





SL/3				seconds of arc	
day	target arc	sights	limb	mean err	std. dev.
19	Moon-Diphda	13	Near	11	21
19	Moon-Diphda (err	11	Near	106	40
19	Moon-Diphda	11	Near	34	24
20	Moon-Diphda	10	Near	5	12
40	Moon-Nunki	18	Far	22	12
40	Moon-Nunki	34	Far	28	13
40	Moon-Nunki	33	Far	20	12
42	Moon-Nunki	42	Near	-19	9
46	Moon-Fomalhaut	18	Near	-32	9
47	Moon-Fomalhaut	17	Far	4	9
49	Moon-Fomalhaut	16	Far	-20	12
49	Moon-Fomalhaut	18	Far	-11	12



Moon-Regulus
2' 24.2" Far





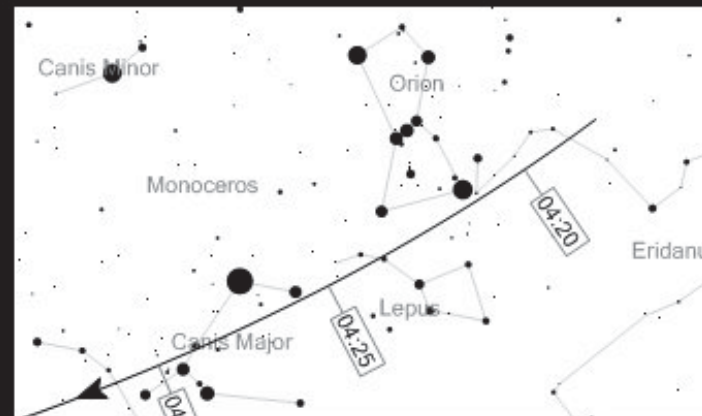
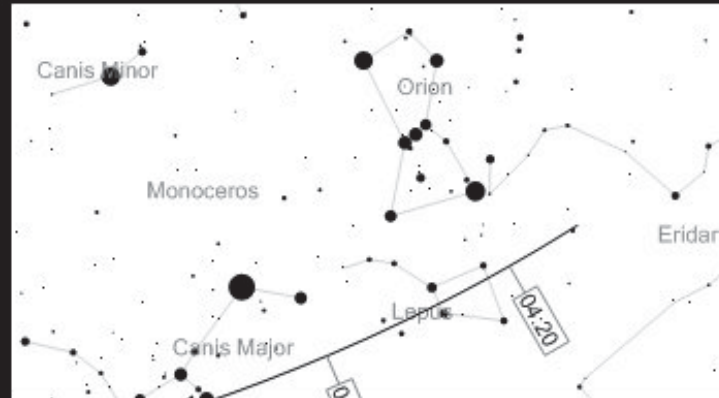
Moon-Jupiter
0° 47.7' Near

Moon-Regulus
2' 24.2" Far

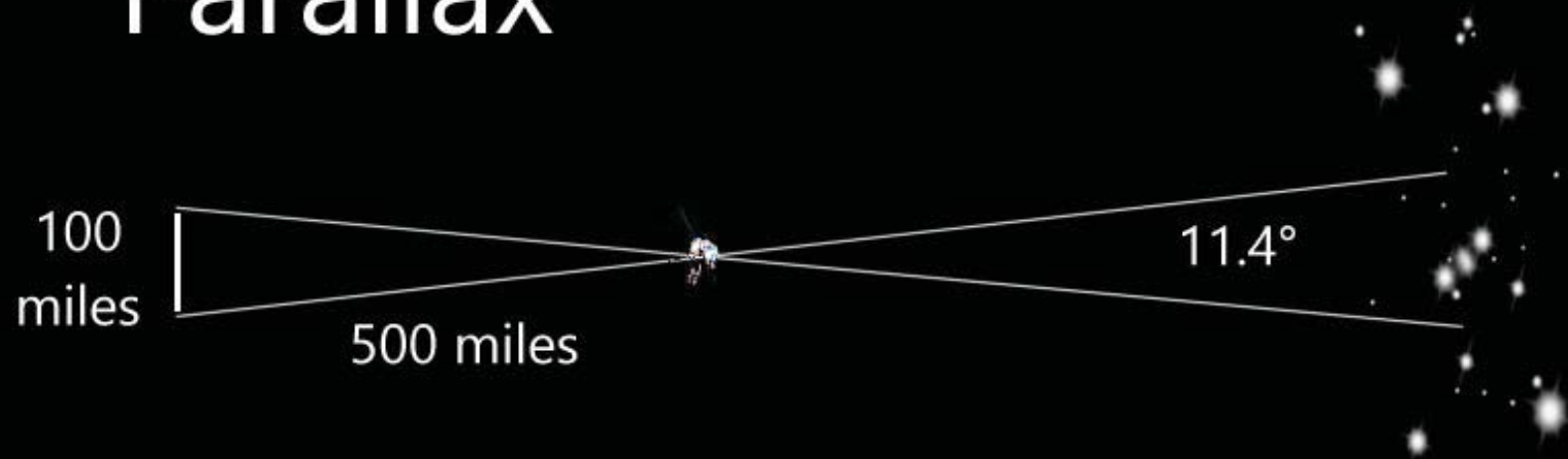


Moon-Jupiter
0' 47.7" Near





Parallax



So useful today...

Such a nuisance back then.

Distances of β 's Center from Sun, and from Stars west of her.

Days	Stars Names.	Noon. D. M. S.	3 Hours. D. M. S.	6 Hours. D. M. S.	9 Hours. D. M. S.	12 Hours. D. M. S.	15 Hours. D. M. S.	18 Hours. D. M. S.	21 Hours. D. M. S.
1 2	Antares.	91. 46. 55 103. 32. 36	93. 15. 5	94. 43. 16	96. 11. 27	97. 39. 38	99. 7. 50	100. 36. 4	102. 4. 19
2 3 4 5	α Aquilæ.	54. 25. 12 64. 49. 0 75. 31. 38 86. 26. 46	55. 41. 52 66. 8. 28 76. 52. 57	56. 58. 55 67. 28. 11 78. 14. 26	58. 16. 22 68. 48. 11 79. 36. 6	59. 34. 13 70. 8. 26 80. 57. 57	60. 52. 25 71. 28. 55 82. 19. 57	62. 10. 57 72. 49. 36 83. 42. 5	63. 29. 49 74. 10. 31 85. 4. 22
5 6 7	α Pega fi.	38. 38. 56 49. 55. 43 61. 36. 27	40. 1. 51 51. 22. 11	41. 25. 16 52. 49. 0	42. 49. 13 54. 15. 8	44. 13. 38 55. 43. 37	45. 38. 32 57. 11. 24	47. 3. 51 58. 39. 28	48. 29. 35 60. 7. 49
7 8 9 10	α Arietis.	18. 25. 8 29. 58. 38 42. 14. 9 54. 54. 36	19. 48. 9 31. 28. 54 43. 47. 57	21. 12. 20 32. 59. 40 45. 22. 7	22. 37. 40 34. 30. 59 46. 56. 39	24. 4. 8 36. 2. 48 48. 31. 33	25. 31. 35 37. 35. 1 50. 6. 48	26. 59. 49 39. 7. 39 51. 42. 24	28. 28. 51 40. 10. 42 53. 18. 20
10 11 12 13	Aldeba- ran.	21. 26. 22 34. 31. 20 48. 0. 52 61. 53. 37	23. 3. 0 36. 11. 14 49. 43. 42	24. 40. 4 37. 51. 31 51. 26. 54	26. 17. 34 39. 32. 10 53. 10. 26	27. 55. 31 41. 13. 11 54. 54. 22	29. 33. 52 42. 54. 33 56. 38. 39	31. 12. 38 44. 36. 18 58. 23. 17	32. 51. 47 46. 18. 24 60. 8. 16
13 14 15	Pollux.	22. 6. 15 35. 5. 6 49. 3. 52	23. 38. 18 36. 47. 37 50. 51. 10	25. 12. 8 38. 30. 52 52. 38. 49	26. 47. 36 40. 14. 52 54. 26. 50	28. 24. 35 41. 59. 36 56. 15. 12	30. 3. 1 43. 44. 52	31. 42. 35 45. 30. 41	33. 23. 17 47. 17. 0

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OCTOBER 1789.

X

Survey Observations subward Trig. Station of Boston

Sept. 16th 1899. Acc. to alt. 12th 58' 56" should dist. of 10 to be 71' 56" the call. 55' 36".
 alt. of O'Connell's land. 38' 35" - longitude by account 48° 40' East

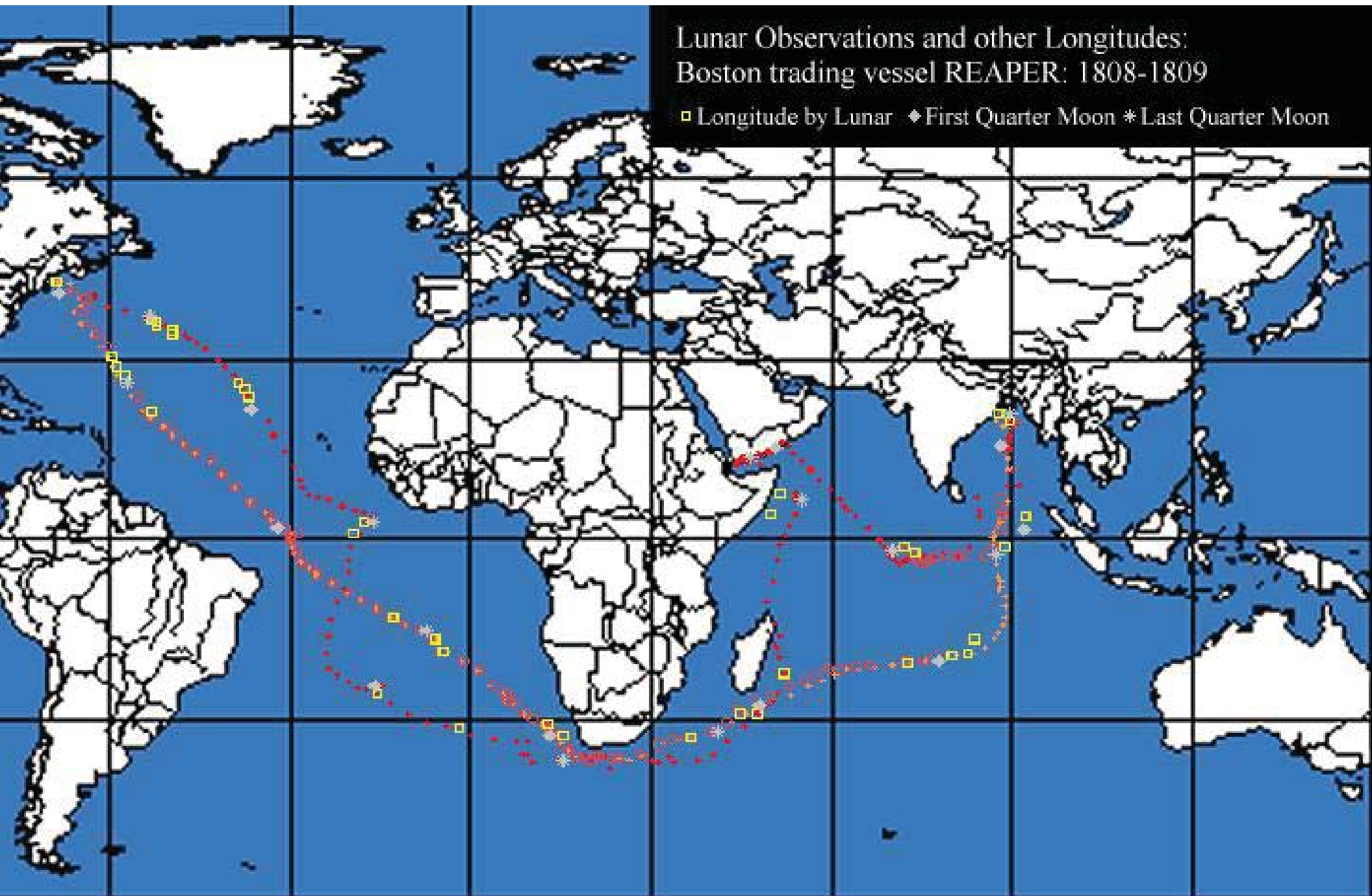
Call. Alt.	55.36	Alt. 38.35	Alt. dist. 47.56	Alt. 12.56	Alt. 12.56	Alt. 12.56
Cor.	12	20	15.56	15.56	15.56	15.56
Call. Alt.	55.48	Alt. 38.15	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Call. Alt.	38.15		Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Sum -	94.3		Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Distance	47.33	6.40	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Distance	17.33	9.96940	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Distance	8.46	9.18812	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Top. Dist. -	36.14	10.13502	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Alt. -	11.6	Jan. 9.29257	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Distance	25.8	10.32869	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Call. Alt.	55.48	9.83225	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Cor. Call.	33	2.57490	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Sum.	47.20	2.67584	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Call.	38.15	9.96459	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
Cor. Call.	45.29	10.10329	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
2 nd Cor.	39.53	6.8558	Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10
1 st Cor.	23		Alt. 10.10	Alt. 10.10	Alt. 10.10	Alt. 10.10

Running for theodolite and -
 from Cape Cod. This
 Alt. appears very nearly with acc. to
 longitude by Alt. At Merid. on Monday Sept. 18th
 by my account 53. 53

Monday October 2nd 1899 Long. by O.T.C. 52° 16' 44"
 Sept. 2nd 1899. Acc. to 110' from Cape Cod. bearing 197° 6' long. -
 would make it long. about 57.10 - by Monday it long. is 57.38 -

Lunar Observations and other Longitudes:
Boston trading vessel REAPER: 1808-1809

□ Longitude by Lunar ♦ First Quarter Moon * Last Quarter Moon



March 27th Sea Area 3rd Jato Long
 Dist 0th alt

3 ^h 05 ^m 43 ^s - 80.02.45 - 38.45.30	12	59.47
4.28	16.03	
	15.23	38.57.30
35-43	80-34-21	9.99410
34	38.57.30	11239
	59.27.00	11239
	178.59.01	1.8205
	89.29.30	206915
	8.54.59	1.93237
	50.32.60	2.06543
		47
		15.29
		56.50
		15.23

34.21
 58.57
 31.23
 2.06
 47
 15

80-07-02

Lunar Observation

N^o 28 Monday June 15th 1829 at sea in the longitude of 17 West
By account the following observations of the moon and star
Spica were as follows Horizontal parallax 56. 25

Time	Stars Altitude	Moon's alti	obs. distance S L
12. 18 19	55. 47	57. 05	65. 49. 15
13. 31. 01	55. 30	57. 52	65. 47. 10
13. 35. 59	56. 51	58. 48	65. 45. 00
37. 23. 19	167. 08	173. 45	197. 21. 15
12. 21. 16	55. 23	57. 55	65. 47. 05
Error 13. 29	4	12	DSD 15. 37
12. 07. 37	55. 39	58. 07	65. 31. 28
Long 1. 04. 00			
13. 11. 37			

App. dist.	65. 31	same	p. 4591	same	p. 4591	True = 65. 31. 28
Stars Altitude	55. 39	2 ^d Rem. case 0. 2526	same	0. 2526	Table 17	57. 22
Moon's Altitude	58. 07	1 st Rem. case 0. 0397	presumed 1. 1938	Table 19	58. 35	
Sum	177. 17	Table 17	1. 8955	Table 10	0. 2114	1 st cor 61. 17
Half sum	89. 38	1 st cor	2. 1470	2 ^d cor	2. 6169	2 ^d cor 61. 26
1 st Remainder	24. 07			Table 20	60. 19	
2 ^d Remainder	33. 59					
True Distance						65. 03. 12
True Distances						65. 03. 22
						Difference

6500

Howling Comet Calm Sealnet 8 Hr

847 hr 53.70 245 2 Sealnet 16.18

81804 13.3304 13942 15942 1619

81804 13.3304 13942 15942 1619

81804 13.3304 13942 15942 1619

81804 13.3304 13942 15942 1619

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81804 13.3304 13942 15942 1619

81804 13.3304 13942 15942 1619

Distance Observed of the D & Star A Pegasi West of
 line on Monday 5. Oct. 1709 at about 8 hours & 1/2
 Apparent 1. 30' west of Greenwich — Lunatic Limb. True Time
 Error 1' - 28"

Watch.
^h 8. 25. 5
^m + 1. 49 Watch Slow
^s 8. 26. 54
 10. 16. 55
 1. 50. 1

* a Peg.

52. 46'
 - 4
 52. 42

37. 52 - 130 -
 38. 39 - 121 - 47+ 9 - 33 + 6 -
 37. 5 - 139 - 47- 9+ 12 - 2+
 37. 31 - 131 - 21 - 4+ 2 - ...+
 19+ 4 -
 38. 11 - 126
 1. 20 - 703
 39. 31 - 829

D S. L.

22. 4'
 + 11
 22. 15

D a A. "

43. 51. 15.
 - 1. 28
 43. 49. 47
 + 15. 2 Local Time
 44. 4. 49 Reckon
 - 39. 31
 43. 25. 18
 42. 49. 13 IX
 44. 13. 38 Midway
 1. 24. 25 3280
 . 36. 5 6900
 1. 16. 55 5892
 IX

8. 29. 4
 + 1. 49
 8. 30. 53
 10. 22. 10
 1. 51. 17

53. 37
 - 4
 53. 33

37. 52 - 130 -
 38. 39 - 122 47+ 8 - 26+ 4 -
 37. 6 - 140 46- 10+ 16 - 4+
 37. 32 - 135 20- 5+ 2 - 1+
 8+ 1+
 38. 0 - 134
 1. 19 - 703
 39. 19 - 834

23. 10
 + 11
 23. 21

43. 53. 30
 - 1. 28
 43. 52. 2
 + 15. 2 Local Time
 44. 7. 4 Reckon
 - 39. 19
 43. 27. 45 IX
 42. 49. 13 XII
 44. 13. 38
 1. 24. 25 3280
 . 38. 32 6694
 1. 22. 10 3406

Lunars Calculator (ver. 4)

SETUP:

DR Lat:	43	48	N ▾
DR Lon:	29	00	W ▾
IC:			
Temperature:	50		°F
Pressure (SL):	29.80		inches Hg
Height of Eye:	16		feet
Body:	Markab		▾

ALTITUDES:

(Leave Blank to Calculate)

Body:			LL ▾
Moon:			LL ▾

LUNAR:

Greenwich Date:	October ▾	5	, 1789
Time:	22	: 05	: 00 Greenwich Mean Time ▾
Distance:	43	49.8	Near ▾
Options:	☐ Ignore Oblateness of the Earth ☐ Ignore Refrational Flattening of Moon & Sun		

Calculate

Distances of β 's Center from Sun, and from Stars west of her.

Days	Stars Names.	Noon. D. M. S.	3 Hours. D. M. S.	6 Hours. D. M. S.	9 Hours. D. M. S.	12 Hours. D. M. S.	15 Hours. D. M. S.	18 Hours. D. M. S.	21 Hours. D. M. S.
1 2	Antares.	91. 46. 55 103. 32. 36	93. 15. 5	94. 43. 16	96. 11. 27	97. 39. 38	99. 7. 50	100. 36. 4	102. 4. 19
2 3 4 5	α Aquilæ.	54. 25. 12 64. 49. 0 75. 31. 38 86. 26. 46	55. 41. 52 66. 8. 28 76. 52. 57	56. 58. 55 67. 28. 11 78. 14. 26	58. 16. 22 68. 48. 11 79. 36. 6	59. 34. 13 70. 8. 26 80. 57. 57	60. 52. 25 71. 28. 55 82. 19. 57	62. 10. 57 72. 49. 36 83. 42. 5	63. 29. 49 74. 10. 31 85. 4. 22
5 6 7	α Pega fi.	38. 38. 56 49. 55. 43 61. 36. 27	40. 1. 51 51. 22. 11	41. 25. 16 52. 49. 0	42. 49. 13 54. 15. 8	44. 13. 38 55. 43. 37	45. 38. 32 57. 11. 24	47. 3. 51 58. 39. 28	48. 29. 35 60. 7. 49
7 8 9 10	α Arietis.	18. 25. 8 29. 58. 38 42. 14. 9 54. 54. 36	19. 48. 9 31. 28. 54 43. 47. 57	21. 12. 20 32. 59. 40 45. 22. 7	22. 37. 40 34. 30. 59 46. 56. 39	24. 4. 8 36. 2. 48 48. 31. 33	25. 31. 35 37. 35. 1 50. 6. 48	26. 59. 49 39. 7. 39 51. 42. 24	28. 28. 51 40. 10. 42 53. 18. 20
10 11 12 13	Aldeba- ran.	21. 26. 22 34. 31. 20 48. 0. 52 61. 53. 37	23. 3. 0 36. 11. 14 49. 43. 42	24. 40. 4 37. 51. 31 51. 26. 54	26. 17. 34 39. 32. 10 53. 10. 26	27. 55. 31 41. 13. 11 54. 54. 22	29. 33. 52 42. 54. 33 56. 38. 39	31. 12. 38 44. 36. 18 58. 23. 17	32. 51. 47 46. 18. 24 60. 8. 16
13 14 15	Pollux.	22. 6. 15 35. 5. 6 49. 3. 52	23. 38. 18 36. 47. 37 50. 51. 10	25. 12. 8 38. 30. 52 52. 38. 49	26. 47. 36 40. 14. 52 54. 26. 50	28. 24. 35 41. 59. 36 56. 15. 12	30. 3. 1 43. 44. 52	31. 42. 35 45. 30. 41	33. 23. 17 47. 17. 0

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OCTOBER 1789.

X

Lunars Almanac for October 5, 1789

Date and Times are GAT.

	0:00	3:00	6:00	9:00	12:00	15:00	18:00	21:00	24:00
<i>Moon's HP</i>	<i>54.4</i>	<i>54.44</i>	<i>54.47</i>	<i>54.51</i>	<i>54.55</i>	<i>54.59</i>	<i>54.62</i>	<i>54.66</i>	<i>54.7</i>
Geocentric Lunar Distances									
The Sun	171° 51.1'	170° 34.0'	169° 15.3'	167° 55.6'	166° 35.2'	165° 14.1'	163° 52.5'	162° 30.5'	161° 08.2'
α Arietis	16° 29.4'	15° 13.8'	14° 01.0'	12° 51.7'	11° 47.1'	10° 48.5'	9° 57.9'	9° 17.4'	8° 49.4'
Aldebaran	47° 36.4'	46° 06.5'	44° 36.5'	43° 06.5'	41° 36.4'	40° 06.2'	38° 35.9'	37° 05.5'	35° 35.0'
Pollux	90° 07.8'	88° 39.3'	87° 10.6'	85° 41.8'	84° 13.0'	82° 44.0'	81° 14.9'	79° 45.8'	78° 16.5'
Regulus	126° 57.1'	125° 27.5'	123° 57.8'	122° 27.9'	120° 57.9'	119° 27.8'	117° 57.5'	116° 27.1'	114° 56.6'
Spica	178° 50.6'	179° 21.7'	177° 59.8'	176° 30.7'	175° 00.6'	173° 30.2'	171° 59.6'	170° 28.8'	168° 57.8'
Antares	133° 06.8'	134° 36.1'	136° 05.5'	137° 34.9'	139° 04.3'	140° 33.8'	142° 03.4'	143° 32.9'	145° 02.5'
α Aquilae	80° 57.1'	82° 19.1'	83° 41.2'	85° 03.5'	86° 25.9'	87° 48.5'	89° 11.2'	90° 33.9'	91° 56.9'
Fomalhaut	53° 27.1'	54° 42.8'	55° 59.1'	57° 15.9'	58° 33.3'	59° 51.1'	61° 09.4'	62° 28.1'	63° 47.2'
α Pegasi	33° 13.7'	34° 33.8'	35° 54.6'	37° 16.2'	38° 38.5'	40° 01.3'	41° 24.8'	42° 48.7'	44° 13.2'

Sun SD: 16.02

Lunars Almanac for October 5, 1789

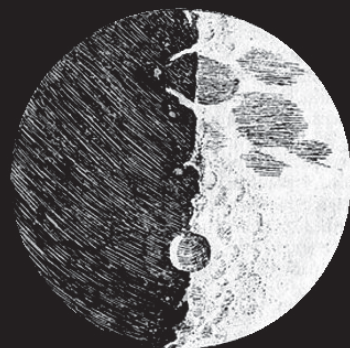
Date and Times are GAT.

	0:00	3:00	6:00	9:00	12:00	15:00	18:00	21:00	24:00
<i>Moon's HP</i>	54.4	54.44	54.47	54.51	54.55	54.59	54.62	54.66	54.7
Geocentric Lunar Distances									
α Arietis	16° 29.4'	15° 13.8'	14° 01.0'	---	---	---	---	---	---
Aldebaran	47° 36.4'	46° 06.5'	44° 36.5'	---	---	---	---	---	35° 35.0'
Pollux	---	88° 39.3'	87° 10.6'	---	---	---	---	---	---
Regulus	---	---	123° 57.8'	---	---	---	---	---	---
α Aquilae	80° 57.1'	---	---	---	---	---	---	90° 33.9'	91° 56.9'
Fomalhaut	53° 27.1'	54° 42.8'	---	---	---	---	---	62° 28.1'	63° 47.2'
α Pegasi	33° 13.7'	34° 33.8'	35° 54.6'	---	---	---	---	42° 48.7'	44° 13.2'

Showing lunars visible at 40° 00.0'N, 22° 00.0'W only.

Showing lunars in sextant range only.

-Frank E. Reed, Clockwork Mapping / Centennia Software. First version live: May 2004.



Lunar Observation

N^o 28 Monday June 15th 1829 at sea in the longitude of 17 West
By account the following observations of the moon and star
Spica were as follows Horizontal parallax 56. 25

Time	Stars Altitude	Moon's alti	obs. distance S L
12. 18 19	55. 47	57. 05	65. 49. 15
13. 31. 01	55. 30	57. 52	65. 47. 10
13. 35. 59	56. 51	58. 48	65. 45. 00
37. 23. 19	167. 08	173. 45	197. 21. 15
12. 21. 16	55. 43	57. 55	65. 47. 05
Error 13. 29	4	12	DSD 15. 37
12. 07. 37	55. 39	58. 07	65. 31. 28
Long 1. 04. 00			
13. 11. 37			

App. dist.	65. 31	same	p. 4591	same	p. 4591	True = 65. 31. 28
Stars Altitude	55. 39	2 ^d Rem. case 0. 2526	same	0. 2526	Table 17	57. 22
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Sum	177. 17	Table 17	1. 8455	Table 10	0. 2114	1 st cor 61. 17
Half sum	89. 38	1 st cor	2. 1470	2 ^d cor	2. 6169	2 ^d cor 61. 16
1 st Remainder	24. 07			Table 20	60. 19	
2 ^d Remainder	33. 59					
True Distance						65. 03. 12
True Distances						65. 03. 22
						Difference



