TABLE 19

Table of Offsets

	DISTANCE ALONG POSITION LINE FROM INTERCEPT										
	00´	05´	10´	15´	20´	25´	30´	35´	40´	45´	
ALT.	**OFFSETS**										***ALT.***
0 °	0´.0	0´.0	0´.0	0´.0	0´.0	0´.0	0´.0	0´.0	0´.0	0´.0	0 °
30	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 2	30
40	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 2	0. 2	0. 3	40
50	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 2	0. 3	0. 3	50
55	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 3	0. 4	55
60	0. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 2	0. 3	0. 4	0. 5	60
62	0. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 2	0. 3	0. 4	0. 5	62
64	0. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 4	0. 5	0. 6	64
66	0. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 4	0. 5	0. 7	66
68	0. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 4	0. 6	0. 7	68
70	0. 0	0. 0	0. 0	0. 1	0. 2	0. 2	0. 4	0. 5	0. 6	0. 8	70
71	0. 0	0. 0	0. 0	0. 1	0. 2	0. 3	0. 4	0. 5	0. 7	0. 9	71
72	0. 0	0. 0	0. 0	0. 1	0. 2	0. 3	0. 4	0. 5	0. 7	0. 9	72
73	0. 0	0. 0	0. 0	0. 1	0. 2	0. 3	0. 4	0. 6	0. 8	1. 0	73
74	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 5	0. 6	0. 8	1. 0	74
75	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 5	0. 7	0. 9	1. 1	75
76	0. 0	0. 0	0. 1	0. 1	0. 2	0. 4	0. 5	0. 7	0. 9	1. 2	76
77	0. 0	0. 0	0. 1	0. 1	0. 3	0. 4	0. 6	0. 8	1. 0	1. 3	77
78	0. 0	0. 0	0. 1	0. 2	0. 3	0. 4	0. 6	0. 8	1. 1	1. 4	78
79	0. 0	0. 0	0. 1	0. 2	0. 3	0. 5	0. 7	0. 9	1. 2	1. 5	79
80 . 0	0. 0	0. 0	0. 1	0. 2	0. 3	0. 5	0. 7	1. 0	1. 3	1. 7	80 . 0
80 . 5	0. 0	0. 0	0. 1	0. 2	0. 3	0. 5	0. 8	1. 1	1. 4	1. 8	80 . 5
81 . 0	0. 0	0. 0	0. 1	0. 2	0. 4	0. 6	0. 8	1. 1	1. 5	1. 9	81 . 0
81 . 5	0. 0	0. 0	0. 1	0. 2	0. 4	0. 6	0. 9	1. 2	1. 6	2. 0	81 . 5
82 . 0	0. 0	0. 0	0. 1	0. 2	0. 4	0. 6	0. 9	1. 3	1. 7	2. 1	82 . 0
82 . 5	0. 0	0. 0	0. 1	0. 2	0. 4	0. 7	1. 0	1. 4	1. 8	2. 2	82 . 5
83 . 0	0. 0	0. 0	0. 1	0. 3	0. 5	0. 7	1. 1	1. 5	1. 9	2. 4	83 . 0
83 . 5	0. 0	0. 0	0. 1	0. 3	0. 5	0. 8	1. 2	1. 6	2. 0	2. 6	83 . 5
84 . 0	0. 0	0. 0	0. 1	0. 3	0. 5	0. 9	1. 2	1. 7	2. 2	2. 8	84 . 0
84 . 5	0. 0	0. 0	0. 2	0. 3	0. 6	1. 0	1. 4	1. 9	2. 4	3. 1	84 . 5
85 . 0	0. 0	0. 0	0. 2	0. 4	0. 7	1. 0	1. 5	2. 1	2. 7	3. 4	85 . 0
85 . 5	0. 0	0. 0	0. 2	0. 4	0. 7	1. 2	1. 7	2. 3	3. 0	3. 8	85 . 5
86 . 0	0. 0	0. 1	0. 2	0. 5	0. 8	1. 3	1. 9	2. 6	3. 4	4. 3	86 . 0
86 . 5	0. 0	0. 1	0. 2	0. 5	1. 0	1. 5	2. 2	2. 9	3. 8	4. 9	86 . 5
87 . 0	0. 0	0. 1	0. 3	0. 6	1. 1	1. 7	2. 5	3. 4	4. 5	5. 7	87 . 0
87 . 5	0. 0	0. 1	0. 3	0. 8	1. 3	2. 1	3. 0	4. 1	5. 4	6. 9	87 . 5
88 . 0	0. 0	0. 1	0. 4	0. 9	1. 7	2. 7	3. 8	5. 2	6. 9	8. 8	88 . 0
88 . 5	0. 0	0. 2	0. 6	1. 3	2. 3	3. 5	5. 1	7. 1	9. 4	12. 1	88 . 5
89 . 0	0. 0	0. 3	0. 8	1. 9	3. 4	5. 5	8. 0	11. 3	15. 3	20. 3	89 . 0

TABLE 20

Meridian Angle and Altitude of a Body on the Prime Vertical Circle

Latitude	Declination (same name as Latitude) 0° t	0° Alt.	1° t	1° Alt.	2° t	2° Alt.	3° t	3° Alt.	4° t	4° Alt.	5° t	5° Alt.	Latitude
°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	—	—	*90. 0*	*0. 0*	*90. 0*	*0. 0*	*90. 0*	*0. 0*	*90. 0*	*0. 0*	*90. 0*	*0. 0*	0
1	90. 0	0. 0	0. 0	90. 0	*60. 0*	*30. 0*	*70. 5*	*19. 5*	*75. 5*	*14. 5*	*78. 5*	*11. 6*	1
2	90. 0	0. 0	60. 0	30. 0	0. 0	90. 0	*48. 2*	*41. 8*	*60. 0*	*30. 0*	*66. 5*	*23. 6*	2
3	90. 0	0. 0	70. 5	19. 5	48. 2	41. 8	0. 0	90. 0	*41. 5*	*48. 6*	*53. 2*	*36. 9*	3
4	90. 0	0. 0	75. 5	14. 5	60. 0	30. 0	41. 5	48. 6	0. 0	90. 0	*36. 9*	*53. 2*	4
5	90. 0	0. 0	78. 5	11. 6	66. 5	23. 6	53. 2	36. 9	36. 9	53. 2	0. 0	90. 0	5
6	90. 0	0. 0	80. 4	9. 6	70. 6	19. 5	60. 1	30. 0	48. 3	41. 9	33. 7	56. 5	6
7	90. 0	0. 0	81. 8	8. 2	73. 5	16. 6	64. 7	25. 4	55. 3	34. 9	44. 6	45. 7	7
8	90. 0	0. 0	82. 9	7. 2	75. 6	14. 5	68. 1	22. 1	60. 2	30. 1	51. 5	38. 8	8
9	90. 0	0. 0	83. 7	6. 4	77. 3	12. 9	70. 7	19. 5	63. 8	26. 5	56. 5	33. 9	9
10	90. 0	0. 0	84. 3	5. 8	78. 6	11. 6	72. 7	17. 5	66. 6	23. 7	60. 3	30. 1	10
11	90. 0	0. 0	84. 8	5. 2	79. 7	10. 5	74. 4	15. 9	68. 9	21. 4	63. 3	27. 2	11
12	90. 0	0. 0	85. 3	4. 8	80. 5	9. 7	75. 7	14. 6	70. 8	19. 6	65. 7	24. 8	12
13	90. 0	0. 0	85. 7	4. 4	81. 3	8. 9	76. 9	13. 5	72. 4	18. 1	67. 7	22. 8	13
14	90. 0	0. 0	86. 0	4. 1	81. 9	8. 3	77. 9	12. 5	73. 7	16. 8	69. 5	21. 1	14
15	90. 0	0. 0	86. 3	3. 9	82. 5	7. 7	78. 7	11. 7	74. 9	15. 6	70. 9	19. 7	15
16	90. 0	0. 0	86. 5	3. 6	83. 0	7. 3	79. 5	10. 9	75. 9	14. 7	72. 2	18. 4	16
17	90. 0	0. 0	86. 7	3. 4	83. 4	6. 9	80. 1	10. 3	76. 8	13. 8	73. 4	17. 3	17
18	90. 0	0. 0	86. 9	3. 2	83. 8	6. 5	80. 7	9. 8	77. 6	13. 0	74. 4	16. 4	18
19	90. 0	0. 0	87. 1	3. 1	84. 2	6. 2	81. 2	9. 3	78. 3	12. 4	75. 3	15. 5	19
20	90. 0	0. 0	87. 3	2. 9	84. 5	5. 9	81. 7	8. 8	78. 9	11. 8	76. 1	14. 8	20
21	90. 0	0. 0	87. 4	2. 8	84. 8	5. 6	82. 2	8. 4	79. 5	11. 2	76. 8	14. 1	21
22	90. 0	0. 0	87. 5	2. 7	85. 0	5. 3	82. 5	8. 0	80. 0	10. 7	77. 5	13. 5	22
23	90. 0	0. 0	87. 6	2. 6	85. 3	5. 1	82. 9	7. 7	80. 5	10. 3	78. 1	12. 9	23
24	90. 0	0. 0	87. 8	2. 5	85. 5	4. 9	83. 2	7. 4	81. 0	9. 9	78. 7	12. 4	24
25	90. 0	0. 0	87. 9	2. 4	85. 7	4. 7	83. 5	7. 1	81. 4	9. 5	79. 2	11. 9	25
26	90. 0	0. 0	87. 9	2. 3	85. 9	4. 6	83. 8	6. 9	81. 8	9. 2	79. 7	11. 5	26
27	90. 0	0. 0	88. 0	2. 2	86. 1	4. 4	84. 1	6. 6	82. 1	8. 8	80. 1	11. 1	27
28	90. 0	0. 0	88. 1	2. 1	86. 2	4. 3	84. 3	6. 4	82. 4	8. 5	80. 5	10. 7	28
29	90. 0	0. 0	88. 2	2. 1	86. 4	4. 1	84. 6	6. 2	82. 8	8. 3	80. 9	10. 4	29
30	90. 0	0. 0	88. 3	2. 0	86. 5	4. 0	84. 8	6. 0	83. 0	8. 0	81. 3	10. 0	30
31	90. 0	0. 0	88. 3	1. 9	86. 7	3. 9	85. 0	5. 8	83. 3	7. 8	81. 6	9. 7	31
32	90. 0	0. 0	88. 4	1. 9	86. 8	3. 8	85. 2	5. 7	83. 6	7. 6	82. 0	9. 5	32
33	90. 0	0. 0	88. 5	1. 8	86. 9	3. 7	85. 4	5. 5	83. 8	7. 4	82. 3	9. 2	33
34	90. 0	0. 0	88. 5	1. 8	87. 0	3. 6	85. 5	5. 4	84. 0	7. 2	82. 5	9. 0	34
35	90. 0	0. 0	88. 6	1. 7	87. 1	3. 5	85. 7	5. 2	84. 3	7. 0	82. 8	8. 7	35
36	90. 0	0. 0	88. 6	1. 7	87. 2	3. 4	85. 9	5. 1	84. 5	6. 8	83. 1	8. 5	36
37	90. 0	0. 0	88. 7	1. 7	87. 3	3. 3	86. 0	5. 0	84. 7	6. 7	83. 3	8. 3	37
38	90. 0	0. 0	88. 7	1. 6	87. 4	3. 2	86. 2	4. 9	84. 9	6. 5	83. 6	8. 1	38
39	90. 0	0. 0	88. 8	1. 6	87. 5	3. 2	86. 3	4. 8	85. 0	6. 4	83. 8	8. 0	39
40	90. 0	0. 0	88. 8	1. 6	87. 6	3. 1	86. 4	4. 7	85. 2	6. 2	84. 0	7. 8	40
41	90. 0	0. 0	88. 8	1. 5	87. 7	3. 0	86. 5	4. 6	85. 4	6. 1	84. 2	7. 6	41
42	90. 0	0. 0	88. 9	1. 5	87. 8	3. 0	86. 7	4. 5	85. 5	6. 0	84. 4	7. 5	42
43	90. 0	0. 0	88. 9	1. 5	87. 9	2. 9	86. 8	4. 4	85. 7	5. 9	84. 6	7. 3	43
44	90. 0	0. 0	89. 0	1. 4	87. 9	2. 9	86. 9	4. 3	85. 8	5. 8	84. 8	7. 2	44
45	90. 0	0. 0	89. 0	1. 4	88. 0	2. 8	87. 0	4. 2	86. 0	5. 7	85. 0	7. 1	45
46	90. 0	0. 0	89. 0	1. 4	88. 1	2. 8	87. 1	4. 2	86. 1	5. 6	85. 2	7. 0	46
47	90. 0	0. 0	89. 1	1. 4	88. 1	2. 7	87. 2	4. 1	86. 3	5. 5	85. 3	6. 8	47
48	90. 0	0. 0	89. 1	1. 3	88. 2	2. 7	87. 3	4. 0	86. 4	5. 4	85. 5	6. 7	48
49	90. 0	0. 0	89. 1	1. 3	88. 3	2. 7	87. 4	4. 0	86. 5	5. 3	85. 6	6. 6	49
50	90. 0	0. 0	89. 2	1. 3	88. 3	2. 6	87. 5	3. 9	86. 6	5. 2	85. 8	6. 5	50
52	90. 0	0. 0	89. 2	1. 3	88. 4	2. 5	87. 7	3. 8	86. 9	5. 1	86. 1	6. 4	52
54	90. 0	0. 0	89. 3	1. 2	88. 5	2. 5	87. 8	3. 7	87. 1	4. 9	86. 4	6. 2	54
56	90. 0	0. 0	89. 3	1. 2	88. 7	2. 4	88. 0	3. 6	87. 3	4. 8	86. 6	6. 0	56
58	90. 0	0. 0	89. 4	1. 2	88. 7	2. 4	88. 1	3. 5	87. 5	4. 7	86. 9	5. 9	58
60	90. 0	0. 0	89. 4	1. 2	88. 8	2. 3	88. 3	3. 5	87. 7	4. 6	87. 1	5. 8	60
65	90. 0	0. 0	89. 5	1. 1	89. 1	2. 2	88. 6	3. 3	88. 1	4. 4	87. 7	5. 5	65
70	90. 0	0. 0	89. 6	1. 1	89. 3	2. 1	88. 9	3. 2	88. 5	4. 3	88. 2	5. 3	70
75	90. 0	0. 0	89. 7	1. 0	89. 5	2. 1	89. 2	3. 1	88. 9	4. 1	88. 7	5. 2	75
80	90. 0	0. 0	89. 8	1. 0	89. 6	2. 0	89. 5	3. 0	89. 3	4. 1	89. 1	5. 1	80
85	90. 0	0. 0	89. 9	1. 0	89. 8	2. 0	89. 7	3. 0	89. 6	4. 0	89. 6	5. 0	85

Numbers in *italics* indicate nearest approach to prime vertical

TABLE 20

Meridian Angle and Altitude of a Body on the Prime Vertical Circle

Latitude	Declination (same name as Latitude) 6° t	6° Alt.	7° t	7° Alt.	8° t	8° Alt.	9° t	9° Alt.	10° t	10° Alt.	11° t	11° Alt.	Latitude
°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	*90. 0*	*0. 0*	*90. 0*	*0. 0*	*90. 0*	*0. 0*	*90. 0*	*0. 0*	*90. 0*	*0. 0*	*90. 0*	*0. 0*	0
1	*80. 4*	*9. 6*	*81. 8*	*8. 2*	*82. 9*	*7. 2*	*83. 7*	*6. 4*	*84. 3*	*5. 8*	*84. 8*	*5. 2*	1
2	*70. 6*	*19. 5*	*73. 5*	*16. 6*	*75. 6*	*14. 5*	*77. 3*	*12. 9*	*78. 6*	*11. 6*	*79. 7*	*10. 5*	2
3	*60. 1*	*30. 0*	*64. 7*	*25. 4*	*68. 1*	*22. 1*	*70. 7*	*19. 5*	*72. 7*	*17. 5*	*74. 4*	*15. 9*	3
4	*48. 3*	*41. 9*	*55. 3*	*34. 9*	*60. 2*	*30. 1*	*63. 8*	*26. 5*	*66. 6*	*23. 7*	*68. 9*	*21. 4*	4
5	*33. 7*	*56. 5*	*44. 6*	*45. 7*	*51. 5*	*38. 8*	*56. 5*	*33. 9*	*60. 3*	*30. 1*	*63. 3*	*27. 2*	5
6	0. 0	90. 0	*31. 1*	*59. 1*	*41. 6*	*48. 7*	*48. 4*	*41. 9*	*53. 4*	*37. 0*	*57. 3*	*33. 2*	6
7	31. 1	59. 1	0. 0	90. 0	*29. 1*	*61. 1*	*39. 2*	*51. 2*	*45. 9*	*44. 6*	*50. 8*	*39. 7*	7
8	41. 6	48. 7	29. 1	61. 1	0. 0	90. 0	*27. 5*	*62. 8*	*37. 2*	*53. 3*	*43. 7*	*46. 8*	8
9	48. 4	41. 9	39. 2	51. 2	27. 5	62. 8	0. 0	90. 0	*26. 1*	*64. 3*	*35. 4*	*55. 1*	9
10	53. 4	37. 0	45. 9	44. 6	37. 2	53. 3	26. 1	64. 3	0. 0	90. 0	*24. 9*	*65. 5*	10
11	57. 3	33. 2	50. 8	39. 7	43. 7	46. 8	35. 4	55. 1	24. 9	65. 5	0. 0	90. 0	11
12	60. 4	30. 2	54. 7	35. 9	48. 6	42. 0	41. 8	48. 8	33. 9	56. 6	23. 9	66. 6	12
13	62. 9	27. 7	57. 9	32. 8	52. 5	38. 2	46. 7	44. 1	40. 2	50. 5	32. 7	58. 0	13
14	65. 1	25. 6	60. 5	30. 2	55. 7	35. 1	50. 6	40. 3	45. 0	45. 9	38. 8	52. 1	14
15	66. 9	23. 8	62. 7	28. 1	58. 4	32. 5	53. 8	37. 2	48. 8	42. 1	43. 5	47. 5	15
16	68. 5	22. 3	64. 6	26. 2	60. 7	30. 3	56. 5	34. 6	52. 1	39. 0	47. 3	43. 8	16
17	69. 9	20. 9	66. 3	24. 6	62. 6	28. 4	58. 8	32. 3	54. 8	36. 4	50. 5	40. 7	17
18	71. 1	19. 8	67. 8	23. 2	64. 4	26. 8	60. 8	30. 4	57. 1	34. 2	53. 3	38. 1	18
19	72. 2	18. 7	69. 1	22. 0	65. 9	25. 3	62. 6	28. 7	59. 2	32. 2	55. 6	35. 9	19
20	73. 2	17. 8	70. 3	20. 9	67. 3	24. 0	64. 2	27. 2	61. 0	30. 5	57. 7	33. 9	20
21	74. 1	17. 0	71. 3	19. 9	68. 5	22. 9	65. 6	25. 9	62. 7	29. 0	59. 6	32. 2	21
22	74. 9	16. 2	72. 3	19. 0	69. 6	21. 8	66. 9	24. 7	64. 1	27. 6	61. 2	30. 6	22
23	75. 7	15. 5	73. 2	18. 2	70. 7	20. 9	68. 1	23. 6	65. 5	26. 4	62. 7	29. 2	23
24	76. 3	14. 9	74. 0	17. 4	71. 6	20. 0	69. 2	22. 6	66. 7	25. 3	64. 1	28. 0	24
25	77. 0	14. 3	74. 7	16. 8	72. 5	19. 2	70. 1	21. 7	67. 8	24. 3	65. 4	26. 8	25
26	77. 6	13. 8	75. 4	16. 1	73. 3	18. 5	71. 1	20. 9	68. 8	23. 3	66. 5	25. 8	26
27	78. 1	13. 3	76. 1	15. 6	74. 0	17. 9	71. 9	20. 2	69. 8	22. 5	67. 6	24. 9	27
28	78. 6	12. 9	76. 6	15. 0	74. 7	17. 2	72. 7	19. 5	70. 6	21. 7	68. 6	24. 0	28
29	79. 1	12. 5	77. 2	14. 6	75. 3	16. 7	73. 4	18. 8	71. 5	21. 0	69. 5	23. 2	29
30	79. 5	12. 1	77. 7	14. 1	75. 9	16. 2	74. 1	18. 2	72. 2	20. 3	70. 3	22. 4	30
31	79. 9	11. 7	78. 2	13. 7	76. 5	15. 7	74. 7	17. 7	72. 9	19. 7	71. 1	21. 7	31
32	80. 3	11. 4	78. 7	13. 3	77. 0	15. 2	75. 3	17. 2	73. 6	19. 1	71. 9	21. 1	32
33	80. 7	11. 1	79. 1	12. 9	77. 5	14. 8	75. 9	16. 7	74. 2	18. 6	72. 6	20. 5	33
34	81. 0	10. 8	79. 5	12. 6	78. 0	14. 4	76. 4	16. 2	74. 8	18. 1	73. 3	20. 0	34
35	81. 4	10. 5	79. 9	12. 3	78. 4	14. 0	76. 9	15. 8	75. 4	17. 6	73. 9	19. 4	35
36	81. 7	10. 2	80. 3	12. 0	78. 8	13. 7	77. 4	15. 4	76. 0	17. 2	74. 5	18. 9	36
37	82. 0	10. 0	80. 6	11. 7	79. 3	13. 4	77. 9	15. 1	76. 5	16. 8	75. 1	18. 5	37
38	82. 3	9. 8	81. 0	11. 4	79. 6	13. 1	78. 3	14. 7	77. 0	16. 4	75. 6	18. 1	38
39	82. 5	9. 6	81. 3	11. 2	80. 0	12. 8	78. 7	14. 4	77. 4	16. 0	76. 1	17. 6	39
40	82. 8	9. 4	81. 6	10. 9	80. 4	12. 5	79. 1	14. 1	77. 9	15. 7	76. 6	17. 3	40
41	83. 1	9. 2	81. 9	10. 7	80. 7	12. 2	79. 5	13. 8	78. 3	15. 3	77. 1	16. 9	41
42	83. 3	9. 0	82. 2	10. 5	81. 0	12. 0	79. 9	13. 5	78. 7	15. 0	77. 5	16. 6	42
43	83. 5	8. 8	82. 4	10. 3	81. 3	11. 8	80. 2	13. 3	79. 1	14. 8	78. 0	16. 2	43
44	83. 8	8. 7	82. 7	10. 1	81. 6	11. 6	80. 6	13. 0	79. 5	14. 5	78. 4	15. 9	44
45	84. 0	8. 5	82. 9	9. 9	81. 9	11. 4	80. 9	12. 8	79. 8	14. 2	78. 8	15. 7	45
46	84. 2	8. 4	83. 2	9. 8	82. 2	11. 2	81. 2	12. 6	80. 2	14. 0	79. 2	15. 4	46
47	84. 4	8. 2	83. 4	9. 6	82. 5	11. 0	81. 5	12. 4	80. 5	13. 7	79. 6	15. 1	47
48	84. 6	8. 1	83. 7	9. 4	82. 7	10. 8	81. 8	12. 2	80. 9	13. 5	79. 9	14. 9	48
49	84. 8	8. 0	83. 9	9. 3	83. 0	10. 6	82. 1	12. 0	81. 2	13. 3	80. 3	14. 6	49
50	84. 9	7. 8	84. 1	9. 2	83. 2	10. 5	82. 4	11. 8	81. 5	13. 1	80. 6	14. 4	50
52	85. 3	7. 6	84. 5	8. 9	83. 7	10. 2	82. 9	11. 5	82. 1	12. 7	81. 3	14. 0	52
54	85. 6	7. 4	84. 9	8. 7	84. 1	9. 9	83. 4	11. 1	82. 6	12. 4	81. 9	13. 6	54
56	85. 9	7. 2	85. 2	8. 5	84. 6	9. 7	83. 9	10. 9	83. 2	12. 1	82. 5	13. 3	56
58	86. 2	7. 1	85. 6	8. 3	85. 0	9. 4	84. 3	10. 6	83. 7	11. 8	83. 0	13. 0	58
60	86. 5	6. 9	85. 9	8. 1	85. 3	9. 2	84. 8	10. 4	84. 2	11. 6	83. 6	12. 7	60
65	87. 2	6. 6	86. 7	7. 7	86. 2	8. 8	85. 8	9. 9	85. 3	11. 0	84. 8	12. 2	65
70	87. 8	6. 4	87. 4	7. 5	87. 1	8. 5	86. 7	9. 6	86. 3	10. 6	85. 9	11. 7	70
75	88. 4	6. 2	88. 1	7. 2	87. 8	8. 3	87. 6	9. 3	87. 3	10. 4	87. 0	11. 4	75
80	88. 9	6. 1	88. 8	7. 1	88. 6	8. 1	88. 4	9. 1	88. 2	10. 2	88. 0	11. 2	80
85	89. 5	6. 0	89. 4	7. 0	89. 3	8. 0	89. 2	9. 0	89. 1	10. 0	89. 0	11. 0	85

Numbers in *italics* indicate nearest approach to prime vertical

TABLE 20

Meridian Angle and Altitude of a Body on the Prime Vertical Circle

Latitude	Declination (same name as Latitude)												Latitude
	12°		13°		14°		15°		16°		17°		
	t	Alt.	t	Alt.	t	Alt.	t	Alt.	t	Alt.	t	Alt.	
°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	90.0	0.0	90.0	0.0	90.0	0.0	90.0	0.0	90.0	0.0	90.0	0.0	0
1	*85.3*	*4.8*	*85.7*	*4.4*	*86.0*	*4.1*	*86.3*	*3.9*	*86.5*	*3.6*	*86.7*	*3.4*	1
2	*80.5*	*9.7*	*81.3*	*8.9*	*81.9*	*8.3*	*82.5*	*7.7*	*83.0*	*7.3*	*83.4*	*6.9*	2
3	*75.7*	*14.6*	*76.9*	*13.5*	*77.9*	*12.5*	*78.7*	*11.7*	*79.5*	*10.9*	*80.1*	*10.3*	3
4	*70.8*	*19.6*	*72.4*	*18.1*	*73.7*	*16.8*	*74.9*	*15.6*	*75.9*	*14.7*	*76.8*	*13.8*	4
5	*65.7*	*24.8*	*67.7*	*22.8*	*69.5*	*21.1*	*70.9*	*19.7*	*72.2*	*18.4*	*73.4*	*17.3*	5
6	*60.4*	*30.2*	*62.9*	*27.7*	*65.1*	*25.6*	*66.9*	*23.8*	*68.5*	*22.3*	*69.9*	*20.9*	6
7	*54.7*	*35.9*	*57.9*	*32.8*	*60.5*	*30.2*	*62.7*	*28.1*	*64.6*	*26.2*	*66.3*	*24.6*	7
8	*48.6*	*42.0*	*52.5*	*38.2*	*55.7*	*35.1*	*58.4*	*32.5*	*60.7*	*30.3*	*62.6*	*28.4*	8
9	*41.8*	*48.8*	*46.7*	*44.1*	*50.6*	*40.3*	*53.8*	*37.2*	*56.5*	*34.6*	*58.8*	*32.3*	9
10	*33.9*	*56.6*	*40.2*	*50.5*	*45.0*	*45.9*	*48.8*	*42.1*	*52.1*	*39.0*	*54.8*	*36.4*	10
11	*23.9*	*66.6*	*32.7*	*58.0*	*38.8*	*52.1*	*43.5*	*47.5*	*47.3*	*43.8*	*50.5*	*40.7*	11
12	0.0	90.0	*23.0*	*67.6*	*31.5*	*59.3*	*37.5*	*53.4*	*42.2*	*49.0*	*46.0*	*45.3*	12
13	23.0	67.6	0.0	90.0	*22.2*	*68.4*	*30.5*	*60.4*	*36.4*	*54.7*	*41.0*	*50.3*	13
14	31.5	59.3	22.2	68.4	0.0	90.0	*21.5*	*69.2*	*29.6*	*61.4*	*35.4*	*55.8*	14
15	37.5	53.4	30.5	60.4	21.5	69.2	0.0	90.0	*20.9*	*69.9*	*28.8*	*62.3*	15
16	42.2	49.0	36.4	54.7	29.6	61.4	20.9	69.9	0.0	90.0	*20.3*	*70.5*	16
17	46.0	45.3	41.0	50.3	35.4	55.8	28.8	62.3	20.3	70.5	0.0	90.0	17
18	49.1	42.3	44.7	46.7	39.9	51.5	34.4	56.9	28.1	63.1	19.8	71.1	18
19	51.9	39.7	47.9	43.7	43.6	48.0	38.9	52.7	33.6	57.8	27.4	63.9	19
20	54.3	37.4	50.6	41.1	46.8	45.0	42.6	49.2	38.0	53.7	32.9	58.7	20
21	56.4	35.5	53.0	38.9	49.5	42.5	45.7	46.2	41.7	50.3	37.2	54.7	21
22	58.3	33.7	55.2	36.9	51.9	40.2	48.5	43.7	44.8	47.4	40.8	51.3	22
23	60.0	32.1	57.1	35.1	54.0	38.3	50.9	41.5	47.5	44.9	43.9	48.4	23
24	61.5	30.7	58.8	33.6	55.9	36.5	53.0	39.5	49.9	42.7	46.6	46.0	24
25	62.9	29.5	60.3	32.2	57.7	34.9	54.9	37.8	52.1	40.7	49.0	43.8	25
26	64.2	28.3	61.7	30.9	59.3	33.5	56.7	36.2	54.0	39.0	51.2	41.8	26
27	65.3	27.3	63.1	29.7	60.7	32.2	58.3	34.8	55.8	37.4	53.1	40.1	27
28	66.4	26.3	64.3	28.6	62.0	31.0	59.7	33.5	57.4	36.0	54.9	38.5	28
29	67.5	25.4	65.4	27.6	63.3	29.9	61.1	32.3	58.8	34.6	56.5	37.1	29
30	68.4	24.6	66.4	26.7	64.4	28.9	62.3	31.2	60.2	33.5	58.0	35.8	30
31	69.3	23.8	67.4	25.9	65.5	28.0	63.5	30.2	61.5	32.4	59.4	34.6	31
32	70.1	23.1	68.3	25.1	66.5	27.2	64.6	29.2	62.7	31.3	60.7	33.5	32
33	70.9	22.4	69.2	24.4	67.4	26.4	65.6	28.4	63.8	30.4	61.9	32.5	33
34	71.6	21.8	70.0	23.7	68.3	25.6	66.6	27.6	64.8	29.5	63.0	31.5	34
35	72.3	21.3	70.7	23.1	69.1	24.9	67.5	26.8	65.8	28.7	64.1	30.6	35
36	73.0	20.7	71.5	22.5	69.9	24.3	68.4	26.1	66.8	28.0	65.1	29.8	36
37	73.6	20.2	72.2	21.9	70.7	23.7	69.2	25.5	67.6	27.3	66.1	29.1	37
38	74.2	19.7	72.8	21.4	71.4	23.1	69.9	24.9	68.5	26.6	67.0	28.4	38
39	74.8	19.3	73.4	20.9	72.1	22.6	70.7	24.3	69.3	26.0	67.8	27.7	39
40	75.3	18.9	74.0	20.5	72.7	22.1	71.4	23.7	70.0	25.4	68.6	27.1	40
41	75.8	18.5	74.6	20.1	73.3	21.6	72.0	23.2	70.7	24.8	69.4	26.5	41
42	76.3	18.1	75.1	19.6	73.9	21.2	72.7	22.8	71.4	24.3	70.2	25.9	42
43	76.8	17.7	75.7	19.3	74.5	20.8	73.3	22.3	72.1	23.8	70.9	25.4	43
44	77.3	17.4	76.2	18.9	75.0	20.4	73.9	21.9	72.7	23.4	71.5	24.9	44
45	77.7	17.1	76.7	18.5	75.6	20.0	74.5	21.5	73.3	22.9	72.2	24.4	45
46	78.2	16.8	77.1	18.2	76.1	19.7	75.0	21.1	73.9	22.5	72.8	24.0	46
47	78.6	16.5	77.6	17.9	76.6	19.3	75.5	20.7	74.5	22.1	73.4	23.6	47
48	79.0	16.2	78.0	17.6	77.0	19.0	76.0	20.4	75.0	21.8	74.0	23.2	48
49	79.4	16.0	78.4	17.3	77.5	18.7	76.5	20.1	75.6	21.4	74.6	22.8	49
50	79.7	15.7	78.8	17.1	77.9	18.4	77.0	19.7	76.1	21.1	75.1	22.4	50
52	80.4	15.3	79.6	16.6	78.8	17.9	77.9	19.2	77.1	20.5	76.2	21.8	52
54	81.1	14.9	80.3	16.1	79.6	17.4	78.8	18.7	78.0	19.9	77.2	21.2	54
56	81.8	14.5	81.0	15.7	80.3	17.0	79.6	18.2	78.8	19.4	78.1	20.7	56
58	82.4	14.2	81.7	15.4	81.0	16.6	80.4	17.8	79.7	19.0	79.0	20.2	58
60	83.0	13.9	82.3	15.1	81.7	16.2	81.1	17.4	80.5	18.6	79.8	19.7	60
65	84.3	13.3	83.8	14.4	83.3	15.5	82.8	16.6	82.3	17.7	81.8	18.8	65
70	85.6	12.8	85.2	13.8	84.8	14.9	84.4	16.0	84.0	17.1	83.6	18.1	70
75	86.7	12.4	86.5	13.5	86.2	14.5	85.9	15.5	85.6	16.6	85.3	17.6	75
80	87.9	12.2	87.7	13.2	87.5	14.2	87.3	15.2	87.1	16.3	86.9	17.3	80
85	88.9	12.0	88.8	13.1	88.8	14.1	88.7	15.1	88.6	16.1	88.5	17.1	85

Numbers in *italics* indicate nearest approach to prime vertical

TABLE 20

Meridian Angle and Altitude of a Body on the Prime Vertical Circle

Latitude	Declination (same name as Latitude)												Latitude
	18°		19°		20°		21°		22°		23°		
	t	Alt.	t	Alt.	t	Alt.	t	Alt.	t	Alt.	t	Alt.	
°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	*90.0*	*0.0*	90.0	*0.0*	90.0	*0.0*	90.0	*0.0*	90.0	*0.0*	90.0	*0.0*	0
1	*86.9*	*3.2*	*87.1*	*3.1*	*87.3*	*2.9*	*87.4*	*2.8*	*87.5*	*2.7*	*87.6*	*2.6*	1
2	*83.8*	*6.5*	*84.2*	*6.2*	*84.5*	*5.9*	*84.8*	*5.6*	*85.0*	*5.3*	*85.3*	*5.1*	2
3	*80.7*	*9.8*	*81.2*	*9.3*	*81.7*	*8.8*	*82.2*	*8.4*	*82.5*	*8.0*	*82.9*	*7.7*	3
4	*77.6*	*13.0*	*78.3*	*12.4*	*78.9*	*11.8*	*79.5*	*11.2*	*80.0*	*10.7*	*80.5*	*10.3*	4
5	*74.4*	*16.4*	*75.3*	*15.5*	*76.1*	*14.8*	*76.8*	*14.1*	*77.5*	*13.5*	*78.1*	*12.9*	5
6	*71.1*	*19.8*	*72.2*	*18.7*	*73.2*	*17.8*	*74.1*	*17.0*	*74.9*	*16.2*	*75.7*	*15.5*	6
7	*67.8*	*23.2*	*69.1*	*22.0*	*70.3*	*20.9*	*71.3*	*19.9*	*72.3*	*19.0*	*73.2*	*18.2*	7
8	*64.4*	*26.8*	*65.9*	*25.3*	*67.3*	*24.0*	*68.5*	*22.9*	*69.6*	*21.8*	*70.7*	*20.9*	8
9	*60.8*	*30.4*	*62.6*	*28.7*	*64.2*	*27.2*	*65.6*	*25.9*	*66.9*	*24.7*	*68.1*	*23.6*	9
10	*57.1*	*34.2*	*59.2*	*32.2*	*61.0*	*30.5*	*62.7*	*29.0*	*64.1*	*27.6*	*65.5*	*26.4*	10
11	*53.3*	*38.1*	*55.6*	*35.9*	*57.7*	*33.9*	*59.6*	*32.2*	*61.2*	*30.6*	*62.7*	*29.2*	11
12	*49.1*	*42.3*	*51.9*	*39.7*	*54.3*	*37.4*	*56.4*	*35.5*	*58.3*	*33.7*	*60.0*	*32.1*	12
13	*44.7*	*46.7*	*47.9*	*43.7*	*50.6*	*41.1*	*53.0*	*38.9*	*55.2*	*36.9*	*57.1*	*35.1*	13
14	*39.9*	*51.5*	*43.6*	*48.0*	*46.8*	*45.0*	*49.5*	*42.5*	*51.9*	*40.2*	*54.0*	*38.3*	14
15	*34.4*	*56.9*	*38.9*	*52.7*	*42.6*	*49.2*	*45.7*	*46.2*	*48.5*	*43.7*	*50.9*	*41.5*	15
16	*28.1*	*63.1*	*33.6*	*57.8*	*38.0*	*53.7*	*41.7*	*50.3*	*44.8*	*47.4*	*47.5*	*44.9*	16
17	*19.8*	*71.1*	*27.4*	*63.9*	*32.9*	*58.7*	*37.2*	*54.7*	*40.8*	*51.3*	*43.9*	*48.4*	17
18	0.0	90.0	*19.3*	*71.7*	*26.8*	*64.6*	*32.2*	*59.6*	*36.5*	*55.6*	*40.1*	*52.3*	18
19	19.3	71.7	0.0	90.0	*18.9*	*72.2*	*26.2*	*65.3*	*31.5*	*60.4*	*35.8*	*56.4*	19
20	26.8	64.6	18.9	72.2	0.0	90.0	*18.5*	*72.6*	*25.7*	*65.9*	*31.0*	*61.1*	20
21	32.2	59.6	26.2	65.3	18.5	72.6	0.0	90.0	*18.2*	*73.1*	*25.3*	*66.5*	21
22	36.5	55.6	31.5	60.4	25.7	65.9	18.2	73.1	0.0	90.0	*17.9*	*73.5*	22
23	40.1	52.3	35.8	56.4	31.0	61.1	25.3	66.5	17.9	73.5	0.0	90.0	23
24	43.1	49.4	39.3	53.2	35.2	57.2	30.4	61.8	24.8	67.1	17.6	73.9	24
25	45.8	47.0	42.4	50.4	38.7	54.0	34.6	58.0	30.0	62.4	24.5	67.6	25
26	48.2	44.8	45.1	48.0	41.7	51.3	38.1	54.8	34.1	58.7	29.5	63.0	26
27	50.4	42.9	47.5	45.8	44.4	48.9	41.1	52.1	37.5	55.6	33.6	59.4	27
28	52.3	41.2	49.6	43.9	46.8	46.8	43.8	49.8	40.5	52.9	37.0	56.3	28
29	54.1	39.6	51.6	42.2	49.0	44.9	46.2	47.7	43.2	50.6	40.0	53.7	29
30	55.8	38.2	53.4	40.6	50.9	43.2	48.3	45.8	45.6	48.5	42.7	51.4	30
31	57.3	36.9	55.0	39.2	52.7	41.6	50.3	44.1	47.7	46.7	45.1	49.3	31
32	58.7	35.7	56.6	37.9	54.4	40.2	52.1	42.6	49.7	45.0	47.2	47.5	32
33	60.0	34.6	58.0	36.7	55.9	38.9	53.8	41.1	51.5	43.5	49.2	45.8	33
34	61.2	33.5	59.3	35.6	57.3	37.7	55.3	39.9	53.2	42.1	51.0	44.3	34
35	62.4	32.6	60.5	34.6	58.7	36.6	56.8	38.7	54.8	40.8	52.7	42.9	35
36	63.4	31.7	61.7	33.6	59.9	35.6	58.1	37.6	56.2	39.6	54.3	41.7	36
37	64.5	30.9	62.8	32.8	61.1	34.6	59.4	36.5	57.6	38.5	55.7	40.5	37
38	65.4	30.1	63.9	31.9	62.2	33.7	60.6	35.6	58.9	37.5	57.1	39.4	38
39	66.3	29.4	64.8	31.2	63.3	32.9	61.7	34.7	60.1	36.5	58.4	38.4	39
40	67.2	28.7	65.8	30.4	64.3	32.1	62.8	33.9	61.2	35.6	59.6	37.4	40
41	68.1	28.1	66.7	29.8	65.2	31.4	63.8	33.1	62.3	34.8	60.8	36.6	41
42	68.8	27.5	67.5	29.1	66.2	30.7	64.8	32.4	63.3	34.0	61.9	35.7	42
43	69.6	26.9	68.3	28.5	67.0	30.1	65.7	31.7	64.3	33.3	62.9	35.0	43
44	70.3	26.4	69.1	27.9	67.9	29.5	66.6	31.1	65.3	32.6	63.9	34.2	44
45	71.0	25.9	69.9	27.4	68.7	28.9	67.4	30.5	66.2	32.0	64.9	33.5	45
46	71.7	25.4	70.6	26.9	69.4	28.4	68.2	29.9	67.0	31.4	65.8	32.9	46
47	72.4	25.0	71.3	26.4	70.2	27.9	69.0	29.3	67.9	30.8	66.7	32.3	47
48	73.0	24.6	71.9	26.0	70.9	27.4	69.8	28.8	68.7	30.3	67.5	31.7	48
49	73.6	24.2	72.6	25.6	71.6	26.9	70.5	28.3	69.4	29.8	68.3	31.2	49
50	74.2	23.8	73.2	25.2	72.2	26.5	71.2	27.9	70.2	29.3	69.1	30.7	50
52	75.3	23.1	74.4	24.4	73.5	25.7	72.5	27.1	71.6	28.4	70.6	29.7	52
54	76.3	22.5	75.5	23.7	74.7	25.0	73.8	26.3	72.9	27.6	72.0	28.9	54
56	77.3	21.9	76.6	23.1	75.8	24.4	75.0	25.6	74.2	26.9	73.4	28.1	56
58	78.3	21.4	77.6	22.6	76.9	23.8	76.1	25.0	75.4	26.2	74.6	27.4	58
60	79.2	20.9	78.5	22.1	77.9	23.3	77.2	24.4	76.5	25.6	75.8	26.8	60
65	81.3	19.9	80.8	21.1	80.2	22.2	79.7	23.3	79.1	24.4	78.6	25.5	65
70	83.2	19.2	82.8	20.3	82.4	21.3	82.0	22.4	81.5	23.5	81.1	24.6	70
75	85.0	18.7	84.7	19.7	84.4	20.7	84.1	21.8	83.8	22.8	83.5	23.9	75
80	86.7	18.3	86.5	19.3	86.3	20.3	86.1	21.3	85.9	22.4	85.7	23.4	80
85	88.4	18.1	88.3	19.1	88.2	20.1	88.1	21.1	88.0	22.1	87.9	23.1	85

Numbers in *italics* indicate nearest approach to prime vertical

TABLE 21

Latitude and Longitude Factors

f, the change of latitude for a unit change in longitude
F, the change of longitude for a unit change in latitude

Azimuth angle	Latitude 0°		2°		4°		6°		8°		Azimuth angle
	f	F	f	F	f	F	f	F	f	F	
°											°
0	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	180
1	0. 02	57. 29	0. 02	57. 32	0. 02	57. 43	0. 02	57. 61	0. 02	57. 85	179
2	0. 03	28. 64	0. 03	28. 65	0. 03	28. 71	0. 03	28. 79	0. 03	28. 92	178
3	0. 05	19. 08	0. 05	19. 09	0. 05	19. 13	0. 05	19. 19	0. 05	19. 27	177
4	0. 07	14. 30	0. 07	14. 31	0. 07	14. 34	0. 07	14. 38	0. 07	14. 44	176
5	0. 09	11. 43	0. 09	11. 44	0. 09	11. 46	0. 09	11. 49	0. 09	11. 54	175
6	0. 11	9. 51	0. 11	9. 52	0. 10	9. 54	0. 10	9. 57	0. 10	9. 61	174
7	0. 12	8. 14	0. 12	8. 15	0. 12	8. 16	0. 12	8. 19	0. 12	8. 22	173
8	0. 14	7. 12	0. 14	7. 12	0. 14	7. 13	0. 14	7. 15	0. 14	7. 18	172
9	0. 16	6. 31	0. 16	6. 32	0. 16	6. 33	0. 16	6. 35	0. 16	6. 38	171
10	0. 18	5. 67	0. 18	5. 68	0. 18	5. 69	0. 18	5. 70	0. 17	5. 73	170
12	0. 21	4. 70	0. 21	4. 71	0. 21	4. 72	0. 21	4. 73	0. 21	4. 75	168
14	0. 25	4. 01	0. 25	4. 01	0. 25	4. 02	0. 25	4. 03	0. 25	4. 05	166
16	0. 29	3. 49	0. 29	3. 49	0. 29	3. 50	0. 28	3. 51	0. 28	3. 52	164
18	0. 32	3. 08	0. 32	3. 08	0. 32	3. 08	0. 32	3. 10	0. 32	3. 11	162
20	0. 36	2. 75	0. 36	2. 75	0. 36	2. 75	0. 36	2. 76	0. 36	2. 77	160
22	0. 40	2. 48	0. 40	2. 48	0. 40	2. 48	0. 40	2. 49	0. 40	2. 50	158
24	0. 45	2. 25	0. 44	2. 25	0. 44	2. 25	0. 44	2. 26	0. 44	2. 27	156
26	0. 49	2. 05	0. 49	2. 06	0. 49	2. 06	0. 49	2. 06	0. 48	2. 07	154
28	0. 53	1. 88	0. 53	1. 88	0. 53	1. 88	0. 53	1. 89	0. 53	1. 90	152
30	0. 58	1. 73	0. 58	1. 73	0. 57	1. 74	0. 57	1. 74	0. 57	1. 75	150
32	0. 62	1. 60	0. 62	1. 60	0. 62	1. 60	0. 62	1. 61	0. 62	1. 62	148
34	0. 67	1. 48	0. 67	1. 48	0. 67	1. 49	0. 67	1. 49	0. 67	1. 50	146
36	0. 73	1. 38	0. 73	1. 38	0. 72	1. 38	0. 72	1. 38	0. 72	1. 39	144
38	0. 78	1. 28	0. 78	1. 28	0. 78	1. 28	0. 78	1. 29	0. 78	1. 29	142
40	0. 84	1. 19	0. 84	1. 19	0. 84	1. 19	0. 83	1. 20	0. 83	1. 20	140
42	0. 90	1. 11	0. 90	1. 11	0. 90	1. 11	0. 90	1. 12	0. 89	1. 12	138
44	0. 97	1. 04	0. 97	1. 04	0. 96	1. 04	0. 96	1. 04	0. 96	1. 05	136
46	1. 04	0. 97	1. 04	0. 97	1. 03	0. 97	1. 03	0. 97	1. 03	0. 98	134
48	1. 11	0. 90	1. 11	0. 90	1. 11	0. 90	1. 11	0. 90	1. 10	0. 91	132
50	1. 19	0. 84	1. 19	0. 84	1. 19	0. 84	1. 19	0. 84	1. 18	0. 85	130
52	1. 28	0. 78	1. 28	0. 78	1. 28	0. 78	1. 27	0. 79	1. 27	0. 79	128
54	1. 38	0. 73	1. 38	0. 73	1. 37	0. 73	1. 37	0. 73	1. 36	0. 73	126
56	1. 48	0. 67	1. 48	0. 67	1. 48	0. 68	1. 47	0. 68	1. 47	0. 68	124
58	1. 60	0. 62	1. 60	0. 63	1. 60	0. 63	1. 59	0. 63	1. 58	0. 63	122
60	1. 73	0. 58	1. 73	0. 58	1. 73	0. 58	1. 72	0. 58	1. 72	0. 58	120
62	1. 88	0. 53	1. 88	0. 53	1. 88	0. 53	1. 87	0. 53	1. 86	0. 54	118
64	2. 05	0. 49	2. 05	0. 49	2. 05	0. 49	2. 04	0. 49	2. 03	0. 49	116
66	2. 25	0. 45	2. 24	0. 45	2. 24	0. 45	2. 23	0. 45	2. 22	0. 45	114
68	2. 48	0. 40	2. 47	0. 40	2. 47	0. 40	2. 46	0. 40	2. 45	0. 41	112
70	2. 75	0. 36	2. 75	0. 36	2. 74	0. 36	2. 73	0. 37	2. 72	0. 37	110
72	3. 08	0. 32	3. 08	0. 33	3. 07	0. 33	3. 06	0. 33	3. 05	0. 33	108
74	3. 49	0. 29	3. 49	0. 29	3. 48	0. 29	3. 47	0. 29	3. 45	0. 29	106
76	4. 01	0. 25	4. 01	0. 25	4. 00	0. 25	3. 99	0. 25	3. 97	0. 25	104
78	4. 70	0. 21	4. 70	0. 21	4. 69	0. 21	4. 68	0. 21	4. 66	0. 21	102
80	5. 67	0. 18	5. 67	0. 18	5. 66	0. 18	5. 64	0. 18	5. 62	0. 18	100
81	6. 31	0. 16	6. 31	0. 16	6. 30	0. 16	6. 28	0. 16	6. 25	0. 16	99
82	7. 12	0. 14	7. 11	0. 14	7. 10	0. 14	7. 07	0. 14	7. 05	0. 14	98
83	8. 14	0. 12	8. 14	0. 12	8. 12	0. 12	8. 10	0. 12	8. 07	0. 12	97
84	9. 51	0. 11	9. 51	0. 11	9. 49	0. 11	9. 46	0. 11	9. 42	0. 11	96
85	11. 43	0. 09	11. 42	0. 09	11. 40	0. 09	11. 37	0. 09	11. 32	0. 09	95
86	14. 30	0. 07	14. 29	0. 07	14. 27	0. 07	14. 22	0. 07	14. 16	0. 07	94
87	19. 08	0. 05	19. 07	0. 05	19. 03	0. 05	18. 98	0. 05	18. 91	0. 05	93
88	28. 64	0. 03	28. 62	0. 03	28. 57	0. 03	28. 48	0. 03	28. 36	0. 03	92
89	57. 29	0. 02	57. 26	0. 02	57. 15	0. 02	56. 98	0. 02	56. 73	0. 02	91
90	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 00	90
	0°		2°		4°		6°		8°		

Correction to latitude = f error in longitude

Correction to longitude = F error in latitude

TABLE 21

Latitude and Longitude Factors

f, the change of latitude for a unit change in longitude
F, the change of longitude for a unit change in latitude

Azimuth angle	Latitude 10°		12°		14°		16°		18°		Azimuth angle
	f	F	f	F	f	F	f	F	f	F	
°											°
0	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	180
1	0. 02	58. 17	0. 02	58. 57	0. 02	59. 04	0. 02	59. 60	0. 02	60. 24	179
2	0. 03	29. 08	0. 03	29. 28	0. 03	29. 51	0. 03	29. 79	0. 03	30. 11	178
3	0. 05	19. 38	0. 05	19. 51	0. 05	19. 67	0. 05	19. 85	0. 05	20. 06	177
4	0. 07	14. 52	0. 07	14. 62	0. 07	14. 74	0. 07	14. 88	0. 07	15. 04	176
5	0. 09	11. 61	0. 09	11. 69	0. 08	11. 78	0. 08	11. 89	0. 08	12. 02	175
6	0. 10	9. 66	0. 10	9. 73	0. 10	9. 81	0. 10	9. 90	0. 10	10. 00	174
7	0. 12	8. 27	0. 12	8. 33	0. 12	8. 39	0. 12	8. 47	0. 12	8. 56	173
8	0. 14	7. 22	0. 14	7. 27	0. 14	7. 33	0. 14	7. 40	0. 13	7. 48	172
9	0. 16	6. 41	0. 15	6. 45	0. 15	6. 51	0. 15	6. 57	0. 15	6. 64	171
10	0. 17	5. 76	0. 17	5. 80	0. 17	5. 85	0. 17	5. 90	0. 17	5. 96	170
12	0. 21	4. 78	0. 21	4. 81	0. 21	4. 85	0. 20	4. 89	0. 20	4. 95	168
14	0. 25	4. 07	0. 24	4. 10	0. 24	4. 13	0. 24	4. 17	0. 24	4. 22	166
16	0. 28	3. 54	0. 28	3. 56	0. 28	3. 59	0. 28	3. 63	0. 27	3. 67	164
18	0. 32	3. 13	0. 32	3. 15	0. 32	3. 17	0. 31	3. 20	0. 31	3. 24	162
20	0. 36	2. 79	0. 36	2. 81	0. 35	2. 83	0. 35	2. 86	0. 35	2. 89	160
22	0. 40	2. 51	0. 40	2. 53	0. 39	2. 55	0. 39	2. 57	0. 38	2. 60	158
24	0. 44	2. 28	0. 44	2. 30	0. 43	2. 32	0. 43	2. 34	0. 42	2. 36	156
26	0. 48	2. 08	0. 48	2. 10	0. 47	2. 11	0. 47	2. 13	0. 46	2. 16	154
28	0. 52	1. 91	0. 52	1. 92	0. 52	1. 94	0. 51	1. 96	0. 51	1. 98	152
30	0. 57	1. 76	0. 56	1. 77	0. 56	1. 78	0. 56	1. 80	0. 55	1. 82	150
32	0. 62	1. 63	0. 61	1. 64	0. 61	1. 65	0. 60	1. 66	0. 59	1. 68	148
34	0. 66	1. 50	0. 66	1. 52	0. 65	1. 53	0. 65	1. 54	0. 64	1. 56	146
36	0. 72	1. 40	0. 71	1. 41	0. 70	1. 42	0. 70	1. 43	0. 69	1. 45	144
38	0. 77	1. 30	0. 76	1. 31	0. 76	1. 32	0. 75	1. 33	0. 74	1. 35	142
40	0. 83	1. 21	0. 82	1. 22	0. 81	1. 23	0. 81	1. 24	0. 80	1. 25	140
42	0. 88	1. 13	0. 88	1. 14	0. 88	1. 14	0. 87	1. 15	0. 85	1. 17	138
44	0. 95	1. 05	0. 94	1. 06	0. 94	1. 07	0. 93	1. 08	0. 92	1. 09	136
46	1. 02	0. 98	1. 01	0. 99	1. 01	1. 00	1. 00	1. 01	0. 99	1. 02	134
48	1. 10	0. 91	1. 09	0. 92	1. 08	0. 93	1. 07	0. 94	1. 06	0. 95	132
50	1. 17	0. 85	1. 17	0. 86	1. 16	0. 87	1. 15	0. 87	1. 13	0. 88	130
52	1. 26	0. 79	1. 25	0. 80	1. 24	0. 80	1. 23	0. 81	1. 22	0. 82	128
54	1. 36	0. 74	1. 35	0. 74	1. 34	0. 75	1. 32	0. 76	1. 31	0. 76	126
56	1. 46	0. 68	1. 45	0. 69	1. 44	0. 69	1. 43	0. 70	1. 41	0. 71	124
58	1. 58	0. 63	1. 57	0. 64	1. 55	0. 64	1. 54	0. 65	1. 52	0. 66	122
60	1. 71	0. 59	1. 69	0. 59	1. 68	0. 60	1. 67	0. 60	1. 65	0. 61	120
62	1. 85	0. 54	1. 84	0. 54	1. 83	0. 55	1. 81	0. 55	1. 79	0. 56	118
64	2. 02	0. 50	2. 01	0. 50	1. 99	0. 50	1. 97	0. 51	1. 95	0. 51	116
66	2. 21	0. 45	2. 20	0. 46	2. 18	0. 46	2. 16	0. 46	2. 14	0. 47	114
68	2. 44	0. 41	2. 42	0. 41	2. 40	0. 42	2. 38	0. 42	2. 35	0. 42	112
70	2. 71	0. 37	2. 69	0. 37	2. 67	0. 37	2. 64	0. 38	2. 61	0. 38	110
72	3. 03	0. 33	3. 01	0. 33	2. 99	0. 33	2. 96	0. 34	2. 93	0. 34	108
74	3. 43	0. 29	3. 41	0. 29	3. 38	0. 30	3. 35	0. 30	3. 32	0. 30	106
76	3. 95	0. 25	3. 92	0. 25	3. 89	0. 26	3. 86	0. 26	3. 81	0. 26	104
78	4. 63	0. 22	4. 60	0. 22	4. 56	0. 22	4. 52	0. 22	4. 47	0. 22	102
80	5. 59	0. 18	5. 55	0. 18	5. 50	0. 18	5. 45	0. 18	5. 39	0. 18	100
81	6. 22	0. 16	6. 18	0. 16	6. 13	0. 16	6. 07	0. 16	6. 01	0. 17	99
82	7. 01	0. 14	6. 96	0. 14	6. 90	0. 14	6. 84	0. 15	6. 77	0. 15	98
83	8. 02	0. 12	7. 97	0. 13	7. 90	0. 13	7. 83	0. 13	7. 75	0. 13	97
84	9. 37	0. 11	9. 31	0. 11	9. 23	0. 11	9. 15	0. 11	9. 05	0. 11	96
85	11. 25	0. 09	11. 18	0. 09	11. 09	0. 09	10. 99	0. 09	10. 87	0. 09	95
86	14. 08	0. 07	13. 99	0. 07	13. 88	0. 07	13. 75	0. 07	13. 60	0. 07	94
87	18. 79	0. 05	18. 66	0. 05	18. 51	0. 05	18. 34	0. 05	18. 15	0. 05	93
88	28. 20	0. 03	28. 01	0. 04	27. 79	0. 04	27. 53	0. 04	27. 23	0. 04	92
89	56. 42	0. 02	56. 04	0. 02	55. 59	0. 02	55. 07	0. 02	54. 49	0. 02	91
90	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 00	90
	10°		12°		14°		16°		18°		

Correction to latitude = f error in longitude

Correction to longitude = F error in latitude

TABLE 21

Latitude and Longitude Factors

f, the change of latitude for a unit change in longitude
F, the change of longitude for a unit change in latitude

Azimuth angle	Latitude 20°		22°		24°		26°		28°		Azimuth angle
	f	F	f	F	f	F	f	F	f	F	
°											°
0	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	180
1	0. 02	60. 97	0. 02	61. 79	0. 02	62. 71	0. 02	63. 74	0. 02	64. 88	179
2	0. 03	30. 47	0. 03	30. 89	0. 03	31. 35	0. 03	31. 86	0. 03	32. 43	178
3	0. 05	20. 31	0. 05	20. 58	0. 05	20. 89	0. 05	21. 23	0. 05	21. 61	177
4	0. 07	15. 22	0. 06	15. 42	0. 06	15. 65	0. 06	15. 91	0. 06	16. 20	176
5	0. 08	12. 16	0. 08	12. 33	0. 08	12. 51	0. 08	12. 72	0. 08	12. 95	175
6	0. 10	10. 12	0. 10	10. 26	0. 10	10. 41	0. 09	10. 59	0. 09	10. 78	174
7	0. 12	8. 67	0. 11	8. 78	0. 11	8. 91	0. 11	9. 06	0. 11	9. 22	173
8	0. 13	7. 57	0. 13	7. 67	0. 13	7. 79	0. 13	7. 92	0. 12	8. 06	172
9	0. 15	6. 72	0. 15	6. 81	0. 14	6. 91	0. 14	7. 02	0. 14	7. 15	171
10	0. 17	6. 03	0. 16	6. 12	0. 16	6. 21	0. 16	6. 31	0. 16	6. 42	170
12	0. 20	5. 01	0. 20	5. 07	0. 19	5. 15	0. 19	5. 23	0. 19	5. 33	168
14	0. 23	4. 27	0. 23	4. 33	0. 23	4. 39	0. 22	4. 46	0. 22	4. 54	166
16	0. 27	3. 71	0. 27	3. 76	0. 26	3. 82	0. 26	3. 88	0. 25	3. 95	164
18	0. 30	3. 28	0. 30	3. 32	0. 30	3. 37	0. 29	3. 42	0. 29	3. 49	162
20	0. 34	2. 92	0. 34	2. 96	0. 33	3. 01	0. 33	3. 06	0. 32	3. 11	160
22	0. 38	2. 63	0. 38	2. 67	0. 37	2. 71	0. 36	2. 75	0. 36	2. 80	158
24	0. 42	2. 39	0. 41	2. 42	0. 41	2. 46	0. 40	2. 50	0. 39	2. 54	156
26	0. 46	2. 18	0. 45	2. 21	0. 45	2. 24	0. 44	2. 28	0. 43	2. 32	154
28	0. 50	2. 00	0. 49	2. 03	0. 49	2. 06	0. 48	2. 09	0. 47	2. 13	152
30	0. 54	1. 84	0. 53	1. 87	0. 53	1. 90	0. 52	1. 93	0. 51	1. 96	150
32	0. 59	1. 70	0. 58	1. 73	0. 57	1. 75	0. 56	1. 78	0. 55	1. 81	148
34	0. 63	1. 58	0. 63	1. 60	0. 62	1. 62	0. 61	1. 65	0. 60	1. 68	146
36	0. 68	1. 47	0. 67	1. 48	0. 66	1. 51	0. 65	1. 53	0. 64	1. 56	144
38	0. 74	1. 36	0. 72	1. 38	0. 71	1. 40	0. 70	1. 42	0. 69	1. 45	142
40	0. 79	1. 27	0. 78	1. 28	0. 77	1. 30	0. 75	1. 33	0. 74	1. 35	140
42	0. 85	1. 18	0. 83	1. 20	0. 82	1. 22	0. 81	1. 24	0. 80	1. 26	138
44	0. 91	1. 10	0. 90	1. 12	0. 88	1. 13	0. 87	1. 15	0. 85	1. 17	136
46	0. 97	1. 03	0. 96	1. 04	0. 95	1. 06	0. 93	1. 07	0. 91	1. 09	134
48	1. 04	0. 96	1. 03	0. 97	1. 02	0. 99	1. 00	1. 00	0. 98	1. 02	132
50	1. 12	0. 89	1. 10	0. 91	1. 09	0. 92	1. 07	0. 93	1. 05	0. 95	130
52	1. 20	0. 83	1. 19	0. 84	1. 17	0. 85	1. 15	0. 87	1. 13	0. 88	128
54	1. 29	0. 77	1. 28	0. 78	1. 26	0. 79	1. 24	0. 81	1. 22	0. 82	126
56	1. 39	0. 72	1. 38	0. 73	1. 35	0. 74	1. 33	0. 75	1. 31	0. 76	124
58	1. 50	0. 66	1. 48	0. 67	1. 46	0. 68	1. 44	0. 70	1. 41	0. 71	122
60	1. 63	0. 61	1. 61	0. 62	1. 58	0. 63	1. 56	0. 64	1. 53	0. 65	120
62	1. 77	0. 57	1. 74	0. 57	1. 72	0. 58	1. 69	0. 59	1. 66	0. 60	118
64	1. 93	0. 52	1. 90	0. 53	1. 87	0. 53	1. 84	0. 54	1. 81	0. 55	116
66	2. 11	0. 47	2. 08	0. 48	2. 05	0. 49	2. 02	0. 50	1. 98	0. 50	114
68	2. 33	0. 43	2. 30	0. 44	2. 26	0. 44	2. 23	0. 45	2. 18	0. 46	112
70	2. 58	0. 39	2. 55	0. 39	2. 51	0. 40	2. 47	0. 40	2. 43	0. 41	110
72	2. 89	0. 35	2. 85	0. 35	2. 81	0. 36	2. 77	0. 36	2. 72	0. 37	108
74	3. 28	0. 31	3. 23	0. 31	3. 19	0. 31	3. 14	0. 32	3. 08	0. 33	106
76	3. 77	0. 27	3. 72	0. 27	3. 66	0. 27	3. 61	0. 28	3. 54	0. 28	104
78	4. 42	0. 23	4. 36	0. 23	4. 30	0. 23	4. 23	0. 24	4. 15	0. 24	102
80	5. 33	0. 19	5. 26	0. 19	5. 18	0. 19	5. 10	0. 20	5. 01	0. 20	100
81	5. 93	0. 17	5. 86	0. 17	5. 77	0. 17	5. 68	0. 18	5. 58	0. 18	99
82	6. 69	0. 15	6. 60	0. 15	6. 50	0. 15	6. 40	0. 16	6. 28	0. 16	98
83	7. 65	0. 13	7. 55	0. 13	7. 44	0. 13	7. 32	0. 14	7. 19	0. 14	97
84	8. 94	0. 11	8. 82	0. 11	8. 69	0. 12	8. 55	0. 12	8. 40	0. 12	96
85	10. 74	0. 09	10. 60	0. 09	10. 44	0. 10	10. 26	0. 10	10. 09	0. 10	95
86	13. 44	0. 07	13. 26	0. 08	13. 07	0. 08	12. 86	0. 08	12. 63	0. 08	94
87	17. 93	0. 06	17. 69	0. 06	17. 43	0. 06	17. 15	0. 06	16. 85	0. 06	93
88	26. 91	0. 04	26. 55	0. 04	26. 16	0. 04	25. 74	0. 04	25. 28	0. 04	92
89	53. 84	0. 02	53. 12	0. 02	52. 33	0. 02	51. 50	0. 02	50. 58	0. 02	91
90	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 00	90
	20°		22°		24°		26°		28°		

Correction to latitude = f error in longitude

Correction to longitude = F error in latitude

TABLE 21

Latitude and Longitude Factors

f, the change of latitude for a unit change in longitude
F, the change of longitude for a unit change in latitude

Azimuth angle	Latitude 30°		32°		34°		36°		38°		Azimuth angle
	f	F	f	F	f	F	f	F	f	F	
°											°
0	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	180
1	0. 02	66. 15	0. 01	67. 56	0. 01	69. 10	0. 01	70. 81	0. 01	72. 70	179
2	0. 03	33. 07	0. 03	33. 77	0. 03	34. 54	0. 03	35. 40	0. 03	36. 34	178
3	0. 05	22. 03	0. 05	22. 50	0. 04	23. 02	0. 04	23. 59	0. 04	24. 21	177
4	0. 06	16. 51	0. 06	16. 86	0. 06	17. 25	0. 06	17. 68	0. 06	18. 15	176
5	0. 08	13. 20	0. 07	13. 48	0. 07	13. 79	0. 07	14. 13	0. 07	14. 50	175
6	0. 09	10. 99	0. 09	11. 22	0. 09	11. 48	0. 09	11. 76	0. 08	12. 07	174
7	0. 11	9. 40	0. 10	9. 60	0. 10	9. 82	0. 10	10. 07	0. 10	10. 34	173
8	0. 12	8. 22	0. 12	8. 39	0. 12	8. 58	0. 11	8. 79	0. 11	9. 03	172
9	0. 14	7. 29	0. 13	7. 45	0. 13	7. 62	0. 13	7. 80	0. 12	8. 01	171
10	0. 15	6. 55	0. 15	6. 69	0. 15	6. 84	0. 14	7. 01	0. 14	7. 20	170
12	0. 18	5. 43	0. 18	5. 55	0. 18	5. 67	0. 17	5. 82	0. 17	5. 97	168
14	0. 22	4. 63	0. 21	4. 73	0. 21	4. 84	0. 20	4. 96	0. 20	5. 09	166
16	0. 25	4. 03	0. 24	4. 11	0. 24	4. 21	0. 23	4. 31	0. 23	4. 43	164
18	0. 28	3. 55	0. 28	3. 63	0. 27	3. 71	0. 26	3. 80	0. 26	3. 91	162
20	0. 32	3. 17	0. 31	3. 24	0. 30	3. 31	0. 29	3. 40	0. 29	3. 49	160
22	0. 35	2. 86	0. 34	2. 92	0. 34	2. 99	0. 33	3. 06	0. 32	3. 14	158
24	0. 39	2. 59	0. 38	2. 65	0. 37	2. 71	0. 36	2. 78	0. 35	2. 85	156
26	0. 42	2. 37	0. 41	2. 42	0. 40	2. 47	0. 40	2. 53	0. 38	2. 60	154
28	0. 46	2. 17	0. 45	2. 22	0. 44	2. 27	0. 43	2. 32	0. 42	2. 39	152
30	0. 50	2. 00	0. 49	2. 04	0. 48	2. 09	0. 47	2. 14	0. 45	2. 20	150
32	0. 54	1. 85	0. 53	1. 89	0. 52	1. 93	0. 51	1. 98	0. 49	2. 03	148
34	0. 58	1. 71	0. 57	1. 75	0. 56	1. 79	0. 55	1. 83	0. 53	1. 88	146
36	0. 63	1. 59	0. 62	1. 62	0. 60	1. 66	0. 59	1. 70	0. 57	1. 75	144
38	0. 68	1. 48	0. 66	1. 51	0. 65	1. 54	0. 63	1. 58	0. 62	1. 62	142
40	0. 72	1. 38	0. 71	1. 41	0. 69	1. 44	0. 68	1. 47	0. 66	1. 51	140
42	0. 78	1. 28	0. 76	1. 31	0. 75	1. 34	0. 73	1. 37	0. 71	1. 41	138
44	0. 84	1. 20	0. 82	1. 22	0. 80	1. 25	0. 78	1. 28	0. 76	1. 31	136
46	0. 90	1. 11	0. 88	1. 14	0. 86	1. 16	0. 84	1. 19	0. 82	1. 23	134
48	0. 96	1. 04	0. 94	1. 06	0. 92	1. 09	0. 90	1. 11	0. 88	1. 14	132
50	1. 03	0. 97	1. 01	0. 99	0. 99	1. 01	0. 96	1. 04	0. 94	1. 06	130
52	1. 11	0. 90	1. 09	0. 92	1. 06	0. 94	1. 04	0. 97	1. 01	0. 99	128
54	1. 19	0. 84	1. 16	0. 86	1. 14	0. 88	1. 11	0. 90	1. 08	0. 92	126
56	1. 28	0. 78	1. 26	0. 79	1. 23	0. 81	1. 20	0. 83	1. 17	0. 86	124
58	1. 39	0. 72	1. 36	0. 74	1. 33	0. 75	1. 30	0. 77	1. 26	0. 79	122
60	1. 49	0. 67	1. 47	0. 68	1. 44	0. 70	1. 40	0. 71	1. 37	0. 73	120
62	1. 63	0. 61	1. 59	0. 63	1. 56	0. 64	1. 52	0. 66	1. 48	0. 67	118
64	1. 78	0. 56	1. 74	0. 57	1. 70	0. 59	1. 66	0. 60	1. 62	0. 62	116
66	1. 95	0. 51	1. 91	0. 52	1. 85	0. 54	1. 82	0. 55	1. 77	0. 56	114
68	2. 14	0. 47	2. 10	0. 48	2. 05	0. 49	2. 00	0. 50	1. 95	0. 51	112
70	2. 38	0. 42	2. 33	0. 43	2. 28	0. 44	2. 22	0. 45	2. 17	0. 46	110
72	2. 67	0. 38	2. 61	0. 38	2. 55	0. 39	2. 50	0. 40	2. 43	0. 41	108
74	3. 02	0. 33	2. 96	0. 34	2. 89	0. 35	2. 82	0. 35	2. 75	0. 36	106
76	3. 47	0. 29	3. 40	0. 29	3. 33	0. 30	3. 25	0. 31	3. 16	0. 32	104
78	4. 07	0. 24	3. 99	0. 25	3. 90	0. 26	3. 81	0. 26	3. 71	0. 27	102
80	4. 91	0. 20	4. 81	0. 21	4. 70	0. 21	4. 59	0. 22	4. 47	0. 22	100
81	5. 47	0. 18	5. 35	0. 19	5. 24	0. 19	5. 11	0. 20	4. 98	0. 20	99
82	6. 16	0. 16	6. 03	0. 17	5. 90	0. 17	5. 76	0. 17	5. 61	0. 18	98
83	7. 05	0. 14	6. 91	0. 14	6. 75	0. 15	6. 59	0. 15	6. 42	0. 16	97
84	8. 24	0. 12	8. 07	0. 12	7. 89	0. 13	7. 70	0. 13	7. 50	0. 13	96
85	9. 90	0. 10	9. 69	0. 10	9. 48	0. 11	9. 25	0. 11	9. 01	0. 11	95
86	12. 39	0. 08	12. 13	0. 08	11. 86	0. 08	11. 57	0. 09	11. 27	0. 09	94
87	16. 52	0. 06	16. 18	0. 06	15. 82	0. 06	15. 44	0. 06	15. 04	0. 07	93
88	24. 80	0. 04	24. 28	0. 04	23. 74	0. 04	23. 17	0. 04	22. 57	0. 04	92
89	49. 61	0. 02	48. 58	0. 02	47. 50	0. 02	46. 36	0. 02	45. 14	0. 02	91
90	—	0. 00	—	0. 00	—	0. 00	—	0. 00	—	0. 0 0	90
	30°		32°		34°		36°		38°		

Correction to latitude = f error in longitude

Correction to longitude = F error in latitude

TABLE 21

Latitude and Longitude Factors

f, the change of latitude for a unit change in longitude
F, the change of longitude for a unit change in latitude

Azimuth angle	Latitude 40°		42°		44°		46°		48°		Azimuth angle
	f	F	f	F	f	F	f	F	f	F	
°											°
0	0.00	—	0.00	—	0.00	—	0.00	—	0.00	—	180
1	0.01	74.79	0.01	77.09	0.01	79.64	0.01	82.47	0.01	85.62	179
2	0.03	37.38	0.03	38.53	0.03	39.81	0.02	41.22	0.02	42.80	178
3	0.04	24.91	0.04	25.68	0.04	26.53	0.04	27.47	0.03	28.52	177
4	0.05	18.67	0.05	19.24	0.05	19.88	0.05	20.59	0.05	21.37	176
5	0.07	14.92	0.07	15.38	0.06	15.89	0.06	16.45	0.06	17.08	175
6	0.08	12.42	0.08	12.80	0.08	13.23	0.07	13.70	0.07	14.22	174
7	0.09	10.63	0.09	10.96	0.09	11.32	0.08	11.72	0.08	12.17	173
8	0.11	9.29	0.10	9.57	0.10	9.89	0.10	10.24	0.09	10.63	172
9	0.12	8.24	0.12	8.50	0.11	8.78	0.11	9.09	0.11	9.44	171
10	0.14	7.40	0.13	7.63	0.13	7.88	0.12	8.16	0.12	8.48	170
12	0.16	6.14	0.16	6.33	0.15	6.54	0.15	6.77	0.14	7.03	168
14	0.19	5.24	0.19	5.40	0.18	5.58	0.17	5.77	0.17	5.99	166
16	0.22	4.55	0.21	4.69	0.21	4.85	0.20	5.02	0.19	5.21	164
18	0.25	4.02	0.24	4.14	0.23	4.28	0.23	4.43	0.22	4.60	162
20	0.28	3.59	0.27	3.70	0.26	3.82	0.25	3.95	0.24	4.11	160
22	0.31	3.23	0.30	3.33	0.29	3.44	0.28	3.56	0.27	3.70	158
24	0.34	2.93	0.33	3.02	0.32	3.12	0.31	3.23	0.30	3.36	156
26	0.37	2.68	0.36	2.76	0.35	2.85	0.34	2.95	0.33	3.06	154
28	0.41	2.45	0.40	2.53	0.38	2.61	0.37	2.71	0.36	2.81	152
30	0.44	2.26	0.43	2.33	0.41	2.41	0.40	2.49	0.39	2.59	150
32	0.48	2.09	0.46	2.15	0.45	2.22	0.43	2.30	0.42	2.39	148
34	0.52	1.93	0.50	1.99	0.49	2.06	0.47	2.13	0.45	2.22	146
36	0.56	1.80	0.54	1.85	0.52	1.91	0.50	1.98	0.49	2.06	144
38	0.60	1.67	0.58	1.72	0.56	1.78	0.54	1.84	0.52	1.91	142
40	0.64	1.56	0.63	1.60	0.60	1.66	0.58	1.71	0.56	1.78	140
42	0.69	1.45	0.67	1.49	0.65	1.54	0.63	1.60	0.60	1.66	138
44	0.74	1.35	0.72	1.39	0.69	1.44	0.67	1.49	0.65	1.55	136
46	0.79	1.26	0.77	1.30	0.74	1.34	0.72	1.39	0.69	1.44	134
48	0.85	1.17	0.83	1.21	0.80	1.25	0.77	1.30	0.74	1.35	132
50	0.91	1.09	0.88	1.13	0.86	1.17	0.83	1.21	0.80	1.25	130
52	0.98	1.02	0.95	1.05	0.92	1.09	0.89	1.12	0.86	1.17	128
54	1.05	0.95	1.02	0.98	0.99	1.01	0.96	1.05	0.92	1.09	126
56	1.14	0.88	1.10	0.91	1.07	0.94	1.03	0.97	0.99	1.01	124
58	1.23	0.82	1.19	0.84	1.15	0.87	1.11	0.90	1.07	0.93	122
60	1.33	0.75	1.29	0.78	1.25	0.80	1.20	0.83	1.16	0.86	120
62	1.44	0.69	1.40	0.72	1.35	0.74	1.31	0.77	1.26	0.79	118
64	1.57	0.64	1.52	0.66	1.48	0.68	1.42	0.70	1.37	0.73	116
66	1.72	0.58	1.67	0.60	1.62	0.62	1.56	0.64	1.50	0.66	114
68	1.90	0.53	1.84	0.54	1.78	0.56	1.72	0.58	1.66	0.60	112
70	2.10	0.47	2.04	0.49	1.98	0.51	1.91	0.52	1.84	0.54	110
72	2.36	0.42	2.29	0.44	2.21	0.45	2.14	0.47	2.06	0.49	108
74	2.67	0.37	2.59	0.39	2.51	0.40	2.42	0.41	2.33	0.43	106
76	3.07	0.32	2.98	0.34	2.89	0.35	2.79	0.36	2.68	0.37	104
78	3.60	0.28	3.50	0.29	3.38	0.29	3.27	0.31	3.15	0.32	102
80	4.34	0.23	4.22	0.24	4.08	0.24	3.94	0.25	3.80	0.26	100
81	4.84	0.21	4.69	0.21	4.54	0.22	4.39	0.23	4.23	0.24	99
82	5.45	0.18	5.29	0.19	5.12	0.20	4.94	0.20	4.76	0.21	98
83	6.24	0.16	6.05	0.16	5.86	0.17	5.66	0.18	5.45	0.18	97
84	7.29	0.14	7.07	0.14	6.84	0.15	6.61	0.15	6.37	0.16	96
85	8.75	0.11	8.49	0.12	8.22	0.12	7.94	0.13	7.65	0.13	95
86	10.95	0.09	10.63	0.09	10.29	0.10	9.94	0.10	9.57	0.10	94
87	14.62	0.07	14.18	0.07	13.73	0.07	13.26	0.08	12.77	0.08	93
88	21.94	0.05	21.28	0.05	20.60	0.05	19.89	0.05	19.16	0.05	92
89	43.98	0.02	42.58	0.02	41.21	0.02	39.80	0.02	38.34	0.03	91
90	—	0.00	—	0.00	—	0.00	—	0.00	—	0.00	90
	40°		42°		44°		46°		48°		

Correction to latitude = f error in longitude

Correction to longitude = F error in latitude

TABLE 21

Latitude and Longitude Factors

f, the change of latitude for a unit change in longitude
F, the change of longitude for a unit change in latitude

Azimuth angle	Latitude 50°		52°		54°		56°		58°		Azimuth angle
	f	F	f	F	f	F	f	F	f	F	
°											°
0	0.00	—	0.00	—	0.00	—	0.00	—	0.00	—	180
1	0.01	89.13	0.01	93.05	0.01	97.47	0.01	102.45	0.01	108.11	179
2	0.02	44.55	0.02	46.51	0.02	48.72	0.02	51.21	0.02	54.04	178
3	0.03	29.68	0.03	30.99	0.03	32.46	0.03	34.12	0.03	36.01	177
4	0.04	22.25	0.04	23.23	0.04	24.33	0.04	25.57	0.04	26.99	176
5	0.06	17.78	0.05	18.57	0.05	19.45	0.05	20.44	0.05	21.57	175
6	0.07	14.80	0.06	15.45	0.06	16.19	0.06	17.01	0.06	17.95	174
7	0.08	12.67	0.08	13.23	0.07	13.86	0.07	14.56	0.06	15.37	173
8	0.09	11.07	0.08	11.56	0.08	12.11	0.08	12.72	0.07	13.43	172
9	0.10	9.82	0.10	10.26	0.09	10.74	0.09	11.29	0.08	11.91	171
10	0.11	8.82	0.11	9.21	0.10	9.65	0.10	10.14	0.09	10.70	170
12	0.14	7.32	0.13	7.64	0.13	8.00	0.12	8.41	0.11	8.88	168
14	0.16	6.24	0.15	6.51	0.15	6.82	0.14	7.17	0.13	7.57	166
16	0.18	5.42	0.18	5.66	0.17	5.93	0.16	6.24	0.15	6.58	164
18	0.21	4.79	0.20	5.00	0.19	5.24	0.18	5.50	0.17	5.81	162
20	0.23	4.27	0.22	4.46	0.21	4.67	0.20	4.91	0.19	5.19	160
22	0.26	3.85	0.25	4.02	0.24	4.21	0.23	4.43	0.21	4.67	158
24	0.29	3.49	0.27	3.65	0.26	3.82	0.25	4.02	0.24	4.24	156
26	0.31	3.19	0.30	3.33	0.29	3.49	0.27	3.66	0.26	3.87	154
28	0.34	2.93	0.33	3.05	0.31	3.20	0.30	3.36	0.28	3.55	152
30	0.37	2.69	0.36	2.81	0.34	2.95	0.32	3.10	0.31	3.27	150
32	0.40	2.49	0.38	2.60	0.37	2.72	0.35	2.86	0.33	3.02	148
34	0.43	2.31	0.42	2.41	0.40	2.52	0.38	2.65	0.36	2.80	146
36	0.47	2.14	0.45	2.24	0.43	2.34	0.41	2.46	0.39	2.60	144
38	0.50	1.99	0.48	2.08	0.46	2.18	0.44	2.29	0.41	2.41	142
40	0.54	1.85	0.52	1.94	0.49	2.03	0.47	2.13	0.44	2.25	140
42	0.58	1.73	0.56	1.80	0.53	1.89	0.50	1.99	0.48	2.09	138
44	0.62	1.61	0.59	1.68	0.57	1.76	0.54	1.85	0.51	1.95	136
46	0.67	1.50	0.64	1.57	0.61	1.64	0.58	1.73	0.55	1.82	134
48	0.71	1.40	0.68	1.46	0.65	1.53	0.62	1.61	0.59	1.70	132
50	0.77	1.31	0.73	1.36	0.70	1.43	0.67	1.50	0.63	1.58	130
52	0.82	1.22	0.79	1.27	0.75	1.33	0.72	1.40	0.68	1.47	128
54	0.88	1.13	0.85	1.18	0.81	1.23	0.77	1.30	0.73	1.37	126
56	0.95	1.05	0.91	1.10	0.87	1.15	0.83	1.21	0.79	1.27	124
58	1.03	0.97	0.99	1.01	0.94	1.06	0.89	1.12	0.85	1.18	122
60	1.11	0.90	1.07	0.94	1.02	0.98	0.97	1.03	0.92	1.09	120
62	1.21	0.83	1.16	0.86	1.11	0.90	1.05	0.95	1.00	1.00	118
64	1.32	0.76	1.26	0.79	1.20	0.83	1.15	0.87	1.09	0.92	116
66	1.44	0.69	1.38	0.72	1.32	0.76	1.26	0.79	1.19	0.84	114
68	1.59	0.63	1.52	0.65	1.45	0.69	1.38	0.72	1.31	0.76	112
70	1.77	0.57	1.69	0.59	1.61	0.62	1.54	0.65	1.45	0.68	110
72	1.98	0.51	1.89	0.53	1.81	0.55	1.72	0.58	1.63	0.61	108
74	2.24	0.45	2.15	0.46	2.05	0.49	1.95	0.51	1.85	0.54	106
76	2.58	0.39	2.47	0.40	2.36	0.42	2.24	0.45	2.13	0.47	104
78	3.02	0.33	2.90	0.34	2.77	0.36	2.63	0.38	2.49	0.40	102
80	3.65	0.27	3.49	0.29	3.33	0.30	3.17	0.31	3.01	0.33	100
81	4.06	0.25	3.89	0.26	3.71	0.27	3.53	0.28	3.35	0.30	99
82	4.57	0.22	4.38	0.23	4.18	0.24	3.98	0.25	3.77	0.26	98
83	5.24	0.19	5.01	0.20	4.79	0.21	4.55	0.22	4.32	0.23	97
84	6.12	0.16	5.86	0.17	5.59	0.18	5.32	0.19	5.04	0.20	96
85	7.35	0.14	7.04	0.14	6.72	0.15	6.39	0.16	6.06	0.16	95
86	9.19	0.11	8.81	0.11	8.41	0.12	8.00	0.12	7.58	0.13	94
87	12.27	0.08	11.75	0.08	11.22	0.09	10.67	0.09	10.11	0.10	93
88	18.41	0.05	17.63	0.06	16.83	0.06	16.01	0.06	15.17	0.07	92
89	36.83	0.03	35.27	0.03	33.68	0.03	32.04	0.03	30.36	0.03	91
90	—	0.00	—	0.00	—	0.00	—	0.00	—	0.00	90
	50°		52°		54°		56°		58°		

Correction to latitude = f error in longitude

Correction to longitude = F error in latitude

TABLE 21

Latitude and Longitude Factors

f, the change of latitude for a unit change in longitude
F, the change of longitude for a unit change in latitude

Azimuth angle	Latitude 60° f	60° F	62° f	62° F	64° f	64° F	66° f	66° F	68° f	68° F	Azimuth angle
°											°
0	0.00	—	0.00	—	0.00	—	0.00	—	0.00	—	180
1	0.01	114.58	0.01	122.03	0.01	130.69	0.01	140.85	0.01	152.93	179
2	0.02	57.27	0.02	61.00	0.02	65.32	0.01	70.40	0.01	76.44	178
3	0.03	38.16	0.02	40.64	0.02	43.53	0.02	46.91	0.02	50.94	177
4	0.03	28.60	0.03	30.46	0.03	32.62	0.03	35.16	0.03	38.18	176
5	0.04	22.86	0.04	24.35	0.04	26.07	0.04	28.10	0.03	30.51	175
6	0.05	19.03	0.05	20.27	0.05	21.70	0.04	23.39	0.04	25.40	174
7	0.06	16.29	0.06	17.35	0.05	18.58	0.05	20.02	0.05	21.74	173
8	0.07	14.23	0.07	15.16	0.06	16.23	0.06	17.49	0.05	18.99	172
9	0.08	12.63	0.07	13.45	0.07	14.40	0.06	15.52	0.06	16.85	171
10	0.09	11.34	0.08	12.08	0.08	12.94	0.07	13.94	0.07	15.14	170
12	0.11	9.41	0.10	10.02	0.09	10.73	0.09	11.57	0.08	12.56	168
14	0.12	8.02	0.12	8.54	0.11	9.15	0.10	9.86	0.09	10.71	166
16	0.14	6.97	0.13	7.43	0.13	7.96	0.12	8.57	0.11	9.31	164
18	0.16	6.15	0.15	6.56	0.14	7.02	0.13	7.57	0.12	8.22	162
20	0.18	5.49	0.17	5.85	0.16	6.27	0.15	6.75	0.14	7.33	160
22	0.20	4.95	0.19	5.27	0.18	5.65	0.16	6.09	0.15	6.61	158
24	0.22	4.49	0.21	4.78	0.20	5.12	0.18	5.52	0.17	6.00	156
26	0.24	4.10	0.23	4.37	0.21	4.68	0.20	5.04	0.18	5.47	154
28	0.27	3.76	0.25	4.01	0.23	4.29	0.22	4.62	0.20	5.02	152
30	0.29	3.46	0.27	3.69	0.25	3.95	0.23	4.26	0.22	4.62	150
32	0.31	3.20	0.29	3.41	0.27	3.65	0.25	3.93	0.23	4.27	148
34	0.34	2.96	0.32	3.16	0.30	3.38	0.27	3.65	0.25	3.96	146
36	0.36	2.75	0.34	2.93	0.32	3.14	0.30	3.38	0.27	3.67	144
38	0.39	2.56	0.37	2.73	0.34	2.92	0.32	3.15	0.29	3.42	142
40	0.42	2.38	0.39	2.54	0.37	2.72	0.34	2.93	0.31	3.18	140
42	0.45	2.22	0.42	2.37	0.39	2.53	0.37	2.73	0.34	2.96	138
44	0.48	2.07	0.45	2.21	0.42	2.36	0.39	2.55	0.36	2.76	136
46	0.52	1.93	0.49	2.06	0.45	2.20	0.42	2.37	0.39	2.58	134
48	0.56	1.80	0.52	1.92	0.49	2.05	0.45	2.21	0.42	2.40	132
50	0.60	1.68	0.56	1.79	0.52	1.91	0.48	2.06	0.45	2.24	130
52	0.64	1.56	0.60	1.66	0.56	1.78	0.52	1.92	0.48	2.09	128
54	0.69	1.45	0.65	1.55	0.60	1.66	0.56	1.79	0.52	1.94	126
56	0.74	1.35	0.70	1.44	0.65	1.54	0.60	1.66	0.56	1.80	124
58	0.80	1.25	0.75	1.33	0.70	1.43	0.65	1.54	0.60	1.67	122
60	0.87	1.15	0.81	1.23	0.76	1.32	0.70	1.42	0.65	1.54	120
62	0.94	1.06	0.88	1.13	0.82	1.21	0.76	1.31	0.70	1.42	118
64	1.03	0.97	0.96	1.04	0.90	1.11	0.83	1.20	0.77	1.30	116
66	1.12	0.89	1.05	0.95	0.98	1.02	0.91	1.09	0.84	1.19	114
68	1.24	0.81	1.16	0.86	1.09	0.92	1.01	0.99	0.93	1.08	112
70	1.37	0.73	1.29	0.78	1.20	0.83	1.12	0.89	1.03	0.97	110
72	1.54	0.65	1.44	0.69	1.35	0.74	1.25	0.80	1.15	0.87	108
74	1.74	0.57	1.64	0.61	1.53	0.65	1.42	0.70	1.31	0.77	106
76	2.01	0.50	1.88	0.53	1.76	0.57	1.63	0.61	1.50	0.67	104
78	2.35	0.42	2.21	0.45	2.06	0.48	1.91	0.52	1.76	0.57	102
80	2.84	0.35	2.66	0.38	2.49	0.40	2.31	0.43	2.12	0.47	100
81	3.16	0.32	2.96	0.34	2.77	0.36	2.57	0.39	2.37	0.42	99
82	3.56	0.28	3.34	0.30	3.12	0.32	2.89	0.35	2.67	0.38	98
83	4.07	0.25	3.82	0.26	3.57	0.28	3.31	0.30	3.05	0.33	97
84	4.76	0.21	4.47	0.22	4.17	0.24	3.87	0.26	3.56	0.28	96
85	5.72	0.17	5.37	0.19	5.01	0.20	4.65	0.22	4.28	0.23	95
86	7.15	0.14	6.71	0.15	6.27	0.16	5.82	0.17	5.36	0.19	94
87	9.54	0.10	8.96	0.11	8.36	0.12	7.76	0.13	7.15	0.14	93
88	14.32	0.07	13.44	0.07	12.55	0.08	11.65	0.09	10.73	0.09	92
89	28.65	0.03	26.90	0.04	25.11	0.04	23.30	0.04	21.46	0.05	91
90	—	0.00	—	0.00	—	0.00	—	0.00	—	0.00	90
	60°		62°		64°		66°		68°		

Correction to latitude = f error in longitude

Correction to longitude = F error in latitude

TABLE 22
Amplitudes

Latitude	Declination													Latitude
	0°0 Z	0°5 Z	1°0 Z	1°5 Z	2°0 Z	2°5 Z	3°0 Z	3°5 Z	4°0 Z	4°5 Z	5°0 Z	5°5 Z	6°0 Z	
°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	0
10	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.6	4.1	4.6	5.1	5.6	6.1	10
15	0.0	0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.1	4.7	5.2	5.7	6.2	15
20	0.0	0.5	1.1	1.6	2.1	2.7	3.2	3.7	4.3	4.8	5.3	5.9	6.4	20
25	0.0	0.6	1.1	1.7	2.2	2.8	3.3	3.9	4.4	5.0	5.5	6.1	6.6	25
30	0.0	0.6	1.2	1.7	2.3	2.9	3.5	4.0	4.6	5.2	5.8	6.4	6.9	30
32	0.0	0.6	1.2	1.8	2.4	2.9	3.5	4.1	4.7	5.3	5.9	6.5	7.1	32
34	0.0	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2	34
36	0.0	0.6	1.2	1.9	2.5	3.1	3.7	4.3	4.9	5.6	6.2	6.8	7.4	36
38	0.0	0.6	1.3	1.9	2.5	3.2	3.8	4.4	5.1	5.7	6.4	7.0	7.6	38
40	0.0	0.7	1.3	2.0	2.6	3.3	3.9	4.6	5.2	5.9	6.5	7.2	7.8	40
42	0.0	0.7	1.3	2.0	2.7	3.4	4.0	4.7	5.4	6.1	6.7	7.4	8.1	42
44	0.0	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4	44
46	0.0	0.7	1.4	2.2	2.9	3.6	4.3	5.0	5.8	6.5	7.2	7.9	8.7	46
48	0.0	0.7	1.5	2.2	3.0	3.7	4.5	5.2	6.0	6.7	7.5	8.2	9.0	48
50	0.0	0.8	1.6	2.3	3.1	3.9	4.7	5.4	6.2	7.0	7.8	8.6	9.4	50
51	0.0	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6	51
52	0.0	0.8	1.6	2.4	3.2	4.1	4.9	5.7	6.5	7.3	8.1	9.0	9.8	52
53	0.0	0.8	1.7	2.5	3.3	4.2	5.0	5.8	6.7	7.5	8.3	9.2	10.0	53
54	0.0	0.9	1.7	2.6	3.4	4.3	5.1	6.0	6.8	7.7	8.5	9.4	10.2	54
55	0.0	0.9	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7	9.6	10.5	55
56	0.0	0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1	9.0	9.9	10.8	56
57	0.0	0.9	1.8	2.8	3.7	4.6	5.5	6.4	7.4	8.3	9.2	10.1	11.1	57
58	0.0	0.9	1.9	2.8	3.8	4.7	5.7	6.6	7.6	8.5	9.5	10.4	11.4	58
59	0.0	1.0	1.9	2.9	3.9	4.9	5.8	6.8	7.8	8.8	9.7	10.7	11.7	59
60	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.1	12.1	60
61	0.0	1.0	2.1	3.1	4.1	5.2	6.2	7.2	8.3	9.3	10.3	11.4	12.5	61
62	0.0	1.1	2.1	3.2	4.3	5.3	6.4	7.5	8.5	9.6	10.7	11.8	12.9	62
63	0.0	1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	10.0	11.1	12.2	13.3	63
64	0.0	1.1	2.3	3.4	4.6	5.7	6.9	8.0	9.2	10.3	11.5	12.6	13.8	64
65.0	0.0	1.2	2.4	3.6	4.7	5.9	7.1	8.3	9.5	10.7	11.9	13.1	14.3	65.0
65.5	0.0	1.2	2.4	3.6	4.8	6.0	7.3	8.5	9.7	10.9	12.1	13.4	14.6	65.5
66.0	0.0	1.2	2.5	3.7	4.9	6.2	7.4	8.6	9.9	11.1	12.4	13.6	14.9	66.0
66.5	0.0	1.3	2.5	3.8	5.0	6.3	7.5	8.8	10.1	11.3	12.6	13.9	15.2	66.5
67.0	0.0	1.3	2.6	3.8	5.1	6.4	7.7	9.0	10.3	11.6	12.9	14.2	15.5	67.0
67.5	0.0	1.3	2.6	3.9	5.2	6.5	7.9	9.2	10.5	11.8	13.2	14.5	15.9	67.5
68.0	0.0	1.3	2.7	4.0	5.3	6.7	8.0	9.4	10.7	12.1	13.5	14.8	16.2	68.0
68.5	0.0	1.4	2.7	4.1	5.5	6.8	8.2	9.6	11.0	12.4	13.8	15.2	16.6	68.5
69.0	0.0	1.4	2.8	4.2	5.6	7.0	8.4	9.8	11.2	12.6	14.1	15.5	17.0	69.0
69.5	0.0	1.4	2.9	4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.4	15.9	17.4	69.5
70.0	0.0	1.5	2.9	4.4	5.9	7.3	8.8	10.3	11.8	13.3	14.8	16.3	17.8	70.0
70.5	0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.1	13.6	15.1	16.7	18.2	70.5
71.0	0.0	1.5	3.1	4.6	6.2	7.7	9.3	10.8	12.4	13.9	15.5	17.1	18.7	71.0
71.5	0.0	1.6	3.2	4.7	6.3	7.9	9.5	11.1	12.7	14.3	15.9	17.6	19.2	71.5
72.0	0.0	1.6	3.2	4.9	6.5	8.1	9.8	11.4	13.0	14.7	16.4	18.1	19.8	72.0
72.5	0.0	1.7	3.3	5.0	6.7	8.3	10.0	11.7	13.4	15.1	16.8	18.6	20.3	72.5
73.0	0.0	1.7	3.4	5.1	6.9	8.6	10.3	12.1	13.8	15.6	17.3	19.1	20.9	73.0
73.5	0.0	1.8	3.5	5.3	7.1	8.8	10.6	12.4	14.2	16.0	17.9	19.7	21.6	73.5
74.0	0.0	1.8	3.6	5.4	7.3	9.1	10.9	12.8	14.7	16.5	18.4	20.3	22.3	74.0
74.5	0.0	1.9	3.7	5.6	7.5	9.4	11.3	13.2	15.1	17.1	19.0	21.0	23.0	74.5
75.0	0.0	1.9	3.9	5.8	7.7	9.7	11.7	13.6	15.6	17.6	19.7	21.7	23.8	75.0
75.5	0.0	2.0	4.0	6.0	8.0	10.0	12.1	14.1	16.2	18.3	20.4	22.5	24.7	75.5
76.0	0.0	2.1	4.1	6.2	8.3	10.4	12.5	14.6	16.8	18.9	21.1	23.3	25.6	76.0
76.5	0.0	2.1	4.3	6.4	8.6	10.8	13.0	15.2	17.4	19.6	21.9	24.2	26.6	76.5
77.0	0.0	2.2	4.4	6.7	8.9	11.2	13.5	15.7	18.1	20.4	22.8	25.2	27.7	77.0

TABLE 22
Amplitudes

Latitude	Declination													Latitude
	6°0 Z	6°5 Z	7°0 Z	7°5 Z	8°0 Z	8°5 Z	9°0 Z	9°5 Z	10°0 Z	10°5 Z	11°0 Z	11°5 Z	12°0 Z	
°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	0
10	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.2	10.7	11.2	11.7	12.2	10
15	6.2	6.7	7.2	7.8	8.3	8.8	9.3	9.8	10.4	10.9	11.4	11.9	12.4	15
20	6.4	6.9	7.5	8.0	8.5	9.0	9.6	10.1	10.6	11.2	11.7	12.2	12.8	20
25	6.6	7.2	7.7	8.3	8.8	9.4	9.9	10.5	11.0	11.6	12.2	12.7	13.3	25
30	6.9	7.5	8.1	8.7	9.2	9.8	10.4	11.0	11.6	12.1	12.7	13.3	13.9	30
32	7.1	7.7	8.3	8.9	9.4	10.0	10.6	11.2	11.8	12.4	13.0	13.6	14.2	32
34	7.2	7.8	8.5	9.1	9.7	10.3	10.9	11.5	12.1	12.7	13.3	13.9	14.5	34
36	7.4	8.0	8.7	9.3	9.9	10.5	11.1	11.8	12.4	13.0	13.6	14.3	14.9	36
38	7.6	8.3	8.9	9.5	10.2	10.8	11.5	12.1	12.7	13.4	14.0	14.7	15.3	38
40	7.8	8.5	9.2	9.8	10.5	11.1	11.8	12.4	13.1	13.8	14.4	15.1	15.7	40
42	8.1	8.8	9.4	10.1	10.8	11.5	12.1	12.8	13.5	14.2	14.9	15.6	16.2	42
44	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.3	14.0	14.7	15.4	16.1	16.8	44
46	8.7	9.4	10.1	10.8	11.6	12.3	13.0	13.7	14.5	15.2	15.9	16.7	17.4	46
48	9.0	9.7	10.5	11.2	12.0	12.8	13.5	14.3	15.0	15.8	16.6	17.3	18.1	48
50	9.4	10.1	10.9	11.7	12.5	13.3	14.1	14.9	15.7	16.5	17.3	18.1	18.9	50
51	9.6	10.4	11.2	12.0	12.8	13.6	14.4	15.2	16.0	16.8	17.7	18.5	19.3	51
52	9.8	10.6	11.4	12.2	13.1	13.9	14.7	15.6	16.4	17.2	18.1	18.9	19.7	52
53	10.0	10.8	11.7	12.5	13.4	14.2	15.1	15.9	16.8	17.6	18.5	19.3	20.2	53
54	10.2	11.1	12.0	12.8	13.7	14.6	15.4	16.3	17.2	18.1	18.9	19.8	20.7	54
55	10.5	11.4	12.3	13.2	14.0	14.9	15.8	16.7	17.6	18.5	19.4	20.3	21.3	55
56	10.8	11.7	12.6	13.5	14.4	15.3	16.2	17.2	18.1	19.0	20.0	20.9	21.8	56
57	11.1	12.0	12.9	13.9	14.8	15.7	16.7	17.6	18.6	19.6	20.5	21.5	22.4	57
58	11.4	12.3	13.3	14.3	15.2	16.2	17.2	18.1	19.1	20.1	21.1	22.1	23.1	58
59	11.7	12.7	13.7	14.7	15.7	16.7	17.7	18.7	19.7	20.7	21.7	22.8	23.8	59
60	12.1	13.1	14.1	15.1	16.2	17.2	18.2	19.3	20.3	21.4	22.4	23.5	24.6	60
61	12.5	13.5	14.6	15.6	16.7	17.8	18.8	19.9	21.0	22.1	23.2	24.3	25.4	61
62	12.9	14.0	15.0	16.1	17.2	18.4	19.5	20.6	21.7	22.8	24.0	25.1	26.3	62
63	13.3	14.4	15.6	16.7	17.9	19.0	20.2	21.3	22.5	23.7	24.9	26.0	27.3	63
64	13.8	15.0	16.2	17.3	18.5	19.7	20.9	22.1	23.3	24.6	25.8	27.1	28.3	64
65.0	14.3	15.5	16.8	18.0	19.2	20.5	21.7	23.0	24.3	25.5	26.8	28.1	29.5	65.0
65.5	14.6	15.8	17.1	18.3	19.6	20.9	22.2	23.5	24.8	26.1	27.4	28.7	30.1	65.5
66.0	14.9	16.2	17.4	18.7	20.0	21.3	22.6	23.9	25.3	26.6	28.0	29.4	30.7	66.0
66.5	15.2	16.5	17.8	19.1	20.4	21.8	23.1	24.5	25.8	27.2	28.6	30.0	31.4	66.5
67.0	15.5	16.8	18.2	19.5	20.9	22.2	23.6	25.0	26.4	27.8	29.2	30.7	32.1	67.0
67.5	15.9	17.2	18.6	19.9	21.3	22.7	24.1	25.5	27.0	28.4	29.9	31.4	32.9	67.5
68.0	16.2	17.6	19.0	20.4	21.8	23.2	24.7	26.1	27.6	29.1	30.6	32.2	33.7	68.0
68.5	16.6	18.0	19.4	20.9	22.3	23.8	25.3	26.8	28.3	29.8	31.4	33.0	34.6	68.5
69.0	17.0	18.4	19.9	21.4	22.9	24.4	25.9	27.4	29.0	30.6	32.2	33.8	35.5	69.0
69.5	17.4	18.9	20.4	21.9	23.4	25.0	26.5	28.1	29.7	31.4	33.0	34.7	36.4	69.5
70.0	17.8	19.3	20.9	22.4	24.0	25.6	27.2	28.9	30.5	32.2	33.9	35.7	37.4	70.0
70.5	18.2	19.8	21.4	23.0	24.6	26.3	27.9	29.6	31.3	33.1	34.9	36.7	38.5	70.5
71.0	18.7	20.3	22.0	23.6	25.3	27.0	28.7	30.5	32.2	34.0	35.9	37.8	39.7	71.0
71.5	19.2	20.9	22.6	24.3	26.0	27.8	29.5	31.3	33.2	35.1	37.0	38.9	40.9	71.5
72.0	19.8	21.5	23.2	25.0	26.8	28.6	30.4	32.3	34.2	36.1	38.1	40.2	42.3	72.0
72.5	20.3	22.1	23.9	25.7	27.6	29.4	31.3	33.3	35.3	37.3	39.4	41.5	43.7	72.5
73.0	20.9	22.8	24.6	26.5	28.4	30.4	32.3	34.4	36.4	38.6	40.7	43.0	45.3	73.0
73.5	21.6	23.5	25.4	27.4	29.3	31.4	33.4	35.5	37.7	39.9	42.2	44.6	47.1	73.5
74.0	22.3	24.2	26.2	28.3	30.3	32.4	34.6	36.8	39.0	41.4	43.8	46.3	49.0	74.0
74.5	23.0	25.1	27.1	29.3	31.4	33.6	35.8	38.1	40.5	43.0	45.6	48.2	51.1	74.5
75.0	23.8	25.9	28.1	30.3	32.5	34.8	37.2	39.6	42.1	44.8	47.5	50.4	53.4	75.0
75.5	24.7	26.9	29.1	31.4	33.8	36.2	38.7	41.2	43.9	46.7	49.6	52.8	56.1	75.5
76.0	25.6	27.9	30.2	32.7	35.1	37.7	40.3	43.0	45.9	48.9	52.1	55.5	59.3	76.0
76.5	26.6	29.0	31.5	34.0	36.6	39.3	42.1	45.0	48.1	51.3	54.8	58.7	63.0	76.5
77.0	27.7	30.2	32.8	35.5	38.2	41.1	44.1	47.2	50.5	54.1	58.0	62.4	67.6	77.0

TABLE 22
Amplitudes

Latitude	Declination													Latitude
	12°0 Z	12°5 Z	13°0 Z	13°5 Z	14°0 Z	14°5 Z	15°0 Z	15°5 Z	16°0 Z	16°5 Z	17°0 Z	17°5 Z	18°0 Z	
°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	12. 0	12. 5	13. 0	13. 5	14. 0	14. 5	15. 0	15. 5	16. 0	16. 5	17. 0	17. 5	18. 0	0
10	12. 2	12. 7	13. 2	13. 7	14. 2	14. 7	15. 2	15. 7	16. 3	16. 8	17. 3	17. 8	18. 3	10
15	12. 4	12. 9	13. 5	14. 0	14. 5	15. 0	15. 5	16. 1	16. 6	17. 1	17. 6	18. 1	18. 7	15
20	12. 8	13. 3	13. 9	14. 4	14. 9	15. 5	16. 0	16. 5	17. 1	17. 6	18. 1	18. 7	19. 2	20
25	13. 3	13. 8	14. 4	14. 9	15. 5	16. 0	16. 6	17. 1	17. 7	18. 3	18. 8	19. 4	19. 9	25
30	13. 9	14. 5	15. 1	15. 6	16. 2	16. 8	17. 4	18. 0	18. 6	19. 1	19. 7	20. 3	20. 9	30
32	14. 2	14. 8	15. 4	16. 0	16. 6	17. 2	17. 8	18. 4	19. 0	19. 6	20. 2	20. 8	21. 4	32
34	14. 5	15. 1	15. 7	16. 4	17. 0	17. 6	18. 2	18. 8	19. 4	20. 0	20. 7	21. 3	21. 9	34
36	14. 9	15. 5	16. 1	16. 8	17. 4	18. 0	18. 7	19. 3	19. 9	20. 6	21. 2	21. 8	22. 5	36
38	15. 3	15. 9	16. 6	17. 2	17. 9	18. 5	19. 2	19. 8	20. 5	21. 1	21. 8	22. 4	23. 1	38
40	15. 7	16. 4	17. 1	17. 7	18. 4	19. 1	19. 7	20. 4	21. 1	21. 8	22. 4	23. 1	23. 8	40
41	16. 0	16. 7	17. 3	18. 0	18. 7	19. 4	20. 1	20. 8	21. 4	22. 1	22. 8	23. 5	24. 2	41
42	16. 2	16. 9	17. 6	18. 3	19. 0	19. 7	20. 4	21. 1	21. 8	22. 5	23. 2	23. 9	24. 6	42
43	16. 5	17. 2	17. 9	18. 6	19. 3	20. 0	20. 7	21. 4	22. 1	22. 9	23. 6	24. 3	25. 0	43
44	16. 8	17. 5	18. 2	18. 9	19. 7	20. 4	21. 1	21. 8	22. 5	23. 3	24. 0	24. 7	25. 4	44
45	17. 1	17. 8	18. 5	19. 3	20. 0	20. 7	21. 5	22. 2	22. 9	23. 7	24. 4	25. 2	25. 9	45
46	17. 4	18. 2	18. 9	19. 6	20. 4	21. 1	21. 9	22. 6	23. 4	24. 1	24. 9	25. 7	26. 4	46
47	17. 7	18. 5	19. 3	20. 0	20. 8	21. 5	22. 3	23. 1	23. 8	24. 6	25. 4	26. 2	26. 9	47
48	18. 1	18. 9	19. 6	20. 4	21. 2	22. 0	22. 8	23. 5	24. 3	25. 1	25. 9	26. 7	27. 5	48
49	18. 5	19. 3	20. 1	20. 8	21. 6	22. 4	23. 2	24. 0	24. 8	25. 7	26. 5	27. 3	28. 1	49
50	18. 9	19. 7	20. 5	21. 3	22. 1	22. 9	23. 7	24. 6	25. 4	26. 2	27. 1	27. 9	28. 7	50
51	19. 3	20. 1	20. 9	21. 8	22. 6	23. 4	24. 3	25. 1	26. 0	26. 8	27. 7	28. 5	29. 4	51
52	19. 7	20. 6	21. 4	22. 3	23. 1	24. 0	24. 9	25. 7	26. 6	27. 5	28. 3	29. 2	30. 1	52
53	20. 2	21. 1	21. 9	22. 8	23. 7	24. 6	25. 5	26. 4	27. 3	28. 2	29. 1	30. 0	30. 9	53
54	20. 7	21. 6	22. 5	23. 4	24. 3	25. 2	26. 1	27. 0	28. 0	28. 9	29. 8	30. 8	31. 7	54
55	21. 3	22. 2	23. 1	24. 0	24. 9	25. 9	26. 8	27. 8	28. 7	29. 7	30. 6	31. 6	32. 6	55
56	21. 8	22. 8	23. 7	24. 7	25. 6	26. 6	27. 6	28. 5	29. 5	30. 5	31. 5	32. 5	33. 5	56
57	22. 4	23. 4	24. 4	25. 4	26. 4	27. 4	28. 4	29. 4	30. 4	31. 4	32. 5	33. 5	34. 6	57
58	23. 1	24. 1	25. 1	26. 1	27. 2	28. 2	29. 2	30. 3	31. 3	32. 4	33. 5	34. 6	35. 7	58
59	23. 8	24. 8	25. 9	27. 0	28. 0	29. 1	30. 2	31. 3	32. 4	33. 5	34. 6	35. 7	36. 9	59
60	24. 6	25. 7	26. 7	27. 8	28. 9	30. 1	31. 2	32. 3	33. 5	34. 6	35. 8	37. 0	38. 2	60
61	25. 4	26. 5	27. 6	28. 8	29. 9	31. 1	32. 3	33. 5	34. 6	35. 9	37. 1	38. 3	39. 6	61
62	26. 3	27. 5	28. 6	29. 8	31. 0	32. 2	33. 5	34. 7	36. 0	37. 2	38. 5	39. 8	41. 2	62
63	27. 3	28. 5	29. 7	30. 9	32. 2	33. 5	34. 8	36. 1	37. 4	38. 7	40. 1	41. 5	42. 9	63
64	28. 3	29. 6	30. 9	32. 2	33. 5	34. 8	36. 2	37. 6	39. 0	40. 4	41. 8	43. 3	44. 8	64
65. 0	29. 5	30. 8	32. 2	33. 5	34. 9	36. 3	37. 8	39. 2	40. 7	42. 2	43. 8	45. 4	47. 0	65. 0
65. 5	30. 1	31. 5	32. 9	34. 3	35. 7	37. 1	38. 6	40. 1	41. 7	43. 2	44. 8	46. 5	48. 2	65. 5
66. 0	30. 7	32. 1	33. 6	35. 0	36. 5	38. 0	39. 5	41. 1	42. 7	44. 3	46. 0	47. 7	49. 4	66. 0
66. 5	31. 4	32. 9	34. 3	35. 8	37. 3	38. 9	40. 5	42. 1	43. 7	45. 4	47. 2	48. 9	50. 8	66. 5
67. 0	32. 1	33. 6	35. 1	36. 7	38. 3	39. 9	41. 5	43. 2	44. 9	46. 6	48. 4	50. 3	52. 3	67. 0
67. 5	32. 9	34. 4	36. 0	37. 6	39. 2	40. 9	42. 6	44. 3	46. 1	47. 9	49. 8	51. 8	53. 9	67. 5
68. 0	33. 7	35. 3	36. 9	38. 6	40. 2	41. 9	43. 7	45. 5	47. 4	49. 3	51. 3	53. 4	55. 6	68. 0
68. 5	34. 6	36. 2	37. 9	39. 6	41. 3	43. 1	44. 9	46. 8	48. 8	50. 8	52. 9	55. 1	57. 5	68. 5
69. 0	35. 5	37. 2	38. 9	40. 6	42. 5	44. 3	46. 2	48. 2	50. 3	52. 4	54. 7	57. 0	59. 6	69. 0
69. 5	36. 4	38. 2	40. 0	41. 8	43. 7	45. 6	47. 7	49. 7	51. 9	54. 2	56. 6	59. 2	61. 9	69. 5
70. 0	37. 4	39. 3	41. 1	43. 0	45. 0	47. 1	49. 2	51. 4	53. 7	56. 1	58. 7	61. 5	64. 6	70. 0
70. 5	38. 5	40. 4	42. 4	44. 4	46. 4	48. 6	50. 8	53. 2	55. 7	58. 3	61. 1	64. 3	67. 8	70. 5
71. 0	39. 7	41. 7	43. 7	45. 8	48. 0	50. 3	52. 7	55. 2	57. 8	60. 7	63. 9	67. 5	71. 7	71. 0
71. 5	40. 9	43. 0	45. 1	47. 4	49. 7	52. 1	54. 7	57. 4	60. 3	63. 5	67. 1	71. 4	76. 9	71. 5
72. 0	42. 3	44. 5	46. 7	49. 1	51. 5	54. 1	56. 9	59. 9	63. 1	66. 8	71. 1	76. 7	90. 0	72. 0
72. 5	43. 7	46. 0	48. 4	50. 9	53. 6	56. 4	59. 4	62. 7	66. 4	70. 8	76. 5	90. 0		72. 5
73. 0	45. 3	47. 8	50. 3	53. 0	55. 8	58. 9	62. 3	66. 1	70. 5	76. 3	90. 0			73. 0
73. 5	47. 1	49. 6	52. 4	55. 3	58. 4	61. 8	65. 7	70. 2	76. 0	90. 0				73. 5
74. 0	49. 0	51. 7	54. 7	57. 9	61. 4	65. 3	69. 9	75. 8	90. 0					74. 0
74. 5	51. 1	54. 1	57. 3	60. 9	64. 9	69. 5	75. 6	90. 0						74. 5

TABLE 22
Amplitudes

Latitude	Declination													Latitude
	18°0 Z	18°5 Z	19°0 Z	19°5 Z	20°0 Z	20°5 Z	21°0 Z	21°5 Z	22°0 Z	22°5 Z	23°0 Z	23°5 Z	24°0 Z	
°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	18. 0	18. 5	19. 0	19. 5	20. 0	20. 5	21. 0	21. 5	22. 0	22. 5	23. 0	23. 5	24. 0	0
10	18. 3	18. 8	19. 3	19. 8	20. 3	20. 8	21. 3	21. 8	22. 4	22. 9	23. 4	23. 9	24. 4	10
15	18. 7	19. 2	19. 7	20. 2	20. 7	21. 3	21. 8	22. 3	22. 8	23. 3	23. 9	24. 4	24. 9	15
20	19. 2	19. 7	20. 3	20. 8	21. 3	21. 9	22. 4	23. 0	23. 5	24. 0	24. 6	25. 1	25. 6	20
25	19. 9	20. 5	21. 1	21. 6	22. 2	22. 7	23. 3	23. 9	24. 4	25. 0	25. 5	26. 1	26. 7	25
30	20. 9	21. 5	22. 1	22. 7	23. 3	23. 9	24. 4	25. 0	25. 6	26. 2	26. 8	27. 4	28. 0	30
32	21. 4	22. 0	22. 6	23. 2	23. 8	24. 4	25. 0	25. 6	26. 2	26. 8	27. 4	28. 0	28. 7	32
34	21. 9	22. 5	23. 1	23. 7	24. 4	25. 0	25. 6	26. 2	26. 9	27. 5	28. 1	28. 7	29. 4	34
36	22. 5	23. 1	23. 7	24. 4	25. 0	25. 7	26. 3	26. 9	27. 6	28. 2	28. 9	29. 5	30. 2	36
38	23. 1	23. 7	24. 4	25. 1	25. 7	26. 4	27. 1	27. 7	28. 4	29. 1	29. 7	30. 4	31. 1	38
40	23. 8	24. 5	25. 2	25. 8	26. 5	27. 2	27. 9	28. 6	29. 3	30. 0	30. 7	31. 4	32. 1	40
41	24. 2	24. 9	25. 6	26. 3	26. 9	27. 6	28. 3	29. 1	29. 8	30. 5	31. 2	31. 9	32. 6	41
42	24. 6	25. 3	26. 0	26. 7	27. 4	28. 1	28. 8	29. 5	30. 3	31. 0	31. 7	32. 5	33. 2	42
43	25. 0	25. 7	26. 4	27. 2	27. 9	28. 6	29. 3	30. 1	30. 8	31. 6	32. 3	33. 0	33. 8	43
44	25. 4	26. 2	26. 9	27. 6	28. 4	29. 1	29. 9	30. 6	31. 4	32. 1	32. 9	33. 7	34. 4	44
45	25. 9	26. 7	27. 4	28. 2	28. 9	29. 7	30. 5	31. 2	32. 0	32. 8	33. 5	34. 3	35. 1	45
46	26. 4	27. 2	27. 9	28. 7	29. 5	30. 3	31. 1	31. 8	32. 6	33. 4	34. 2	35. 0	35. 8	46
47	26. 9	27. 7	28. 5	29. 3	30. 1	30. 9	31. 7	32. 5	33. 3	34. 1	35. 0	35. 8	36. 6	47
48	27. 5	28. 3	29. 1	29. 9	30. 7	31. 6	32. 4	33. 2	34. 0	34. 9	35. 7	36. 6	37. 4	48
49	28. 1	28. 9	29. 8	30. 6	31. 4	32. 3	33. 1	34. 0	34. 8	35. 7	36. 6	37. 4	38. 3	49
50	28. 7	29. 6	30. 4	31. 3	32. 1	33. 0	33. 9	34. 8	35. 6	36. 5	37. 4	38. 3	39. 3	50
51	29. 4	30. 3	31. 2	32. 0	32. 9	33. 8	34. 7	35. 6	36. 5	37. 5	38. 4	39. 3	40. 3	51
52	30. 1	31. 0	31. 9	32. 8	33. 7	34. 7	35. 6	36. 5	37. 5	38. 4	39. 4	40. 4	41. 3	52
53	30. 9	31. 8	32. 8	33. 7	34. 6	35. 6	36. 5	37. 5	38. 5	39. 5	40. 5	41. 5	42. 5	53
54	31. 7	32. 7	33. 6	34. 6	35. 6	36. 6	37. 6	38. 6	39. 6	40. 6	41. 7	42. 7	43. 8	54
55	32. 6	33. 6	34. 6	35. 6	36. 6	37. 6	38. 7	39. 7	40. 8	41. 9	42. 9	44. 0	45. 2	55
56	33. 5	34. 6	35. 6	36. 7	37. 7	38. 8	39. 9	41. 0	42. 1	43. 2	44. 3	45. 5	46. 7	56
57	34. 6	35. 6	36. 7	37. 8	38. 9	40. 0	41. 1	42. 3	43. 5	44. 6	45. 8	47. 1	48. 3	57
58	35. 7	36. 8	37. 9	39. 1	40. 2	41. 4	42. 6	43. 8	45. 0	46. 2	47. 5	48. 8	50. 1	58
59	36. 9	38. 0	39. 2	40. 4	41. 6	42. 8	44. 1	45. 4	46. 7	48. 0	49. 3	50. 7	52. 2	59
60. 0	38. 2	39. 4	40. 6	41. 9	43. 2	44. 5	45. 8	47. 1	48. 5	49. 9	51. 4	52. 9	54. 4	60. 0
60. 5	38. 9	40. 1	41. 4	42. 7	44. 0	45. 3	46. 7	48. 1	49. 5	51. 0	52. 5	54. 1	55. 7	60. 5
61. 0	39. 6	40. 9	42. 2	43. 5	44. 9	46. 3	47. 7	49. 1	50. 6	52. 1	53. 7	55. 3	57. 0	61. 0
61. 5	40. 4	41. 7	43. 0	44. 4	45. 8	47. 2	48. 7	50. 2	51. 7	53. 3	55. 0	56. 7	58. 5	61. 5
62. 0	41. 2	42. 5	43. 9	45. 3	46. 8	48. 2	49. 8	51. 3	52. 9	54. 6	56. 3	58. 1	60. 0	62. 0
62. 5	42. 0	43. 4	44. 8	46. 3	47. 8	49. 3	50. 9	52. 5	54. 2	56. 0	57. 8	59. 7	61. 7	62. 5
63. 0	42. 9	44. 3	45. 8	47. 3	48. 9	50. 5	52. 1	53. 8	55. 6	57. 5	59. 4	61. 4	63. 6	63. 0
63. 5	43. 8	45. 3	46. 9	48. 4	50. 0	51. 7	53. 4	55. 2	57. 1	59. 1	61. 1	63. 4	65. 7	63. 5
64. 0	44. 8	46. 4	48. 0	49. 6	51. 3	53. 0	54. 8	56. 7	58. 7	60. 8	63. 0	65. 5	68. 1	64. 0
64. 5	45. 9	47. 5	49. 1	50. 8	52. 6	54. 4	56. 3	58. 4	60. 5	62. 7	65. 2	67. 9	70. 9	64. 5
65. 0	47. 0	48. 7	50. 4	52. 2	54. 0	56. 0	58. 0	60. 1	62. 4	64. 9	67. 6	70. 7	74. 2	65. 0
65. 5	48. 2	49. 9	51. 7	53. 6	55. 6	57. 6	59. 8	62. 1	64. 6	67. 3	70. 4	74. 1	78. 8	65. 5
66. 0	49. 4	51. 3	53. 2	55. 2	57. 2	59. 4	61. 8	64. 3	67. 1	70. 2	73. 9	78. 6	90. 0	66. 0
66. 5	50. 8	52. 7	54. 7	56. 8	59. 1	61. 4	64. 0	66. 8	70. 0	73. 7	78. 5	90. 0		66. 5
67. 0	52. 3	54. 3	56. 4	58. 7	61. 1	63. 7	66. 5	69. 7	73. 5	78. 4	90. 0			67. 0
67. 5	53. 9	56. 0	58. 3	60. 7	63. 3	66. 2	69. 5	73. 3	78. 2	90. 0				67. 5
68. 0	55. 6	57. 9	60. 4	63. 0	65. 9	69. 2	73. 1	78. 1	90. 0					68. 0
68. 5	57. 5	60. 0	62. 7	65. 6	68. 9	72. 9	77. 9	90. 0						68. 5
69. 0	59. 6	62. 3	65. 3	68. 7	72. 6	77. 7	90. 0							69. 0
69. 5	61. 9	65. 0	68. 4	72. 4	77. 6	90. 0								69. 5
70. 0	64. 6	68. 1	72. 2	77. 4	90. 0									70. 0
70. 5	67. 8	71. 9	77. 2	90. 0										70. 5
71. 0	71. 7	77. 1	90. 0											71. 0
71. 5	76. 9	90. 0												71. 5
72. 0	90. 0													72. 0

TABLE 23

Correction of Amplitude as Observed on the Visible Horizon

Latitude	Declination													Latitude
	0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	
°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10
15	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	15
20	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	20
25	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	25
30	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	30
32	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	32
34	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	34
36	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.6	36
38	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	38
40	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	40
42	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	42
44	0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	44
46	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	46
48	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0	48
50	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.0	50
51	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.1	1.1	1.1	51
52	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.3	52
53	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.2	1.3	53
54	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.3	54
55	1.0	1.0	1.0	1.0	1.1	1.1	1.0	1.2	1.2	1.2	1.3	1.3	1.4	55
56	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.5	56
57	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.7	57
58	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.4	1.4	1.5	1.6	1.8	58
59	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.6	1.7	1.9	59
60	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.7	1.9	2.2	60
61	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.5	1.6	1.7	1.8	2.0	2.4	61
62	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.9	2.3	2.6	62
63	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.9	2.1	2.5	3.3	63
64	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.7	1.8	2.1	2.3	2.9	4.3	64
65.0	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.9	2.0	2.2	2.7	3.5	7.2	65.0
65.5	1.5	1.5	1.5	1.6	1.6	1.7	1.8	1.9	2.1	2.3	2.8	3.9		65.5
66.0	1.6	1.6	1.6	1.6	1.7	1.7	1.9	2.0	2.1	2.5	3.1	4.4		66.0
66.5	1.6	1.6	1.6	1.7	1.7	1.8	1.9	2.1	2.3	2.6	3.3	5.4		66.5
67.0	1.7	1.7	1.7	1.7	1.7	1.8	2.0	2.1	2.3	2.8	3.6	7.5		67.0
67.5	1.7	1.7	1.7	1.7	1.8	1.9	2.0	2.2	2.5	2.9	4.1			67.5
68.0	1.7	1.8	1.8	1.8	1.9	2.0	2.1	2.3	2.6	3.2	4.7			68.0
68.5	1.8	1.8	1.8	1.8	2.0	2.0	2.2	2.4	2.8	3.5	5.7			68.5
69.0	1.8	1.9	1.9	1.9	1.9	2.1	2.2	2.5	2.9	3.8	7.9			69.0
69.5	1.9	1.9	1.9	1.9	2.1	2.2	2.4	2.6	3.2	4.3				69.5
70.0	1.9	1.9	1.9	2.0	2.1	2.3	2.5	2.8	3.4	5.0				70.0
70.5	2.0	2.0	2.0	2.2	2.2	2.4	2.6	3.0	3.6	6.0				70.5
71.0	2.0	2.0	2.1	2.2	2.3	2.5	2.7	3.1	4.1	8.3				71.0
71.5	2.1	2.1	2.2	2.3	2.4	2.5	2.9	3.3	4.6					71.5
72.0	2.2	2.2	2.3	2.3	2.4	2.6	3.0	3.6	5.3					72.0
72.5	2.2	2.2	2.3	2.4	2.5	2.7	3.2	3.9	6.4					72.5
73.0	2.3	2.3	2.4	2.5	2.7	2.9	3.4	4.4	8.9					73.0
73.5	2.4	2.4	2.5	2.6	2.8	3.0	3.6	4.9						73.5
74.0	2.4	2.4	2.5	2.7	2.9	3.3	3.8	5.6						74.0
74.5	2.5	2.6	2.7	2.8	3.0	3.4	4.2	6.8						74.5
75.0	2.6	2.7	2.8	2.9	3.2	3.7	4.7	9.3						75.0
75.5	2.7	2.8	2.8	3.0	3.3	3.9	5.3							75.5
76.0	2.8	2.8	2.9	3.2	3.5	4.2	5.6							76.0
76.5	2.9	3.0	3.1	3.3	3.7	4.5	7.3							76.5
77.0	3.0	3.1	3.2	3.5	4.0	5.1	10.2							77.0

For the **sun,** a **planet,** or a **star,** apply the correction to the observed amplitude in the direction **away** from the elevated pole. For the **moon** apply **half** the correction **toward** the elevated pole.

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **same** name to latitude, **upper** transit: **add** correction to observed altitude												Latitude
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	
°	″	″	″	″	″	″	″	″	″	″	″	″	°
0					28.1	22.4	18.7	16.0	14.0	12.4	11.1	10.1	0
1						28.0	22.4	18.6	16.0	13.9	12.4	11.1	1
2							28.0	22.3	18.6	15.9	13.9	12.3	2
3								27.9	22.3	18.5	15.8	13.8	3
4	28.1								27.8	22.2	18.5	15.8	4
5	22.4	28.0								27.7	22.1	18.4	5
6	18.7	22.4	28.0								27.6	22.0	6
7	16.0	18.6	22.3	27.9								27.4	7
8	14.0	16.0	18.6	22.3	27.8								8
9	12.4	13.9	15.9	18.5	22.2	27.7							9
10	11.1	12.4	13.9	15.8	18.5	22.1	27.6						10
11	10.1	11.1	12.3	13.8	15.8	18.4	22.0	27.4					11
12	9.2	10.1	11.1	12.3	13.8	15.7	18.3	21.9	27.3				12
13	8.5	9.2	10.0	11.0	12.2	13.7	15.6	18.2	21.7	27.1			13
14	7.9	8.5	9.2	10.0	10.9	12.1	13.6	15.5	18.0	21.6	26.9		14
15	7.3	7.8	8.4	9.1	9.9	10.9	12.1	13.5	15.4	17.9	21.4	26.7	15
16	6.8	7.3	7.8	8.4	9.1	9.8	10.8	12.0	13.4	15.3	17.8	21.3	16
17	6.4	6.8	7.2	7.8	8.3	9.0	9.8	10.7	11.9	13.3	15.2	17.6	17
18	6.0	6.4	6.8	7.2	7.7	8.3	8.9	9.7	10.6	11.8	13.2	15.0	18
19	5.7	6.0	6.3	6.7	7.2	7.6	8.2	8.9	9.6	10.6	11.7	13.1	19
20	5.4	5.7	6.0	6.3	6.7	7.1	7.6	8.1	8.8	9.5	10.5	11.6	20
21	5.1	5.4	5.6	5.9	6.3	6.6	7.0	7.5	8.1	8.7	9.5	10.4	21
22	4.9	5.1	5.3	5.6	5.9	6.2	6.6	7.0	7.5	8.0	8.6	9.4	22
23	4.6	4.8	5.0	5.3	5.5	5.8	6.1	6.5	6.9	7.4	7.9	8.5	23
24	4.4	4.6	4.8	5.0	5.2	5.5	5.8	6.1	6.4	6.8	7.3	7.8	24
25	4.2	4.4	4.6	4.7	5.0	5.2	5.4	5.7	6.0	6.4	6.8	7.2	25
26	4.0	4.2	4.3	4.5	4.7	4.9	5.1	5.4	5.7	6.0	6.3	6.7	26
27	3.9	4.0	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.6	5.9	6.2	27
28	3.7	3.8	4.0	4.1	4.3	4.4	4.6	4.8	5.0	5.3	5.5	5.8	28
29	3.5	3.7	3.8	3.9	4.1	4.2	4.4	4.6	4.7	5.0	5.2	5.5	29
30	3.4	3.5	3.6	3.7	3.9	4.0	4.2	4.3	4.5	4.7	4.9	5.1	30
31	3.3	3.4	3.5	3.6	3.7	3.8	4.0	4.1	4.3	4.4	4.6	4.8	31
32	3.1	3.2	3.3	3.4	3.5	3.7	3.8	3.9	4.1	4.2	4.4	4.6	32
33	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4.0	4.2	4.3	33
34	2.9	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.7	3.8	3.9	4.1	34
35	2.8	2.9	3.0	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.9	35
36	2.7	2.8	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	36
37	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.1	3.2	3.3	3.4	3.5	37
38	2.5	2.6	2.6	2.7	2.8	2.8	2.9	3.0	3.0	3.2	3.2	3.3	38
39	2.4	2.5	2.5	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.1	3.2	39
40	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.8	2.9	3.0	3.0	40
41	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6	2.7	2.8	2.8	2.9	41
42	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6	2.7	2.8	42
43	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.7	43
44	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	44
45	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	45
46	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	46
47	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	47
48	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	48
49	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.1	49
50	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	50
51	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	51
52	1.5	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	52
53	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	53
54	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	54
55	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	55
56	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	56
57	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.5	57
58	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	58
59	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	59
60	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	60
Latitude	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	Latitude
	Declination **same** name to latitude, **upper** transit: **add** correction to observed altitude												

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude												Latitude
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	
°	″	″	″	″	″	″	″	″	″	″	″	″	°
0					28.1	22.4	18.7	16.0	14.0	12.4	11.1	10.1	0
1				28.1	22.4	18.7	16.0	14.0	12.4	11.2	10.1	9.3	1
2			28.1	22.4	18.7	16.0	14.0	12.5	11.2	10.2	9.3	8.6	2
3		28.1	22.4	18.7	16.0	14.0	12.5	11.2	10.2	9.3	8.6	8.0	3
4	28.1	22.4	18.7	16.0	14.0	12.5	11.2	10.2	9.3	8.6	8.0	7.4	4
5	22.4	18.7	16.0	14.0	12.5	11.2	10.2	9.3	8.6	8.0	7.4	7.0	5
6	18.7	16.0	14.0	12.5	11.2	10.2	9.3	8.6	8.0	7.5	7.0	6.6	6
7	16.0	14.0	12.4	11.2	10.2	9.3	8.6	8.0	7.5	7.0	6.6	6.2	7
8	14.0	12.4	11.2	10.2	9.3	8.6	8.0	7.5	7.0	6.6	6.2	5.9	8
9	12.4	11.2	10.2	9.3	8.6	8.0	7.5	7.0	6.6	6.2	5.9	5.6	9
10	11.1	10.1	9.3	8.6	8.0	7.4	7.0	6.6	6.2	5.9	5.6	5.3	10
11	10.1	9.3	8.6	8.0	7.4	7.0	6.6	6.2	5.9	5.6	5.3	5.1	11
12	9.2	8.5	7.9	7.4	7.0	6.5	6.2	5.9	5.6	5.3	5.0	4.8	12
13	8.5	7.9	7.4	6.9	6.5	6.2	5.8	5.6	5.3	5.0	4.8	4.6	13
14	7.9	7.4	6.9	6.5	6.2	5.8	5.5	5.3	5.0	4.8	4.6	4.4	14
15	7.3	6.9	6.5	6.1	5.8	5.5	5.3	5.0	4.8	4.6	4.4	4.2	15
16	6.8	6.5	6.1	5.8	5.5	5.2	5.0	4.8	4.6	4.4	4.2	4.1	16
17	6.4	6.1	5.8	5.5	5.2	5.0	4.8	4.6	4.4	4.2	4.1	3.9	17
18	6.0	5.7	5.5	5.2	5.0	4.8	4.6	4.4	4.2	4.1	3.9	3.8	18
19	5.7	5.4	5.2	4.9	4.7	4.5	4.4	4.2	4.0	3.9	3.8	3.6	19
20	5.4	5.1	4.9	4.7	4.5	4.3	4.2	4.0	3.9	3.8	3.6	3.5	20
21	5.1	4.9	4.7	4.5	4.3	4.2	4.0	3.9	3.7	3.6	3.5	3.4	21
22	4.9	4.7	4.5	4.3	4.1	4.0	3.9	3.7	3.6	3.5	3.4	3.3	22
23	4.6	4.4	4.3	4.1	4.0	3.8	3.7	3.6	3.5	3.4	3.3	3.2	23
24	4.4	4.2	4.1	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	24
25	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.1	3.0	25
26	4.0	3.9	3.8	3.6	3.5	3.4	3.3	3.2	3.1	3.0	3.0	2.9	26
27	3.9	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.8	27
28	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.8	2.7	28
29	3.5	3.4	3.3	3.2	3.1	3.1	3.0	2.9	2.8	2.8	2.7	2.6	29
30	3.4	3.3	3.2	3.1	3.0	3.0	2.9	2.8	2.7	2.7	2.6	2.5	30
31	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.6	2.6	2.5	2.5	31
32	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.5	2.4	32
33	3.0	2.9	2.9	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.3	33
34	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.3	34
35	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	35
36	2.7	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	36
37	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.1	2.1	37
38	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.0	38
39	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	39
40	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9	40
41	2.3	2.2	2.2	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.8	41
42	2.2	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	42
43	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.7	43
44	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	44
45	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	45
46	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	46
47	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	47
48	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.5	48
49	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	49
50	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	50
51	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	51
52	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.3	52
53	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	53
54	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	54
55	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	55
56	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	56
57	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	57
58	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	58
59	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	59
60	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	60
Latitude	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	Latitude
	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude												

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													Latitude
	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	9.2	8.5	7.9	7.3	6.8	6.4	6.0	5.7	5.4	5.1	4.9	4.6	4.4	0
1	10.1	9.2	8.5	7.8	7.3	6.8	6.4	6.0	5.7	5.4	5.1	4.8	4.6	1
2	11.1	10.0	9.2	8.4	7.8	7.2	6.8	6.3	6.0	5.6	5.3	5.0	4.8	2
3	12.3	11.0	10.0	9.1	8.4	7.8	7.2	6.7	6.3	5.9	5.6	5.3	5.0	3
4	13.8	12.2	10.9	9.9	9.1	8.3	7.7	7.2	6.7	6.3	5.9	5.5	5.2	4
5	15.7	13.7	12.1	10.9	9.8	9.0	8.3	7.6	7.1	6.6	6.2	5.8	5.5	5
6	18.3	15.6	13.6	12.1	10.8	9.8	8.9	8.2	7.6	7.0	6.6	6.1	5.8	6
7	21.9	18.2	15.5	13.5	12.0	10.7	9.7	8.9	8.1	7.5	7.0	6.5	6.1	7
8	27.3	21.7	18.0	15.4	13.4	11.9	10.6	9.6	8.8	8.1	7.5	6.9	6.4	8
9		27.1	21.6	17.9	15.3	13.3	11.8	10.6	9.5	8.7	8.0	7.4	6.8	9
10			26.9	21.4	17.8	15.2	13.2	11.7	10.5	9.5	8.6	7.9	7.3	10
11				26.7	21.3	17.6	15.0	13.1	11.6	10.4	9.4	8.5	7.8	11
12					26.5	21.1	17.5	14.9	13.0	11.5	10.3	9.3	8.4	12
13						26.2	20.9	17.3	14.8	12.8	11.3	10.1	9.2	13
14							26.0	20.7	17.1	14.6	12.7	11.2	10.0	14
15								25.7	20.4	16.9	14.4	12.5	11.1	15
16	26.5								25.4	20.2	16.7	14.3	12.4	16
17	21.1	26.2								25.1	20.0	16.5	14.1	17
18	17.5	20.9	26.0								24.8	19.7	16.3	18
19	14.9	17.3	20.7	25.7								24.5	19.5	19
20	13.0	14.8	17.1	20.4	25.4								24.2	20
21	11.5	12.8	14.6	16.9	20.2	25.1								21
22	10.3	11.3	12.7	14.4	16.7	20.0	24.8							22
23	9.3	10.1	11.2	12.5	14.3	16.5	19.7	24.5						23
24	8.4	9.2	10.0	11.1	12.4	14.1	16.3	19.5	24.2					24
25	7.7	8.3	9.0	9.9	10.9	12.2	13.9	16.1	19.2	23.8				25
26	7.1	7.6	8.2	8.9	9.8	10.8	12.1	13.7	15.9	18.9	23.5			26
27	6.6	7.0	7.5	8.1	8.8	9.6	10.6	11.9	13.5	15.6	18.6	23.1		27
28	6.2	6.5	7.0	7.4	8.0	8.7	9.5	10.5	11.7	13.3	15.4	18.3	22.7	28
29	5.7	6.1	6.4	6.9	7.3	7.9	8.6	9.4	10.3	11.5	13.1	15.1	18.0	29
30	5.4	5.7	6.0	6.4	6.8	7.2	7.8	8.4	9.2	10.1	11.3	12.8	14.9	30
31	5.1	5.3	5.6	5.9	6.3	6.7	7.1	7.7	8.3	9.0	10.0	11.1	12.6	31
32	4.8	5.0	5.2	5.5	5.8	6.2	6.5	7.0	7.5	8.1	8.9	9.8	10.9	32
33	4.5	4.7	4.9	5.1	5.4	5.7	6.1	6.4	6.9	7.4	8.0	8.7	9.6	33
34	4.3	4.4	4.6	4.8	5.1	5.3	5.6	5.9	6.3	6.8	7.3	7.8	8.6	34
35	4.0	4.2	4.4	4.5	4.7	5.0	5.2	5.5	5.8	6.2	6.6	7.1	7.7	35
36	3.8	4.0	4.1	4.3	4.5	4.7	4.9	5.1	5.4	5.7	6.1	6.5	7.0	36
37	3.6	3.8	3.9	4.0	4.2	4.4	4.6	4.8	5.0	5.3	5.6	6.0	6.4	37
38	3.4	3.6	3.7	3.8	4.0	4.1	4.3	4.5	4.7	4.9	5.2	5.5	5.8	38
39	3.3	3.4	3.5	3.6	3.8	3.9	4.0	4.2	4.4	4.6	4.8	5.1	5.4	39
40	3.1	3.2	3.3	3.4	3.6	3.7	3.8	4.0	4.1	4.3	4.5	4.7	5.0	40
41	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4.0	4.2	4.4	4.6	41
42	2.9	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.7	3.8	4.0	4.1	4.3	42
43	2.7	2.8	2.9	3.0	3.0	3.1	3.2	3.3	3.5	3.6	3.7	3.9	4.0	43
44	2.6	2.7	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.8	44
45	2.5	2.6	2.6	2.7	2.8	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	45
46	2.4	2.4	2.5	2.6	2.6	2.7	2.8	2.8	2.9	3.0	3.1	3.2	3.3	46
47	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.8	2.9	2.9	3.0	3.1	47
48	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.8	2.9	3.0	48
49	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.8	49
50	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.6	50
51	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5	51
52	1.8	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.4	52
53	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2	53
54	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.1	2.1	54
55	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	55
56	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	56
57	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	57
58	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	58
59	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	59
60	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	60
Latitude	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Latitude
	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude													Latitude
	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	9.2	8.5	7.9	7.3	6.8	6.4	6.0	5.7	5.4	5.1	4.9	4.6	4.4	0
1	8.5	7.9	7.4	6.9	6.5	6.1	5.7	5.4	5.1	4.9	4.7	4.4	4.2	1
2	7.9	7.4	6.9	6.5	6.1	5.8	5.5	5.2	4.9	4.7	4.5	4.3	4.1	2
3	7.4	6.9	6.5	6.1	5.8	5.5	5.2	4.9	4.7	4.5	4.3	4.1	3.9	3
4	7.0	6.5	6.2	5.8	5.5	5.2	5.0	4.7	4.5	4.3	4.1	4.0	3.8	4
5	6.5	6.2	5.8	5.5	5.2	5.0	4.8	4.5	4.3	4.2	4.0	3.8	3.7	5
6	6.2	5.8	5.5	5.3	5.0	4.8	4.6	4.4	4.2	4.0	3.9	3.7	3.6	6
7	5.9	5.6	5.3	5.0	4.8	4.6	4.4	4.2	4.0	3.9	3.7	3.6	3.5	7
8	5.6	5.3	5.0	4.8	4.6	4.4	4.2	4.0	3.9	3.7	3.6	3.5	3.4	8
9	5.3	5.0	4.8	4.6	4.4	4.2	4.1	3.9	3.8	3.6	3.5	3.4	3.3	9
10	5.0	4.8	4.6	4.4	4.2	4.1	3.9	3.8	3.6	3.5	3.4	3.3	3.2	10
11	4.8	4.6	4.4	4.2	4.1	3.9	3.8	3.6	3.5	3.4	3.3	3.2	3.1	11
12	4.6	4.4	4.3	4.1	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	12
13	4.4	4.3	4.1	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	13
14	4.2	4.1	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	14
15	4.1	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.8	15
16	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.8	2.7	16
17	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.6	17
18	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.6	2.5	18
19	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.6	2.6	2.5	19
20	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.6	2.6	2.5	2.4	20
21	3.3	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.4	2.4	21
22	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.4	2.4	2.3	22
23	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.4	2.4	2.3	2.3	23
24	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	24
25	2.9	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	25
26	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.1	2.1	26
27	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.1	27
28	2.6	2.6	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.0	28
29	2.6	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	29
30	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9	30
31	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9	31
32	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.8	32
33	2.3	2.2	2.2	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	33
34	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	34
35	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	35
36	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	36
37	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.6	37
38	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	38
39	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	39
40	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.5	40
41	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	41
42	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	42
43	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	43
44	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	44
45	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	45
46	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	46
47	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	47
48	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	48
49	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	49
50	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	50
51	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	51
52	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	52
53	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	53
54	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	54
55	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	55
56	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	56
57	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	57
58	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	58
59	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	59
60	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	60
Latitude	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	Latitude
	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude													

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													Latitude
	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	4.2	4.0	3.9	3.7	3.5	3.4	3.3	3.1	3.0	2.9	2.8	2.7	2.6	0
1	4.4	4.2	4.0	3.8	3.7	3.5	3.4	3.2	3.1	3.0	2.9	2.8	2.7	1
2	4.6	4.3	4.1	4.0	3.8	3.6	3.5	3.3	3.2	3.1	3.0	2.8	2.7	2
3	4.7	4.5	4.3	4.1	3.9	3.7	3.6	3.4	3.3	3.2	3.0	2.9	2.8	3
4	5.0	4.7	4.5	4.3	4.1	3.9	3.7	3.5	3.4	3.2	3.1	3.0	2.9	4
5	5.2	4.9	4.7	4.4	4.2	4.0	3.8	3.7	3.5	3.3	3.2	3.1	3.0	5
6	5.4	5.1	4.9	4.6	4.4	4.2	4.0	3.8	3.6	3.5	3.3	3.2	3.0	6
7	5.7	5.4	5.1	4.8	4.6	4.3	4.1	3.9	3.7	3.6	3.4	3.3	3.1	7
8	6.0	5.7	5.3	5.0	4.8	4.5	4.3	4.1	3.9	3.7	3.5	3.4	3.2	8
9	6.4	6.0	5.6	5.3	5.0	4.7	4.4	4.2	4.0	3.8	3.6	3.5	3.3	9
10	6.8	6.3	5.9	5.5	5.2	4.9	4.6	4.4	4.2	3.9	3.7	3.6	3.4	10
11	7.2	6.7	6.2	5.8	5.5	5.1	4.8	4.6	4.3	4.1	3.9	3.7	3.5	11
12	7.7	7.1	6.6	6.2	5.8	5.4	5.1	4.8	4.5	4.3	4.0	3.8	3.6	12
13	8.3	7.6	7.1	6.5	6.1	5.7	5.3	5.0	4.7	4.4	4.2	4.0	3.8	13
14	9.1	8.2	7.6	7.0	6.4	6.0	5.6	5.2	4.9	4.6	4.4	4.1	3.9	14
15	9.9	8.9	8.1	7.4	6.9	6.4	5.9	5.5	5.2	4.8	4.5	4.3	4.0	15
16	10.9	9.8	8.8	8.0	7.3	6.8	6.3	5.8	5.4	5.1	4.8	4.5	4.2	16
17	12.2	10.8	9.6	8.7	7.9	7.2	6.7	6.2	5.7	5.3	5.0	4.7	4.4	17
18	13.9	12.1	10.6	9.5	8.6	7.8	7.1	6.6	6.1	5.6	5.2	4.9	4.6	18
19	16.1	13.7	11.9	10.5	9.4	8.4	7.7	7.0	6.4	6.0	5.5	5.1	4.8	19
20	19.2	15.9	13.5	11.7	10.3	9.2	8.3	7.5	6.9	6.3	5.8	5.4	5.0	20
21	23.8	18.9	15.6	13.3	11.5	10.1	9.1	8.2	7.4	6.8	6.2	5.7	5.3	21
22		23.5	18.6	15.4	13.1	11.3	10.0	8.9	8.0	7.3	6.6	6.1	5.6	22
23			23.1	18.3	15.1	12.8	11.1	9.8	8.7	7.9	7.1	6.5	6.0	23
24				22.7	18.0	14.9	12.6	10.9	9.6	8.6	7.7	7.0	6.4	24
25					22.3	17.7	14.6	12.4	10.7	9.4	8.4	7.5	6.8	25
26						21.9	17.4	14.3	12.1	10.5	9.2	8.2	7.4	26
27							21.5	17.0	14.0	11.9	10.3	9.1	8.1	27
28								21.1	16.7	13.8	11.7	10.1	8.9	28
29	22.3								20.6	16.3	13.5	11.4	9.9	29
30	17.7	21.9								20.2	16.0	13.2	11.1	30
31	14.6	17.4	21.5								19.8	15.6	12.9	31
32	12.4	14.3	17.0	21.1								19.3	15.3	32
33	10.7	12.1	14.0	16.7	20.6								18.9	33
34	9.4	10.5	11.9	13.8	16.3	20.2								34
35	8.4	9.2	10.3	11.7	13.5	16.0	19.8							35
36	7.5	8.2	9.1	10.1	11.4	13.2	15.6	19.3						36
37	6.8	7.4	8.1	8.9	9.9	11.1	12.9	15.3	18.9					37
38	6.2	6.7	7.2	7.9	8.7	9.6	10.9	12.6	14.9	18.4				38
39	5.7	6.1	6.5	7.1	7.7	8.5	9.4	10.6	12.2	14.5	17.9			39
40	5.3	5.6	6.0	6.4	6.9	7.5	8.2	9.2	10.4	11.9	14.1	17.4		40
41	4.9	5.2	5.5	5.8	6.2	6.7	7.3	8.0	8.9	10.1	11.6	13.8	17.0	41
42	4.5	4.8	5.0	5.3	5.7	6.1	6.6	7.1	7.8	8.7	9.8	11.3	13.4	42
43	4.2	4.4	4.6	4.9	5.2	5.5	5.9	6.4	6.9	7.6	8.5	9.5	11.0	43
44	3.9	4.1	4.3	4.5	4.8	5.1	5.4	5.8	6.2	6.7	7.4	8.2	9.3	44
45	3.7	3.8	4.0	4.2	4.4	4.7	4.9	5.2	5.6	6.0	6.6	7.2	8.0	45
46	3.5	3.6	3.7	3.9	4.1	4.3	4.5	4.8	5.1	5.4	5.9	6.4	7.0	46
47	3.3	3.4	3.5	3.6	3.8	4.0	4.2	4.4	4.6	4.9	5.3	5.7	6.2	47
48	3.1	3.2	3.3	3.4	3.5	3.7	3.9	4.0	4.3	4.5	4.8	5.1	5.5	48
49	2.9	3.0	3.1	3.2	3.3	3.4	3.6	3.7	3.9	4.1	4.4	4.6	5.0	49
50	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.5	3.6	3.8	4.0	4.2	4.5	50
51	2.6	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.4	3.5	3.7	3.9	4.1	51
52	2.4	2.5	2.6	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.4	3.6	3.7	52
53	2.3	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.3	3.4	53
54	2.2	2.2	2.3	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9	3.0	3.2	54
55	2.0	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.6	2.7	2.8	2.9	55
56	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.6	2.7	56
57	1.8	1.9	1.9	2.0	2.0	2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.5	57
58	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.3	2.3	58
59	1.6	1.7	1.7	1.7	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.1	2.2	59
60	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.0	60
Latitude	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	Latitude
	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **contrary** name to latitude **upper** transit: **add** correction to observed altitude													Latitude
	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	4.2	4.0	3.9	3.7	3.5	3.4	3.3	3.1	3.0	2.9	2.8	2.7	2.6	0
1	4.1	3.9	3.7	3.6	3.4	3.3	3.2	3.1	2.9	2.8	2.7	2.6	2.6	1
2	3.9	3.8	3.6	3.5	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2
3	3.8	3.6	3.5	3.4	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	3
4	3.7	3.5	3.4	3.3	3.2	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	4
5	3.6	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	5
6	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.4	2.3	6
7	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	7
8	3.2	3.1	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.4	2.3	2.3	2.2	8
9	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.2	9
10	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.2	2.1	10
11	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.3	2.2	2.1	2.1	11
12	2.9	2.8	2.7	2.6	2.6	2.5	2.4	2.3	2.3	2.2	2.2	2.1	2.0	12
13	2.8	2.7	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	13
14	2.7	2.7	2.6	2.5	2.4	2.4	2.3	2.3	2.2	2.1	2.1	2.0	2.0	14
15	2.7	2.6	2.5	2.5	2.4	2.3	2.3	2.2	2.1	2.1	2.0	2.0	1.9	15
16	2.6	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9	16
17	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	17
18	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8	18
19	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	19
20	2.4	2.3	2.3	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.8	20
21	2.3	2.3	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.8	1.8	1.7	21
22	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.7	22
23	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	23
24	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	24
25	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6	25
26	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	26
27	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	27
28	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.5	28
29	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	29
30	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	30
31	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	31
32	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	32
33	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	33
34	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	34
35	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	35
36	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	36
37	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	37
38	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	38
39	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	39
40	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2	40
41	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	41
42	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	42
43	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	43
44	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	44
45	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	45
46	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	46
47	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	47
48	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1		48
49	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1			49
50	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1				50
51	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0					51
52	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0						52
53	1.1	1.1	1.1	1.1	1.0	1.0	1.0							53
54	1.1	1.1	1.0	1.0	1.0	1.0								54
55	1.0	1.0	1.0	1.0	1.0									55
56	1.0	1.0	1.0	1.0										56
57	1.0	1.0	1.0											57
58	1.0	0.9												58
59	0.9												0.8	59
60												0.8	0.8	60
Latitude	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	Latitude
	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude													

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													Latitude
	38°	39°	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	2.5	2.4	2.3	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	0
1	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1
2	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	2
3	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8	1.7	3
4	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	4
5	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8	5
6	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.8	6
7	3.0	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.8	7
8	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.9	8
9	3.2	3.0	2.9	2.8	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	1.9	9
10	3.2	3.1	3.0	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9	10
11	3.4	3.2	3.1	2.9	2.8	2.7	2.6	2.4	2.3	2.2	2.1	2.1	2.0	11
12	3.5	3.3	3.1	3.0	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	12
13	3.6	3.4	3.2	3.1	2.9	2.8	2.7	2.6	2.4	2.3	2.2	2.1	2.0	13
14	3.7	3.5	3.3	3.2	3.0	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.1	14
15	3.8	3.6	3.4	3.3	3.1	3.0	2.8	2.7	2.6	2.4	2.3	2.2	2.1	15
16	4.0	3.8	3.6	3.4	3.2	3.0	2.9	2.8	2.6	2.5	2.4	2.3	2.2	16
17	4.1	3.9	3.7	3.5	3.3	3.1	3.0	2.8	2.7	2.6	2.4	2.3	2.2	17
18	4.3	4.1	3.8	3.6	3.4	3.2	3.1	2.9	2.8	2.6	2.5	2.4	2.3	18
19	4.5	4.2	4.0	3.7	3.5	3.3	3.2	3.0	2.8	2.7	2.6	2.4	2.3	19
20	4.7	4.4	4.1	3.9	3.7	3.5	3.3	3.1	2.9	2.8	2.6	2.5	2.4	20
21	4.9	4.6	4.3	4.0	3.8	3.6	3.4	3.2	3.0	2.9	2.7	2.6	2.4	21
22	5.2	4.8	4.5	4.2	4.0	3.7	3.5	3.3	3.1	2.9	2.8	2.6	2.5	22
23	5.5	5.1	4.7	4.4	4.1	3.9	3.6	3.4	3.2	3.0	2.9	2.7	2.6	23
24	5.8	5.4	5.0	4.6	4.3	4.0	3.8	3.5	3.3	3.1	3.0	2.8	2.6	24
25	6.2	5.7	5.3	4.9	4.5	4.2	3.9	3.7	3.5	3.3	3.1	2.9	2.7	25
26	6.7	6.1	5.6	5.2	4.8	4.4	4.1	3.8	3.6	3.4	3.2	3.0	2.8	26
27	7.2	6.5	6.0	5.5	5.0	4.6	4.3	4.0	3.7	3.5	3.3	3.1	2.9	27
28	7.9	7.1	6.4	5.8	5.3	4.9	4.5	4.2	3.9	3.6	3.4	3.2	3.0	28
29	8.7	7.7	6.9	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.3	3.1	29
30	9.6	8.5	7.5	6.7	6.1	5.5	5.1	4.7	4.3	4.0	3.7	3.4	3.2	30
31	10.9	9.4	8.2	7.3	6.6	5.9	5.4	4.9	4.5	4.2	3.9	3.6	3.3	31
32	12.6	10.6	9.2	8.0	7.1	6.4	5.8	5.2	4.8	4.4	4.0	3.7	3.5	32
33	14.9	12.2	10.4	8.9	7.8	6.9	6.2	5.6	5.1	4.6	4.3	3.9	3.6	33
34	18.4	14.5	11.9	10.1	8.7	7.6	6.7	6.0	5.4	4.9	4.5	4.1	3.8	34
35		17.9	14.1	11.6	9.8	8.5	7.4	6.6	5.9	5.3	4.8	4.4	4.0	35
36			17.4	13.8	11.3	9.5	8.2	7.2	6.4	5.7	5.1	4.6	4.2	36
37				17.0	13.4	11.0	9.3	8.0	7.0	6.2	5.5	5.0	4.5	37
38					16.5	13.0	10.7	9.0	7.7	6.8	6.0	5.3	4.8	38
39						16.0	12.6	10.3	8.7	7.5	6.5	5.8	5.1	39
40							15.5	12.2	10.0	8.4	7.2	6.3	5.6	40
41								15.0	11.8	9.7	8.1	7.0	6.1	41
42	16.5								14.5	11.4	9.3	7.9	6.7	42
43	13.0	16.0								14.0	11.0	9.0	7.6	43
44	10.6	12.6	15.5								13.6	10.6	8.7	44
45	9.0	10.3	12.2	15.0								13.1	10.2	45
46	7.7	8.7	10.0	11.8	14.5								12.6	46
47	6.8	7.5	8.4	9.7	11.4	14.0								47
48	6.0	6.5	7.2	8.1	9.3	11.0	13.6							48
49	5.3	5.8	6.3	7.0	7.9	9.0	10.6	13.1						49
50	4.8	5.1	5.6	6.1	6.7	7.6	8.7	10.2	12.6					50
51	4.3	4.6	5.0	5.4	5.9	6.5	7.3	8.4	9.9	12.1				51
52	3.9	4.2	4.5	4.8	5.2	5.7	6.3	7.0	8.0	9.5	11.6			52
53	3.6	3.8	4.0	4.3	4.6	5.0	5.4	6.0	6.7	7.7	9.1	11.1		53
54	3.3	3.5	3.7	3.9	4.1	4.4	4.8	5.2	5.8	6.5	7.4	8.7	10.6	54
55	3.0	3.2	3.3	3.5	3.7	4.0	4.3	4.6	5.0	5.5	6.2	7.1	8.3	55
56	2.8	2.9	3.1	3.2	3.4	3.6	3.8	4.1	4.4	4.8	5.3	5.9	6.8	56
57	2.6	2.7	2.8	2.9	3.1	3.2	3.4	3.6	3.9	4.2	4.6	5.0	5.6	57
58	2.4	2.5	2.6	2.7	2.8	2.9	3.1	3.3	3.5	3.7	4.0	4.4	4.8	58
59	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3.0	3.1	3.3	3.6	3.8	4.2	59
60	2.1	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3.0	3.2	3.4	3.6	60
Latitude	38°	39°	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	Latitude
	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													

TABLE 24

Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude													Latitude
	38°	39°	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	2.5	2.4	2.3	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	0
1	2.5	2.4	2.3	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1
2	2.4	2.3	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	2
3	2.4	2.3	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.7	1.6	1.6	3
4	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	1.6	4
5	2.3	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.7	1.6	1.6	1.5	5
6	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	6
7	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.5	7
8	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	8
9	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.6	1.6	1.6	1.5	1.5	9
10	2.1	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.4	10
11	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4	11
12	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.4	1.4	12
13	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.4	13
14	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.4	1.4	1.4	14
15	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.4	15
16	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.3	16
17	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	17
18	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.3	18
19	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	19
20	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	20
21	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	21
22	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2	22
23	1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	23
24	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	24
25	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	25
26	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	26
27	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	27
28	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.1	28
29	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	29
30	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	30
31	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	31
32	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	32
33	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	33
34	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	34
35	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1		35
36	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1			36
37	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1				37
38	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1					38
39	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1						39
40	1.2	1.2	1.2	1.2	1.1	1.1	1.1							40
41	1.2	1.2	1.2	1.1	1.1	1.1								41
42	1.2	1.2	1.1	1.1	1.1									42
43	1.2	1.1	1.1	1.1										43
44	1.1	1.1	1.1											44
45	1.1	1.1												45
46	1.1												0.9	46
47												0.9	0.9	47
48											0.9	0.9	0.9	48
49										0.9	0.9	0.9	0.8	49
50									0.9	0.9	0.9	0.8	0.8	50
51								0.9	0.9	0.9	0.8	0.8	0.8	51
52							0.9	0.9	0.9	0.8	0.8	0.8	0.8	52
53						0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	53
54					0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	54
55				0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	55
56			0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	56
57		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	57
58	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	58
59	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	59
60	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	60
Latitude	38°	39°	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	Latitude
	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude													

TABLE 24
Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													Latitude
	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	61°	62°	63°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0
1	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1
2	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	2
3	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	3
4	1.7	1.6	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	4
5	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.1	5
6	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	6
7	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	7
8	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1	8
9	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.1	9
10	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	10
11	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	11
12	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	12
13	2.0	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.1	13
14	2.0	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	14
15	2.0	1.9	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	15
16	2.1	2.0	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.2	1.2	16
17	2.1	2.0	1.9	1.8	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	17
18	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	18
19	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.3	1.2	19
20	2.3	2.1	2.0	1.9	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.2	20
21	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.2	21
22	2.4	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.3	22
23	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	23
24	2.5	2.4	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	24
25	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	25
26	2.6	2.5	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	26
27	2.7	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.4	27
28	2.8	2.6	2.5	2.3	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.5	1.4	28
29	2.9	2.7	2.5	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	29
30	3.0	2.8	2.6	2.5	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	30
31	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.9	1.7	1.6	1.5	1.4	31
32	3.2	3.0	2.8	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	32
33	3.4	3.1	2.9	2.7	2.5	2.4	2.2	2.1	1.9	1.8	1.7	1.6	1.5	33
34	3.5	3.2	3.0	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.7	1.6	1.5	34
35	3.7	3.4	3.1	2.9	2.7	2.5	2.3	2.2	2.0	1.9	1.8	1.7	1.6	35
36	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.3	2.1	2.0	1.8	1.7	1.6	36
37	4.1	3.7	3.4	3.2	2.9	2.7	2.5	2.3	2.2	2.0	1.9	1.7	1.6	37
38	4.3	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.2	2.1	1.9	1.8	1.7	38
39	4.6	4.2	3.8	3.5	3.2	2.9	2.7	2.5	2.3	2.1	2.0	1.8	1.7	39
40	5.0	4.5	4.0	3.7	3.3	3.1	2.8	2.6	2.4	2.2	2.0	1.9	1.8	40
41	5.4	4.8	4.3	3.9	3.5	3.2	2.9	2.7	2.5	2.3	2.1	1.9	1.8	41
42	5.9	5.2	4.6	4.1	3.7	3.4	3.1	2.8	2.6	2.4	2.2	2.0	1.9	42
43	6.5	5.7	5.0	4.4	4.0	3.6	3.2	2.9	2.7	2.5	2.3	2.1	1.9	43
44	7.3	6.3	5.4	4.8	4.3	3.8	3.4	3.1	2.8	2.6	2.3	2.2	2.0	44
45	8.4	7.0	6.0	5.2	4.6	4.1	3.6	3.3	3.0	2.7	2.4	2.2	2.0	45
46	9.9	8.0	6.7	5.8	5.0	4.4	3.9	3.5	3.1	2.8	2.6	2.3	2.1	46
47	12.1	9.5	7.7	6.5	5.5	4.8	4.2	3.7	3.3	3.0	2.7	2.4	2.2	47
48		11.6	9.1	7.4	6.2	5.3	4.6	4.0	3.6	3.2	2.8	2.6	2.3	48
49			11.1	8.7	7.1	5.9	5.0	4.4	3.8	3.4	3.0	2.7	2.4	49
50				10.6	8.3	6.8	5.6	4.8	4.2	3.6	3.2	2.9	2.6	50
51					10.2	7.9	6.4	5.4	4.6	4.0	3.5	3.0	2.7	51
52						9.7	7.6	6.1	5.1	4.3	3.8	3.3	2.9	52
53							9.2	7.2	5.9	4.9	4.1	3.6	3.1	53
54								8.8	6.8	5.5	4.6	3.9	3.4	54
55	10.2								8.3	6.5	5.3	4.3	3.7	55
56	7.9	9.7								7.9	6.1	5.0	4.1	56
57	6.4	7.6	9.2								7.4	5.8	4.7	57
58	5.4	6.1	7.2	8.8								7.0	5.4	58
59	4.6	5.1	5.9	6.8	8.3								6.6	59
60	4.0	4.3	4.9	5.5	6.5	7.9								60
Latitude	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	61°	62°	63°	Latitude
	Declination **same** name as latitude, **upper** transit: **add** correction to observed altitude													

TABLE 24
Altitude Factor

a, the change of altitude in one minute from meridian transit.

Latitude	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude													Latitude
	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	61°	62°	63°	
°	″	″	″	″	″	″	″	″	″	″	″	″	″	°
0	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0
1	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1
2	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	2
3	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	3
4	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	4
5	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	5
6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	6
7	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	7
8	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	8
9	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	9
10	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	10
11	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	11
12	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	12
13	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	0.9	13
14	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	14
15	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	15
16	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	16
17	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	17
18	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	18
19	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9	19
20	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	20
21	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	21
22	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9		22
23	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9			23
24	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9				24
25	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9					25
26	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9						26
27	1.1	1.1	1.1	1.0	1.0	1.0	1.0							27
28	1.1	1.1	1.1	1.0	1.0	1.0								28
29	1.1	1.1	1.0	1.0	1.0									29
30	1.1	1.1	1.0	1.0										30
31	1.1	1.0	1.0											31
32	1.1	1.0												32
33	1.1											0.8		33
34												0.8	0.7	34
35											0.8	0.8	0.7	35
36										0.8	0.8	0.8	0.7	36
37									0.8	0.8	0.8	0.7	0.7	37
38								0.8	0.8	0.8	0.8	0.7	0.7	38
39							0.8	0.8	0.8	0.8	0.8	0.7	0.7	39
40						0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	40
41					0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	41
42				0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	42
43			0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	43
44		0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	44
45	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	45
46	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	46
47	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	47
48	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	48
49	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	49
50	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	50
51	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	51
52	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	52
53	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	53
54	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	54
55	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	55
56	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	56
57	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	57
58	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	58
59	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	59
60	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	60
Latitude	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	61°	62°	63°	Latitude
	Declination **contrary** name to latitude, **upper** transit: **add** correction to observed altitude													

TABLE 25

Change of Altitude in Given Time from Meridian Transit

a (table 24)	t, meridian angle															*a* (table 24)
	5′	10′	15′	20′	25′	30′	35′	40′	45′	50′	55′	1° 00′	1° 05′	1° 10′	
	0m 20s	0m 40s	1m 00s	1m 20s	1m 40s	2m 00s	2m 20s	2m 40s	3m 00s	3m 20s	3m 40s	4m 00s	4m 20s	4m 40s	
″	′	′	′	′	′	′	′	′	′	′	′	′	′	′	″
0. 1	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1
0. 2	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 2
0. 3	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 1	0. 3
0. 4	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 4
0. 5	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 1	0. 2	0. 2	0. 5
0. 6	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 1	0. 2	0. 2	0. 2	0. 6
0. 7	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 2	0. 2	0. 2	0. 3	0. 7
0. 8	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 1	0. 2	0. 2	0. 3	0. 3	0. 8
0. 9	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 2	0. 2	0. 2	0. 3	0. 3	0. 9
1. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 2	0. 2	0. 2	0. 3	0. 3	0. 4	1. 0
2. 0	0. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 2	0. 2	0. 3	0. 4	0. 4	0. 5	0. 6	0. 7	2. 0
3. 0	0. 0	0. 0	0. 1	0. 1	0. 1	0. 2	0. 3	0. 4	0. 4	0. 6	0. 7	0. 8	0. 9	1. 1	3. 0
4. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 4	0. 5	0. 6	0. 7	0. 9	1. 1	1. 3	1. 5	4. 0
5. 0	0. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 5	0. 6	0. 8	0. 9	1. 1	1. 3	1. 6	1. 8	5. 0
6. 0	0. 0	0. 0	0. 1	0. 2	0. 3	0. 4	0. 5	0. 7	0. 9	1. 1	1. 3	1. 6	1. 9	2. 2	6. 0
7. 0	0. 0	0. 1	0. 1	0. 2	0. 3	0. 5	0. 6	0. 8	1. 0	1. 3	1. 6	1. 9	2. 2	2. 5	7. 0
8. 0	0. 0	0. 1	0. 1	0. 2	0. 4	0. 5	0. 7	0. 9	1. 2	1. 5	1. 8	2. 1	2. 5	2. 9	8. 0
9. 0	0. 0	0. 1	0. 2	0. 3	0. 4	0. 6	0. 8	1. 1	1. 4	1. 7	2. 0	2. 4	2. 8	3. 3	9. 0
10. 0	0. 0	0. 1	0. 2	0. 3	0. 5	0. 7	0. 9	1. 2	1. 5	1. 9	2. 2	2. 7	3. 1	3. 6	10. 0
11. 0	0. 0	0. 1	0. 2	0. 3	0. 5	0. 7	1. 0	1. 3	1. 6	2. 0	2. 5	2. 9	3. 4	4. 0	11. 0
12. 0	0. 0	0. 1	0. 2	0. 4	0. 6	0. 8	1. 1	1. 4	1. 8	2. 2	2. 7	3. 2	3. 8	4. 4	12. 0
13. 0	0. 0	0. 1	0. 2	0. 4	0. 6	0. 9	1. 2	1. 5	2. 0	2. 4	2. 9	3. 5	4. 1	4. 7	13. 0
14. 0	0. 0	0. 1	0. 2	0. 4	0. 6	0. 9	1. 3	1. 7	2. 1	2. 6	3. 1	3. 7	4. 4	5. 1	14. 0
15. 0	0. 0	0. 1	0. 3	0. 4	0. 7	1. 0	1. 4	1. 8	2. 2	2. 8	3. 4	4. 0	4. 7	5. 4	15. 0
16. 0	0. 0	0. 1	0. 3	0. 5	0. 7	1. 1	1. 5	1. 9	2. 4	3. 0	3. 6	4. 3	5. 0	5. 8	16. 0
17. 0	0. 0	0. 1	0. 3	0. 5	0. 8	1. 1	1. 5	2. 0	2. 6	3. 1	3. 8	4. 5	5. 3	6. 2	17. 0
18. 0	0. 0	0. 1	0. 3	0. 5	0. 8	1. 2	1. 6	2. 1	2. 7	3. 3	4. 0	4. 8	5. 6	6. 5	18. 0
19. 0	0. 0	0. 1	0. 3	0. 6	0. 9	1. 3	1. 7	2. 3	2. 8	3. 5	4. 3	5. 1	5. 9	6. 9	19. 0
20. 0	0. 0	0. 1	0. 3	0. 6	0. 9	1. 3	1. 8	2. 4	3. 0	3. 7	4. 5	5. 3	6. 3	7. 3	20. 0
21. 0	0. 0	0. 2	0. 4	0. 6	1. 0	1. 4	1. 9	2. 5	3. 2	3. 9	4. 7	5. 6	6. 6	7. 6	21. 0
22. 0	0. 0	0. 2	0. 4	0. 7	1. 0	1. 5	2. 0	2. 6	3. 3	4. 1	4. 9	5. 9	6. 9	8. 0	22. 0
23. 0	0. 0	0. 2	0. 4	0. 7	1. 1	1. 5	2. 1	2. 7	3. 4	4. 3	5. 2	6. 1	7. 2	8. 3	23. 0
24. 0	0. 0	0. 2	0. 4	0. 7	1. 1	1. 6	2. 2	2. 8	3. 6	4. 4	5. 4	6. 4	7. 5	8. 7	24. 0
25. 0	0. 0	0. 2	0. 4	0. 7	1. 2	1. 7	2. 3	3. 0	3. 8	4. 6	5. 6	6. 7	7. 8	9. 1	25. 0
26. 0	0. 0	0. 2	0. 4	0. 8	1. 2	1. 7	2. 4	3. 1	3. 9	4. 8	5. 8	6. 9	8. 1	9. 4	26. 0
27. 0	0. 0	0. 2	0. 4	0. 8	1. 2	1. 8	2. 4	3. 2	4. 0	5. 0	6. 0	7. 2	8. 5	9. 8	27. 0
28. 0	0. 1	0. 2	0. 5	0. 8	1. 3	1. 9	2. 5	3. 3	4. 2	5. 2	6. 3	7. 5	8. 8	10. 2	28. 0

Caution. —If this table is entered with the meridian angle of the Moon in arc units, such units should correspond to the meridian angle in time units as given in the Increments and Corrections section of the *Nautical Almanac*.

TABLE 25

Change of Altitude in Given Time from Meridian Transit

a (table 24)	t, meridian angle															*a* (table 24)
	1° 15′	1° 20′	1° 25′	1° 30′	1° 35′	1° 40′	1° 45′	1° 50′	1° 55′	2° 00′	2° 05′	2° 10′	2° 15′	2° 20′		
	5m 00s	5m 20s	5m 40s	6m 00s	6m 20s	6m 40s	7m 00s	7m 20s	7m 40s	8m 00s	8m 20s	8m 40s	9m 00s	9m 20s		
″	′	′	′	′	′	′	′	′	′	′	′	′	′	′	″	
0. 1	0. 0	0. 0	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	
0. 2	0. 1	0. 1	0. 1	0. 1	0. 1	0. 1	0. 2	0. 2	0. 2	0. 2	0. 2	0. 3	0. 3	0. 3	0. 2	
0. 3	0. 1	0. 1	0. 2	0. 2	0. 2	0. 2	0. 2	0. 3	0. 3	0. 3	0. 3	0. 4	0. 4	0. 4	0. 3	
0. 4	0. 2	0. 2	0. 2	0. 2	0. 3	0. 3	0. 3	0. 4	0. 4	0. 4	0. 5	0. 5	0. 5	0. 6	0. 4	
0. 5	0. 2	0. 2	0. 3	0. 3	0. 3	0. 4	0. 4	0. 5	0. 5	0. 5	0. 6	0. 6	0. 7	0. 7	0. 5	
0. 6	0. 2	0. 3	0. 3	0. 4	0. 4	0. 4	0. 5	0. 5	0. 6	0. 6	0. 7	0. 8	0. 8	0. 9	0. 6	
0. 7	0. 3	0. 3	0. 4	0. 4	0. 5	0. 5	0. 6	0. 6	0. 7	0. 7	0. 8	0. 9	0. 9	1. 0	0. 7	
0. 8	0. 3	0. 4	0. 4	0. 5	0. 5	0. 6	0. 7	0. 7	0. 8	0. 9	0. 9	1. 0	1. 1	1. 2	0. 8	
0. 9	0. 4	0. 4	0. 5	0. 5	0. 6	0. 7	0. 7	0. 8	0. 9	1. 0	1. 0	1. 1	1. 2	1. 3	0. 9	
1. 0	0. 4	0. 5	0. 5	0. 6	0. 7	0. 7	0. 8	0. 9	1. 0	1. 1	1. 2	1. 3	1. 4	1. 5	1. 0	
2. 0	0. 8	0. 9	1. 1	1. 2	1. 3	1. 5	1. 6	1. 8	2. 0	2. 1	2. 3	2. 5	2. 7	2. 9	2. 0	
3. 0	1. 2	1. 4	1. 6	1. 8	2. 0	2. 2	2. 4	2. 7	2. 9	3. 2	3. 5	3. 8	4. 0	4. 4	3. 0	
4. 0	1. 7	1. 9	2. 1	2. 4	2. 7	3. 0	3. 3	3. 6	3. 9	4. 3	4. 6	5. 0	5. 4	5. 8	4. 0	
5. 0	2. 1	2. 4	2. 7	3. 0	3. 3	3. 7	4. 1	4. 5	4. 9	5. 3	5. 8	6. 3	6. 8	7. 3	5. 0	
6. 0	2. 5	2. 8	3. 2	3. 6	4. 0	4. 4	4. 9	5. 4	5. 9	6. 4	6. 9	7. 5	8. 1	8. 7	6. 0	
7. 0	2. 9	3. 3	3. 7	4. 2	4. 7	5. 2	5. 7	6. 3	6. 9	7. 5	8. 1	8. 8	9. 4	10. 2	7. 0	
8. 0	3. 3	3. 8	4. 3	4. 8	5. 3	5. 9	6. 5	7. 2	7. 8	8. 5	9. 3	10. 0	10. 8	11. 6	8. 0	
9. 0	3. 8	4. 3	4. 8	5. 4	6. 0	6. 7	7. 4	8. 1	8. 8	9. 6	10. 4	11. 3	12. 2	13. 1	9. 0	
10. 0	4. 2	4. 7	5. 4	6. 0	6. 7	7. 4	8. 2	9. 0	9. 8	10. 7	11. 6	12. 5	13. 5	14. 5	10. 0	
11. 0	4. 6	5. 2	5. 9	6. 6	7. 4	8. 1	9. 0	9. 9	10. 8	11. 7	12. 7	13. 8	14. 8	16. 0	11. 0	
12. 0	5. 0	5. 7	6. 4	7. 2	8. 0	8. 9	9. 8	10. 8	11. 8	12. 8	13. 9	15. 0	16. 2	17. 4	12. 0	
13. 0	5. 4	6. 2	7. 0	7. 8	8. 7	9. 6	10. 6	11. 7	12. 7	13. 9	15. 0	16. 3	17. 6	18. 9	13. 0	
14. 0	5. 8	6. 6	7. 5	8. 4	9. 4	10. 4	11. 4	12. 5	13. 7	14. 9	16. 2	17. 5	18. 9	20. 3	14. 0	
15. 0	6. 2	7. 1	8. 0	9. 0	10. 0	11. 1	12. 2	13. 4	14. 7	16. 0	17. 4	18. 8	20. 2	21. 8	15. 0	
16. 0	6. 7	7. 6	8. 6	9. 6	10. 7	11. 9	13. 1	14. 3	15. 7	17. 1	18. 5	20. 0	21. 6	23. 2	16. 0	
17. 0	7. 1	8. 1	9. 1	10. 2	11. 4	12. 6	13. 9	15. 2	16. 7	18. 1	19. 7	21. 3	23. 0	24. 7	17. 0	
18. 0	7. 5	8. 5	9. 6	10. 8	12. 0	13. 3	14. 7	16. 1	17. 6	19. 2	20. 8	22. 5	24. 3	26. 1	18. 0	
19. 0	7. 9	9. 0	10. 2	11. 4	12. 7	14. 1	15. 5	17. 0	18. 6	20. 3	22. 0	23. 8			19. 0	
20. 0	8. 3	9. 5	10. 7	12. 0	13. 4	14. 8	16. 3	17. 9	19. 6	21. 3	23. 1				20. 0	
21. 0	8. 8	10. 0	11. 2	12. 6	14. 0	15. 6	17. 2	18. 8	20. 6						21. 0	
22. 0	9. 2	10. 4	11. 8	13. 2	14. 7	16. 3	18. 0	19. 7	21. 6						22. 0	
23. 0	9. 6	10. 9	12. 3	13. 8	15. 4	17. 0	18. 8	20. 6							23. 0	
24. 0	10. 0	11. 4	12. 8	14. 4	16. 0	17. 8	19. 6	21. 5							24. 0	
25. 0	10. 4	11. 9	13. 4	15. 0	16. 7	18. 5	20. 4								25. 0	
26. 0	10. 8	12. 3	13. 9	15. 6	17. 4	19. 3									26. 0	
27. 0	11. 2	12. 8	14. 4	16. 2	18. 0	20. 0									27. 0	

Caution. —If this table is entered with the meridian angle of the Moon in arc units, such units should correspond to the meridian angle in time units as given in the Increments and Corrections section of the *Nautical Almanac*.

TABLE 25

Change of Altitude in Given Time from Meridian Transit

a (table 24)	t, meridian angle															a (table 24)
	2° 25′	2° 30′	2° 35′	2° 40′	2° 45′	2° 50′	2° 55′	3° 00′	3° 05′	3° 10′	3° 15′	3° 20′	3° 25′	3° 30′		
	$9^m\ 40^s$	$10^m\ 00^s$	$10^m\ 20^s$	$10^m\ 40^s$	$11^m\ 00^s$	$11^m\ 20^s$	$11^m\ 40^s$	$12^m\ 00^s$	$12^m\ 20^s$	$12^m\ 40^s$	$13^m\ 00^s$	$13^m\ 20^s$	$13^m\ 40^s$	$14^m\ 00^s$		
″	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	″
0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1
0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.2
0.3	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.0	0.3
0.4	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	0.4
0.5	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.6	1.7	0.5
0.6	0.9	1.0	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.0	0.6
0.7	1.1	1.2	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.3	0.7
0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.3	2.4	2.5	2.6	2.6	0.8
0.9	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.4	2.5	2.7	2.8	2.9	2.9	0.9
1.0	1.6	1.7	1.8	1.9	2.0	2.1	2.3	2.4	2.5	2.7	2.8	3.0	3.1	3.3	3.3	1.0
2.0	3.1	3.3	3.6	3.8	4.0	4.3	4.5	4.8	5.1	5.3	5.6	5.9	6.2	6.5	6.5	2.0
3.0	4.7	5.0	5.3	5.7	6.0	6.4	6.8	7.2	7.6	8.0	8.4	8.9	9.3	9.8	9.8	3.0
4.0	6.2	6.7	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.7	11.3	11.9	12.5	13.1	13.1	4.0
5.0	7.8	8.3	8.9	9.5	10.1	10.7	11.3	12.0	12.7	13.4	14.1	14.8	15.6	16.3	16.3	5.0
6.0	9.3	10.0	10.7	11.4	12.1	12.8	13.6	14.4	15.2	16.0	16.9	17.8	18.7	19.6	19.6	6.0
7.0	10.9	11.7	12.5	13.3	14.1	15.0	15.9	16.8	17.7	18.7	19.7	20.7	21.8	22.9	22.9	7.0
8.0	12.5	13.3	14.2	15.2	16.1	17.1	18.1	19.2	20.3	21.4	22.5	23.7	24.9	26.1	26.1	8.0
9.0	14.0	15.0	16.0	17.1	18.2	19.3	20.4	21.6	22.8	24.1	25.4	26.7	28.0	29.4	29.4	9.0
10.0	15.6	16.7	17.8	19.0	20.2	21.4	22.7	24.0	25.4	26.7	28.2	29.6				10.0
11.0	17.1	18.3	19.6	20.9	22.2	23.5	25.0	26.4	27.9	29.4						11.0
12.0	18.7	20.0	21.4	22.8	24.2	25.7	27.2	28.8								12.0
13.0	20.2	21.7	23.1	24.7	26.2	27.8	29.5									13.0
14.0	21.8	23.3	24.9	26.6	28.2	30.0										14.0
15.0	23.4	25.0	26.7	28.5	30.2											15.0
16.0	24.9	26.7	28.5	30.3												16.0
17.0	26.5	28.3	30.3													17.0

a (table 24)	t, meridian angle															a (table 24)
	3° 35′	3° 40′	3° 45′	3° 50′	3° 55′	4° 00′	4° 05′	4° 10′	4° 15′	4° 20′	4° 25′	4° 30′	4° 35′	4° 40′		
	$14^m\ 20^s$	$14^m\ 40^s$	$15^m\ 00^s$	$15^m\ 20^s$	$15^m\ 40^s$	$16^m\ 00^s$	$16^m\ 20^s$	$16^m\ 40^s$	$17^m\ 00^s$	$17^m\ 20^s$	$17^m\ 40^s$	$18^m\ 00^s$	$18^m\ 20^s$	$18^m\ 40^s$		
″	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	″
0.1	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.1
0.2	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	0.2
0.3	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.7	0.3
0.4	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.9	1.9	2.0	2.1	2.2	2.2	2.3	2.3	0.4
0.5	1.7	1.8	1.9	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.9	0.5
0.6	2.1	2.2	2.2	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.4	3.5	3.5	0.6
0.7	2.4	2.5	2.6	2.7	2.9	3.0	3.1	3.2	3.4	3.5	3.6	3.8	3.9	4.1	4.1	0.7
0.8	2.7	2.9	3.0	3.1	3.3	3.4	3.6	3.7	3.9	4.0	4.2	4.3	4.5	4.6	4.6	0.8
0.9	3.1	3.2	3.4	3.5	3.7	3.8	4.0	4.2	4.3	4.5	4.7	4.9	5.0	5.2	5.2	0.9
1.0	3.4	3.6	3.8	3.9	4.1	4.3	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	5.8	1.0
2.0	6.8	7.2	7.5	7.8	8.2	8.5	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.6	11.6	2.0
3.0	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.9	14.4	15.0	15.6	16.2	16.8	17.4	17.4	3.0
4.0	13.7	14.3	15.0	15.7	16.4	17.1	17.8	18.5	19.3	20.0	20.8	21.6	22.4	23.2	23.2	4.0
5.0	17.1	17.9	18.8	19.6	20.5	21.3	22.2	23.1	24.1	25.0	26.0	27.0	28.0	29.0	29.0	5.0
6.0	20.5	21.5	22.5	23.5	24.5	25.6	26.7	27.8								6.0
7.0	24.0	25.1	26.3	27.4												7.0
8.0	27.4	28.7	30.0													8.0

Caution. —If this table is entered with the meridian angle of the Moon in arc units, such units should correspond to the meridian angle in time units as given in the Increments and Corrections section of the *Nautical Almanac*.

TABLE 25

Change of Altitude in Given Time from Meridian Transit

a (table 24)	t, meridian angle															a (table 24)
	4° 45′	4° 50′	4° 55′	5° 00′	5° 05′	5° 10′	5° 15′	5° 20′	5° 25′	5° 30′	5° 35′	5° 40′	5° 45′	5° 50′		
	$19^m\ 00^s$	$19^m\ 20^s$	$19^m\ 40^s$	$20^m\ 00^s$	$20^m\ 20^s$	$20^m\ 40^s$	$21^m\ 00^s$	$21^m\ 20^s$	$21^m\ 40^s$	$22^m\ 00^s$	$22^m\ 20^s$	$22^m\ 40^s$	$23^m\ 00^s$	$23^m\ 20^s$		
″	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	″
0.1	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.1	
0.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	0.2	
0.3	1.8	1.9	1.9	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.5	2.6	2.6	2.7	0.3	
0.4	2.4	2.5	2.6	2.7	2.8	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	0.4	
0.5	3.0	3.1	3.2	3.3	3.4	3.6	3.7	3.8	3.9	4.0	4.2	4.3	4.4	4.5	0.5	
0.6	3.6	3.7	3.9	4.0	4.1	4.3	4.4	4.6	4.7	4.8	5.0	5.1	5.3	5.4	0.6	
0.7	4.2	4.4	4.5	4.7	4.8	5.0	5.1	5.3	5.5	5.6	5.8	6.0	6.2	6.4	0.7	
0.8	4.8	5.0	5.2	5.3	5.5	5.7	5.9	6.1	6.3	6.5	6.7	6.9	7.1	7.3	0.8	
0.9	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.3	7.5	7.7	7.9	8.2	0.9	
1.0	6.0	6.2	6.4	6.7	6.9	7.1	7.4	7.6	7.8	8.1	8.3	8.6	8.8	9.1	1.0	
2.0	12.0	12.5	12.9	13.3	13.8	14.2	14.7	15.2	15.6	16.1	16.6	17.1	17.6	18.1	2.0	
3.0	18.0	18.7	19.3	20.0	20.7	21.4	22.0	22.8	23.5	24.2	24.9	25.7	26.4	27.2	3.0	
4.0	24.1	24.9	25.8	26.7	27.6	28.5	29.4	30.3	31.3						4.0	

a (table 24)	t, meridian angle															a (table 24)
	5° 55′	6° 00′	6° 05′	6° 10′	6° 15′	6° 20′	6° 25′	6° 30′	6° 35′	6° 40′	6° 45′	6° 50′	6° 55′	7° 00′		
	$23^m\ 40^s$	$24^m\ 00^s$	$24^m\ 20^s$	$24^m\ 40^s$	$25^m\ 00^s$	$25^m\ 20^s$	$25^m\ 40^s$	$26^m\ 00^s$	$26^m\ 20^s$	$26^m\ 40^s$	$27^m\ 00^s$	$27^m\ 20^s$	$27^m\ 40^s$	$28^m\ 20^s$		
″	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	″
0.1	0.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	0.1	
0.2	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.6	0.2	
0.3	2.8	2.9	3.0	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.6	3.7	3.8	3.9	0.3	
0.4	3.7	3.8	3.9	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.9	5.0	5.1	5.2	0.4	
0.5	4.7	4.8	4.9	5.1	5.2	5.3	5.5	5.6	5.8	5.9	6.1	6.2	6.4	6.5	0.5	
0.6	5.6	5.8	5.9	6.1	6.2	6.4	6.6	6.8	6.9	7.1	7.3	7.5	7.7	7.8	0.6	
0.7	6.5	6.7	6.9	7.1	7.3	7.5	7.7	7.9	8.1	8.3	8.5	8.7	8.9	9.1	0.7	
0.8	7.5	7.7	7.9	8.1	8.3	8.6	8.8	9.0	9.2	9.5	9.7	10.0	10.2	10.5	0.8	
0.9	8.4	8.6	8.9	9.1	9.4	9.6	9.9	10.1	10.4	10.7	10.9	11.2	11.5	11.8	0.9	
1.0	9.3	9.6	9.9	10.1	10.4	10.7	11.0	11.3	11.6	11.9	12.2	12.5	12.8	13.1	1.0	
2.0	18.7	19.2	19.7	20.3	20.8	21.4	22.0	22.5	23.1	23.7	24.3	24.9	25.5	26.1	2.0	
3.0	28.0	28.8	29.6	30.4											3.0	

Caution. —If this table is entered with the meridian angle of the Moon in arc units, such units should correspond to the meridian angle in time units as given in the Increments and Corrections section of the *Nautical Almanac*.

TABLE 26

Time Zones, Zone Descriptions, and Suffixes

ZONE	ZD	SUFFIX	ZONE	ZD	SUFFIX
$7^1/_2°$W to $7^1/_2°$E.	0	Z	$7^1/_2°$ W. to $22^1/_2°$W.	+ 1	N
$7^1/_2°$E. to $22^1/_2°$E.	– 1	A	$22^1/_2°$ W. to $37^1/_2°$W.	+ 2	O
$22^1/_2°$E. to $37^1/_2°$E.	– 2	B	$37^1/_2°$ W. to $52^1/_2°$W.	+ 3	P
$37^1/_2°$E. to $52^1/_2°$E.	– 3	C	$52^1/_2°$ W. to $67^1/_2°$W.	+ 4	Q
$52^1/_2°$E. to $67^1/_2°$E.	– 4	D	$67^1/_2°$ W. to $82^1/_2°$W.	+ 5	R
$67^1/_2°$E. to $82^1/_2°$E.	– 5	E	$82^1/_2°$ W. to $97^1/_2°$W.	+ 6	S
$82^1/_2°$E. to $97^1/_2°$E.	– 6	F	$97^1/_2°$ W. to $112^1/_2°$W.	+ 7	T
$97^1/_2°$E. to $112^1/_2°$E.	– 7	G	$112^1/_2°$ W. to $127^1/_2°$W.	+ 8	U
$112^1/_2°$E. to $127^1/_2°$E.	– 8	H	$127^1/_2°$ W. to $142^1/_2°$W.	+ 9	V
$127^1/_2°$E. to $142^1/_2°$E.	– 9	I	$142^1/_2°$ W. to $157^1/_2°$W.	+ 10	W
$142^1/_2°$E. to $157^1/_2°$E.	– 10	K	$157^1/_2°$ W. to $172^1/_2°$W.	+ 11	X
$157^1/_2°$E. to $172^1/_2°$E.	– 11	L	$172^1/_2°$ W. to 180°	+ 12	Y
$172^1/_2°$E. to 180 °E.	– 12	M			

NOTE. – G M T is indicated by suffix Z. Standard times as kept in various places or countries are listed in *The Nautical Almanac* and *The Air Almanac.*

TABLE 27

Altitude Correction for Air Temperature

Altitude	Temperature—degrees Fahrenheit								Altitude
	− 40	− 30	− 20	− 10	0	+ 10	+ 20	+ 30	
° ′	′	′	′	′	′	′	′	′	° ′
− 0 10	− 7.9	− 6.8	− 5.8	− 4.9	− 4.0	− 3.1	− 2.3	− 1.5	− 0 10
0 00	7.4	6.4	5.5	4.6	3.8	2.9	2.2	1.4	0 00
+ 0 10	6.9	6.0	5.2	4.3	3.5	2.8	2.0	1.3	+ 0 10
0 20	6.6	5.7	4.9	4.1	3.3	2.6	1.9	1.2	0 20
0 30	6.1	5.3	4.6	3.8	3.1	2.4	1.8	1.2	0 30
+ 0 45	− 5.7	− 4.9	− 4.2	− 3.5	− 2.9	− 2.2	− 1.6	− 1.1	+ 0 45
1 00	5.2	4.5	3.9	3.2	2.6	2.1	1.5	1.0	1 00
1 20	4.7	4.1	3.5	2.9	2.4	1.9	1.4	0.9	1 20
1 40	4.3	3.7	3.2	2.7	2.2	1.7	1.2	0.8	1 40
2 00	3.9	3.4	2.9	2.4	2.0	1.6	1.1	0.7	2 00
+ 2 30	− 3.4	− 3.0	− 2.6	− 2.1	− 1.8	− 1.4	− 1.0	− 0.7	+ 2 30
3 00	3.1	2.7	2.3	1.9	1.6	1.2	0.9	0.6	3 00
4	2.5	2.2	1.9	1.6	1.3	1.0	0.7	0.5	4
5	2.1	1.8	1.6	1.3	1.1	0.8	0.6	0.4	5
6	1.8	1.6	1.4	1.1	0.9	0.7	0.5	0.3	6
+ 7	− 1.6	− 1.4	− 1.2	− 1.0	− 0.8	− 0.6	− 0.5	− 0.3	+ 7
8	1.4	1.2	1.0	0.9	0.7	0.6	0.4	0.3	8
9	1.3	1.1	0.9	0.8	0.6	0.5	0.4	0.2	9
10	1.1	1.0	0.8	0.7	0.6	0.5	0.3	0.2	10
15	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	15
+ 20	− 0.6	− 0.5	− 0.4	− 0.3	− 0.3	− 0.2	− 0.2	− 0.1	+ 20
30	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	30
50	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	50
70	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	70
+ 90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	+ 90

Altitude	Temperature—degrees Fahrenheit								Altitude
	+ 40	+ 50	+ 60	+ 70	+ 80	+ 90	+ 100	+ 110	
° ′	′	′	′	′	′	′	′	′	° ′
− 0 10	− 0.7	0.0	+ 0.7	+ 1.4	+ 2.0	+ 2.7	+ 3.3	+ 3.9	− 0 10
0 00	0.7	0.0	0.7	1.3	1.9	2.5	3.1	3.6	0 00
+ 0 10	0.6	0.0	0.6	1.2	1.8	2.4	2.9	3.4	+ 0 10
0 20	0.6	0.0	0.6	1.2	1.7	2.2	2.7	3.2	0 20
0 30	0.6	0.0	0.6	1.1	1.6	2.1	2.6	3.0	0 30
+ 0 45	− 0.5	0.0	+ 0.5	+ 1.0	+ 1.5	+ 1.9	+ 2.4	+ 2.8	+ 0 45
1 00	0.5	0.0	0.5	0.9	1.4	1.8	2.2	2.6	1 00
1 20	0.4	0.0	0.4	0.8	1.2	1.6	2.0	2.3	1 20
1 40	0.4	0.0	0.4	0.8	1.1	1.5	1.8	2.1	1 40
2 00	0.4	0.0	0.4	0.7	1.0	1.3	1.6	1.9	2 00
+ 2 30	− 0.3	0.0	+ 0.3	+ 0.6	+ 0.9	+ 1.2	+ 1.4	+ 1.7	+ 2 30
3 00	0.3	0.0	0.3	0.5	0.8	1.0	1.3	1.5	3 00
4	0.2	0.0	0.2	0.4	0.7	0.9	1.1	1.2	4
5	0.2	0.0	0.2	0.4	0.6	0.7	0.9	1.0	5
6	0.2	0.0	0.2	0.3	0.5	0.6	0.8	0.9	6
+ 7	− 0.1	0.0	+ 0.1	+ 0.3	+ 0.4	+ 0.5	+ 0.7	+ 0.8	+ 7
8	0.1	0.0	0.1	0.2	0.4	0.5	0.6	0.7	8
9	0.1	0.0	0.1	0.2	0.3	0.4	0.5	0.6	9
10	0.1	0.0	0.1	0.2	0.3	0.4	0.5	0.6	10
15	0.1	0.0	0.1	0.1	0.2	0.3	0.3	0.4	15
+ 20	− 0.1	0.0	+ 0.1	+ 0.1	+ 0.1	+ 0.2	+ 0.2	+ 0.3	+ 20
30	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	30
50	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	50
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70
+ 90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	+ 90

TABLE 28

Altitude Correction for Atmospheric Pressure

Altitude	Pressure in inches or millibars— **Subtract** correction from sextant or rectified altitude								Altitude
	31.2	31.0	30.8	30.6	30.4	30.2	30.0	29.8	
	1056.56	1049.78	1043.01	1036.24	1029.46	1022.69	1015.92	1009.15	
° ′	′	′	′	′	′	′	′	′	° ′
− 0 10	− 1.7	− 1.4	− 1.2	− 1.0	− 0.7	− 0.5	− 0.2	0.0	− 0 10
0 00	1.6	1.4	1.1	0.9	0.7	0.4	0.2	0.0	0 00
+ 0 10	1.5	1.3	1.1	0.8	0.6	0.4	0.2	0.0	+ 0 10
0 20	1.4	1.2	1.0	0.8	0.6	0.4	0.2	0.0	0 20
0 30	1.3	1.1	0.9	0.7	0.6	0.4	0.2	0.0	0 30
+ 0 45	− 1.2	− 1.0	− 0.9	− 0.7	− 0.5	− 0.3	− 0.2	− 0.0	+ 0 45
1 00	1.1	1.0	0.8	0.6	0.5	0.3	0.1	0.0	1 00
1 20	1.0	0.9	0.7	0.6	0.4	0.3	0.1	0.0	1 20
1 40	0.9	0.8	0.7	0.5	0.4	0.3	0.1	0.0	1 40
2 00	0.8	0.7	0.6	0.5	0.4	0.2	0.1	0.0	2 00
+ 2 30	− 0.7	− 0.6	− 0.5	− 0.4	− 0.3	− 0.2	− 0.1	0.0	+ 2 30
3 00	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	3 00
4	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.0	4
5	0.5	0.4	0.3	0.3	0.2	0.1	0.0	0.0	5
6	0.4	0.3	0.3	0.2	0.2	0.1	0.0	0.0	6
+ 7	− 0.3	− 0.3	− 0.2	− 0.2	− 0.1	− 0.1	− 0.0	− 0.0	+ 7
8	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	8
9	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	9
10	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	10
15	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	15
+ 20	− 0.1	− 0.1	− 0.1	− 0.1	− 0.1	− 0.0	− 0.0	− 0.0	+ 20
30	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	30
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70
+ 90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	+ 90

Altitude	Pressure in inches or millibars— **Add** correction to sextant or rectified altitude								Altitude
	29.6	29.4	29.2	29.0	28.8	28.6	28.4	28.2	
	1002.37	995.60	988.83	982.05	975.28	968.51	961.74	954.96	
° ′	′	′	′	′	′	′	′	′	° ′
− 0 10	+ 0.3	+ 0.5	+ 0.8	+ 1.0	+ 1.3	+ 1.5	+ 1.8	+ 2.0	− 0 10
0 00	0.3	0.5	0.7	1.0	1.2	1.4	1.6	1.9	0 00
+ 0 10	0.2	0.5	0.7	0.9	1.1	1.3	1.5	1.8	+ 0 10
0 20	0.2	0.4	0.6	0.8	1.1	1.3	1.5	1.7	0 20
0 30	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	0 30
+ 0 45	+ 0.2	+ 0.4	+ 0.6	+ 0.7	+ 0.9	+ 1.1	+ 1.3	+ 1.4	+ 0 45
1 00	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1 00
1 20	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1 20
1 40	0.2	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1 40
2 00	0.1	0.3	0.4	0.5	0.6	0.8	0.9	1.0	2 00
+ 2 30	+ 0.1	+ 0.2	+ 0.3	+ 0.4	+ 0.6	+ 0.7	+ 0.8	+ 0.9	+ 2 30
3 00	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	3 00
4	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	4
5	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	5
6	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	6
+ 7	+ 0.1	+ 0.1	+ 0.2	+ 0.2	+ 0.3	+ 0.3	+ 0.4	+ 0.4	+ 7
8	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	8
9	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	9
10	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	10
15	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	15
+ 20	+ 0.0	+ 0.0	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 0.1	+ 20
30	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	30
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70
+ 90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	+ 90