25.0		
			30.7	25.96					27.2	22.72					24.8	19.72					27.2	22.94	
			14.46		65.7				1046		47.1				11814		531.7				11.80		52.3
20	38.62	21	7.230	21	7.300	50	41.02	51	5.230	51	5.233	53	44.02	53	59.070	53	59.078	2	49.86	3	5.900	3	5.811

			21	7.2665				51	5.232						53	59.074					3	5.856	
				−.018					−.016							−.020						−.016	
			21	7.25				51	5.22						53	59.05					3	5.84	
			19	6.36											51	58.20					1	4.84	
			+2	0.89		−121.10					−121.11				+2	0.85	−121.11			+2	1.00	−121.12	
				1.34		+ .18					+ .18					52.79	+ .26				0.36	+ .09	
						− 5.02					− 4.66						− 5.41					− 4.48	
						−2 5.94					−2 5.64						−2 6.26					−2 5.51	
						19 1.31					48 59.58						51 52.79					1 0.33	

				0.05591					0.08465						0.01328						0.09746		
33	49.58	+2864	1.45697	55	5.70	+24.21	1.38399	52	4215	+1505	1.17754	17	3312	+1600	1.20412								
+	32.54		1.51248	+	29.42		1.46864	+	1552		1.19082	+	2013		1.30158								
34	22.12			55	35.12			52	57.67			17	53.15										

+28				+20				+37				+15											
48	26.23			27	13.23			29	5068			4	5520										
+13	51 34			+22	12 50			+5	10 26			+27	35 17										
1.15	2.50			1.37	130			0.71	720			1.47	830										
+	29.79			+	30.23			+	30.27			+	30.42										
1.18	22.29			1.40	153			0.74	747			1.50	872										
	−15.22				−25.21				−5.59				−32.26										
	− .19				− .11				− .06				− .03										
	− .04				− .00				− .03				− .03										
	− 15.45				− 25.32				− 5.68				− 32.32										
+28	48 10.78			+20	26 47.91			+37	29 45.00			+15	4 22.88										

	− .32	−17	41.97			−17	41.97		− .12	−17	41.97		− .62	−17	41.97								
48	10.5	−	32			−	51	29	44.9	−	.12	4	22.3	−	62								
30	27.6	+	5.50			+	8.44	12	2.5	+	9.20	46	42.4	+	9.60								
	42.9	−17	37.29			−17	34.04		42.4	−17	32.89		39.9	17	32.99								
30	32.6	30	33.49	+20	9	13.87		12	11.7	12	12.11	46	52.0	46	49.89								

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1885phae.proj.1622

Dec 16 1885 9.54735 9.96551 8.77129 m

+265 +41 −16.90

22 H Camel ℏ Gem ♂ Mon Inn

ℏ m s −.45 ℏ m s +.34 h m s −.78

6 0 4 6 7 53 18 9 44

+69 21 +22° 32′ + 93° 28′

−26 58 +19 51 86 36 51

−51 0

7 57.4 9 49.0 9 39.6 53.0 ~~+47.7~~ 12 (0.4 14.0)

2.8 50.6 41.9 55.3

8.7 52.5 44.0 57.5 22.7

14.8 54.4 46.4 59.6 13 16.0 34.0

21.0 56.0 48.4 4406 1.9 47.4

25.9 4.0 59.4

32.2 15.3 6.5 15 22.2 12.4 47.180

37.5 17.6 8.6 −46.408

44.3 19.7 10.9

21.9

24.2 1974

184.6 3.80 17.4 13 16.50

B 20.51′ 9 52.50 10 1.900 10 1.933 15 22.20

8 20.511 10 1.933 10 53.772

−.040 − 017 +.259

8 20.47 10 192 10 51.08

6 20.10 8 0.87 8 45.10

−121.12 −121.12 −121.13

+2 0.37 7 .90 +2 1.05 −121.12 +.14 +2 5.93 − 5.75

10.33 00 7 56.16 9 24.90 +39.60

− 9.77 − 4.71 −50.20

−2 9.99 −2 5.69 −1 27.08

6 10.48 7 56.23 9 23.95

0.07759 8.88337

23.75

32 19.00 +9.43 0.97451 43 265 − 145.23 216206

+ 11.27 1.05210 + 11.10 − 271.43 243316

32 30.27 43 13.75 104548

35.02 1.34703

42 5625

+ 2075

43 17.00

+22° 1333 +93

50 18.08 39 3460 39 3135

+19 50 −50 59 13 −50 59 20

1.31740 1.85100 1.85100

+3051 +3055

1.34791 1.88165 1.88165

−22.28 +7615 +7615

− .02 + .68 + 237

− .02 − .03 − .03

− 22.32 + 7680 + 7849

+22 49 51.01 +93 40 5140 404984

+93 40 5062

− .46 −17 41.97 + 105 −17 41.97

149 55.3 506 − .46 40 8.17 + 105

32 9.9 + 10.50 23 9.2 + 1300

45.4 17 31.93 42.5 −17 27.92

41.7 32 19.08 23 22.2 23 22.70

32 20.4

Dec 16

Reg −17 41.3

41.3

42.9

42.19

42.4

39.9

40.7

42.5

43.0

43.5

41.5

41.8

−17 41.97

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1885phad.proj.1622

Dec 16, 1885. * These stars overlooked

9.79272 +1.26

3 Lacertae

h m s −.16
22 18 57
+51° 39'
−9 16

9.81091 +1.18

7 Lacertae

h m s −.13
22 26 31
+49° 41'
−7 18

9.93920

γ Pegasi +.57

h m s +.22
22 37 34
+29° 37'
+12 46

9.61634

i Cephei +.220

h m s −.39
22 45 33
+65° 35'
−23 12

| | | |

1885phae.proj.1622.

Dec 19. 1885 | 9.71788 | | 9.74868

	+ 1.64		+ 1.48
B Cass		L Cass	
h m s	− .28	h m s	− .23
0 3 0		0 33 55	
+58° 31′	+ 37	+55° 54′	
−16 8	+ 02	−13 31	

5 40.1			36 23.7		
42.8			25.8		
47.3			29.3		
50.0			31.3		
53.0			34.9		36 49 4.9
					48 8.5
31.9	5 8.1 16.0			27.3	50 12.4
35.8	8.2 20.0			30.9	48 15.8
39.7	8.0 23.8			34.5	50 19.7
43.8				38.1	
47.6	39660			41.7	34500
	−31.594				− 29.430
5 4664	5 8.066	5 8.107	36 29.00	36 5.070	36 4.900

	5 8.077				36 4.985	
	− .029				− 027	
	5 8.05				36 4.96	
	3 6.77				34 3.55	
			−121.92			−121.93
	+2 1.28		+ .61	+60	+2 1.41	+ .53
	2.71		00		59.11	
			− 4.06			− 4.44
			−2 5.37			−2 5.82
			3 2.68			23 59.14

	9.82996				9.86076
34 18.10 − 38.56	1.58614	10 41.08	− 24.02		1.38057
− 26.07	1.41610		− 17.43		1.24133
33 52.03			10 23.65		

+58°	+56	
48 56.32	12 24.70	
−16 7 58	−13 31 35	
1.22160	1.14160	
+ 1138	+ 1138	
1.23298	1.15298	
+ 17.10	+ 14.22	
− .36	− .15	
− .04	− .01	
+ 16.70	+ 14.06	
+58 49 13.02	+56 12 38.76	

Dec 19
Reg −17 42.6
42.6
−17 42.60

+ .38	−17 42.60		+ .31	−17 42.60	
49 13.4	+ .38		12 39.1	+ .31	
31 30.8	− 35.40		54 56.5	− 33.30	
−17 42.6	−18 17.62		42.6	−18 15.59	
30 55.4	30 55.40		54 23.2	54 23.19	

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1885phae.proj.1622.

Dec. 20, 1885

	9.86670	9.35263	9.97700
	+ .92		+ .33
	i Androm	γ Cephei	O Pegasi
	h m s −.00	−.57	h m s +.40
	23 02 27	23 34 37	23 46 36
	+42° 38′ +.39	+76° 59′	+18° 29′
	−0 15 +.02	−34 36	+23 54

| | | |

1885phae.proj.1622

DEC 20. 1885

9.78658 + 1.29 − .17

T Persei

h m s
2 46 5
+52° 17'
−9 54

47 H Cephei

9.28190 + 5.14 − .60

h m s
2 50 59
+78° 58'
−36 35

J Persei

9.77896 + 1.33 − .19

h m s
2 56 26
+58° 3'
−10 40

B Persei

9.88105 + .85 + .03

h m s
3 0 39
+40° 30'
+1 53

| | | |

1885phaq.proj.1622.

Dec 20 1885 9.89445 + .79

μ Aurigae

h m s +.07
5 5 32
+38° 21'
+4 2

9.94370 + .54

ν5 Tauri

h m s +.24
5 18 59
+28° 30'
+13 53

9.41394 + 3.73

Gr 966

h m s −.54
5 24 20
+74° 58'
−32 35

9.96991 + .39

Z Tauri

h m s +.36
5 30 45
+21° 5'
+21 18

| | | |

1885phae.proj.1622

Dec 20, 1885 9.97257
+ 37
+.38

Two Stars
h m s
5 49 5
+20° 9'
+22 14

50	34.6	50	44.9		57.9
	37.0		47.0		0.1
	39.2		49.0		2.1
	41.1		51.3		4.3
	43.4		53.4	4912	6.5
					8.9
51	35.4		19.6		10.8
	37.2		22.0		13.0
	39.4		24.3		15.3
	41.3		26.4		
	43.7		28.6	2418	
50	39.06		1330		589
51	39.40	51	6.650	51	6.544

51 6.597 −122.40
− .016 + .14
51 6.58
− 4.71
−2 6.97
48 59.61

~~0.08465~~ 0.08465

55 2.12	+27.54	1.43996
+ 33.47	− 32.80	1.51587
55 35.59		1.52461
		1.60052

56 15.15
− 39.86
55 35.29

+20°
27 12.76 27 13.06

+22 12 46	+22 13 59	
1.37130	1.37170	
+ 3344		
1.40474	1.40514	
−.2539	−.2542	
− .13	− .19	
− .00	− .01	
−.2552	−.2562	
+20 26 47.24	26 47.44	
+20 26 47.34		

−17 42.22
− .52
+ 8.51
−17 34.23
9 13.11

Dec 20
Reg −17

41.9	
41.4	
42.4	
43.0	
41.9	
43.8	
42.5	
42.6	
42.3	
41.6	
41.2	
42.1	
−17	42.22

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1885phaq.proj.1622

Dec 24, 1885 | 9.41954 | | 9.74151 | | 9.67656 | | 9.86670

	+ 3.67		+ 1.51		+ 1.85		+ .92
π Cephei		3077 Br 377		4 Cass		i Androm	
h m s	− .54	h m s	− .24	h m s	− .33	h m s	− .00
23 4 15		23 7 45		23 19 44		23 32 30	
+74° 46′	+ .42	+56° 32′		+61° 39′		+42° 38′	
−32 23	+ .02	−14 9		−19 16		−0 15	

| | | |

1885phae.proj.:1622

Dec 24 1885

γ Cephei — 9.35209 + 4.33 − .57

h m s
23 34 39
+77° 0'
−34 37

| | | |

1885phae.proj.1622.

DEC 24, 1885

No Ephemeris

i Perseï

h m s
3 0 29
+49° 9'
−6 46

9.81314
+1.17

ν Perseï

h m s −.12
3 15 50
+49° 26'
−7 3

9.83051
+1.09

J Perseï

h m s −.09
3 34 27
+47° 24'
− 5 1

8.91774
+12.04

Gr 750

h m s −.68
3 59 40
+85° 17′ 13
−42 32

| | | |

1885phae.proj.1622

DEC 28. 1885

No Ephemeris *

L Cas

h m s
2 19 17
+66° 12'

9.78658

† Persei +1.29

h m s −.17
2 46 9
+52° 17' +.46
−9 54 +.00

9.28190

47 H Cephei +5.14

h m s −.60
2 50 57
+78° 58'
−36 35

9.77896

J Persei +1.33

h m s −.19
2 56 30
+53° 3'
−10 40

9.81911

* +1.14

Q Persei

h m s −.11
2 36 23
+48° 45'
−6 22

21 21.2 | 25.4 | 47 26.5 | 47 41.7 | 2.0 | 50 51.0 | 51 17.4 | 22.8 | 58 32 | 23.9 | 38 11.3 | 37 58.2
24.8 | 30.6 | 29.8 | 45.0 | 5.3 | 55.3 | 28.0 | 33.2 | 6.6 | 27.3 | 13.0 | 1.4
28.6 | 36.0 | 32.5 | 48.5 | 8.7 | 2.3 | 39.3 | 44.2 | 10.0 | 30.8 | 15.4 | 4.5
32.0 | 41.2 | 35.0 | 52.0 | 12.3 | 7.7 | 50.8 | 55.0 | 13.4 | 34.1 | 17.5 | 7.8
37.2 | 46.5 | 37.8 | 55.4 | 48.52 15.3 | 17.6 | 0.5 | 39.20 5.6 | 16.8 | 10000 37.6 | 19.6 | 11.0
51.5 | 18.8 | 18.2 | + 27.449 41.0 | 4.
57.1 | 35.8 | 22.0 | 10.6 | 26.6 | 44.5 | 48.5
2.2 | 39.1 | 25.4 | 21.2 | 37.9 | 47.8 | 51.6
7.2 | 42.3 | 29.0 | 31.7 | 49.1 | 51.4 | 54.6
45.8 | 42.7 | 57.7
49.0 | 42.40 | 53.1 | 3186 | 0.9 | 5466

4177 | 9092 | 1388 | 7106 | 506 | 3384 | 5924
21 28.66 | 21 46.411 | 47 32.32 | 48 15.460 | 48 15.422 | 51 2.78 | 53 5.530 | 53 5.622 | 58 37.449 | 58 37.600 | 38 15.36 | 38 29.620

21 46.411
− .037
21 46.37

48 15.441
− .025
48 15.42
46 12.37
+2 3.05 649

− 123.77
+ .59
− 5.88
−2 9.06
46 6.36

53 5.576
− .080
53 5.50
51 4.34
+2 1.16 5060

− 123.77
+ 2.36
− 13.74
−2 15.15
50 50.35

58 37.549
− .025
58 37.52
56 34.36
+2 3.16 2829

− 123.77
+ .61
− 6.07
−2 9.23
56 28.29

9.89866

+1775 | 1.24920 | 6 48 0760 | +4312 | 1.63468 | 7 1205 | +12280 | 9.39398 | 2.08920 | 20 11.45 | +1430
+ 34.15 | 1.53334 | + 3042 | 1.48318 | + 1220
48 31.75 | 7 4247 | 20 2365

+52° 35 16.60
−9 55 18
1.00310
+1871
1.02181
+1052
− .49
− .04
+ 9.99
+52 35 26.59

+79 15 5.88
−36 35 4
1.63060
+1871
1.64931
+4460
− 1.54
− .04
+ 43.02
+79 15 48.90

+49 2 24.70
−6 22 5
0.80880
+1865
0.82665
+671
− .05
− .00
+6.66
+49 2 31.36

+ .24 −17 41.61
25 26.8 + .24
17 47.5 − 20.40
39.3 −18 1.77
17 27.1 17 [24.82]

+ .85 −17 41.61
15 49.8 + .85
58 8.5 − 23.30
41.3 −18 4.06
57 45.2 −57 44.84

+ .16 −17 41.61
2 31.5 + .16
44 48.8 − 20.70
42.7 18 2.15
44 28.1 44 29.21

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1885phae.proj.1622

Dec 28. 1885

9.89415 — 9.88094 — 9.34156 — 9.81299

	ϱ Persei +.79		β Persei +.85		48 H Cephei +4.44		α Persei +1.17	
	h m s +.07		h m s +.03		h m s −.57		h m s −.12	
	2 57 50		3 0 43		3 [illegible] 52		3 16 9	
	+38° 24′		+40° 31′		+77° 19′		+49° 27′	
	+3 59		+1 52		−3 4 56		−7 4	
	17.2 59 45.8	59 30.7 46.5	2 12.7	2 22.8 39.0	5 42.7	6 26.6 23.3	18 47.3	17 44.0 3.4
	20.3 48.0	33.4 49.2	14.4	25.4 41.9	48.0	35.7 32.6	10.1	47.5 6.6
	23.4 50.0	36.0 51.5	16.9	28.1 44.6	53.2	45.8 41.9	13.3	50.7 9.7
	26.6 51.9	38.6 54.5	18.7	30.9 47.2	57.8	54.9 51.1	15.5	53.9 13.0
	29.7 54.0	41.2 35.98 57.2	20.7	33.6 28.16 49.9	8.8	4.3 45.46 0.6	18.4	57.2 50.66 16.1
4.	58 32.8	57.6		52.7	8.4	9.9		19.2
48.5	36.0	12.8 2.3		6.3 55.4		56.6 19.6		35.3 22.5
51.6	39.2	15.4 4.8		8.9 58.0		6.3 29.2		38.3 25.7
54.6	42.2	18.0 7.5		11.6 0.8		15.3 37.9		41.3 28.9
57.7		20.7		14.5		24.8		44.4
0.9	5466	23.4 18.06		17.3 11.72		33.9 15.38		47.8 41.42
5924	2674	18404 5131		9988 4495		6084 61		3208 14151
29620	29.711 59 49.94	59 57.020 59 57.011	2 16.68	2 49.990 2 49.944	5 55.65	8 0.420 8 0.678	18 12.92	18 16.040 18 16.122

	38 29.665	59 57.016	2 49.967	8 0.549
	− .023	− .020	− .020	− .070
	38 29.64	59 56.996	2 49.947	8 0.479
	36 22.93	57 53.58	0 46.43	5 58.58
	−123.76	−123.77	−123.77	−123.77
	+2 3.21 + .52	+2 3.45 + .36	+2 3.52 + .39	+2 1.90 + 2.04
	20.92	48.53	41.28	45.73
	− 5.51	− 5.02	− 5.15	−12.85
	−2 8.75	−2 8.43	−2 8.53	−2 14.58
	36 20.89	57 48.57	0 41.42	5 45.90

	9.93119	0.00623	9.99302	9.45364
4.30	1.15534 41 2.55 + 7.08	0.85003 38 33.02 +33.29	1.52231 46 13.10 +12.490	2.09656 38 52.15 + 3.16
	1.08653 + 7.18	0.85626 + 32.76	1.51533 + 35.50	1.55020 + 2.66
	41 9.73	34 33.78	46 48.60	38 54.81

	+38	+40	+77	+49
	41 38.62	48 42.57	35 59.76	44 53.54
	+3 58 47	+1 51 14	−34 56 3	−7 4 24
	0.60270	0.27070	1.60420	0.85400
	+1878	+1878	+1880	+1885
	0.62148	0.28948	1.62300	0.87285
	− 4.18	− 1.95	+41.98	+7.46
	− .02	− .30	− 1.82	− .02
	− .01	− .07	− .02	− .06
	− 4.21	− 2.32	+40.14	+ 7.40
	+38 41 34.41	+40 48 40.25	+1736 39.89	+49 45 0.94

Dec 28

| | | | |

1885phae.proj.1622

Dec. 29. 1885

	9.77913	9.88105	9.81314	9.83051
	+ 1.33	+.85	+1.17	+ 1.09
	γ Persei	β Persei	α Persei	δ Persei
	h m s	h m s	h m s	h m s
	2 58 14	3 0 26	3 15 50	3 34 27
	+53° 2'	+40° 30'	+49° 26'	+47° 24'
	−10 39	+1 53	−7 3	−5 1
	− .18	+.03	−.12	−.09
	+ .38			
	+ .80			

| | | |

1885phae.proj.1622.

9.94390

+.54

B Tauri

h m s +.24

5 18 46

+28° 30'

+13 53

Gr. 966

9.414441

+.373

h m s −.54

5 23 49

+74° 57'

−32 34

Z Tauri

9.96996

+.39

h m s +.36

5 30 32

+21° 4'

+21 19

No Ephemeris

V Aurigae

h m s

5 43 15

+39° 7'

+3 16

21 49.0
50.7
52.3
53.5
54.6

24.8
21 27.1
29.3
31.5
34.0 29.340
−18.776

21 52.02 2110564

27 12.2
20.9
28.4
34.0
40.7

27 27.24

26
15.1 13.0
15.8 15.3 1020

58.5 2382
0.6 3700
3.4 5232
6.3
8.7 3.50

18.1
21.4
24.1
26.2
29.3 2382
31.9
34.3
36.8
39.4
42.6 3700
45.0
48.2
50.6
52.6
55.2 5032

33 22.0
23.7
25.6
27.0
28.7

33 2540

8.5
10.5
12.7
15.2
17.2 12820
−17.682

32 55.798

32 46.0
48.7
51.0
52.8
55.4
57.4
59.9
1.9
4.0

4971

32 56.233

45 3.5
5.5
8.3
10.8
13.0

45 8.22

45 14.2
16.9
19.7
22.5
24.9 19.64

56.9
59.4
2.0
4.7

7.5 2.10

8174

45 40.870

30.6
33.0
35.5
38.3
40.7
43.5
46.2
49.0
51.7

3685

45 40.944

21 10564
−.018
21 10.55
19 6.45
+2 4.10
1.34

−12.426
+ .20
− 5.11
−2 9.17
19 1.38

26 36968
−.059
26 36.91
24 34.13
+2 2.78
2.117

−124.26
+ 1.42
− 1.296
−2 1.580
24 2.111

32 55.221
−.017
32 55.20
30 51.15
+2 4.05
4.632

−124.27
+ .15
− 4.83
−2 8.95
30 4.625

45 40.907
−.020
45 40.887

0.05598

35 8.72 −41.46
−47.16
34 21.56

1.61763n
1.67361n

8 10.88 −50.27
− 16.90
7 53.98

9.52649

1.70131n
1.22780n

1 9.85 −30.18
− 36.45
0 33.40

0.08204

1.47972n
1.56176n

+32.69 1.51444

+28
48 26.79

+13 52 53
1.15320
+1035
1.16355

−14.57
− .39
− .02
−14.96
+28 48 11.83

+75
14 54.37

−32 34 5
1.56540
+1037
1.57577

+37.65
− .34
− .06
+37.25
+75 15 31.62

+21
22 14.95

+21 18 54
1.35150
+1039
1.36189

−23.01
− .16
− .02
−23.19
+21 21 51.76

− .34 −17 4205
48 11.5 − .34
30 28.2 + 4.40
43.3 −17 37.99
30 32.6 30 33.84

+ .76 −17 4205
15 32.4 + .76
57 52.2 + 1.50
402 −17 39.79
57 53.7 57 31.83
51

− .51 −17 4205
21 51.2 − .51
4 9.9 + 6.40
41.3 −17 36.16
4 16.3 4 15.60

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1885phae.proj.1622

Dec 29th 1885 9.97257 + 37 9.90120 + .76

New Star
h m s
5 49 2
+20° 9'
+22 14

+ .38

α Aurigae
h m s
5 51 36
+37° 12
+5 11

+ .09

57	5.2	50		59.6	53	32.0	53	38.6		52.0
	7.0			1.9		33.7		38.9		54.6
	8.9			4.4		37.0		41.5		57.3
	10.9		53.0	50.8		39.2		44.3		0.0
	12.8		55.1	50.7		40.8		46.8	41.62	2.5
				50.75		10.5				5.0
57	35.3		21.7			13.0		18.0		7.5
	36.8		23.9			15.2		20.4		10.2
	38.7		26.0			17.4		23.2		12.9
	40.4		28.2					25.7		
	43.5		30.4	26.04				28.0	23.06	

54	884		7679		968		6468		220
51	38.94	51	8.395	51	8.533	53	36.54	54 2340	54 2444

51 8464
.016
51 8.45

54 2392
− 100
54 2.37
51 5835
+2 4.02
52.79

−124.28
+ .14
− 4.79
−2 8.93
48 59.52

−124.28
+ .29
− 5.56
−2 9.55
51 52.84

0.08465 ~~0.08465~~

0.01328

56 12.48 − 0.38 9.54978 52 30.52 + 25.85 1.41246
− 37.04 −30.48 1.48401 + 26.65 1.42574
55 35.44 9.66443 52 57.17
1.56866

+20°
27 [illegible]

+37
29 51.18

+22 13 56
1.37170
+ 1046
1.38216

+5 10 14
0.71690
+ 1046
0.72736

−24.11
− .16
− 02
−24.29
+20 26 48.62

−5.34
− .18
− .05
− 5.57
+37 29 45.61

Dec 29
Req −17 42.0
43.6
42.2
42.0
43.3
40.2
41.3
41.8
−17 42.05

−17 42.05
− .54
+ 8.60
−17 34.99
9 13.63

− .13
29 45.5
12 3.7
41.8
12 11.7

−17 42.05
− .13
+ 8.00
−17 34.18
12 11.43

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1995phae.proj.1622

Dec. 30- 1885

S Tauri
h m s
4 16 19
+17° 16'

No Sheet for these dates

E Tauri
h m s
4 21 34
+16° 53'

Jan. 5- 1886

ξ Persei
h m s
3 57 15
+35° 27'

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1885phae.proj.1622

Jan. 6. 1886

		9.99353	9.99539	9.94390
	+ 1.17	− .17	− .15	+ .54
	ℓ Persei	ε Eridani	β Orionis	β Tauri
	h m s	h m s	h m s	h m s
	3 15 50	3 27 19	5 9 2	5 19 3
	+49° 26′	−9° 52′	−8° 20′	+28° 30′
	+0.39	+ .79	+ .77	
	+ .00	+ .39		
		+52 15 ~~17~~ +.00	+50 43	

| | | |

1885phae.proj.1622

9.978415

Gr. 966 +3.73

$5^h\ 24^m\ 27^s$
+74° 68'

α Leporis −.32 +.87

$5^h\ 27^m\ 41^s$
−17 57'
+60 17

γ Tauri +.39

$5^h\ 30^m\ 48^s$
+21° 04'

9.98521

ζ Leporis −.27 +.84

$5^h\ 41^m\ 46^s$
−14° 52'
+57 15

| | | |

1885phae.proj.1622

Jan. 6 - 1886 9.97257
Nova #
New Star. +.37

h m s
5 49 5
+ 20° 9

53 22.0 52 37.5 57.3
25.0 39.7 53.7
27.7 42.1 56.3
29.5 44.3 58.6
31.7 46.6 4204 1.9
35.
6.2.
(10.3)
(15.0)

53 27.8

53 9.14

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1885phae.proj.1622

Jan. 7. 1886

9.83037

9.88636

E Eridani −.17

h m s
3 27 32
−9° 57'

S Persei +.109

h m s
3 34 46,
+47° 25'

Persei +.61

h m s
3 46 56,
+31° 33'

E Persei +.83

h m s
3 50 10
+39° 46'

| | | |

1885phae.proj.1622

Jan. 7. 1886

γ Tauri +.39

h m s
5 30 48
+21 4

32	43.0	32	33.3		46.4	39	42.0	38	37.4		56.6	50	34.5	50	46.3		54.7		
	44.5		35.4		48.6		44.0		40.9		57.8		36.0		48.6		1.5		
	45.6		37.8		50.6		46.0		43.8		3.0		38.0		50.8		3.8		
	47.4		40.0		52.8		48.0		45.3		6.5		40.0		52.8		6.1		
	48.4		42.0	37.70	53.0		51.0		50.7	44.02	9.6		41.5		53.2	50.74	8.2		
					57.2						12.9						10.4		
			8.5		59.5				28.4		16.0	57	44.0		21.4		12.7		
			10.7		1.7				31.9		19.1		46.4		23.5		14.8		
			12.8		4.0				33.2		22.4		48.4		25.8		17.2		
			15.0						38.3				50.0		28.2				
			17.3	12.86					41.6	35.08			57.9		30.3	25.84			
			11056						1910			50	38.00		7658				
32	45.98	32	53.280	32	55.088	39	46.20	39	9.550	39	9.544	51	48.14	51	8.290	51	8.266		

Jan. 7. 1886

O Aurigae +1.18

h m s
5 37 1
+49° 46'

Jan. 7. 1886

New Star +.16

h m s
5 49 57
+20° 9'

32 55.184
− .017
32 55.17
30 51.17 −
+2 4.00

39 9.547
− .024
39 9.52
37 6.03
+2 3.49

51 8.278
− .016
51 8.26

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1885phae.proj.1622

Jan. 14 - 1886

9.98725 | 9.99787 | 9.99663

ρ Herculis +1.79 | ζ Eridani −.25 | χ Tauri +.10 | δ Eridani −.12

h m s
3 47 23
+60°46'

h m s
3 52 41
−13° 49'
+56 12

+ .83
+.50
+.00

h m s
3 57 4
+5°40'
+36 43

+ .60

h m s
4 6 16
−7°8'
+49 31

+ .76

48 30.9 | 48 48.2 | 136 | 54 196 | 54 268 | 395 | 59 41 | 58 49.9 | 59 24 | 7 57.7 | 8 2.6 | 150
33.0 | 52.0 | 178 | 210 | 290 | 415 | 56 | 520 | 45 | 59.4 | 46 | 172
35.9 | 56.5 | 218 | 222 | 310 | 438 | 7.7 | 541 | 65 | 1.0 | 69 | 19.3
38.8 | 1.0 | 26.1 | 23.7 | 33.1 | 459 | 10.1 | 562 | 8.4 | 3.0 | 89 | 216
41.6 | 1.0 | 56543.04 | 25.2 | 35.2 | 31.02 479 | | 58.3 | 5.40 10.9 | 4.2 | 11.0 | 6.80 236
34.6 | 540 | 128 | 256
55.8 | 38.7 | 06 | 572 | 229 | 14.7 | 366 | 277
02 | 43.1 | 28 | 542 | 25.2 | 16.8 | 380 | 29.4
40 | 47.5 | 49 | 563 | 2.2.2 | 18.8 | 39.9 | 31.7
80 | 291 | 421
12.7 4.22 | 7.0 | 9.0 4.86 | 31.3 27.14 | 44.3 4.006
3
6076 | 3588 | 2124 | 4686
48 3604 | 49 30380 | 49 30.400 | 54 2234 | 54 47.940 | 54 47.922 | 59 6.88 | 59 10.620 | 59 10677 | 8 1.06 | 8 23.430 | 8 23.488

49 30.390
− .032
49 3036
47 2743 −12443 etc
+2 293 * .90
25.30 − 2.13
−2 5.66
47 24.70

54 47.931
− 016
54 47.91
52 4332 −12444
+2 4.59 − .12
4263 − 0.69
−2 5.25
52 42.66

59 10.648
− .016
59 10.63
57 6.35 −124.45
+2 4.28 + .05
5.54 − 0.81
−2 5.21
57 5.42

8 23.459
− .016
8 23.44
6 18.85 −124.46
+2 4.59 − .06
18.06 − 0.79
−2 5.31
6 18.13

0.09933 | 0.10995 | 0.10871

53
47 1355 + 25.59 | 1.40807 | 24 470 + 3.77 | 0.57634 | 12 2768 + 22.40 | 1.35025
+ 32.17 | 1.50740 | + 486 | 0.68629 | + 28.77 | 1.45896
47 45.72 | 24 9.56 | 12 56.43
83

−13
30 57.37
+56 10 58
1.93320
+ 4794
1.98114
− 95.75
+ .09
− .10
− 95.76
−13 32 33.13

+5
58 3879
+36 41 49
1.63230
+ 4810
1.68040
− 47.91
+ .00
− .12
− 48.03
+5 57 50.76

−6
50 8.80
+49 30 12
1.82820
+ 48.28
1.87648
− 75.20
+ .03
− .08
75.29
−6 51 23.39

− 1.14 −17 42.40
32 34.3 − 1.14
50 16.6 + 15.50
−17 42.3 −17 28.04
50 1.1 50 1.17

− .82 −17 42.40
57 49.9 − .82
40 9.8 + 10.10
−17 40.4 −17 33.12
40 19.6 40 17.64

− 1.04
51 29.4
8 22.0
6 51.4
8 8.2

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1885phae.proj.1622

Jan-19-1886

β Tauri +.54 — Cl. 966 +3.73 — 9.97841 — α Leporis −.32 — 9.99763 — i Orionis −.10

β Tauri: 4h am S; 5 19 3; +28° 30'

Cl. 966: 4h 2m S; 5h 24 27; +74° 58'

α Leporis: 4h 2m S +.87; 5h 27 41; −17° 53'; +60 18

i Orionis: 4h 2m S +.75; 5h 29 50; −5° 54'; +48 22

| | | |

1885phae.proj.1622

9.98521

G Leporis

h m s
5 41 46.
−14°52.
+57 15

−27
+ 84

43 25.7 27.5 29.3 30.9 32.4
43 31.9 34.0 36.1 38.1 40.3 60 8.2 10.3 12.4 14.6 10638
43 29.22 43 53.190
447 469 49.2 57.2 533 55.4 57.6 59.7 1.6 10.30
43 53.311

9.97257

Nova

h m s
5 49 8.
+20° 9.
+22 11

+.38

57 23.5 27.3 29.8 31.9 33.3
50 46.3 49.0 51.0 53.4 55.3
57 29.16 51 8.576
59.8 2.4 4.4 6.8 8.8 51.070 17.576 10.5 13.2 15.3 17.6
51 8.788

9.90120

O Aurigae

h m s
5 57 54.
+37° 12.

+.76

54 34.2 35.9 37.8 39.4 42.0
53 57.9 54.6 55.2 55.5 2.2 3.0 17.6 20.4 22.4 25.6 28.3 7.2 10.0 12.7 22920 −20.715
54 34.86 54 2.205
54 2.253

48 53.250
− .016
43 53.23
41 48.59
+2 4.64
47.40
−1.19
−2 5.97
41 47.26

−124.65
− .13

51 8.717
− .016
51 8.70

Red to 1885.

−124.66
+ .18
− 1.28
−2 5.76
49 2.94
− 3.53
48 59.41

54 2.230
− .020
54 2.21
51 58.39
+2 3.82

−12.466

0.09729
55 42.8 +24.03
+30.06
55 34.34
1.38075
1.47804

0.08465
55 57.48 −20.44
− 2.84
55 32.64
1.31048
1.39513

−14 32 45.99
+57 12 48
1.95013
+51.16
2.00129
−100.30
+ .08
− .00
−100.22
−14 34 26.21

Jan 14
Req for Aurora plate

−17 42.3
46.4
42.8
43.6
42.9
−17 42.40

+20 27 15.71
+22 [illegible] 42
1.37760
+51.34
1.42294
− 26.48
− .07
− .03
− 26.58
+20 26 49.07

− 1.15
34 27.4
52 13.3
42.9
51 55.50

−17 42.40
− 1.15
+ 15.30
−17 28.25
51 54.46

−17 42.40
− 5.2
+ 9.70
−17 33.22
9 15.81
− 0.96
9 14.95

Red to 1885.

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1885phae.proj.1622

Jan. 17 1886

9.98950

9.99355

2 H Camel +1.70 | ζ Tauri +.22 | 9 Eridani −.17 | S Persei +1.09

2 H Camel: h m s 3 19 49, +59° 33'

ζ Tauri: h m s 3 24 33, +12° 33', +29 50; +.50, +.51, +.00

9 Eridani: h m s 3 27 32, −0° 37', +52 14; +.79

S Persei: h m s 3 34 46, +47° 24

| | | |

1885phae.proj.1622

9.98722

J Eridani −.25

h m s
3 52 41.
−13° 57'
+56 13

+.83

9.96551

E Leporis −.41

h m s
5 0 37
−22° 52'
+64 55

+.91

1 H Camelop +.19

h m s
5 3 45
+79 6

B Tauri +.54

h m s
5 19 3
+28° 36'

| | | |

1885phae.proj..1622

Jan 17 — 1866

9.98521

Gr. 966 +3.73 | Y Tauri +.39 | ζ Leporis −.27 | Nova +.16

Gr. 966: h m s 5 24 27, +74° 58'

Y Tauri: h m s 8 30 48, +21° 4'

ζ Leporis: h m s 5 41 46, −14° 52', +57 15, +.84

Nova: h m s 5 49 8, +20° 9'

| | | |

1885phae.proj.1622

9.97257
+ .37
+ .38

Nova
h m s
5 49 8
+ 20° 9'
+ 22 14

37 16.0
17.9
18.8
20.4
22.3

37

8.5 6.3
8.7 8.4
.6 10.8

37 36.0 21.9 .9 13.3
37.6 24.0 .7 13.5
39.6 26.2 .7 14.5
41.1 28.3
43.2 30.5 26.180
− 17.576

51 19.08
51 39.50 51 8604 8.683

51 8.643
− .016
51 8.63

− 12447
+ .19
− 1.27
−2 555
49 3.08
− 3.53
48 59.55

Red to 1885.

0.08465

55 49.88 − 10.44 1.01870 n
− 12.69 − 30.86 1.48940 n
55 37.19 1.10335 n
1.57405 n

56 13.70
− 37.50
55 36.20

+20
27 11.16 27 12.15

+22 13 34 +22 13 58
1.37160 1.37170
+ 22.16 + 22.16
1.39376 1.39386

− 24.76 − 24.77
− .02 − .07
− .02 − .04
− 24.80 − 24.78
+20 26 46.36 47.17
+20 26 46.76

June 17
Reg. for Annapolis

−17 4.36
4.45
4.40
4.21
45.7
−17 43.98

−17 43.98
− .51
+ 9.70
−17 34.79
9 12.38
− .096
9 11.42

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1885phae.proj.1622

Jan 23 – 1886 9.99355

E Eridani

h m s
3 27 32.
−9°57'
+52 14

−.17

+ .79
+ .45
+ .00

S Persei + 1.09

h m s
3 34 46.
+47 25

9.98722

−.25

J Eridani + .83

h m s
3 52 41.
−13°50'
+56 13

E Ves-Dim

h m s
16 57 47.
+37°46'

9.13078
143
Ex
+ 732

| | | |

1885phad.proj.1622

9.99539 — 15

19 H Camelop. +5.19

h m s
δ 3 45
+79 6

β Orionis

h m s +.77
δ 9 2
−8° 20'
+50 43

9.94390 +.54

β Tauri

h m s
δ 19 3
+ 28°30'

9.97841 −.32

α Lesporis

h m s +.87
δ 27 41
−17°53'
+60 18

| | | |

1885phae.proj.1622

Jan 23 – 1886

9.98521

G Jansi +.39

h m s
5 30 48
+21° 4'

T Lisporis −.27

h m s +.84
5 41 47
−14 52
+57 15

9.97257

Nova +.37

h m s +.38
5 49 2
+20 9
+22 14

32	28.6	32	33.3		46.5	43	28.1	43	31.7		44.6	50	36.4	50	46.3		57.6		
	30.2		35.6		48.8		30.0		33.9		46.8		38.5		48.8		2.0		
	32.2		37.6		50.8		32.1		36.0		49.0		40.4		51.0		4.2		
	34.3		40.0		53.0		34.0		38.3		51.1		42.8		53.4		6.5		
	36.8		41.9	3768	53.4		36.4		40.3	36040	53.3		43.5		53.2	5098	8.6		
					57.4				+17.072		53.4						10.7		
			8.3		0.0						57.4				21.9		13.0		
			10.7		2.0						59.6				23.9		15.3		
			12.8		4.2						1.6				26.3		17.3		
			15.0												28.3				
			17.2	1280											30.6	2620			
			11048												1718				
32	32.38	32	55.240	32	55.344	43	32.12	43	53.112	43	53.200	50	40.12	51	8.590	51	8.577		

32 55.290
− .017
32 55.27
30 51.11
+2 4.16

43 53.156
− .016
43 53.14
41 48.56
+2 4.58
47.40

51 8.589
− .016
51 8.57

−124.46 | −124.46
− .12 | + .17
− 1.16 | − 1.25
−2 5.74 | −2 5.54
41 47.40 | 49 3.03
Red to 1885 | − 3.53
48 57.50

0.09729

55 10.62 | +21.04 | 1.32305
+ 26.32 | 1.42034
55 36.94

0.08465

54 59.35 | +28.47 | 1.45439
+ 34.60 | 1.53904
55 33.95

56 16.65

−14
32 48.59

+5712.55
1.95018
+ 4773
1.99791

− 99.52
+ .06
− .01
− 99.47
−14 34 28.06

+20
27 14.40

+22 12.43
1.37130
+ 4802
1.41932

− 26.26
− .14
− .20
− 26.60
+20 26 47.80

Jan 23
Reg for
Antumbrae

−17 44.5
42.5
44.7
42.5
−17 43.55

− 1.10 | −17 43.55
34 29.2 | − 1.10
52 11.7 | + 16.70
42.5 | −17 27.95
51 55.0 | 51 56.01

−17 43.55
− .50
+ 9.69
−17 34.36
9 13.44
Red to 1885 − 0.96
9 12.48

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1995phae.proj.1622

Jan 26 – 1886 9.98722 9.99663 9.98588

J Eridani −.25 Gl. 750 +12.05 O'Eridani −.12 53 Eridni −.26

h m s h m s h m s h m s
3 52 41. 4 0 48 4 6 15 4 32 53
−13°55' +85 15 20 −7°8' −14°32'
+56 13 +49 31 +56 55

+.83 +.76 +.84
+.50
+.00

54 27.1 54 26.7 39.4 5 22 1 35.5 17.1 8 49.6 8 15.3 34 38.0 34 41.9 54.7
28.5 28.8 41.5 4.0 42.7 25.3 37.3 17.4 40.5 44.0 56.8
30.4 31.0 43.7 5.2 50.7 33.3 5.26 19.4 41.8 46.1 58.8
32.0 33.0 45.9 6.6 54.4 41.4 54.4 21.4 43.1 48.3 1.0
33.8 35.3 3096 47.9 8.2 8.5 5142 49.3 3328 57.0 23.4 45.2 50.4 46.14 3.2
5.00 25.5 5.3
0.8 52.1 22.3 3328 57.7 35.8 27.5 16.0 7.3
3.0 54.4 29.8 1448 6.3 87.9 29.7 18.1 9.5
5.0 56.5 37.4 55.98 14.6 4.00 31.7 20.1 11.7
7.0 46.3 22.5 42.0 22.3
9.2 5.00 53.0 3816 31.2 1446 442 39.980 24.4 2.018
−16629
9596 632
54 3036 54 47980 54 47.933 5 5.24 3.95 8 52.98 8 23.357 8 23.478 34 41.72 35 3.160 35 3.144
47.0
53.6
4.0
13.8 55.98

54 47.956 3 14.660 8 23.435 35 3.152
− .016 − .184 − .016 − .016
54 47.94 3 14.48 8 23.42 35 3.14
52 43.16 −124.64 1 15.99 −124.64 6 18.75 −124.64 32 58.29 −124.64
− .12 + 6.02 − .06 − .13
+2 4.78 +1 58.89 +2 4.67 +2 4.85
42.63 − 0.53 4.92 −11.07 18.06 − 0.69 57.52 − 0.77
−2 5.29 −2 9.69 −2 5.39 −2 5.54
52 42.65 1 4.79 6 18.03 32 51.60

0.09930 0.10871 0.09796

53 3255 +1760 1.24551 12 5565 −2955 1.47056 35 240 +21.43 1.33102
+ 2212 1.34481 − 3795 1.57927 + 2685 1.42898
53 5467 12 1770 35 2925

−13 −6 −14
.31 6.32 49 2935 12 40.90

+56 11 17 +49 30 40 +56 52 46
1.93328 1.82830 1.94462
+ 2028 + 2070 + 2143
1.95356 1.84900 1.96605

− 87.86 − 7063 − 9248
+ .04 + .06 + .06
− .14 − .12 − .00
− 89.96 − 7069 − 9242
−13 32 36.28 −6 50 4004 −14 14 1332

− 108 −17 4200 − .99 −17 4200 − 109 −17 4200
32 37.4 − 1.08 50 41.0 − .99 14 14.4 − 1.09
50 17.9 + 16.80 8 23.2 + 15.00 31 57.5 + 17.20
−17 40.5 −17 2628 422 −17 2799 43.1 −17 25.89
50 1.1 50 2.56 8 8.2 8 8.03 31 40.3 31 39.21

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1885phae.proj.1622

Jan. 26 1886 9.99539

B Urania — .15 Gr. 966 +.373 — A Tania +.39 — O Amigae +.18

B Urania: h m s 5 9 0, −8° 20, +50 43 — + .71

Gr. 966: h m s 5 24 21, +74° 58′

A Tania: h m s 5 30 46, +21° 4′

O Amigae: h m s 5 36 59, +49° 46′

| | | |

1885phae.proj.1622

9.97257
+.37

Nova
h m s
5- 49 2.
+20 9'
+22 14

+.38

50 35.3
36.7
38.7
40.2
42.0

50 46.8
48.8
51.0
53.2
55.6

0.0
2.2
4.4
6.6
8.8
11.0
13.0
15.3
17.6

57.08

57 46.7
48.0
49.5
50.7
52.4

22.0
24.2
26.3
28.4
30.6

26.30

50 38.58
51 49.46

17.8

51 8.690

51 8.789

9.90120
+.76

O Omicron
h m s
5- 57 53
+37 12'

53 56.5
085
0.5
1.8
4.0

53

52.3
54.8
57.5
01
2.6

41.8 41.8
41.7 42.2
41.8 42.0 41.77

5.2
7.7
10.3
12.8

18.1
20.5
23.2
25.7
28.2

23.14

491

54 0.26

54 2.455

54 2.589

51 8.739
— .016
51 8.72

54 2.522
— .020
54 2.50
51 58.34
+2 4.16

— 124.65
+ .18
— 1.23
— 2 5.70
49 3.02
— 3.53
48 59.49

Red to 1885

0.08465

55 0.42 +30.16 1.47943
+ 36.65 — 40.72 1.60981
55 37.07 1.56408
1.69446

56 27.30
— 49.48
55 37.82

+20 27 11.28 27 10.53

+22 12 44 +22 14 11
1.37130 1.37180
+ 2361 + 2361
1.39491 1.39541

— 24.83 — 24.85
— .16 — .29
— .50 — .06
— 2489 — 2520

+20 26 46.39 45.33
+20 26 45.56

— 17 42.00
— 49
+ 9.68
— 17 32.81
9 13.05
2.96
9 12.09

Red to 1885

Jan 26
Ray for
Auriga stars
— 17 40.5
42.2
43.1
42.2
— 17 42.00

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1885phae.proj.1622.

Feb 1 — 1886 9.96873 | 9.99419 | 9.99913 | 9.88105

| I | | | h m s | | |

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9.99355 9.98722

48 H Cephei +4.44 — α Persei +1.17 — E Eridani −.17 — γ Eridani −.25

48 H Cephei: h m s 3 5 46, +77° 19 — α Persei: h m s 3 16 7, +49° 27 — E Eridani: h m s 3 27 31, −9° 37, +82 14 +.79 — γ Eridani: h m s 3 52 40, −13° 50, +56 13 +.83

| | | |

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Feb 2- 1886

ε Eridani −.17

h m s
3 27 31.
−9° 37

ζ Persei +1.09

h m s
3 34 44.
+47° 25

29	37.0	29	19.0		31.3	36	18.5	36	24.2		42.4
	39.2		21.0		33.4		20.0		27.3		45.4
	41.3		23.0		35.7		22.6		30.2		48.8
	43.3		24.9		37.7		24.5		33.4		51.7
	45.0		24.1	23.00	39.9		28.9		36.4	30.30	54.6
					42.2						57.7
			52.4		44.0				12.8		0.9
			54.3		46.2				16.2		3.4
			56.4		48.2				19.0		6.8
			58.3						22.0		
			0.6	56.44					25.1	19.02	

7944 10932

29 41.24 29 39.720 29 39.844 36 22.90 36 54.660 36 54.667

29 39.782
— .016
29 39.77
27 33.86
+2 5.91

36 54.663
— .022
36 54.64
34 49.60
+2 5.04

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