

**TABLE 25**  
Change of Altitude in Given Time from Meridian Transit

| a<br>(table<br>24) | t, meridian angle  |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    | a<br>(table<br>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                | 0.1                | 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<br>(table<br>24) | t, meridian angle  |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    | a<br>(table<br>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                | 0.1                |
| 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                | 0.3                | 0.4                | 0.4                | 0.4                | 0.4                | 0.5                | 0.5                | 0.4                |
| 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                | 0.5                |
| 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                | 0.7                | 0.8                | 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                | 0.8                | 0.9                | 0.9                | 0.7                |
| 0.8                | 0.3                | 0.4                | 0.4                | 0.5                | 0.5                | 0.6                | 0.6                | 0.7                | 0.7                | 0.8                | 0.8                | 0.9                | 1.0                | 1.1                | 0.8                |
| 0.9                | 0.4                | 0.4                | 0.5                | 0.5                | 0.6                | 0.7                | 0.7                | 0.8                | 0.8                | 0.9                | 1.0                | 1.0                | 1.1                | 1.2                | 0.9                |
| 1.0                | 0.4                | 0.5                | 0.5                | 0.6                | 0.7                | 0.7                | 0.8                | 0.9                | 1.0                | 1.1                | 1.1                | 1.2                | 1.3                | 1.4                | 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<br>(table<br>24)                                     | t, meridian angle |         |         |         |         |         |         |         |         |         |         |         |         |         | a<br>(table<br>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'  |                    |
|  | 9m 40"            | 10m 00" | 10m 20" | 10m 40" | 11m 00" | 11m 20" | 11m 40" | 12m 00" | 12m 20" | 12m 40" | 13m 00" | 13m 20" | 13m 40" | 14m 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     | 0.6     | 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     | 0.9     | 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     | 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               |
| a<br>(table<br>24)                                     | t, meridian angle |         |         |         |         |         |         |         |         |         |         |         |         |         | a<br>(table<br>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'  |                    |
|  | 14m 20"           | 14m 40" | 15m 00" | 15m 20" | 15m 40" | 16m 00" | 16m 20" | 16m 40" | 17m 00" | 17m 20" | 17m 40" | 18m 00" | 18m 20" | 18m 40" |                    |
| "  | "                 | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "                  |
| 0.1  | 0.3               | 0.4     | 0.4     | 0.4     | 0.4     | 0.4     | 0.4     | 0.5     | 0.5     | 0.5     | 0.5     | 0.6     | 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     | 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     | 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     | 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     | 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     | 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     | 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     | 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     | 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     | 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    | 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    | 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    | 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    | 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<br>(table<br>24)                                     | t, meridian angle |         |         |         |         |         |         |         |         |         |         |         |         |         | a<br>(table<br>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'  |                    |
|  | 19m 00"           | 19m 20" | 19m 40" | 20m 00" | 20m 20" | 20m 40" | 21m 00" | 21m 20" | 21m 40" | 22m 00" | 22m 20" | 22m 40" | 23m 00" | 23m 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     | 1.7     | 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<br>(table<br>24)                                     | t, meridian angle |         |         |         |         |         |         |         |         |         |         |         |         |         | a<br>(table<br>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'  |                    |
|  | 23m 40"           | 24m 00" | 24m 20" | 24m 40" | 25m 00" | 25m 20" | 25m 40" | 26m 00" | 26m 20" | 26m 40" | 27m 00" | 27m 20" | 27m 40" | 28m 20" |                    |
| "  | "                 | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "       | "                  |
| 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*.