

**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'	
	0 <sup>m</sup> 20'	0 <sup>m</sup> 40'	1 <sup>m</sup> 00'	1 <sup>m</sup> 20'	1 <sup>m</sup> 40'	2 <sup>m</sup> 00'	2 <sup>m</sup> 20'	2 <sup>m</sup> 40'	3 <sup>m</sup> 00'	3 <sup>m</sup> 20'	3 <sup>m</sup> 40'	4 <sup>m</sup> 00'	4 <sup>m</sup> 20'	4 <sup>m</sup> 40'	
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	0.1	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'	
	5 <sup>m</sup> 00'	5 <sup>m</sup> 20'	5 <sup>m</sup> 40'	6 <sup>m</sup> 00'	6 <sup>m</sup> 20'	6 <sup>m</sup> 40'	7 <sup>m</sup> 00'	7 <sup>m</sup> 20'	7 <sup>m</sup> 40'	8 <sup>m</sup> 00'	8 <sup>m</sup> 20'	8 <sup>m</sup> 40'	9 <sup>m</sup> 00'	9 <sup>m</sup> 20'	
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	
0.2	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	
0.3	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	
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	
0.5	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	
0.6	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.8	
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	
0.8	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	
0.9	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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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			
20.0	8.3	9.5	10.7	12.0	13.4	14.8	16.3	17.9	19.6	21.3	23.1				
21.0	8.8	10.0	11.2	12.6	14.0	15.6	17.2	18.8	20.6						
22.0	9.2	10.4	11.8	13.2	14.7	16.3	18.0	19.7	21.6						
23.0	9.6	10.9	12.3	13.8	15.4	17.0	18.8	20.6							
24.0	10.0	11.4	12.8	14.4	16.0	17.8	19.6	21.5							
25.0	10.4	11.9	13.4	15.0	16.7	18.5	20.4								
26.0	10.8	12.3	13.9	15.6	17.4	19.3									
27.0	11.2	12.8	14.4	16.2	18.0	20.0									

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 <sup>m</sup> 40'	10 <sup>m</sup> 00'	10 <sup>m</sup> 20'	10 <sup>m</sup> 40'	11 <sup>m</sup> 00'	11 <sup>m</sup> 20'	11 <sup>m</sup> 40'	12 <sup>m</sup> 00'	12 <sup>m</sup> 20'	12 <sup>m</sup> 40'	13 <sup>m</sup> 00'	13 <sup>m</sup> 20'	13 <sup>m</sup> 40'	14 <sup>m</sup> 00'	
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	0.1
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	0.2
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

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 <sup>m</sup> 00'	19 <sup>m</sup> 20'	19 <sup>m</sup> 40'	20 <sup>m</sup> 00'	20 <sup>m</sup> 20'	20 <sup>m</sup> 40'	21 <sup>m</sup> 00'	21 <sup>m</sup> 20'	21 <sup>m</sup> 40'	22 <sup>m</sup> 00'	22 <sup>m</sup> 20'	22 <sup>m</sup> 40'	23 <sup>m</sup> 00'	23 <sup>m</sup> 20'	
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	1.6	1.7	1.7	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 <sup>m</sup> 40'	24 <sup>m</sup> 00'	24 <sup>m</sup> 20'	24 <sup>m</sup> 40'	25 <sup>m</sup> 00'	25 <sup>m</sup> 20'	25 <sup>m</sup> 40'	26 <sup>m</sup> 00'	26 <sup>m</sup> 20'	26 <sup>m</sup> 40'	27 <sup>m</sup> 00'	27 <sup>m</sup> 20'	27 <sup>m</sup> 40'	28 <sup>m</sup> 00'	
0.1	0.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	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*.