

| LAT. | 45° | 46° | 47°         | 48°         | 49°         | LAT. |
|------|-----|-----|-------------|-------------|-------------|------|
| H.A. |     |     | Alt. Az.    | Alt. Az.    | Alt. Az.    | H.A. |
| I35  | ... | ... | 10 17+11 30 | 11 08+11 31 | 11 59+11 31 | 225  |
| I36  | ... | ... | ...         | 10 48 11 30 | 11 40 11 30 | 224  |
| I37  | ... | ... | ...         | 10 28 11 29 | 11 20 11 29 | 223  |
| I38  | ... | ... | ...         | 10 09+12 29 | 11 01 12 29 | 222  |
| I39  | ... | ... | ...         | ...         | 10 43 12 28 | 221  |
| I40  | ... | ... | ...         | ...         | 10 24+12 27 | 220  |
| I41  | ... | ... | ...         | ...         | 10 06+12 27 | 219  |
| I42  | ... | ... | ...         | ...         | ...         | 218  |
| I43  | ... | ... | ...         | ...         | ...         | 217  |
| I44  | ... | ... | ...         | ...         | ...         | 216  |
| I45  | ... | ... | ...         | ...         | ...         | 215  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ - \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1945.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 72 56+19 | 0   | 73 56+19 | 0   | 74 56+19 | 0   | 75 56+19 | 0   | 76 56+19 | 0   | 360  |
| 1    | 72 55 19 | 2   | 73 55 19 | 2   | 74 55 19 | 2   | 75 55 19 | 2   | 76 55 19 | 2   | 359  |
| 2    | 72 54 19 | 3   | 73 53 19 | 3   | 74 53 19 | 4   | 75 53 19 | 4   | 76 53 19 | 4   | 358  |
| 3    | 72 51 19 | 5   | 73 50 19 | 5   | 74 50 19 | 5   | 75 50 19 | 6   | 76 49 19 | 6   | 357  |
| 4    | 72 46 19 | 6   | 73 46 19 | 7   | 74 46 19 | 7   | 75 45 19 | 8   | 76 45 19 | 8   | 356  |
| 5    | 72 41+19 | 8   | 73 41+19 | 8   | 74 40+19 | 9   | 75 39+19 | 9   | 76 38+19 | 10  | 355  |
| 6    | 72 35 19 | 9   | 73 34 19 | 10  | 74 33 19 | 11  | 75 32 19 | 11  | 76 31 19 | 12  | 354  |
| 7    | 72 27 19 | 11  | 73 26 19 | 12  | 74 25 19 | 12  | 75 23 18 | 13  | 76 22 18 | 14  | 353  |
| 8    | 72 19 18 | 12  | 73 17 18 | 13  | 74 16 18 | 14  | 75 14 18 | 15  | 76 12 18 | 16  | 352  |
| 9    | 72 09 18 | 14  | 73 07 18 | 15  | 74 05 18 | 16  | 75 03 18 | 16  | 76 00 18 | 18  | 351  |
| 10   | 71 59+18 | 15  | 72 56+18 | 16  | 73 54+18 | 17  | 74 51+17 | 18  | 75 48+17 | 19  | 350  |
| 11   | 71 47 18 | 17  | 72 44 17 | 18  | 73 41 17 | 19  | 74 38 17 | 20  | 75 34 17 | 21  | 349  |
| 12   | 71 34 17 | 18  | 72 31 17 | 19  | 73 28 17 | 20  | 74 24 17 | 21  | 75 20 16 | 23  | 348  |
| 13   | 71 21 17 | 19  | 72 17 17 | 20  | 73 13 16 | 21  | 74 09 16 | 23  | 75 04 16 | 24  | 347  |
| 14   | 71 06 17 | 20  | 72 02 16 | 22  | 72 58 16 | 23  | 73 53 16 | 24  | 74 47 16 | 26  | 346  |
| 15   | 70 51+16 | 22  | 71 47+16 | 23  | 72 42+16 | 24  | 73 36+15 | 25  | 74 30+15 | 27  | 345  |
| 16   | 70 35 16 | 23  | 71 30 16 | 24  | 72 25 15 | 25  | 73 19 15 | 27  | 74 12 15 | 28  | 344  |
| 17   | 70 18 15 | 24  | 71 13 15 | 25  | 72 07 15 | 26  | 73 00 14 | 28  | 73 53 14 | 30  | 343  |
| 18   | 70 01 15 | 25  | 70 55 15 | 26  | 71 48 14 | 28  | 72 41 14 | 29  | 73 33 14 | 31  | 342  |
| 19   | 69 42 15 | 26  | 70 36 14 | 27  | 71 29 14 | 29  | 72 21 14 | 30  | 73 13 13 | 32  | 341  |
| 20   | 69 23+14 | 27  | 70 16+14 | 28  | 71 09+13 | 30  | 72 01+13 | 31  | 72 51+13 | 33  | 340  |
| 21   | 69 04 14 | 28  | 69 56 13 | 29  | 70 48 13 | 31  | 71 40 13 | 32  | 72 30 12 | 34  | 339  |
| 22   | 68 44 13 | 29  | 69 36 13 | 30  | 70 27 13 | 32  | 71 18 12 | 33  | 72 08 12 | 35  | 338  |
| 23   | 68 23 13 | 30  | 69 14 13 | 31  | 70 05 12 | 33  | 70 56 12 | 34  | 71 45 11 | 36  | 337  |
| 24   | 68 01 12 | 31  | 68 53 12 | 32  | 69 43 12 | 33  | 70 33 11 | 35  | 71 22 11 | 37  | 336  |
| 25   | 67 40+12 | 31  | 68 30+12 | 33  | 69 21+11 | 34  | 70 10+11 | 36  | 70 58+10 | 37  | 335  |
| 26   | 67 17 12 | 32  | 68 08 11 | 33  | 68 57 11 | 35  | 69 46 10 | 36  | 70 34 10 | 38  | 334  |
| 27   | 66 54 11 | 33  | 67 45 11 | 34  | 68 34 10 | 36  | 69 22 10 | 37  | 70 09 9  | 39  | 333  |
| 28   | 66 31 11 | 33  | 67 21 10 | 35  | 68 10 10 | 36  | 68 58 9  | 38  | 69 45 9  | 39  | 332  |
| 29   | 66 08 10 | 34  | 66 57 10 | 35  | 67 45 9  | 37  | 68 33 9  | 38  | 69 19 8  | 40  | 331  |
| 30   | 65 44+10 | 35  | 66 33+10 | 36  | 67 21 +9 | 37  | 68 08 +9 | 39  | 68 54 +8 | 41  | 330  |
| 31   | 65 19 10 | 35  | 66 08 9  | 37  | 66 56 9  | 38  | 67 42 8  | 39  | 68 28 8  | 41  | 329  |
| 32   | 64 55 9  | 36  | 65 43 9  | 37  | 66 30 8  | 39  | 67 17 8  | 40  | 68 02 7  | 42  | 328  |
| 33   | 64 30 9  | 36  | 65 18 8  | 38  | 66 05 8  | 39  | 66 51 7  | 40  | 67 36 7  | 42  | 327  |
| 34   | 64 04 8  | 37  | 64 52 8  | 38  | 65 39 7  | 39  | 66 25 7  | 41  | 67 10 6  | 42  | 326  |
| 35   | 63 39 +8 | 37  | 64 26 +7 | 39  | 65 13 +7 | 40  | 65 58 +7 | 41  | 66 43 +6 | 43  | 325  |
| 36   | 63 13 8  | 38  | 64 00 7  | 39  | 64 47 7  | 40  | 65 32 6  | 42  | 66 16 6  | 43  | 324  |
| 37   | 62 47 7  | 38  | 63 34 7  | 39  | 64 20 6  | 41  | 65 05 6  | 42  | 65 49 5  | 43  | 323  |
| 38   | 62 21 7  | 38  | 63 08 6  | 40  | 63 53 6  | 41  | 64 38 5  | 42  | 65 22 5  | 44  | 322  |
| 39   | 61 54 6  | 39  | 62 41 6  | 40  | 63 26 5  | 41  | 64 11 5  | 43  | 64 55 4  | 44  | 321  |
| 40   | 61 28 +6 | 39  | 62 14 +6 | 40  | 62 59 +5 | 42  | 63 44 +5 | 43  | 64 27 +4 | 44  | 320  |
| 41   | 61 01 6  | 39  | 61 47 5  | 41  | 62 32 5  | 42  | 63 16 4  | 43  | 64 00 4  | 44  | 319  |
| 42   | 60 34 5  | 40  | 61 20 5  | 41  | 62 05 4  | 42  | 62 49 4  | 43  | 63 32 3  | 45  | 318  |
| 43   | 60 07 5  | 40  | 60 53 4  | 41  | 61 37 4  | 42  | 62 21 4  | 44  | 63 04 3  | 45  | 317  |
| 44   | 59 40 5  | 40  | 60 25 4  | 41  | 61 10 4  | 42  | 61 54 3  | 44  | 62 37 3  | 45  | 316  |
| 45   | 59 12 +4 | 40  | 59 58 +4 | 41  | 60 42 +3 | 43  | 61 26 +3 | 44  | 62 09 +2 | 45  | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
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| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 59 12 +4 | 40  | 59 58 +4 | 41  | 60 42 +3 | 43  | 61 26 +3 | 44  | 62 09 +2 | 45  | 315  |
| 46   | 58 45 4  | 40  | 59 30 3  | 42  | 60 15 3  | 43  | 60 58 3  | 44  | 61 41 2  | 45  | 314  |
| 47   | 58 17 4  | 41  | 59 02 3  | 42  | 59 47 3  | 43  | 60 30 2  | 44  | 61 13 2  | 45  | 313  |
| 48   | 57 50 3  | 41  | 58 35 3  | 42  | 59 19 2  | 43  | 60 02 2  | 44  | 60 45 1  | 45  | 312  |
| 49   | 57 22 3  | 41  | 58 07 2  | 42  | 58 51 2  | 43  | 59 34 2  | 44  | 60 17 1  | 45  | 311  |
| 50   | 56 54 +3 | 41  | 57 39 +2 | 42  | 58 23 +2 | 43  | 59 06 +1 | 44  | 59 49 +1 | 46  | 310  |
| 51   | 56 26 2  | 41  | 57 11 2  | 42  | 57 55 1  | 43  | 58 38 1  | 44  | 59 21 0  | 46  | 309  |
| 52   | 55 58 2  | 41  | 56 43 1  | 42  | 57 27 1  | 43  | 58 10 +1 | 44  | 58 53 0  | 46  | 308  |
| 53   | 55 30 2  | 41  | 56 15 1  | 42  | 56 59 +1 | 43  | 57 42 0  | 44  | 58 25 0  | 46  | 307  |
| 54   | 55 02 1  | 41  | 55 47 +1 | 42  | 56 31 0  | 43  | 57 14 0  | 44  | 57 56 0  | 46  | 306  |
| 55   | 54 34 +1 | 41  | 55 19 0  | 42  | 56 03 0  | 43  | 56 46 0  | 44  | 57 28 -1 | 46  | 305  |
| 56   | 54 06 +1 | 41  | 54 51 0  | 42  | 55 35 0  | 43  | 56 18 -1 | 44  | 57 00 1  | 45  | 304  |
| 57   | 53 38 0  | 41  | 54 23 0  | 42  | 55 07 -1 | 43  | 55 50 1  | 44  | 56 32 1  | 45  | 303  |
| 58   | 53 10 0  | 41  | 53 54 0  | 42  | 54 38 1  | 43  | 55 22 1  | 44  | 56 04 2  | 45  | 302  |
| 59   | 52 42 0  | 41  | 53 26 -1 | 42  | 54 10 1  | 43  | 54 54 1  | 44  | 55 36 2  | 45  | 301  |
| 60   | 52 14 -1 | 41  | 52 58 -1 | 42  | 53 42 -1 | 43  | 54 26 -2 | 44  | 55 08 -2 | 45  | 300  |
| 61   | 51 46 1  | 41  | 52 30 1  | 42  | 53 14 2  | 43  | 53 58 2  | 44  | 54 40 2  | 45  | 299  |
| 62   | 51 18 1  | 41  | 52 02 1  | 42  | 52 46 2  | 43  | 53 30 2  | 44  | 54 13 3  | 45  | 298  |
| 63   | 50 50 1  | 41  | 51 34 2  | 42  | 52 18 2  | 43  | 53 02 3  | 44  | 53 45 3  | 45  | 297  |
| 64   | 50 22 2  | 41  | 51 06 2  | 42  | 51 51 2  | 43  | 52 34 3  | 44  | 53 17 3  | 45  | 296  |
| 65   | 49 54 -2 | 41  | 50 38 -2 | 42  | 51 23 -3 | 43  | 52 06 -3 | 44  | 52 49 -3 | 45  | 295  |
| 66   | 49 26 2  | 41  | 50 11 3  | 42  | 50 55 3  | 43  | 51 39 3  | 44  | 52 22 4  | 44  | 294  |
| 67   | 48 58 3  | 41  | 49 43 3  | 42  | 50 27 3  | 43  | 51 11 4  | 43  | 51 54 4  | 44  | 293  |
| 68   | 48 30 3  | 41  | 49 15 3  | 42  | 50 00 4  | 42  | 50 44 4  | 43  | 51 27 4  | 44  | 292  |
| 69   | 48 02 3  | 41  | 48 47 3  | 42  | 49 32 4  | 42  | 50 16 4  | 43  | 50 59 5  | 44  | 291  |
| 70   | 47 35 -3 | 41  | 48 20 -4 | 41  | 49 04 -4 | 42  | 49 49 -4 | 43  | 50 32 -5 | 44  | 290  |
| 71   | 47 07 4  | 41  | 47 52 4  | 41  | 48 37 4  | 42  | 49 21 5  | 43  | 50 05 5  | 44  | 289  |
| 72   | 46 39 4  | 40  | 47 25 4  | 41  | 48 10 5  | 42  | 48 54 5  | 43  | 49 38 5  | 43  | 288  |
| 73   | 46 12 4  | 40  | 46 57 4  | 41  | 47 42 5  | 42  | 48 27 5  | 42  | 49 11 5  | 43  | 287  |
| 74   | 45 45 4  | 40  | 46 30 5  | 41  | 47 15 5  | 42  | 48 00 5  | 42  | 48 44 6  | 43  | 286  |
| 75   | 45 17 -5 | 40  | 46 03 -5 | 41  | 46 48 -5 | 41  | 47 33 -6 | 42  | 48 17 -6 | 43  | 285  |
| 76   | 44 50 5  | 40  | 45 36 5  | 40  | 46 21 6  | 41  | 47 06 6  | 42  | 47 51 6  | 43  | 284  |
| 77   | 44 23 5  | 40  | 45 09 5  | 40  | 45 54 6  | 41  | 46 39 6  | 42  | 47 24 6  | 42  | 283  |
| 78   | 43 56 5  | 40  | 44 42 6  | 40  | 45 28 6  | 41  | 46 13 6  | 41  | 46 57 7  | 42  | 282  |
| 79   | 43 29 6  | 39  | 44 15 6  | 40  | 45 01 6  | 41  | 45 46 7  | 41  | 46 31 7  | 42  | 281  |
| 80   | 43 02 -6 | 39  | 43 48 -6 | 40  | 44 34 -7 | 40  | 45 20 -7 | 41  | 46 05 -7 | 42  | 280  |
| 81   | 42 35 6  | 39  | 43 22 6  | 40  | 44 08 7  | 40  | 44 54 7  | 41  | 45 39 7  | 41  | 279  |
| 82   | 42 09 6  | 39  | 42 55 7  | 39  | 43 42 7  | 40  | 44 27 7  | 41  | 45 13 8  | 41  | 278  |
| 83   | 41 42 7  | 39  | 42 29 7  | 39  | 43 16 7  | 40  | 44 01 7  | 40  | 44 47 8  | 41  | 277  |
| 84   | 41 16 7  | 38  | 42 03 7  | 39  | 42 49 7  | 39  | 43 36 8  | 40  | 44 21 8  | 41  | 276  |
| 85   | 40 50 -7 | 38  | 41 37 -7 | 39  | 42 24 -8 | 39  | 43 10 -8 | 40  | 43 56 -8 | 40  | 275  |
| 86   | 40 24 7  | 38  | 41 11 8  | 38  | 41 58 8  | 39  | 42 44 8  | 39  | 43 30 8  | 40  | 274  |
| 87   | 39 58 8  | 38  | 40 45 8  | 38  | 41 32 8  | 39  | 42 19 8  | 39  | 43 05 9  | 40  | 273  |
| 88   | 39 32 8  | 37  | 40 20 8  | 38  | 41 07 8  | 38  | 41 54 9  | 39  | 42 40 9  | 40  | 272  |
| 89   | 39 06 8  | 37  | 39 54 8  | 38  | 40 41 9  | 38  | 41 28 9  | 39  | 42 15 9  | 39  | 271  |
| 90   | 38 41 -8 | 37  | 39 29 -8 | 37  | 40 16 -9 | 38  | 41 03 -9 | 38  | 41 50 -9 | 39  | 270  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
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|------|-----------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|------|
| H.A. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | H.A. |
| 90   | 38 41 -8  | 37  | 39 29 -8  | 37  | 40 16 -9  | 38  | 41 03 -9  | 38  | 41 50 -9  | 39  | 270  |
| 91   | 38 16 8   | 37  | 39 04 9   | 37  | 39 51 9   | 38  | 40 39 9   | 38  | 41 26 9   | 39  | 269  |
| 92   | 37 50 9   | 36  | 38 38 9   | 37  | 39 26 9   | 37  | 40 14 9   | 38  | 41 01 10  | 38  | 268  |
| 93   | 37 25 9   | 36  | 38 14 9   | 37  | 39 02 9   | 37  | 39 49 10  | 38  | 40 37 10  | 38  | 267  |
| 94   | 37 00 9   | 36  | 37 49 9   | 36  | 38 37 10  | 37  | 39 25 10  | 37  | 40 13 10  | 38  | 266  |
| 95   | 36 36 -9  | 36  | 37 24 -10 | 36  | 38 13 -10 | 36  | 39 01 -10 | 37  | 39 49 -10 | 37  | 265  |
| 96   | 36 11 10  | 35  | 37 00 10  | 36  | 37 49 10  | 36  | 38 37 10  | 37  | 39 25 10  | 37  | 264  |
| 97   | 35 47 10  | 35  | 36 36 10  | 35  | 37 25 10  | 36  | 38 13 10  | 36  | 39 01 11  | 37  | 263  |
| 98   | 35 23 10  | 35  | 36 12 10  | 35  | 37 01 10  | 36  | 37 49 11  | 36  | 38 38 11  | 36  | 262  |
| 99   | 34 59 10  | 34  | 35 48 10  | 35  | 36 37 11  | 35  | 37 26 11  | 36  | 38 15 11  | 36  | 261  |
| 100  | 34 35 -10 | 34  | 35 24 -11 | 34  | 36 14 -11 | 35  | 37 03 -11 | 35  | 37 51 -11 | 36  | 260  |
| 101  | 34 11 11  | 34  | 35 01 11  | 34  | 35 50 11  | 35  | 36 40 11  | 35  | 37 29 11  | 35  | 259  |
| 102  | 33 48 11  | 33  | 34 38 11  | 34  | 35 27 11  | 34  | 36 17 11  | 35  | 37 06 12  | 35  | 258  |
| 103  | 33 24 11  | 33  | 34 14 11  | 33  | 35 04 11  | 34  | 35 54 12  | 34  | 36 43 12  | 35  | 257  |
| 104  | 33 01 11  | 33  | 33 52 11  | 33  | 34 42 12  | 34  | 35 31 12  | 34  | 36 21 12  | 34  | 256  |
| 105  | 32 38 -11 | 32  | 33 29 -12 | 33  | 34 19 -12 | 33  | 35 09 -12 | 34  | 35 59 -12 | 34  | 255  |
| 106  | 32 16 12  | 32  | 33 06 12  | 33  | 33 57 12  | 33  | 34 47 12  | 33  | 35 37 12  | 34  | 254  |
| 107  | 31 53 12  | 32  | 32 44 12  | 32  | 33 35 12  | 33  | 34 25 12  | 33  | 35 15 12  | 33  | 253  |
| 108  | 31 31 12  | 31  | 32 22 12  | 32  | 33 13 12  | 32  | 34 04 12  | 33  | 34 54 13  | 33  | 252  |
| 109  | 31 09 12  | 31  | 32 00 12  | 31  | 32 51 12  | 32  | 33 42 13  | 32  | 34 33 13  | 33  | 251  |
| 110  | 30 47 -12 | 31  | 31 39 -12 | 31  | 32 30 -13 | 31  | 33 21 -13 | 32  | 34 12 -13 | 32  | 250  |
| 111  | 30 26 13  | 30  | 31 17 13  | 31  | 32 09 13  | 31  | 33 00 13  | 31  | 33 51 13  | 32  | 249  |
| 112  | 30 04 13  | 30  | 30 56 13  | 30  | 31 48 13  | 31  | 32 39 13  | 31  | 33 30 13  | 31  | 248  |
| 113  | 29 43 13  | 30  | 30 35 13  | 30  | 31 27 13  | 30  | 32 18 13  | 31  | 33 10 13  | 31  | 247  |
| 114  | 29 22 13  | 29  | 30 14 13  | 30  | 31 06 13  | 30  | 31 58 13  | 30  | 32 50 14  | 31  | 246  |
| 115  | 29 01 -13 | 29  | 29 54 -13 | 29  | 30 46 -14 | 30  | 31 38 -14 | 30  | 32 30 -14 | 30  | 245  |
| 116  | 28 41 13  | 29  | 29 33 14  | 29  | 30 26 14  | 29  | 31 18 14  | 30  | 32 10 14  | 30  | 244  |
| 117  | 28 21 14  | 28  | 29 13 14  | 29  | 30 06 14  | 29  | 30 58 14  | 29  | 31 51 14  | 29  | 243  |
| 118  | 28 01 14  | 28  | 28 54 14  | 28  | 29 46 14  | 28  | 30 39 14  | 29  | 31 32 14  | 29  | 242  |
| 119  | 27 41 14  | 28  | 28 34 14  | 28  | 29 27 14  | 28  | 30 20 14  | 28  | 31 13 14  | 29  | 241  |
| 120  | 27 22 -14 | 27  | 28 15 -14 | 27  | 29 08 -14 | 28  | 30 01 -14 | 28  | 30 54 -15 | 28  | 240  |
| 121  | 27 02 14  | 27  | 27 56 14  | 27  | 28 49 15  | 27  | 29 42 15  | 28  | 30 35 15  | 28  | 239  |
| 122  | 26 43 14  | 26  | 27 37 15  | 27  | 28 31 15  | 27  | 29 24 15  | 27  | 30 17 15  | 27  | 238  |
| 123  | 26 25 15  | 26  | 27 19 15  | 26  | 28 12 15  | 26  | 29 06 15  | 27  | 29 59 15  | 27  | 237  |
| 124  | 26 06 15  | 26  | 27 00 15  | 26  | 27 54 15  | 26  | 28 48 15  | 26  | 29 42 15  | 27  | 236  |
| 125  | 25 48 -15 | 25  | 26 42 -15 | 25  | 27 36 -15 | 26  | 28 30 -15 | 26  | 29 24 -15 | 26  | 235  |
| 126  | 25 30 15  | 25  | 26 24 15  | 25  | 27 19 15  | 25  | 28 13 15  | 25  | 29 07 15  | 26  | 234  |
| 127  | 25 12 15  | 24  | 26 07 15  | 25  | 27 01 15  | 25  | 27 56 16  | 25  | 28 50 16  | 25  | 233  |
| 128  | 24 55 15  | 24  | 25 50 15  | 24  | 26 44 16  | 24  | 27 39 16  | 25  | 28 33 16  | 25  | 232  |
| 129  | 24 38 16  | 24  | 25 33 16  | 24  | 26 28 16  | 24  | 27 22 16  | 24  | 28 17 16  | 24  | 231  |
| 130  | 24 21 -16 | 23  | 25 16 -16 | 23  | 26 11 -16 | 24  | 27 06 -16 | 24  | 28 01 -16 | 24  | 230  |
| 131  | 24 05 16  | 23  | 25 00 16  | 23  | 25 55 16  | 23  | 26 50 16  | 23  | 27 45 16  | 24  | 229  |
| 132  | 23 48 16  | 22  | 24 44 16  | 23  | 25 39 16  | 23  | 26 34 16  | 23  | 27 30 16  | 23  | 228  |
| 133  | 23 32 16  | 22  | 24 28 16  | 22  | 25 23 16  | 22  | 26 19 16  | 22  | 27 14 16  | 23  | 227  |
| 134  | 23 17 16  | 22  | 24 12 16  | 22  | 25 08 16  | 22  | 26 04 16  | 22  | 26 59 17  | 22  | 226  |
| 135  | 23 01 -16 | 21  | 23 57 -16 | 21  | 24 53 -16 | 21  | 25 49 -17 | 22  | 26 44 -17 | 22  | 225  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
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| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 135  | 23 01-16 | 21  | 23 57-16 | 21  | 24 53-16 | 21  | 25 49-17 | 22  | 26 44-17 | 22  | 225  |
| 136  | 22 46 16 | 21  | 23 42 17 | 21  | 24 38 17 | 21  | 25 34 17 | 21  | 26 30 17 | 21  | 224  |
| 137  | 22 31 17 | 20  | 23 28 17 | 20  | 24 24 17 | 21  | 25 20 17 | 21  | 26 16 17 | 21  | 223  |
| 138  | 22 17 17 | 20  | 23 13 17 | 20  | 24 10 17 | 20  | 25 06 17 | 20  | 26 02 17 | 20  | 222  |
| 139  | 22 03 17 | 19  | 22 59 17 | 19  | 23 56 17 | 20  | 24 52 17 | 20  | 25 48 17 | 20  | 221  |
| 140  | 21 49-17 | 19  | 22 46-17 | 19  | 23 42-17 | 19  | 24 39-17 | 19  | 25 35-17 | 19  | 220  |
| 141  | 21 35 17 | 18  | 22 32 17 | 19  | 23 29 17 | 19  | 24 26 17 | 19  | 25 22 17 | 19  | 219  |
| 142  | 21 22 17 | 18  | 22 19 17 | 18  | 23 16 17 | 18  | 24 13 17 | 18  | 25 10 17 | 19  | 218  |
| 143  | 21 09 17 | 18  | 22 06 17 | 18  | 23 03 17 | 18  | 24 00 17 | 18  | 24 57 18 | 18  | 217  |
| 144  | 20 56 17 | 17  | 21 54 17 | 17  | 22 51 18 | 17  | 23 48 18 | 18  | 24 45 18 | 18  | 216  |
| 145  | 20 44-18 | 17  | 21 42-18 | 17  | 22 39-18 | 17  | 23 36-18 | 17  | 24 33-18 | 17  | 215  |
| 146  | 20 32 18 | 16  | 21 30 18 | 16  | 22 27 18 | 16  | 23 25 18 | 17  | 24 22 18 | 17  | 214  |
| 147  | 20 20 18 | 16  | 21 18 18 | 16  | 22 16 18 | 16  | 23 13 18 | 16  | 24 11 18 | 16  | 213  |
| 148  | 20 09 18 | 15  | 21 07 18 | 15  | 22 05 18 | 16  | 23 02 18 | 16  | 24 00 18 | 16  | 212  |
| 149  | 19 58 18 | 15  | 20 56 18 | 15  | 21 54 18 | 15  | 22 52 18 | 15  | 23 49 18 | 15  | 211  |
| 150  | 19 47-18 | 14  | 20 45-18 | 15  | 21 43-18 | 15  | 22 41-18 | 15  | 23 39-18 | 15  | 210  |
| 151  | 19 37 18 | 14  | 20 35 18 | 14  | 21 33 18 | 14  | 22 31 18 | 14  | 23 29 18 | 14  | 209  |
| 152  | 19 27 18 | 13  | 20 25 18 | 14  | 21 23 18 | 14  | 22 22 18 | 14  | 23 20 18 | 14  | 208  |
| 153  | 19 17 18 | 13  | 20 16 18 | 13  | 21 14 18 | 13  | 22 12 18 | 13  | 23 11 18 | 13  | 207  |
| 154  | 19 08 18 | 13  | 20 06 18 | 13  | 21 05 18 | 13  | 22 03 18 | 13  | 23 02 18 | 13  | 206  |
| 155  | 18 59-18 | 12  | 19 57-18 | 12  | 20 56-19 | 12  | 21 54-19 | 12  | 22 53-19 | 12  | 205  |
| 156  | 18 50 19 | 12  | 19 49 19 | 12  | 20 47 19 | 12  | 21 46 19 | 12  | 22 45 19 | 12  | 204  |
| 157  | 18 42 19 | 11  | 19 41 19 | 11  | 20 39 19 | 11  | 21 38 19 | 11  | 22 37 19 | 11  | 203  |
| 158  | 18 34 19 | 11  | 19 33 19 | 11  | 20 32 19 | 11  | 21 30 19 | 11  | 22 29 19 | 11  | 202  |
| 159  | 18 26 19 | 10  | 19 25 19 | 10  | 20 24 19 | 10  | 21 23 19 | 10  | 22 22 19 | 10  | 201  |
| 160  | 18 19-19 | 10  | 19 18-19 | 10  | 20 17-19 | 10  | 21 16-19 | 10  | 22 15-19 | 10  | 200  |
| 161  | 18 12 19 | 9   | 19 11 19 | 9   | 20 10 19 | 9   | 21 09 19 | 9   | 22 08 19 | 9   | 199  |
| 162  | 18 05 19 | 9   | 19 04 19 | 9   | 20 04 19 | 9   | 21 03 19 | 9   | 22 02 19 | 9   | 198  |
| 163  | 17 59 19 | 8   | 18 58 19 | 8   | 19 58 19 | 8   | 20 57 19 | 8   | 21 56 19 | 8   | 197  |
| 164  | 17 53 19 | 8   | 18 52 19 | 8   | 19 52 19 | 8   | 20 51 19 | 8   | 21 50 19 | 8   | 196  |
| 165  | 17 48-19 | 7   | 18 47-19 | 7   | 19 46-19 | 7   | 20 46-19 | 7   | 21 45-19 | 7   | 195  |
| 166  | 17 42 19 | 7   | 18 42 19 | 7   | 19 41 19 | 7   | 20 41 19 | 7   | 21 40 19 | 7   | 194  |
| 167  | 17 37 19 | 6   | 18 37 19 | 6   | 19 36 19 | 6   | 20 36 19 | 6   | 21 35 19 | 7   | 193  |
| 168  | 17 33 19 | 6   | 18 33 19 | 6   | 19 32 19 | 6   | 20 32 19 | 6   | 21 31 19 | 6   | 192  |
| 169  | 17 29 19 | 5   | 18 28 19 | 5   | 19 28 19 | 5   | 20 28 19 | 5   | 21 27 19 | 6   | 191  |
| 170  | 17 25-19 | 5   | 18 25-19 | 5   | 19 24-19 | 5   | 20 24-19 | 5   | 21 24-19 | 5   | 190  |
| 171  | 17 22 19 | 4   | 18 21 19 | 4   | 19 21 19 | 4   | 20 21 19 | 4   | 21 20 19 | 5   | 189  |
| 172  | 17 19 19 | 4   | 18 18 19 | 4   | 19 18 19 | 4   | 20 18 19 | 4   | 21 17 19 | 4   | 188  |
| 173  | 17 16 19 | 3   | 18 16 19 | 3   | 19 15 19 | 3   | 20 15 19 | 3   | 21 15 19 | 4   | 187  |
| 174  | 17 14 19 | 3   | 18 13 19 | 3   | 19 13 19 | 3   | 20 13 19 | 3   | 21 13 19 | 3   | 186  |
| 175  | 17 12-19 | 2   | 18 11-19 | 2   | 19 11-19 | 2   | 20 11-19 | 2   | 21 11-19 | 3   | 185  |
| 176  | 17 10 19 | 2   | 18 10 19 | 2   | 19 10 19 | 2   | 20 09 19 | 2   | 21 09 19 | 2   | 184  |
| 177  | 17 09 19 | 1   | 18 08 19 | 1   | 19 08 19 | 1   | 20 08 19 | 2   | 21 08 19 | 2   | 183  |
| 178  | 17 08 19 | 1   | 18 08 19 | 1   | 19 07 19 | 1   | 20 07 19 | 1   | 21 07 19 | 1   | 182  |
| 179  | 17 07 19 | 0   | 18 07 19 | 0   | 19 07 19 | 1   | 20 07 19 | 1   | 21 07 19 | 1   | 181  |
| 180  | 17 07-19 | 0   | 18 07-19 | 0   | 19 07-19 | 0   | 20 07-19 | 0   | 21 06-19 | 0   | 180  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. |
| 0    | 15 07+19 | 180 | 14 07+19 | 180 | 13 07+19 | 180 | 12 08+19 | 180 | 11 08+19 | 180 |
| 1    | 15 06 19 | 179 | 14 07 19 | 179 | 13 07 19 | 179 | 12 07 19 | 179 | 11 08 19 | 179 |
| 2    | 15 05 19 | 178 | 14 06 19 | 178 | 13 06 19 | 178 | 12 06 19 | 178 | 11 07 19 | 178 |
| 3    | 15 04 19 | 177 | 14 04 19 | 177 | 13 04 19 | 177 | 12 05 19 | 177 | 11 05 19 | 177 |
| 4    | 15 01 19 | 176 | 14 02 19 | 176 | 13 02 19 | 176 | 12 03 19 | 176 | 11 03 19 | 176 |
| 5    | 14 58+19 | 176 | 13 59+19 | 176 | 12 59+19 | 176 | 12 00+19 | 176 | 11 00+19 | 176 |
| 6    | 14 55 19 | 175 | 13 55 19 | 175 | 12 56 19 | 175 | 11 56 19 | 175 | 10 57 19 | 175 |
| 7    | 14 51 19 | 174 | 13 51 19 | 174 | 12 52 19 | 174 | 11 52 19 | 174 | 10 53 19 | 174 |
| 8    | 14 46 19 | 173 | 13 46 19 | 173 | 12 47 19 | 173 | 11 48 19 | 173 | 10 49 19 | 173 |
| 9    | 14 40 19 | 172 | 13 41 19 | 172 | 12 42 19 | 172 | 11 43 19 | 172 | 10 44 19 | 172 |
| 10   | 14 34+19 | 171 | 13 35+19 | 171 | 12 36+19 | 171 | 11 37+19 | 171 | 10 38+19 | 171 |
| 11   | 14 27 19 | 170 | 13 28 19 | 170 | 12 29 19 | 170 | 11 30 19 | 170 | 10 32 19 | 170 |
| 12   | 14 19 19 | 169 | 13 21 19 | 169 | 12 22 19 | 169 | 11 23 19 | 169 | 10 25 19 | 169 |
| 13   | 14 11 19 | 168 | 13 13 19 | 168 | 12 14 19 | 169 | 11 16 19 | 169 | 10 17 19 | 168 |
| 14   | 14 02 19 | 168 | 13 04 19 | 168 | 12 06 19 | 168 | 11 07 19 | 168 | 10 09 19 | 168 |
| 15   | 13 53+19 | 167 | 12 55+19 | 167 | 11 57+19 | 167 | 10 59+19 | 167 | 10 01+19 | 167 |
| 16   | 13 43 19 | 166 | 12 45 19 | 166 | 11 47 19 | 166 | 10 49 19 | 166 | ...      | ... |
| 17   | 13 32 19 | 165 | 12 34 19 | 165 | 11 37 19 | 165 | 10 39 19 | 165 | ...      | ... |
| 18   | 13 21 19 | 164 | 12 23 19 | 164 | 11 26 19 | 164 | 10 29 19 | 164 | ...      | ... |
| 19   | 13 09 19 | 163 | 12 12 19 | 163 | 11 15 19 | 163 | 10 18 19 | 163 | ...      | ... |
| 20   | 12 56+19 | 162 | 11 59+19 | 162 | 11 03+19 | 162 | 10 06+19 | 162 | ...      | ... |
| 21   | 12 43 18 | 161 | 11 47 18 | 162 | 10 50 19 | 162 | ...      | ... | ...      | ... |
| 22   | 12 29 18 | 161 | 11 33 18 | 161 | 10 37 18 | 161 | ...      | ... | ...      | ... |
| 23   | 12 15 18 | 160 | 11 19 18 | 160 | 10 23 18 | 160 | ...      | ... | ...      | ... |
| 24   | 12 00 18 | 159 | 11 05 18 | 159 | 10 09+18 | 159 | ...      | ... | ...      | ... |
| 25   | 11 45+18 | 158 | 10 49+18 | 158 | ...      | ... | ...      | ... | ...      | ... |
| 26   | 11 29 18 | 157 | 10 34 18 | 157 | ...      | ... | ...      | ... | ...      | ... |
| 27   | 11 12 18 | 156 | 10 17 18 | 156 | ...      | ... | ...      | ... | ...      | ... |
| 28   | 10 55 18 | 156 | 10 01+18 | 156 | ...      | ... | ...      | ... | ...      | ... |
| 29   | 10 37 18 | 155 | ...      | ... | ...      | ... | ...      | ... | ...      | ... |
| 30   | 10 19+18 | 154 | ...      | ... | ...      | ... | ...      | ... | ...      | ... |
| 31   | 10 00+18 | 153 | ...      | ... | ...      | ... | ...      | ... | ...      | ... |
| 32   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... |
| 33   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... |
| 34   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... |
| 35   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. }  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. }  
 No correction for date is necessary until 1944.

# FORMALHAUT

# SOUTH LATITUDES

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. |
| 0    | 74 56-19 | 180 | 73 57-19 | 180 | 72 57-19 | 180 | 71 57-19 | 180 | 70 57-19 | 180 |
| 1    | 74 55 19 | 177 | 73 55 19 | 177 | 72 55 19 | 177 | 71 56 19 | 177 | 70 56 19 | 177 |
| 2    | 74 52 19 | 173 | 73 52 19 | 174 | 72 52 19 | 174 | 71 53 19 | 174 | 70 53 19 | 174 |
| 3    | 74 45 19 | 170 | 73 46 19 | 171 | 72 47 19 | 171 | 71 48 19 | 172 | 70 48 19 | 171 |
| 4    | 74 37 19 | 167 | 73 38 19 | 168 | 72 40 19 | 168 | 71 41 19 | 169 | 70 42 19 | 168 |
| 5    | 74 26-19 | 164 | 73 28-19 | 165 | 72 31-19 | 165 | 71 32-19 | 166 | 70 34-19 | 166 |
| 6    | 74 13 18 | 161 | 73 16 18 | 162 | 72 19 19 | 163 | 71 22 19 | 164 | 70 24 19 | 166 |
| 7    | 73 58 18 | 158 | 73 02 18 | 159 | 72 06 18 | 160 | 71 10 18 | 161 | 70 13 19 | 165 |
| 8    | 73 41 18 | 155 | 72 46 18 | 156 | 71 51 18 | 157 | 70 56 18 | 158 | 70 00 18 | 158 |
| 9    | 73 22 18 | 152 | 72 28 18 | 153 | 71 34 18 | 155 | 70 40 18 | 156 | 69 45 18 | 155 |
| 10   | 73 01-17 | 149 | 72 09-18 | 151 | 71 16-18 | 152 | 70 23-18 | 153 | 69 29-18 | 155 |
| 11   | 72 38 17 | 146 | 71 48 17 | 148 | 70 56 18 | 150 | 70 04 18 | 151 | 69 11 18 | 155 |
| 12   | 72 14 17 | 144 | 71 25 17 | 146 | 70 35 17 | 147 | 69 44 17 | 149 | 68 52 18 | 155 |
| 13   | 71 48 16 | 141 | 71 00 17 | 143 | 70 12 17 | 145 | 69 22 17 | 146 | 68 32 17 | 144 |
| 14   | 71 21 16 | 139 | 70 35 16 | 141 | 69 48 17 | 143 | 69 00 17 | 144 | 68 10 17 | 144 |
| 15   | 70 52-16 | 137 | 70 08-16 | 139 | 69 22-17 | 140 | 68 35-17 | 142 | 67 48-17 | 144 |
| 16   | 70 23 16 | 135 | 69 40 16 | 137 | 68 56 16 | 138 | 68 10 17 | 140 | 67 24 17 | 144 |
| 17   | 69 52 15 | 133 | 69 11 16 | 135 | 68 28 16 | 136 | 67 44 16 | 138 | 66 59 17 | 144 |
| 18   | 69 20 15 | 131 | 68 41 15 | 133 | 67 59 16 | 134 | 67 17 16 | 136 | 66 33 16 | 143 |
| 19   | 68 48 15 | 129 | 68 09 15 | 131 | 67 30 16 | 133 | 66 48 16 | 134 | 66 06 16 | 143 |
| 20   | 68 14-14 | 127 | 67 37-15 | 129 | 66 59-15 | 131 | 66 19-16 | 132 | 65 38-16 | 143 |
| 21   | 67 40 14 | 125 | 67 05 15 | 127 | 66 28 15 | 129 | 65 49 15 | 131 | 65 09 16 | 143 |
| 22   | 67 05 14 | 124 | 66 31 14 | 125 | 65 55 15 | 127 | 65 18 15 | 129 | 64 40 16 | 143 |
| 23   | 66 29 14 | 122 | 65 57 14 | 124 | 65 22 15 | 126 | 64 47 15 | 127 | 64 10 15 | 143 |
| 24   | 65 53 14 | 120 | 65 22 14 | 122 | 64 49 14 | 124 | 64 15 15 | 126 | 63 39 15 | 143 |
| 25   | 65 16-13 | 119 | 64 46-14 | 121 | 64 15-14 | 123 | 63 42-15 | 124 | 63 07-15 | 143 |
| 26   | 64 39 13 | 118 | 64 10 14 | 119 | 63 40 14 | 121 | 63 08 15 | 123 | 62 35 15 | 143 |
| 27   | 64 01 13 | 116 | 63 34 13 | 118 | 63 05 14 | 120 | 62 34 14 | 121 | 62 02 15 | 143 |
| 28   | 63 23 13 | 115 | 62 57 13 | 117 | 62 29 14 | 118 | 62 00 14 | 120 | 61 29 15 | 143 |
| 29   | 62 44 13 | 114 | 62 19 13 | 115 | 61 53 14 | 117 | 61 25 14 | 119 | 60 55 14 | 143 |
| 30   | 62 05-13 | 112 | 61 41-13 | 114 | 61 16-13 | 116 | 60 49-14 | 117 | 60 21-14 | 143 |
| 31   | 61 25 12 | 111 | 61 03 13 | 113 | 60 39 13 | 114 | 60 13 14 | 116 | 59 46 14 | 143 |
| 32   | 60 46 12 | 110 | 60 24 13 | 112 | 60 02 13 | 113 | 59 37 14 | 115 | 59 11 14 | 143 |
| 33   | 60 06 12 | 109 | 59 46 13 | 110 | 59 24 13 | 112 | 59 01 13 | 114 | 58 36 14 | 143 |
| 34   | 59 25 12 | 108 | 59 06 12 | 109 | 58 46 13 | 111 | 58 24 13 | 112 | 58 00 14 | 143 |
| 35   | 58 45-12 | 107 | 58 27-12 | 108 | 58 07-13 | 110 | 57 46-13 | 111 | 57 24-14 | 143 |
| 36   | 58 04 12 | 106 | 57 47 12 | 107 | 57 29 13 | 109 | 57 09 13 | 110 | 56 47 14 | 143 |
| 37   | 57 23 12 | 105 | 57 07 12 | 106 | 56 50 13 | 108 | 56 31 13 | 109 | 56 11 13 | 143 |
| 38   | 56 42 12 | 104 | 56 27 12 | 105 | 56 11 13 | 107 | 55 53 13 | 108 | 55 34 13 | 143 |
| 39   | 56 01 12 | 103 | 55 47 12 | 104 | 55 32 12 | 106 | 55 15 13 | 107 | 54 56 13 | 143 |
| 40   | 55 19-11 | 102 | 55 06-12 | 103 | 54 52-12 | 105 | 54 36-13 | 106 | 54 19-13 | 143 |
| 41   | 54 38 11 | 101 | 54 26 12 | 102 | 54 12 12 | 104 | 53 58 13 | 105 | 53 41 13 | 143 |
| 42   | 53 56 11 | 100 | 53 45 12 | 101 | 53 33 12 | 103 | 53 19 13 | 104 | 53 03 13 | 143 |
| 43   | 53 14 11 | 99  | 53 04 12 | 100 | 52 53 12 | 102 | 52 40 13 | 103 | 52 25 13 | 143 |
| 44   | 52 32 11 | 98  | 52 23 12 | 100 | 52 12 12 | 101 | 52 00 13 | 102 | 51 47 13 | 143 |
| 45   | 51 50-11 | 97  | 51 42-12 | 99  | 51 32-12 | 100 | 51 21-12 | 101 | 51 09-13 | 143 |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth.}$  }  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth.}$  }  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 51 50-11 | 97  | 51 42-12 | 99  | 51 32-12 | 100 | 51 21-12 | 101 | 51 09-13 | 102 | 315  |
| 46   | 51 08 11 | 97  | 51 01 12 | 98  | 50 52 12 | 99  | 50 42 12 | 100 | 50 30 13 | 102 | 314  |
| 47   | 50 26 11 | 96  | 50 19 12 | 97  | 50 11 12 | 98  | 50 02 12 | 99  | 49 52 13 | 101 | 313  |
| 48   | 49 44 11 | 95  | 49 38 12 | 96  | 49 31 12 | 97  | 49 23 12 | 99  | 49 13 13 | 100 | 312  |
| 49   | 49 02 11 | 94  | 48 57 12 | 95  | 48 50 12 | 97  | 48 43 12 | 98  | 48 34 13 | 99  | 311  |
| 50   | 48 19-11 | 94  | 48 15-11 | 95  | 48 10-12 | 96  | 48 03-12 | 97  | 47 55-13 | 98  | 310  |
| 51   | 47 37 11 | 93  | 47 34 11 | 94  | 47 29 12 | 95  | 47 23 12 | 96  | 47 16 13 | 97  | 309  |
| 52   | 46 55 11 | 92  | 46 52 11 | 93  | 46 48 12 | 94  | 46 43 12 | 95  | 46 37 13 | 96  | 308  |
| 53   | 46 12 11 | 91  | 46 10 11 | 92  | 46 07 12 | 93  | 46 03 12 | 94  | 45 58 13 | 95  | 307  |
| 54   | 45 30 11 | 91  | 45 29 11 | 92  | 45 26 12 | 93  | 45 23 12 | 94  | 45 19 13 | 95  | 306  |
| 55   | 44 47-11 | 90  | 44 47-11 | 91  | 44 46-12 | 92  | 44 43-12 | 93  | 44 40-13 | 94  | 305  |
| 56   | 44 05 11 | 89  | 44 05 11 | 90  | 44 05 12 | 91  | 44 03 12 | 92  | 44 00 13 | 93  | 304  |
| 57   | 43 23 11 | 88  | 43 24 11 | 89  | 43 24 12 | 90  | 43 23 12 | 91  | 43 21 12 | 92  | 303  |
| 58   | 42 40 11 | 88  | 42 42 11 | 89  | 42 43 12 | 90  | 42 43 12 | 91  | 42 42 12 | 91  | 302  |
| 59   | 41 58 11 | 87  | 42 00 11 | 88  | 42 02 12 | 89  | 42 03 12 | 90  | 42 02 12 | 91  | 301  |
| 60   | 41 16-11 | 86  | 41 19-11 | 87  | 41 21-12 | 88  | 41 23-12 | 89  | 41 23-12 | 90  | 300  |
| 61   | 40 33 11 | 86  | 40 37 11 | 87  | 40 40 12 | 88  | 40 42 12 | 88  | 40 44 12 | 89  | 299  |
| 62   | 39 51 11 | 85  | 39 56 11 | 86  | 39 59 12 | 87  | 40 02 12 | 88  | 40 04 12 | 88  | 298  |
| 63   | 39 09 11 | 84  | 39 14 11 | 85  | 39 19 12 | 86  | 39 22 12 | 87  | 39 25 12 | 88  | 297  |
| 64   | 38 27 11 | 84  | 38 33 12 | 85  | 38 38 12 | 85  | 38 42 12 | 86  | 38 46 13 | 87  | 296  |
| 65   | 37 44-11 | 83  | 37 51-12 | 84  | 37 57-12 | 85  | 38 02-12 | 86  | 38 07-13 | 86  | 295  |
| 66   | 37 02 11 | 83  | 37 10 12 | 83  | 37 16 12 | 84  | 37 22 12 | 85  | 37 27 13 | 86  | 294  |
| 67   | 36 20 11 | 82  | 36 28 12 | 83  | 36 36 12 | 83  | 36 42 12 | 84  | 36 48 13 | 85  | 293  |
| 68   | 35 38 11 | 81  | 35 47 12 | 82  | 35 55 12 | 83  | 36 02 12 | 83  | 36 09 13 | 84  | 292  |
| 69   | 34 57 11 | 81  | 35 06 12 | 81  | 35 15 12 | 82  | 35 23 12 | 83  | 35 30 13 | 83  | 291  |
| 70   | 34 15-11 | 80  | 34 25-12 | 81  | 34 34-12 | 81  | 34 43-12 | 82  | 34 51-13 | 83  | 290  |
| 71   | 33 33 11 | 79  | 33 44 12 | 80  | 33 54 12 | 81  | 34 03 12 | 81  | 34 12 13 | 82  | 289  |
| 72   | 32 51 11 | 79  | 33 03 12 | 79  | 33 13 12 | 80  | 33 23 12 | 81  | 33 33 13 | 81  | 288  |
| 73   | 32 10 11 | 78  | 32 22 12 | 79  | 32 33 12 | 79  | 32 44 12 | 80  | 32 54 13 | 81  | 287  |
| 74   | 31 28 12 | 78  | 31 41 12 | 78  | 31 53 12 | 79  | 32 04 12 | 79  | 32 15 13 | 80  | 286  |
| 75   | 30 47-12 | 77  | 31 00-12 | 78  | 31 13-12 | 78  | 31 25-12 | 79  | 31 37-13 | 79  | 285  |
| 76   | 30 06 12 | 76  | 30 20 12 | 77  | 30 33 12 | 77  | 30 46 13 | 78  | 30 58 13 | 79  | 284  |
| 77   | 29 25 12 | 76  | 29 39 12 | 76  | 29 53 12 | 77  | 30 07 13 | 77  | 30 19 13 | 78  | 283  |
| 78   | 28 44 12 | 75  | 28 59 12 | 76  | 29 13 12 | 76  | 29 28 13 | 77  | 29 41 13 | 77  | 282  |
| 79   | 28 03 12 | 75  | 28 19 12 | 75  | 28 34 12 | 76  | 28 49 13 | 76  | 29 03 13 | 77  | 281  |
| 80   | 27 22-12 | 74  | 27 38-12 | 74  | 27 54-12 | 75  | 28 10-13 | 75  | 28 25-13 | 76  | 280  |
| 81   | 26 41 12 | 73  | 26 58 12 | 74  | 27 15 12 | 74  | 27 31 13 | 75  | 27 46 13 | 75  | 279  |
| 82   | 26 01 12 | 73  | 26 19 12 | 73  | 26 36 13 | 74  | 26 52 13 | 74  | 27 08 13 | 75  | 278  |
| 83   | 25 21 12 | 72  | 25 39 12 | 73  | 25 56 13 | 73  | 26 14 13 | 73  | 26 31 13 | 74  | 277  |
| 84   | 24 40 12 | 71  | 24 59 12 | 72  | 25 17 13 | 72  | 25 35 13 | 73  | 25 53 13 | 73  | 276  |
| 85   | 24 00-12 | 71  | 24 20-12 | 71  | 24 39-13 | 72  | 24 57-13 | 72  | 25 15-13 | 73  | 275  |
| 86   | 23 20 12 | 70  | 23 40 12 | 71  | 24 00 13 | 71  | 24 19 13 | 72  | 24 38 13 | 72  | 274  |
| 87   | 22 40 12 | 70  | 23 01 13 | 70  | 23 21 13 | 70  | 23 41 13 | 71  | 24 01 13 | 71  | 273  |
| 88   | 22 01 12 | 69  | 22 22 13 | 69  | 22 43 13 | 70  | 23 03 13 | 70  | 23 23 13 | 71  | 272  |
| 89   | 21 21 12 | 68  | 21 43 13 | 69  | 22 05 13 | 69  | 22 26 13 | 70  | 22 46 13 | 70  | 271  |
| 90   | 20 42-13 | 68  | 21 04-13 | 68  | 21 26-13 | 69  | 21 48-13 | 69  | 22 10-13 | 69  | 270  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 90   | 20 42-13 | 68  | 21 04-13 | 68  | 21 26-13 | 69  | 21 48-13 | 69  | 22 10-13 | 69  | 270  |
| 91   | 20 03 13 | 67  | 20 26 13 | 68  | 20 49 13 | 68  | 21 11 13 | 68  | 21 33 14 | 69  | 269  |
| 92   | 19 24 13 | 67  | 19 48 13 | 67  | 20 11 13 | 67  | 20 34 13 | 68  | 20 56 14 | 68  | 268  |
| 93   | 18 45 13 | 66  | 19 09 13 | 66  | 19 33 13 | 67  | 19 57 13 | 67  | 20 20 14 | 67  | 267  |
| 94   | 18 07 13 | 65  | 18 31 13 | 66  | 18 56 13 | 66  | 19 20 14 | 66  | 19 44 14 | 67  | 266  |
| 95   | 17 28-13 | 65  | 17 54-13 | 65  | 18 19-13 | 65  | 18 43-14 | 66  | 19 08-14 | 66  | 265  |
| 96   | 16 50 13 | 64  | 17 16 13 | 64  | 17 42 13 | 65  | 18 07 14 | 65  | 18 32 14 | 65  | 264  |
| 97   | 16 12 13 | 64  | 16 39 13 | 64  | 17 05 13 | 64  | 17 31 14 | 64  | 17 57 14 | 65  | 263  |
| 98   | 15 34 13 | 63  | 16 01 13 | 63  | 16 28 14 | 63  | 16 55 14 | 64  | 17 21 14 | 64  | 262  |
| 99   | 14 57 13 | 62  | 15 24 13 | 63  | 15 52 14 | 63  | 16 19 14 | 63  | 16 46 14 | 63  | 261  |
| 100  | 14 19-13 | 62  | 14 48-14 | 62  | 15 16-14 | 62  | 15 43-14 | 62  | 16 11-14 | 63  | 260  |
| 101  | 13 42 13 | 61  | 14 11 14 | 61  | 14 40 14 | 62  | 15 08 14 | 62  | 15 36 14 | 62  | 259  |
| 102  | 13 05 13 | 60  | 13 35 14 | 61  | 14 04 14 | 61  | 14 33 14 | 61  | 15 02 14 | 61  | 258  |
| 103  | 12 29 14 | 60  | 12 59 14 | 60  | 13 28 14 | 60  | 13 58 14 | 60  | 14 27 14 | 61  | 257  |
| 104  | 11 52 14 | 59  | 12 23 14 | 59  | 12 53 14 | 60  | 13 23 14 | 60  | 13 53 14 | 60  | 256  |
| 105  | 11 16-14 | 59  | 11 47-14 | 59  | 12 18-14 | 59  | 12 49-14 | 59  | 13 20-15 | 59  | 255  |
| 106  | 10 40 14 | 58  | 11 12 14 | 58  | 11 43 14 | 58  | 12 15 14 | 58  | 12 46 15 | 59  | 254  |
| 107  | 10 05-14 | 57  | 10 37 14 | 57  | 11 09 14 | 58  | 11 41 14 | 58  | 12 13 15 | 58  | 253  |
| 108  | ...      |     | 10 02-14 | 57  | 10 35 14 | 57  | 11 07 15 | 57  | 11 40 15 | 57  | 252  |
| 109  | ...      |     | ...      |     | 10 01-14 | 56  | 10 34 15 | 56  | 11 07 15 | 57  | 251  |
| 110  | ...      |     | ...      |     | ...      |     | 10 01-15 | 56  | 10 34-15 | 56  | 250  |
| 111  | ...      |     | ...      |     | ...      |     | ...      |     | 10 02-15 | 55  | 249  |
| 112  | ...      |     | ...      |     | ...      |     | ...      |     | ...      |     | 248  |
| 113  | ...      |     | ...      |     | ...      |     | ...      |     | ...      |     | 247  |
| 114  | ...      |     | ...      |     | ...      |     | ...      |     | ...      |     | 246  |
| 115  | ...      |     | ...      |     | ...      |     | ...      |     | ...      |     | 245  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1944.

| LAT. | 45°       |     | 46°       |     | 47°       |     | 48°       |     | 49°      |     | LAT. |
|------|-----------|-----|-----------|-----|-----------|-----|-----------|-----|----------|-----|------|
| H.A. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | Alt.     | Az. | H.A. |
| 0    | 78 05 +12 | 0   | 79 05 +12 | 0   | ...       | ... | ...       | ... | ...      | ... | 360  |
| 1    | 78 04 12  | 3   | 79 03 12  | 3   | ...       | ... | ...       | ... | ...      | ... | 359  |
| 2    | 78 01 12  | 5   | 79 00 12  | 6   | ...       | ... | ...       | ... | ...      | ... | 358  |
| 3    | 77 56 11  | 8   | 78 55 11  | 9   | 79 54 +11 | 9   | ...       | ... | ...      | ... | 357  |
| 4    | 77 49 11  | 10  | 78 48 11  | 11  | 79 47 11  | 12  | ...       | ... | ...      | ... | 356  |
| 5    | 77 41 +11 | 13  | 78 39 +11 | 14  | 79 37 +11 | 15  | ...       | ... | ...      | ... | 355  |
| 6    | 77 30 11  | 15  | 78 28 11  | 17  | 79 25 11  | 18  | ...       | ... | ...      | ... | 354  |
| 7    | 77 18 11  | 18  | 78 15 11  | 19  | 79 12 10  | 21  | ...       | ... | ...      | ... | 353  |
| 8    | 77 05 10  | 20  | 78 01 10  | 21  | 78 56 10  | 23  | 79 51 +10 | 26  | ...      | ... | 352  |
| 9    | 76 49 10  | 22  | 77 45 10  | 24  | 78 39 10  | 26  | 79 33 10  | 28  | ...      | ... | 351  |
| 10   | 76 33 +10 | 24  | 77 27 +10 | 26  | 78 21 +9  | 28  | 79 13 +9  | 30  | ...      | ... | 350  |
| 11   | 76 15 10  | 26  | 77 08 9   | 28  | 78 01 9   | 30  | 78 52 9   | 33  | 79 42 +8 | 36  | 349  |
| 12   | 75 56 9   | 28  | 76 48 9   | 30  | 77 40 9   | 32  | 78 30 8   | 35  | 79 18 8  | 38  | 348  |
| 13   | 75 35 9   | 30  | 76 27 9   | 32  | 77 17 8   | 34  | 78 06 8   | 37  | 78 54 7  | 40  | 347  |
| 14   | 75 14 9   | 31  | 76 05 8   | 33  | 76 54 8   | 36  | 77 42 8   | 38  | 78 28 7  | 41  | 346  |
| 15   | 74 51 +8  | 33  | 75 41 +8  | 35  | 76 30 +8  | 37  | 77 17 +7  | 40  | 78 02 +7 | 43  | 345  |
| 16   | 74 28 8   | 34  | 75 17 8   | 36  | 76 05 7   | 39  | 76 51 7   | 41  | 77 35 6  | 44  | 344  |
| 17   | 74 04 8   | 36  | 74 52 7   | 38  | 75 39 7   | 40  | 76 24 6   | 43  | 77 07 6  | 46  | 343  |
| 18   | 73 39 7   | 37  | 74 26 7   | 39  | 75 12 7   | 41  | 75 56 6   | 44  | 76 38 6  | 47  | 342  |
| 19   | 73 13 7   | 38  | 74 00 7   | 40  | 74 45 6   | 42  | 75 28 6   | 45  | 76 09 5  | 48  | 341  |
| 20   | 72 47 +7  | 39  | 73 33 +6  | 41  | 74 17 +6  | 44  | 74 59 +5  | 46  | 75 40 +5 | 49  | 340  |
| 21   | 72 20 6   | 40  | 73 05 6   | 42  | 73 48 6   | 45  | 74 30 5   | 47  | 75 10 5  | 50  | 339  |
| 22   | 71 52 6   | 41  | 72 37 6   | 43  | 73 19 5   | 45  | 74 01 5   | 48  | 74 40 4  | 51  | 338  |
| 23   | 71 24 6   | 42  | 72 08 5   | 44  | 72 50 5   | 46  | 73 31 5   | 49  | 74 09 4  | 51  | 337  |
| 24   | 70 55 6   | 43  | 71 39 5   | 45  | 72 20 5   | 47  | 73 00 4   | 49  | 73 38 4  | 52  | 336  |
| 25   | 70 26 +5  | 44  | 71 09 +5  | 46  | 71 50 +4  | 48  | 72 30 +4  | 50  | 73 07 +3 | 53  | 335  |
| 26   | 69 57 5   | 44  | 70 39 5   | 46  | 71 20 4   | 48  | 71 59 4   | 51  | 72 36 3  | 53  | 334  |
| 27   | 69 27 5   | 45  | 70 09 4   | 47  | 70 49 4   | 49  | 71 28 3   | 51  | 72 04 3  | 54  | 333  |
| 28   | 68 57 4   | 45  | 69 38 4   | 47  | 70 18 4   | 49  | 70 56 3   | 52  | 71 33 3  | 54  | 332  |
| 29   | 68 27 4   | 46  | 69 08 4   | 48  | 69 47 3   | 50  | 70 25 3   | 52  | 71 01 2  | 54  | 331  |
| 30   | 67 56 +4  | 47  | 68 37 +4  | 48  | 69 16 +3  | 50  | 69 53 +3  | 52  | 70 29 +2 | 55  | 330  |
| 31   | 67 25 4   | 47  | 68 05 3   | 49  | 68 44 3   | 51  | 69 21 2   | 53  | 69 56 2  | 55  | 329  |
| 32   | 66 54 3   | 47  | 67 34 3   | 49  | 68 12 3   | 51  | 68 49 2   | 53  | 69 24 2  | 55  | 328  |
| 33   | 66 23 3   | 48  | 67 02 3   | 50  | 67 40 2   | 51  | 68 17 2   | 53  | 68 52 2  | 55  | 327  |
| 34   | 65 51 3   | 48  | 66 30 3   | 50  | 67 08 2   | 52  | 67 45 2   | 54  | 68 19 1  | 56  | 326  |
| 35   | 65 19 +3  | 49  | 65 58 +2  | 50  | 66 36 +2  | 52  | 67 12 +2  | 54  | 67 47 +1 | 56  | 325  |
| 36   | 64 47 3   | 49  | 65 26 2   | 50  | 66 04 +2  | 52  | 66 40 1   | 54  | 67 14 1  | 56  | 324  |
| 37   | 64 15 2   | 49  | 64 54 2   | 51  | 65 31 2   | 52  | 66 07 1   | 54  | 66 42 1  | 56  | 323  |
| 38   | 63 43 2   | 49  | 64 22 2   | 51  | 64 59 1   | 53  | 65 35 1   | 54  | 66 09 +1 | 56  | 322  |
| 39   | 63 11 2   | 50  | 63 49 2   | 51  | 64 26 1   | 53  | 65 02 1   | 54  | 65 36 0  | 56  | 321  |
| 40   | 62 39 +2  | 50  | 63 17 +1  | 51  | 63 54 +1  | 53  | 64 29 +1  | 55  | 65 03 0  | 56  | 320  |
| 41   | 62 06 2   | 50  | 62 44 1   | 51  | 63 21 1   | 53  | 63 57 0   | 55  | 64 31 0  | 56  | 319  |
| 42   | 61 34 1   | 50  | 62 12 1   | 52  | 62 49 +1  | 53  | 63 24 0   | 55  | 63 58 0  | 56  | 318  |
| 43   | 61 01 1   | 50  | 61 39 1   | 52  | 62 16 0   | 53  | 62 51 0   | 55  | 63 25 0  | 56  | 317  |
| 44   | 60 29 1   | 50  | 61 07 +1  | 52  | 61 43 0   | 53  | 62 19 0   | 55  | 62 53 0  | 56  | 316  |
| 45   | 59 56 +1  | 50  | 60 34 0   | 52  | 61 10 0   | 53  | 61 46 0   | 55  | 62 20 -1 | 56  | 315  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1946.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 59 56 +1 | 50  | 60 34 0  | 52  | 61 10 0  | 53  | 61 46 0  | 55  | 62 20 -1 | 56  | 315  |
| 46   | 59 23 +1 | 50  | 60 01 0  | 52  | 60 38 0  | 53  | 61 13 0  | 55  | 61 47 1  | 56  | 314  |
| 47   | 58 51 0  | 50  | 59 28 0  | 52  | 60 05 0  | 53  | 60 40 -1 | 55  | 61 15 1  | 56  | 313  |
| 48   | 58 18 0  | 51  | 58 56 0  | 52  | 59 32 0  | 53  | 60 08 1  | 54  | 60 42 1  | 56  | 312  |
| 49   | 57 45 0  | 51  | 58 23 0  | 52  | 59 00 -1 | 53  | 59 35 1  | 54  | 60 09 1  | 56  | 311  |
| 50   | 57 13 0  | 51  | 57 50 0  | 52  | 58 27 -1 | 53  | 59 02 -1 | 54  | 59 37 -1 | 56  | 310  |
| 51   | 56 40 0  | 50  | 57 18 -1 | 52  | 57 54 1  | 53  | 58 30 1  | 54  | 59 04 2  | 56  | 309  |
| 52   | 56 07 0  | 50  | 56 45 1  | 52  | 57 22 1  | 53  | 57 57 1  | 54  | 58 32 2  | 55  | 308  |
| 53   | 55 34 -1 | 50  | 56 12 1  | 52  | 56 49 1  | 53  | 57 25 1  | 54  | 57 59 2  | 55  | 307  |
| 54   | 55 02 1  | 50  | 55 40 1  | 51  | 56 16 1  | 53  | 56 52 2  | 54  | 57 27 2  | 55  | 306  |
| 55   | 54 29 -1 | 50  | 55 07 -1 | 51  | 55 44 -1 | 53  | 56 20 -2 | 54  | 56 55 -2 | 55  | 305  |
| 56   | 53 56 1  | 50  | 54 34 1  | 51  | 55 12 2  | 52  | 55 48 2  | 54  | 56 23 2  | 55  | 304  |
| 57   | 53 24 1  | 50  | 54 02 2  | 51  | 54 39 2  | 52  | 55 15 2  | 53  | 55 51 2  | 55  | 303  |
| 58   | 52 51 1  | 50  | 53 30 2  | 51  | 54 07 2  | 52  | 54 43 2  | 53  | 55 19 2  | 54  | 302  |
| 59   | 52 19 2  | 50  | 52 57 2  | 51  | 53 35 2  | 52  | 54 11 2  | 53  | 54 47 3  | 54  | 301  |
| 60   | 51 47 -2 | 50  | 52 25 -2 | 51  | 53 02 -2 | 52  | 53 39 -2 | 53  | 54 15 -3 | 54  | 300  |
| 61   | 51 14 2  | 50  | 51 53 2  | 51  | 52 30 2  | 52  | 53 07 3  | 53  | 53 43 3  | 54  | 299  |
| 62   | 50 42 2  | 50  | 51 20 2  | 50  | 51 58 2  | 51  | 52 35 3  | 52  | 53 11 3  | 54  | 298  |
| 63   | 50 10 2  | 49  | 50 48 2  | 50  | 51 26 3  | 51  | 52 03 3  | 52  | 52 40 3  | 53  | 297  |
| 64   | 49 38 2  | 49  | 50 16 3  | 50  | 50 54 3  | 51  | 51 32 3  | 52  | 52 08 3  | 53  | 296  |
| 65   | 49 05 -2 | 49  | 49 44 -3 | 50  | 50 23 -3 | 51  | 51 00 -3 | 52  | 51 37 -3 | 53  | 295  |
| 66   | 48 33 3  | 49  | 49 13 3  | 50  | 49 51 3  | 51  | 50 29 3  | 52  | 51 06 3  | 53  | 294  |
| 67   | 48 02 3  | 49  | 48 41 3  | 50  | 49 19 3  | 50  | 49 57 3  | 51  | 50 34 4  | 52  | 293  |
| 68   | 47 30 3  | 48  | 48 09 3  | 49  | 48 48 3  | 50  | 49 26 3  | 51  | 50 03 4  | 52  | 292  |
| 69   | 46 58 3  | 48  | 47 38 3  | 49  | 48 17 3  | 50  | 48 55 4  | 51  | 49 32 4  | 52  | 291  |
| 70   | 46 26 -3 | 48  | 47 06 -3 | 49  | 47 45 -4 | 50  | 48 24 -4 | 51  | 49 02 -4 | 51  | 290  |
| 71   | 45 55 3  | 48  | 46 35 3  | 49  | 47 14 4  | 49  | 47 53 4  | 50  | 48 31 4  | 51  | 289  |
| 72   | 45 24 3  | 48  | 46 04 4  | 48  | 46 43 4  | 49  | 47 22 4  | 50  | 48 00 4  | 51  | 288  |
| 73   | 44 52 3  | 47  | 45 33 4  | 48  | 46 12 4  | 49  | 46 51 4  | 50  | 47 30 4  | 51  | 287  |
| 74   | 44 21 4  | 47  | 45 02 4  | 48  | 45 42 4  | 49  | 46 21 4  | 49  | 47 00 4  | 50  | 286  |
| 75   | 43 50 -4 | 47  | 44 31 -4 | 48  | 45 11 -4 | 48  | 45 50 -4 | 49  | 46 29 -5 | 50  | 285  |
| 76   | 43 19 4  | 47  | 44 00 4  | 47  | 44 40 4  | 48  | 45 20 4  | 49  | 45 59 5  | 50  | 284  |
| 77   | 42 48 4  | 46  | 43 29 4  | 47  | 44 10 4  | 48  | 44 50 5  | 49  | 45 29 5  | 49  | 283  |
| 78   | 42 18 4  | 46  | 42 59 4  | 47  | 43 40 5  | 48  | 44 20 5  | 48  | 45 00 5  | 49  | 282  |
| 79   | 41 47 4  | 46  | 42 29 4  | 47  | 43 10 5  | 47  | 43 50 5  | 48  | 44 30 5  | 49  | 281  |
| 80   | 41 17 -4 | 46  | 41 59 -5 | 46  | 42 40 -5 | 47  | 43 20 -5 | 48  | 44 01 -5 | 48  | 280  |
| 81   | 40 47 5  | 45  | 41 29 5  | 46  | 42 10 5  | 47  | 42 51 5  | 47  | 43 31 5  | 48  | 279  |
| 82   | 40 17 5  | 45  | 40 59 5  | 46  | 41 40 5  | 46  | 42 21 5  | 47  | 43 02 5  | 48  | 278  |
| 83   | 39 47 5  | 45  | 40 29 5  | 45  | 41 11 5  | 46  | 41 52 5  | 47  | 42 33 5  | 47  | 277  |
| 84   | 39 17 5  | 45  | 39 59 5  | 45  | 40 41 5  | 46  | 41 23 5  | 46  | 42 04 6  | 47  | 276  |
| 85   | 38 47 -5 | 44  | 39 30 -5 | 45  | 40 12 -5 | 45  | 40 54 -5 | 46  | 41 36 -6 | 47  | 275  |
| 86   | 38 18 5  | 44  | 39 01 5  | 44  | 39 43 5  | 45  | 40 25 6  | 46  | 41 07 6  | 46  | 274  |
| 87   | 37 48 5  | 44  | 38 32 5  | 44  | 39 14 6  | 45  | 39 57 6  | 45  | 40 39 6  | 46  | 273  |
| 88   | 37 19 5  | 43  | 38 03 6  | 44  | 38 46 6  | 44  | 39 28 6  | 45  | 40 11 6  | 46  | 272  |
| 89   | 36 50 5  | 43  | 37 34 6  | 43  | 38 17 6  | 44  | 39 00 6  | 45  | 39 43 6  | 45  | 271  |
| 90   | 36 21 -6 | 43  | 37 05 -6 | 43  | 37 49 -6 | 44  | 38 32 -6 | 44  | 39 15 -6 | 45  | 270  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1946.

| LAT. | 45°       |     | 46°       |     | 47°       |     | 48°       |     | 49°       |     | LAT. |
|------|-----------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|------|
| H.A. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | Alt.      | Az. | H.A. |
| 90   | 36 21 -6  | 43  | 37 05 -6  | 43  | 37 49 -6  | 44  | 38 32 -6  | 44  | 39 15 -6  | 45  | 270  |
| 91   | 35 53 6   | 42  | 36 37 6   | 43  | 37 21 6   | 43  | 38 04 6   | 44  | 38 47 6   | 44  | 269  |
| 92   | 35 24 6   | 42  | 36 09 6   | 42  | 36 53 6   | 43  | 37 36 6   | 43  | 38 20 6   | 44  | 268  |
| 93   | 34 56 6   | 42  | 35 41 6   | 42  | 36 25 6   | 43  | 37 09 6   | 43  | 37 52 7   | 44  | 267  |
| 94   | 34 28 6   | 41  | 35 13 6   | 42  | 35 57 6   | 42  | 36 42 6   | 43  | 37 25 7   | 43  | 266  |
| 95   | 34 00 -6  | 41  | 34 45 -6  | 41  | 35 30 -6  | 42  | 36 14 -7  | 42  | 36 59 -7  | 43  | 265  |
| 96   | 33 32 6   | 41  | 34 18 6   | 41  | 35 03 7   | 42  | 35 47 7   | 42  | 36 32 7   | 42  | 264  |
| 97   | 33 05 6   | 40  | 33 50 7   | 41  | 34 36 7   | 41  | 35 21 7   | 42  | 36 05 7   | 42  | 263  |
| 98   | 32 38 6   | 40  | 33 23 7   | 40  | 34 09 7   | 41  | 34 54 7   | 41  | 35 39 7   | 42  | 262  |
| 99   | 32 10 7   | 40  | 32 57 7   | 40  | 33 42 7   | 40  | 34 28 7   | 41  | 35 13 7   | 41  | 261  |
| 100  | 31 44 -7  | 39  | 32 30 -7  | 40  | 33 16 -7  | 40  | 34 02 -7  | 40  | 34 47 -7  | 41  | 260  |
| 101  | 31 17 7   | 39  | 32 04 7   | 39  | 32 50 7   | 40  | 33 36 7   | 40  | 34 22 7   | 40  | 259  |
| 102  | 30 50 7   | 38  | 31 37 7   | 39  | 32 24 7   | 39  | 33 10 7   | 40  | 33 56 7   | 40  | 258  |
| 103  | 30 24 7   | 38  | 31 11 7   | 38  | 31 58 7   | 39  | 32 45 7   | 39  | 33 31 7   | 40  | 257  |
| 104  | 29 58 7   | 38  | 30 46 7   | 38  | 31 33 7   | 38  | 32 19 7   | 39  | 33 06 8   | 39  | 256  |
| 105  | 29 32 -7  | 37  | 30 20 -7  | 38  | 31 07 -7  | 38  | 31 54 -8  | 38  | 32 41 -8  | 39  | 255  |
| 106  | 29 07 7   | 37  | 29 55 7   | 37  | 30 42 8   | 38  | 31 30 8   | 38  | 32 17 8   | 38  | 254  |
| 107  | 28 42 7   | 37  | 29 30 8   | 37  | 30 17 8   | 37  | 31 05 8   | 38  | 31 53 8   | 38  | 253  |
| 108  | 28 16 8   | 36  | 29 05 8   | 36  | 29 53 8   | 37  | 30 41 8   | 37  | 31 29 8   | 37  | 252  |
| 109  | 27 52 8   | 36  | 28 40 8   | 36  | 29 29 8   | 36  | 30 17 8   | 37  | 31 05 8   | 37  | 251  |
| 110  | 27 27 -8  | 35  | 28 16 -8  | 36  | 29 04 -8  | 36  | 29 53 -8  | 36  | 30 41 -8  | 37  | 250  |
| 111  | 27 03 8   | 35  | 27 52 8   | 35  | 28 41 8   | 35  | 29 29 8   | 36  | 30 18 8   | 36  | 249  |
| 112  | 26 39 8   | 34  | 27 28 8   | 35  | 28 17 8   | 35  | 29 06 8   | 35  | 29 55 8   | 36  | 248  |
| 113  | 26 15 8   | 34  | 27 04 8   | 34  | 27 54 8   | 35  | 28 43 8   | 35  | 29 32 8   | 35  | 247  |
| 114  | 25 51 8   | 34  | 26 41 8   | 34  | 27 31 8   | 34  | 28 20 8   | 34  | 29 09 8   | 35  | 246  |
| 115  | 25 28 -8  | 33  | 26 18 -8  | 33  | 27 08 -8  | 34  | 27 57 -8  | 34  | 28 47 -9  | 34  | 245  |
| 116  | 25 05 8   | 33  | 25 55 8   | 33  | 26 45 8   | 33  | 27 35 9   | 34  | 28 25 9   | 34  | 244  |
| 117  | 24 42 8   | 32  | 25 32 8   | 33  | 26 23 9   | 33  | 27 13 9   | 33  | 28 03 9   | 33  | 243  |
| 118  | 24 19 8   | 32  | 25 10 9   | 32  | 26 01 9   | 32  | 26 51 9   | 33  | 27 42 9   | 33  | 242  |
| 119  | 23 57 9   | 31  | 24 48 9   | 32  | 25 39 9   | 32  | 26 30 9   | 32  | 27 20 9   | 32  | 241  |
| 120  | 23 35 -9  | 31  | 24 26 -9  | 31  | 25 18 -9  | 32  | 26 09 -9  | 32  | 26 59 -9  | 32  | 240  |
| 121  | 23 13 9   | 31  | 24 05 9   | 31  | 24 56 9   | 31  | 25 48 9   | 31  | 26 39 9   | 32  | 239  |
| 122  | 22 52 9   | 30  | 23 44 9   | 30  | 24 35 9   | 31  | 25 27 9   | 31  | 26 18 9   | 31  | 238  |
| 123  | 22 31 9   | 30  | 23 23 9   | 30  | 24 15 9   | 30  | 25 06 9   | 30  | 25 58 9   | 31  | 237  |
| 124  | 22 10 9   | 29  | 23 02 9   | 29  | 23 54 9   | 30  | 24 46 9   | 30  | 25 38 9   | 30  | 236  |
| 125  | 21 49 -9  | 29  | 22 42 -9  | 29  | 23 34 -9  | 29  | 24 27 -9  | 29  | 25 19 -9  | 30  | 235  |
| 126  | 21 29 9   | 28  | 22 22 9   | 29  | 23 15 9   | 29  | 24 07 9   | 29  | 24 59 9   | 29  | 234  |
| 127  | 21 09 9   | 28  | 22 02 9   | 28  | 22 55 9   | 28  | 23 48 9   | 28  | 24 40 10  | 29  | 233  |
| 128  | 20 50 9   | 27  | 21 43 9   | 28  | 22 36 9   | 28  | 23 29 10  | 28  | 24 22 10  | 28  | 232  |
| 129  | 20 30 9   | 27  | 21 24 9   | 27  | 22 17 10  | 27  | 23 10 10  | 27  | 24 03 10  | 28  | 231  |
| 130  | 20 11 -10 | 26  | 21 05 -10 | 27  | 21 58 -10 | 27  | 22 52 -10 | 27  | 23 45 -10 | 27  | 230  |
| 131  | 19 53 10  | 26  | 20 46 10  | 26  | 21 40 10  | 26  | 22 34 10  | 26  | 23 27 10  | 27  | 229  |
| 132  | 19 34 10  | 25  | 20 28 10  | 26  | 21 22 10  | 26  | 22 16 10  | 26  | 23 10 10  | 26  | 228  |
| 133  | 19 16 10  | 25  | 20 10 10  | 25  | 21 05 10  | 25  | 21 59 10  | 25  | 22 53 10  | 26  | 227  |
| 134  | 18 58 10  | 25  | 19 53 10  | 25  | 20 47 10  | 25  | 21 42 10  | 25  | 22 36 10  | 25  | 226  |
| 135  | 18 41 -10 | 24  | 19 36 -10 | 24  | 20 30 -10 | 24  | 21 25 -10 | 24  | 22 19 -10 | 25  | 225  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1946.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 135  | 18 41-10 | 24  | 19 36-10 | 24  | 20 30-10 | 24  | 21 25-10 | 24  | 22 19-10 | 25  | 225  |
| 136  | 18 24 10 | 24  | 19 19 10 | 24  | 20 14 10 | 24  | 21 08 10 | 24  | 22 03 10 | 24  | 224  |
| 137  | 18 07 10 | 23  | 19 02 10 | 23  | 19 57 10 | 23  | 20 52 10 | 23  | 21 47 10 | 24  | 223  |
| 138  | 17 51 10 | 23  | 18 46 10 | 23  | 19 41 10 | 23  | 20 36 10 | 23  | 21 32 10 | 23  | 222  |
| 139  | 17 35 10 | 22  | 18 30 10 | 22  | 19 26 10 | 22  | 20 21 10 | 22  | 21 16 10 | 23  | 221  |
| 140  | 17 19-10 | 22  | 18 15-10 | 22  | 19 10-10 | 22  | 20 06-10 | 22  | 21 01-10 | 22  | 220  |
| 141  | 17 04 10 | 21  | 18 00 10 | 21  | 18 55 10 | 21  | 19 51 10 | 21  | 20 47 10 | 22  | 219  |
| 142  | 16 49 10 | 21  | 17 45 10 | 21  | 18 41 10 | 21  | 19 37 10 | 21  | 20 33 11 | 21  | 218  |
| 143  | 16 34 10 | 20  | 17 30 10 | 20  | 18 26 11 | 20  | 19 23 11 | 20  | 20 19 11 | 20  | 217  |
| 144  | 16 20 11 | 20  | 17 16 11 | 20  | 18 12 11 | 20  | 19 09 11 | 20  | 20 05 11 | 20  | 216  |
| 145  | 16 06-11 | 19  | 17 02-11 | 19  | 17 59-11 | 19  | 18 55-11 | 19  | 19 52-11 | 19  | 215  |
| 146  | 15 52 11 | 18  | 16 49 11 | 19  | 17 46 11 | 19  | 18 42 11 | 19  | 19 39 11 | 19  | 214  |
| 147  | 15 39 11 | 18  | 16 36 11 | 18  | 17 33 11 | 18  | 18 30 11 | 18  | 19 26 11 | 18  | 213  |
| 148  | 15 26 11 | 17  | 16 23 11 | 18  | 17 20 11 | 18  | 18 17 11 | 18  | 19 14 11 | 18  | 212  |
| 149  | 15 14 11 | 17  | 16 11 11 | 17  | 17 08 11 | 17  | 18 05 11 | 17  | 19 02 11 | 17  | 211  |
| 150  | 15 01-11 | 16  | 15 59-11 | 16  | 16 56-11 | 17  | 17 53-11 | 17  | 18 51-11 | 17  | 210  |
| 151  | 14 50 11 | 16  | 15 47 11 | 16  | 16 45 11 | 16  | 17 42 11 | 16  | 18 40 11 | 16  | 209  |
| 152  | 14 38 11 | 15  | 15 36 11 | 15  | 16 34 11 | 16  | 17 31 11 | 16  | 18 29 11 | 16  | 208  |
| 153  | 14 27 11 | 15  | 15 25 11 | 15  | 16 23 11 | 15  | 17 21 11 | 15  | 18 18 11 | 15  | 207  |
| 154  | 14 17 11 | 14  | 15 15 11 | 14  | 16 13 11 | 14  | 17 10 11 | 15  | 18 08 11 | 15  | 206  |
| 155  | 14 06-11 | 14  | 15 05-11 | 14  | 16 03-11 | 14  | 17 01-11 | 14  | 17 59-11 | 14  | 205  |
| 156  | 13 57 11 | 13  | 14 55 11 | 13  | 15 53 11 | 13  | 16 51 11 | 13  | 17 49 11 | 13  | 204  |
| 157  | 13 47 11 | 13  | 14 45 11 | 13  | 15 44 11 | 13  | 16 42 11 | 13  | 17 40 11 | 13  | 203  |
| 158  | 13 38 11 | 12  | 14 36 11 | 12  | 15 35 11 | 12  | 16 33 11 | 12  | 17 32 11 | 12  | 202  |
| 159  | 13 29 11 | 12  | 14 28 11 | 12  | 15 26 11 | 12  | 16 25 11 | 12  | 17 24 11 | 12  | 201  |
| 160  | 13 21-11 | 11  | 14 20-11 | 11  | 15 18-11 | 11  | 16 17-11 | 11  | 17 16-11 | 11  | 200  |
| 161  | 13 13 11 | 11  | 14 12 11 | 11  | 15 11 11 | 11  | 16 09 11 | 11  | 17 08 11 | 11  | 199  |
| 162  | 13 06 11 | 10  | 14 04 11 | 10  | 15 03 11 | 10  | 16 02 11 | 10  | 17 01 11 | 10  | 198  |
| 163  | 12 59 11 | 9   | 13 57 11 | 9   | 14 56 11 | 10  | 15 55 11 | 10  | 16 54 11 | 10  | 197  |
| 164  | 12 52 11 | 9   | 13 51 11 | 9   | 14 50 11 | 9   | 15 49 11 | 9   | 16 48 11 | 9   | 196  |
| 165  | 12 46-11 | 8   | 13 45-11 | 8   | 14 44-11 | 8   | 15 43-11 | 8   | 16 42-11 | 8   | 195  |
| 166  | 12 40 11 | 8   | 13 39 11 | 8   | 14 38 11 | 8   | 15 37 11 | 8   | 16 36 11 | 8   | 194  |
| 167  | 12 34 11 | 7   | 13 33 11 | 7   | 14 33 12 | 7   | 15 32 12 | 7   | 16 31 12 | 7   | 193  |
| 168  | 12 29 12 | 7   | 13 28 12 | 7   | 14 28 12 | 7   | 15 27 12 | 7   | 16 26 12 | 7   | 192  |
| 169  | 12 24 12 | 6   | 13 24 12 | 6   | 14 23 12 | 6   | 15 23 12 | 6   | 16 22 12 | 6   | 191  |
| 170  | 12 20-12 | 6   | 13 19-12 | 6   | 14 19-12 | 6   | 15 18-12 | 6   | 16 18-12 | 6   | 190  |
| 171  | 12 16 12 | 5   | 13 16 12 | 5   | 14 15 12 | 5   | 15 15 12 | 5   | 16 14 12 | 5   | 189  |
| 172  | 12 13 12 | 4   | 13 12 12 | 4   | 14 12 12 | 4   | 15 11 12 | 5   | 16 11 12 | 5   | 188  |
| 173  | 12 10 12 | 4   | 13 09 12 | 4   | 14 09 12 | 4   | 15 08 12 | 4   | 16 08 12 | 4   | 187  |
| 174  | 12 07 12 | 3   | 13 06 12 | 3   | 14 06 12 | 3   | 15 06 12 | 3   | 16 05 12 | 3   | 186  |
| 175  | 12 05-12 | 3   | 13 04-12 | 3   | 14 04-12 | 3   | 15 04-12 | 3   | 16 03-12 | 3   | 185  |
| 176  | 12 03 12 | 2   | 13 02 12 | 2   | 14 02 12 | 2   | 15 02 12 | 2   | 16 02 12 | 2   | 184  |
| 177  | 12 01 12 | 2   | 13 01 12 | 2   | 14 01 12 | 2   | 15 00 12 | 2   | 16 00 12 | 2   | 183  |
| 178  | 12 00 12 | 1   | 13 00 12 | 1   | 14 00 12 | 1   | 14 59 12 | 1   | 15 59 12 | 1   | 182  |
| 179  | 12 00 12 | 1   | 12 59 12 | 1   | 13 59 12 | 1   | 14 59 12 | 1   | 15 59 12 | 1   | 181  |
| 180  | 11 59-12 | 0   | 12 59-12 | 0   | 13 59-12 | 0   | 14 59-12 | 0   | 15 58-12 | 0   | 180  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1946.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 0    | 73 11 | -9 180 | 72 11 | -9 180 | 71 11 | -9 180 | 70 11 | -9 180 | 69 11 | -9 180 | 360  |
| 1    | 73 09 | 9 177  | 72 10 | 9 177  | 71 10 | 9 177  | 70 10 | 9 177  | 69 10 | 9 178  | 359  |
| 2    | 73 06 | 9 174  | 72 06 | 9 174  | 71 07 | 9 175  | 70 07 | 9 175  | 69 07 | 9 175  | 358  |
| 3    | 73 00 | 9 171  | 72 01 | 9 171  | 71 02 | 9 172  | 70 02 | 9 172  | 69 03 | 9 173  | 357  |
| 4    | 72 53 | 9 168  | 71 54 | 9 169  | 70 55 | 9 169  | 69 56 | 9 170  | 68 57 | 9 170  | 356  |
| 5    | 72 43 | -9 165 | 71 45 | -9 166 | 70 46 | -9 167 | 69 48 | -9 167 | 68 50 | -9 168 | 355  |
| 6    | 72 31 | 9 162  | 71 34 | 9 163  | 70 36 | 9 164  | 69 38 | 9 165  | 68 40 | 9 165  | 354  |
| 7    | 72 17 | 8 159  | 71 20 | 8 160  | 70 24 | 9 161  | 69 27 | 9 162  | 68 30 | 9 163  | 353  |
| 8    | 72 01 | 8 157  | 71 06 | 8 158  | 70 10 | 8 159  | 69 14 | 8 160  | 68 17 | 9 161  | 352  |
| 9    | 71 43 | 8 154  | 70 49 | 8 155  | 69 54 | 8 156  | 68 59 | 8 157  | 68 04 | 8 158  | 351  |
| 10   | 71 24 | -8 151 | 70 31 | -8 153 | 69 37 | -8 154 | 68 43 | -8 155 | 67 48 | -8 156 | 350  |
| 11   | 71 02 | 8 149  | 70 11 | 8 150  | 69 18 | 8 152  | 68 25 | 8 153  | 67 32 | 8 154  | 349  |
| 12   | 70 40 | 8 146  | 69 49 | 8 148  | 68 58 | 8 149  | 68 06 | 8 151  | 67 14 | 8 152  | 348  |
| 13   | 70 16 | 8 144  | 69 26 | 8 146  | 68 37 | 8 147  | 67 46 | 8 148  | 66 54 | 8 150  | 347  |
| 14   | 69 50 | 8 142  | 69 02 | 8 143  | 68 14 | 8 145  | 67 24 | 8 146  | 66 34 | 8 148  | 346  |
| 15   | 69 23 | -8 140 | 68 37 | -8 141 | 67 50 | -8 143 | 67 01 | -8 144 | 66 12 | -8 146 | 345  |
| 16   | 68 55 | 7 138  | 68 10 | 8 139  | 67 24 | 8 141  | 66 37 | 8 142  | 65 49 | 8 144  | 344  |
| 17   | 68 26 | 7 136  | 67 42 | 7 137  | 66 58 | 8 139  | 66 12 | 8 140  | 65 26 | 8 142  | 343  |
| 18   | 67 56 | 7 134  | 67 14 | 7 135  | 66 30 | 7 137  | 65 46 | 8 138  | 65 01 | 8 140  | 342  |
| 19   | 67 24 | 7 132  | 66 44 | 7 133  | 66 02 | 7 135  | 65 19 | 8 137  | 64 35 | 8 138  | 341  |
| 20   | 66 52 | -7 130 | 66 13 | -7 132 | 65 33 | -7 133 | 64 51 | -7 135 | 64 08 | -8 136 | 340  |
| 21   | 66 19 | 7 128  | 65 42 | 7 130  | 65 02 | 7 132  | 64 22 | 7 133  | 63 40 | 7 135  | 339  |
| 22   | 65 46 | 7 126  | 65 09 | 7 128  | 64 31 | 7 130  | 63 52 | 7 131  | 63 12 | 7 133  | 338  |
| 23   | 65 11 | 7 125  | 64 36 | 7 127  | 64 00 | 7 128  | 63 22 | 7 130  | 62 43 | 7 131  | 337  |
| 24   | 64 36 | 7 123  | 64 02 | 7 125  | 63 27 | 7 127  | 62 51 | 7 128  | 62 13 | 7 130  | 336  |
| 25   | 64 00 | -6 122 | 63 28 | -7 124 | 62 54 | -7 125 | 62 19 | -7 127 | 61 42 | -7 128 | 335  |
| 26   | 63 24 | 6 120  | 62 53 | 7 122  | 62 20 | 7 124  | 61 46 | 7 125  | 61 11 | 7 127  | 334  |
| 27   | 62 47 | 6 119  | 62 17 | 6 121  | 61 46 | 7 122  | 61 13 | 7 124  | 60 39 | 7 125  | 333  |
| 28   | 62 10 | 6 118  | 61 41 | 6 119  | 61 11 | 7 121  | 60 40 | 7 122  | 60 07 | 7 124  | 332  |
| 29   | 61 32 | 6 116  | 61 05 | 6 118  | 60 36 | 7 120  | 60 05 | 7 121  | 59 34 | 7 122  | 331  |
| 30   | 60 54 | -6 115 | 60 28 | -6 117 | 60 00 | -6 118 | 59 31 | -7 120 | 59 00 | -7 121 | 330  |
| 31   | 60 15 | 6 114  | 59 50 | 6 115  | 59 24 | 6 117  | 58 56 | 7 118  | 58 27 | 7 120  | 329  |
| 32   | 59 36 | 6 113  | 59 12 | 6 114  | 58 47 | 6 116  | 58 20 | 6 117  | 57 52 | 7 119  | 328  |
| 33   | 58 57 | 6 111  | 58 34 | 6 113  | 58 10 | 6 114  | 57 44 | 6 116  | 57 17 | 7 117  | 327  |
| 34   | 58 17 | 6 110  | 57 56 | 6 112  | 57 33 | 6 113  | 57 08 | 6 115  | 56 42 | 7 116  | 326  |
| 35   | 57 37 | -6 109 | 57 17 | -6 111 | 56 55 | -6 112 | 56 31 | -6 114 | 56 07 | -6 115 | 325  |
| 36   | 56 57 | 6 108  | 56 38 | 6 110  | 56 17 | 6 111  | 55 55 | 6 112  | 55 31 | 6 114  | 324  |
| 37   | 56 17 | 6 107  | 55 58 | 6 109  | 55 38 | 6 110  | 55 17 | 6 111  | 54 55 | 6 113  | 323  |
| 38   | 55 36 | 6 106  | 55 19 | 6 108  | 55 00 | 6 109  | 54 40 | 6 110  | 54 18 | 6 112  | 322  |
| 39   | 54 55 | 6 105  | 54 39 | 6 107  | 54 21 | 6 108  | 54 02 | 6 109  | 53 42 | 6 110  | 321  |
| 40   | 54 14 | -6 104 | 53 59 | -6 106 | 53 42 | -6 107 | 53 24 | -6 108 | 53 05 | -6 109 | 320  |
| 41   | 53 33 | 5 103  | 53 19 | 6 105  | 53 03 | 6 106  | 52 46 | 6 107  | 52 27 | 6 108  | 319  |
| 42   | 52 52 | 5 102  | 52 38 | 6 104  | 52 23 | 6 105  | 52 07 | 6 106  | 51 50 | 6 107  | 318  |
| 43   | 52 10 | 5 101  | 51 58 | 6 103  | 51 44 | 6 104  | 51 29 | 6 105  | 51 12 | 6 106  | 317  |
| 44   | 51 29 | 5 101  | 51 17 | 6 102  | 51 04 | 6 103  | 50 50 | 6 104  | 50 34 | 6 105  | 316  |
| 45   | 50 47 | -5 100 | 50 36 | -6 101 | 50 24 | -6 102 | 50 11 | -6 103 | 49 56 | -6 104 | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1947.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 50 47 -5 | 100 | 50 36 -6 | 101 | 50 24 -6 | 102 | 50 11 -6 | 103 | 49 56 -6 | 104 | 315  |
| 46   | 50 05 5  | 99  | 49 55 6  | 100 | 49 44 6  | 101 | 49 32 6  | 102 | 49 18 6  | 104 | 314  |
| 47   | 49 23 5  | 98  | 49 14 6  | 99  | 49 04 6  | 100 | 48 52 6  | 101 | 48 40 6  | 103 | 313  |
| 48   | 48 41 5  | 97  | 48 33 6  | 98  | 48 24 6  | 99  | 48 13 6  | 101 | 48 01 6  | 102 | 312  |
| 49   | 47 59 5  | 96  | 47 52 5  | 98  | 47 43 6  | 99  | 47 34 6  | 100 | 47 23 6  | 101 | 311  |
| 50   | 47 17 -5 | 96  | 47 10 -5 | 97  | 47 03 -6 | 98  | 46 54 -6 | 99  | 46 44 -6 | 100 | 310  |
| 51   | 46 34 5  | 95  | 46 29 5  | 96  | 46 22 6  | 97  | 46 14 6  | 98  | 46 05 6  | 99  | 309  |
| 52   | 45 52 5  | 94  | 45 47 5  | 95  | 45 41 6  | 96  | 45 35 6  | 97  | 45 26 6  | 98  | 308  |
| 53   | 45 10 5  | 93  | 45 06 5  | 94  | 45 01 6  | 95  | 44 55 6  | 96  | 44 48 6  | 97  | 307  |
| 54   | 44 28 5  | 93  | 44 24 5  | 94  | 44 20 6  | 95  | 44 15 6  | 96  | 44 08 6  | 97  | 306  |
| 55   | 43 45 -5 | 92  | 43 43 -5 | 93  | 43 39 -6 | 94  | 43 35 -6 | 95  | 43 29 -6 | 96  | 305  |
| 56   | 43 03 5  | 91  | 43 01 5  | 92  | 42 58 6  | 93  | 42 55 6  | 94  | 42 50 6  | 95  | 304  |
| 57   | 42 20 5  | 90  | 42 19 5  | 91  | 42 18 6  | 92  | 42 15 6  | 93  | 42 11 6  | 94  | 303  |
| 58   | 41 38 5  | 90  | 41 38 5  | 91  | 41 37 6  | 92  | 41 35 6  | 92  | 41 32 6  | 93  | 302  |
| 59   | 40 56 5  | 89  | 40 56 5  | 90  | 40 56 6  | 91  | 40 55 6  | 92  | 40 52 6  | 93  | 301  |
| 60   | 40 13 -5 | 88  | 40 14 -5 | 89  | 40 15 -6 | 90  | 40 14 -6 | 91  | 40 13 -6 | 92  | 300  |
| 61   | 39 31 5  | 88  | 39 33 5  | 88  | 39 34 6  | 89  | 39 34 6  | 90  | 39 34 6  | 91  | 299  |
| 62   | 38 48 5  | 87  | 38 51 5  | 88  | 38 53 6  | 89  | 38 54 6  | 89  | 38 54 6  | 90  | 298  |
| 63   | 38 06 5  | 86  | 38 10 5  | 87  | 38 12 6  | 88  | 38 14 6  | 89  | 38 15 6  | 89  | 297  |
| 64   | 37 24 5  | 86  | 37 28 5  | 86  | 37 31 6  | 87  | 37 34 6  | 88  | 37 36 6  | 89  | 296  |
| 65   | 36 42 -5 | 85  | 36 46 -5 | 86  | 36 51 -6 | 86  | 36 54 -6 | 87  | 36 56 -6 | 88  | 295  |
| 66   | 35 59 5  | 84  | 36 05 5  | 85  | 36 10 6  | 86  | 36 14 6  | 86  | 36 17 6  | 87  | 294  |
| 67   | 35 17 5  | 84  | 35 23 5  | 84  | 35 29 6  | 85  | 35 34 6  | 86  | 35 38 6  | 86  | 293  |
| 68   | 34 35 5  | 83  | 34 42 5  | 84  | 34 48 6  | 84  | 34 54 6  | 85  | 34 59 6  | 86  | 292  |
| 69   | 33 53 5  | 82  | 34 01 5  | 83  | 34 08 6  | 84  | 34 14 6  | 84  | 34 19 6  | 85  | 291  |
| 70   | 33 11 -5 | 82  | 33 19 -5 | 82  | 33 27 -6 | 83  | 33 34 -6 | 84  | 33 40 -6 | 84  | 290  |
| 71   | 32 29 5  | 81  | 32 38 6  | 82  | 32 46 6  | 82  | 32 54 6  | 83  | 33 01 6  | 84  | 289  |
| 72   | 31 47 5  | 80  | 31 57 6  | 81  | 32 06 6  | 82  | 32 14 6  | 82  | 32 22 6  | 83  | 288  |
| 73   | 31 06 5  | 80  | 31 16 6  | 80  | 31 26 6  | 81  | 31 35 6  | 82  | 31 43 6  | 82  | 287  |
| 74   | 30 24 5  | 79  | 30 35 6  | 80  | 30 45 6  | 80  | 30 55 6  | 81  | 31 04 6  | 82  | 286  |
| 75   | 29 42 -5 | 79  | 29 54 -6 | 79  | 30 05 -6 | 80  | 30 15 -6 | 80  | 30 25 -6 | 81  | 285  |
| 76   | 29 01 5  | 78  | 29 13 6  | 78  | 29 25 6  | 79  | 29 36 6  | 80  | 29 46 6  | 80  | 284  |
| 77   | 28 19 5  | 77  | 28 32 6  | 78  | 28 45 6  | 78  | 28 56 6  | 79  | 29 08 6  | 79  | 283  |
| 78   | 27 38 5  | 77  | 27 52 6  | 77  | 28 05 6  | 78  | 28 17 6  | 78  | 28 29 6  | 79  | 282  |
| 79   | 26 57 6  | 76  | 27 11 6  | 77  | 27 25 6  | 77  | 27 38 6  | 78  | 27 51 6  | 78  | 281  |
| 80   | 26 16 -6 | 75  | 26 31 -6 | 76  | 26 45 -6 | 76  | 26 59 -6 | 77  | 27 12 -6 | 77  | 280  |
| 81   | 25 35 6  | 75  | 25 50 6  | 75  | 26 05 6  | 76  | 26 20 6  | 76  | 26 34 6  | 77  | 279  |
| 82   | 24 54 6  | 74  | 25 10 6  | 75  | 25 26 6  | 75  | 25 41 6  | 76  | 25 56 6  | 76  | 278  |
| 83   | 24 13 6  | 74  | 24 30 6  | 74  | 24 46 6  | 74  | 25 02 6  | 75  | 25 18 6  | 75  | 277  |
| 84   | 23 33 6  | 73  | 23 50 6  | 73  | 24 07 6  | 74  | 24 24 6  | 74  | 24 40 6  | 75  | 276  |
| 85   | 22 52 -6 | 72  | 23 10 -6 | 73  | 23 28 -6 | 73  | 23 45 -6 | 74  | 24 02 -6 | 74  | 275  |
| 86   | 22 12 6  | 72  | 22 31 6  | 72  | 22 49 6  | 73  | 23 07 6  | 73  | 23 24 6  | 73  | 274  |
| 87   | 21 32 6  | 71  | 21 51 6  | 71  | 22 10 6  | 72  | 22 28 6  | 72  | 22 46 6  | 73  | 273  |
| 88   | 20 52 6  | 71  | 21 12 6  | 71  | 21 31 6  | 71  | 21 50 6  | 72  | 22 09 6  | 72  | 272  |
| 89   | 20 12 6  | 70  | 20 33 6  | 70  | 20 53 6  | 71  | 21 12 6  | 71  | 21 32 6  | 71  | 271  |
| 90   | 19 32 -6 | 69  | 19 53 -6 | 70  | 20 14 -6 | 70  | 20 35 -6 | 70  | 20 55 -6 | 71  | 270  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1947.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 90   | 19 32 -6 | 69  | 19 53 -6 | 70  | 20 14 -6 | 70  | 20 35 -6 | 70  | 20 55 -6 | 71  | 270  |
| 91   | 18 53 6  | 69  | 19 15 6  | 69  | 19 36 6  | 69  | 19 57 6  | 70  | 20 18 6  | 70  | 269  |
| 92   | 18 14 6  | 68  | 18 36 6  | 68  | 18 58 6  | 69  | 19 19 6  | 69  | 19 41 6  | 69  | 268  |
| 93   | 17 34 6  | 67  | 17 57 6  | 68  | 18 20 6  | 68  | 18 42 6  | 68  | 19 04 6  | 69  | 267  |
| 94   | 16 55 6  | 67  | 17 19 6  | 67  | 17 42 6  | 67  | 18 05 6  | 68  | 18 28 6  | 68  | 266  |
| 95   | 16 17 -6 | 66  | 16 41 -6 | 66  | 17 04 -6 | 67  | 17 28 -6 | 67  | 17 51 -6 | 67  | 265  |
| 96   | 15 38 6  | 66  | 16 03 6  | 66  | 16 27 6  | 66  | 16 51 6  | 66  | 17 15 6  | 67  | 264  |
| 97   | 15 00 6  | 65  | 15 25 6  | 65  | 15 50 6  | 65  | 16 15 6  | 66  | 16 39 6  | 66  | 263  |
| 98   | 14 21 6  | 64  | 14 47 6  | 65  | 15 13 6  | 65  | 15 38 6  | 65  | 16 03 6  | 65  | 262  |
| 99   | 13 44 6  | 64  | 14 10 6  | 64  | 14 36 6  | 64  | 15 02 6  | 64  | 15 28 7  | 65  | 261  |
| 100  | 13 06 -6 | 63  | 13 33 -6 | 63  | 14 00 -6 | 63  | 14 26 -6 | 64  | 14 53 -7 | 64  | 260  |
| 101  | 12 28 6  | 62  | 12 56 6  | 63  | 13 23 6  | 63  | 13 50 6  | 63  | 14 17 7  | 63  | 259  |
| 102  | 11 51 6  | 62  | 12 19 6  | 62  | 12 47 6  | 62  | 13 15 7  | 62  | 13 43 7  | 63  | 258  |
| 103  | 11 14 6  | 61  | 11 43 6  | 61  | 12 11 6  | 61  | 12 40 7  | 62  | 13 08 7  | 62  | 257  |
| 104  | 10 37 6  | 60  | 11 06 6  | 61  | 11 36 6  | 61  | 12 05 7  | 61  | 12 33 7  | 61  | 256  |
| 105  | 10 01 -6 | 60  | 10 30 -6 | 60  | 11 00 -7 | 60  | 11 30 -7 | 60  | 11 59 -7 | 60  | 255  |
| 106  | ...      |     | ...      |     | 10 25 -7 | 59  | 10 55 7  | 60  | 11 25 7  | 60  | 254  |
| 107  | ...      |     | ...      |     | ...      |     | 10 21 -7 | 59  | 10 52 7  | 59  | 253  |
| 108  | ...      |     | ...      |     | ...      |     | ...      |     | 10 18 -7 | 58  | 252  |
| 109  | ...      |     | ...      |     | ...      |     | ...      |     | ...      |     | 251  |
| 110  | ...      |     | ...      |     | ...      |     | ...      |     | ...      |     | 250  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1947.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 16 52 +9 | 180 | 15 53 +9 | 180 | 14 53 +9 | 180 | 13 53 +9 | 180 | 12 53 +9 | 180 | 360  |
| 1    | 16 52 9  | 179 | 15 52 9  | 179 | 14 52 9  | 179 | 13 53 9  | 179 | 12 53 9  | 179 | 359  |
| 2    | 16 51 9  | 178 | 15 51 9  | 178 | 14 51 9  | 178 | 13 52 9  | 178 | 12 52 9  | 178 | 358  |
| 3    | 16 49 9  | 177 | 15 50 9  | 177 | 14 50 9  | 177 | 13 50 9  | 177 | 12 50 9  | 177 | 357  |
| 4    | 16 47 9  | 176 | 15 47 9  | 176 | 14 48 9  | 176 | 13 48 9  | 176 | 12 48 9  | 176 | 356  |
| 5    | 16 44 +9 | 175 | 15 44 +9 | 175 | 14 45 +9 | 175 | 13 45 +9 | 175 | 12 46 +9 | 175 | 355  |
| 6    | 16 40 9  | 174 | 15 41 9  | 175 | 14 41 9  | 175 | 13 42 9  | 175 | 12 42 9  | 175 | 354  |
| 7    | 16 36 9  | 174 | 15 36 9  | 174 | 14 37 9  | 174 | 13 38 9  | 174 | 12 38 9  | 174 | 353  |
| 8    | 16 31 9  | 173 | 15 31 9  | 173 | 14 32 9  | 173 | 13 33 9  | 173 | 12 34 9  | 173 | 352  |
| 9    | 16 25 9  | 172 | 15 26 9  | 172 | 14 27 9  | 172 | 13 27 9  | 172 | 12 28 9  | 172 | 351  |
| 10   | 16 19 +9 | 171 | 15 19 +9 | 171 | 14 20 +9 | 171 | 13 21 +9 | 171 | 12 22 +9 | 171 | 350  |
| 11   | 16 11 9  | 170 | 15 13 9  | 170 | 14 14 9  | 170 | 13 15 9  | 170 | 12 16 9  | 170 | 349  |
| 12   | 16 04 9  | 169 | 15 05 9  | 169 | 14 06 9  | 169 | 13 08 9  | 169 | 12 09 9  | 169 | 348  |
| 13   | 15 55 9  | 168 | 14 57 9  | 168 | 13 58 9  | 168 | 13 00 9  | 168 | 12 01 9  | 168 | 347  |
| 14   | 15 46 9  | 167 | 14 48 9  | 167 | 13 50 9  | 167 | 12 51 9  | 167 | 11 53 9  | 167 | 346  |
| 15   | 15 37 +9 | 166 | 14 38 +9 | 166 | 13 40 +9 | 166 | 12 42 +9 | 166 | 11 44 +9 | 167 | 345  |
| 16   | 15 26 9  | 165 | 14 28 9  | 165 | 13 31 9  | 166 | 12 33 9  | 166 | 11 35 9  | 166 | 344  |
| 17   | 15 15 9  | 165 | 14 18 9  | 165 | 13 20 9  | 165 | 12 22 9  | 165 | 11 25 9  | 165 | 343  |
| 18   | 15 04 9  | 164 | 14 06 9  | 164 | 13 09 9  | 164 | 12 12 9  | 164 | 11 14 9  | 164 | 342  |
| 19   | 14 51 9  | 163 | 13 54 9  | 163 | 12 57 9  | 163 | 12 00 9  | 163 | 11 03 9  | 163 | 341  |
| 20   | 14 39 +9 | 162 | 13 42 +9 | 162 | 12 45 +9 | 162 | 11 48 +9 | 162 | 10 51 +9 | 162 | 340  |
| 21   | 14 25 8  | 161 | 13 29 9  | 161 | 12 32 9  | 161 | 11 36 9  | 161 | 10 39 9  | 161 | 339  |
| 22   | 14 11 8  | 160 | 13 15 8  | 160 | 12 19 8  | 160 | 11 22 9  | 160 | 10 26 9  | 160 | 338  |
| 23   | 13 56 8  | 159 | 13 00 8  | 159 | 12 05 8  | 159 | 11 09 8  | 159 | 10 13 +8 | 160 | 337  |
| 24   | 13 41 8  | 158 | 12 45 8  | 158 | 11 50 8  | 159 | 10 54 8  | 159 | ...      | ... | 336  |
| 25   | 13 25 +8 | 157 | 12 30 +8 | 158 | 11 35 +8 | 158 | 10 40 +8 | 158 | ...      | ... | 335  |
| 26   | 13 09 8  | 157 | 12 14 8  | 157 | 11 19 8  | 157 | 10 24 8  | 157 | ...      | ... | 334  |
| 27   | 12 52 8  | 156 | 11 57 8  | 156 | 11 03 8  | 156 | 10 08 +8 | 156 | ...      | ... | 333  |
| 28   | 12 34 8  | 155 | 11 40 8  | 155 | 10 46 8  | 155 | ...      | ... | ...      | ... | 332  |
| 29   | 12 16 8  | 154 | 11 22 8  | 154 | 10 28 8  | 154 | ...      | ... | ...      | ... | 331  |
| 30   | 11 57 +8 | 153 | 11 04 +8 | 153 | 10 11 +8 | 153 | ...      | ... | ...      | ... | 330  |
| 31   | 11 38 8  | 152 | 10 45 8  | 152 | ...      | ... | ...      | ... | ...      | ... | 329  |
| 32   | 11 18 8  | 152 | 10 26 8  | 152 | ...      | ... | ...      | ... | ...      | ... | 328  |
| 33   | 10 58 8  | 151 | 10 06 +8 | 151 | ...      | ... | ...      | ... | ...      | ... | 327  |
| 34   | 10 37 8  | 150 | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 326  |
| 35   | 10 15 +8 | 149 | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 325  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1947.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 0    | 50 23 | -9 180 | 49 23 | -9 180 | 48 23 | -9 180 | 47 23 | -9 180 | 46 24 | -9 180 | 360  |
| 1    | 50 23 | 9 178  | 49 23 | 9 178  | 48 23 | 9 179  | 47 23 | 9 179  | 46 23 | 9 179  | 359  |
| 2    | 50 21 | 9 177  | 49 21 | 9 177  | 48 21 | 9 177  | 47 21 | 9 177  | 46 22 | 9 177  | 358  |
| 3    | 50 18 | 9 175  | 49 18 | 9 175  | 48 19 | 9 176  | 47 19 | 9 176  | 46 19 | 9 176  | 357  |
| 4    | 50 14 | 9 174  | 49 15 | 9 174  | 48 15 | 9 174  | 47 15 | 9 174  | 46 16 | 9 174  | 356  |
| 5    | 50 09 | -9 172 | 49 10 | -9 172 | 48 10 | -9 173 | 47 11 | -9 173 | 46 11 | -9 173 | 355  |
| 6    | 50 03 | 9 171  | 49 03 | 9 171  | 48 04 | 9 171  | 47 05 | 9 171  | 46 06 | 9 171  | 354  |
| 7    | 49 55 | 9 169  | 48 56 | 9 169  | 47 57 | 9 170  | 46 58 | 9 170  | 45 59 | 9 170  | 353  |
| 8    | 49 47 | 9 168  | 48 48 | 9 168  | 47 49 | 9 168  | 46 51 | 9 168  | 45 52 | 9 169  | 352  |
| 9    | 49 37 | 9 166  | 48 39 | 9 166  | 47 41 | 9 167  | 46 42 | 9 167  | 45 44 | 9 167  | 351  |
| 10   | 49 26 | -9 165 | 48 28 | -9 165 | 47 31 | -9 165 | 46 33 | -9 165 | 45 34 | -9 166 | 350  |
| 11   | 49 15 | 9 163  | 48 17 | 9 163  | 47 20 | 9 164  | 46 22 | 9 164  | 45 24 | 9 164  | 349  |
| 12   | 49 02 | 9 162  | 48 05 | 9 162  | 47 08 | 9 162  | 46 10 | 9 163  | 45 13 | 9 163  | 348  |
| 13   | 48 48 | 9 160  | 47 51 | 9 161  | 46 55 | 9 161  | 45 58 | 9 161  | 45 01 | 9 162  | 347  |
| 14   | 48 33 | 9 159  | 47 37 | 9 159  | 46 41 | 9 159  | 45 45 | 9 160  | 44 48 | 9 160  | 346  |
| 15   | 48 17 | -9 157 | 47 22 | -9 158 | 46 26 | -9 158 | 45 30 | -9 158 | 44 34 | -9 159 | 345  |
| 16   | 48 00 | 9 156  | 47 05 | 9 156  | 46 10 | 9 157  | 45 15 | 9 157  | 44 20 | 9 157  | 344  |
| 17   | 47 42 | 9 154  | 46 48 | 9 155  | 45 54 | 9 155  | 44 59 | 9 156  | 44 04 | 9 156  | 343  |
| 18   | 47 23 | 9 153  | 46 30 | 9 153  | 45 36 | 9 154  | 44 42 | 9 154  | 43 48 | 9 155  | 342  |
| 19   | 47 04 | 9 152  | 46 11 | 9 152  | 45 18 | 9 153  | 44 24 | 9 153  | 43 31 | 9 153  | 341  |
| 20   | 46 43 | -9 150 | 45 51 | -9 151 | 44 58 | -9 151 | 44 06 | -9 152 | 43 13 | -9 152 | 340  |
| 21   | 46 22 | 9 149  | 45 30 | 9 149  | 44 38 | 9 150  | 43 46 | 9 150  | 42 54 | 9 151  | 339  |
| 22   | 45 59 | 9 148  | 45 08 | 9 148  | 44 17 | 9 149  | 43 26 | 9 149  | 42 34 | 9 150  | 338  |
| 23   | 45 36 | 9 146  | 44 46 | 9 147  | 43 56 | 9 147  | 43 05 | 9 148  | 42 14 | 9 148  | 337  |
| 24   | 45 12 | 9 145  | 44 23 | 9 146  | 43 33 | 9 146  | 42 43 | 9 147  | 41 53 | 9 147  | 336  |
| 25   | 44 47 | -8 144 | 43 59 | -9 144 | 43 10 | -9 145 | 42 21 | -9 145 | 41 31 | -9 146 | 335  |
| 26   | 44 22 | 8 142  | 43 34 | 8 143  | 42 46 | 9 144  | 41 58 | 9 144  | 41 09 | 9 145  | 334  |
| 27   | 43 56 | 8 141  | 43 09 | 8 142  | 42 21 | 8 142  | 41 34 | 9 143  | 40 46 | 9 143  | 333  |
| 28   | 43 29 | 8 140  | 42 42 | 8 141  | 41 56 | 8 141  | 41 09 | 8 142  | 40 22 | 9 142  | 332  |
| 29   | 43 01 | 8 139  | 42 16 | 8 139  | 41 30 | 8 140  | 40 44 | 8 140  | 39 58 | 8 141  | 331  |
| 30   | 42 33 | -8 138 | 41 48 | -8 138 | 41 03 | -8 139 | 40 18 | -8 139 | 39 32 | -8 140 | 330  |
| 31   | 42 04 | 8 136  | 41 20 | 8 137  | 40 36 | 8 138  | 39 52 | 8 138  | 39 07 | 8 139  | 329  |
| 32   | 41 34 | 8 135  | 40 51 | 8 136  | 40 08 | 8 136  | 39 24 | 8 137  | 38 40 | 8 138  | 328  |
| 33   | 41 04 | 8 134  | 40 22 | 8 135  | 39 40 | 8 135  | 38 57 | 8 136  | 38 14 | 8 136  | 327  |
| 34   | 40 33 | 8 133  | 39 52 | 8 134  | 39 11 | 8 134  | 38 29 | 8 135  | 37 46 | 8 135  | 326  |
| 35   | 40 02 | -8 132 | 39 22 | -8 132 | 38 41 | -8 133 | 38 00 | -8 134 | 37 18 | -8 134 | 325  |
| 36   | 39 30 | 8 131  | 38 51 | 8 131  | 38 11 | 8 132  | 37 30 | 8 132  | 36 50 | 8 133  | 324  |
| 37   | 38 57 | 8 130  | 38 19 | 8 130  | 37 40 | 8 131  | 37 01 | 8 131  | 36 21 | 8 132  | 323  |
| 38   | 38 25 | 8 129  | 37 47 | 8 129  | 37 09 | 8 130  | 36 30 | 8 130  | 35 51 | 8 131  | 322  |
| 39   | 37 51 | 8 128  | 37 14 | 8 128  | 36 37 | 8 129  | 35 59 | 8 129  | 35 21 | 8 130  | 321  |
| 40   | 37 17 | -8 126 | 36 41 | -8 127 | 36 05 | -8 128 | 35 28 | -8 128 | 34 51 | -8 129 | 320  |
| 41   | 36 43 | 8 125  | 36 08 | 8 126  | 35 32 | 8 127  | 34 56 | 8 127  | 34 20 | 8 128  | 319  |
| 42   | 36 08 | 8 124  | 35 34 | 8 125  | 34 59 | 8 126  | 34 24 | 8 126  | 33 49 | 8 127  | 318  |
| 43   | 35 33 | 8 123  | 35 00 | 8 124  | 34 26 | 8 125  | 33 52 | 8 125  | 33 17 | 8 126  | 317  |
| 44   | 34 57 | 7 122  | 34 25 | 8 123  | 33 52 | 8 124  | 33 19 | 8 124  | 32 45 | 8 125  | 316  |
| 45   | 34 22 | -7 122 | 33 50 | -8 122 | 33 18 | -8 123 | 32 45 | -8 123 | 32 12 | -8 124 | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1947.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 45   | 34 22 | -7 122 | 33 50 | -8 122 | 33 18 | -8 123 | 32 45 | -8 123 | 32 12 | -8 124 | 315  |
| 46   | 33 45 | 7 121  | 33 14 | 7 121  | 32 43 | 8 122  | 32 11 | 8 122  | 31 39 | 8 123  | 314  |
| 47   | 33 08 | 7 120  | 32 39 | 7 120  | 32 08 | 8 121  | 31 37 | 8 121  | 31 06 | 8 122  | 313  |
| 48   | 32 31 | 7 119  | 32 02 | 7 119  | 31 33 | 7 120  | 31 03 | 8 120  | 30 32 | 8 121  | 312  |
| 49   | 31 54 | 7 118  | 31 26 | 7 118  | 30 57 | 7 119  | 30 28 | 8 119  | 29 58 | 8 120  | 311  |
| 50   | 31 16 | -7 117 | 30 49 | -7 117 | 30 21 | -7 118 | 29 53 | -8 118 | 29 24 | -8 119 | 310  |
| 51   | 30 38 | 7 116  | 30 12 | 7 116  | 29 45 | 7 117  | 29 18 | 7 118  | 28 50 | 8 118  | 309  |
| 52   | 30 00 | 7 115  | 29 35 | 7 116  | 29 08 | 7 116  | 28 42 | 7 117  | 28 15 | 8 117  | 308  |
| 53   | 29 22 | 7 114  | 28 57 | 7 115  | 28 32 | 7 115  | 28 06 | 7 116  | 27 40 | 8 116  | 307  |
| 54   | 28 43 | 7 113  | 28 19 | 7 114  | 27 54 | 7 114  | 27 30 | 7 115  | 27 04 | 7 115  | 306  |
| 55   | 28 04 | -7 112 | 27 41 | -7 113 | 27 17 | -7 113 | 26 53 | -7 114 | 26 29 | -7 114 | 305  |
| 56   | 27 25 | 7 112  | 27 02 | 7 112  | 26 39 | 7 113  | 26 16 | 7 113  | 25 53 | 7 113  | 304  |
| 57   | 26 45 | 7 111  | 26 24 | 7 111  | 26 02 | 7 112  | 25 39 | 7 112  | 25 16 | 7 113  | 303  |
| 58   | 26 05 | 7 110  | 25 45 | 7 110  | 25 24 | 7 111  | 25 02 | 7 111  | 24 40 | 7 112  | 302  |
| 59   | 25 25 | 7 109  | 25 06 | 7 110  | 24 45 | 7 110  | 24 25 | 7 110  | 24 03 | 7 111  | 301  |
| 60   | 24 45 | -7 108 | 24 26 | -7 109 | 24 07 | -7 109 | 23 47 | -7 110 | 23 27 | -7 110 | 300  |
| 61   | 24 05 | 7 108  | 23 47 | 7 108  | 23 28 | 7 108  | 23 09 | 7 109  | 22 50 | 7 109  | 299  |
| 62   | 23 25 | 7 107  | 23 07 | 7 107  | 22 49 | 7 108  | 22 31 | 7 108  | 22 12 | 7 108  | 298  |
| 63   | 22 44 | 7 106  | 22 27 | 7 106  | 22 10 | 7 107  | 21 53 | 7 107  | 21 35 | 7 107  | 297  |
| 64   | 22 03 | 7 105  | 21 47 | 7 106  | 21 31 | 7 106  | 21 14 | 7 106  | 20 57 | 7 107  | 296  |
| 65   | 21 22 | -7 104 | 21 07 | -7 105 | 20 52 | -7 105 | 20 36 | -7 105 | 20 20 | -7 106 | 295  |
| 66   | 20 41 | 7 104  | 20 27 | 7 104  | 20 12 | 7 104  | 19 57 | 7 105  | 19 42 | 7 105  | 294  |
| 67   | 20 00 | 7 103  | 19 46 | 7 103  | 19 32 | 7 104  | 19 18 | 7 104  | 19 04 | 7 104  | 293  |
| 68   | 19 18 | 7 102  | 19 06 | 7 102  | 18 53 | 7 103  | 18 39 | 7 103  | 18 26 | 7 103  | 292  |
| 69   | 18 37 | 7 101  | 18 25 | 7 102  | 18 13 | 7 102  | 18 00 | 7 102  | 17 47 | 7 103  | 291  |
| 70   | 17 55 | -7 101 | 17 44 | -7 101 | 17 33 | -7 101 | 17 21 | -7 102 | 17 09 | -7 102 | 290  |
| 71   | 17 14 | 7 100  | 17 03 | 7 100  | 16 53 | 7 100  | 16 42 | 7 101  | 16 31 | 7 101  | 289  |
| 72   | 16 32 | 7 99   | 16 22 | 7 99   | 16 13 | 7 100  | 16 02 | 7 100  | 15 52 | 7 100  | 288  |
| 73   | 15 50 | 7 98   | 15 41 | 7 99   | 15 32 | 7 99   | 15 23 | 7 99   | 15 13 | 7 99   | 287  |
| 74   | 15 08 | 7 98   | 15 00 | 7 98   | 14 52 | 7 98   | 14 43 | 7 98   | 14 35 | 7 99   | 286  |
| 75   | 14 26 | -7 97  | 14 19 | -7 97  | 14 12 | -7 97  | 14 04 | -7 98  | 13 56 | -7 98  | 285  |
| 76   | 13 44 | 7 96   | 13 38 | 7 96   | 13 31 | 7 97   | 13 24 | 7 97   | 13 17 | 7 97   | 284  |
| 77   | 13 02 | 7 95   | 12 57 | 7 96   | 12 51 | 7 96   | 12 44 | 7 96   | 12 38 | 7 96   | 283  |
| 78   | 12 20 | 7 95   | 12 15 | 7 95   | 12 10 | 7 95   | 12 05 | 7 95   | 11 59 | 7 96   | 282  |
| 79   | 11 38 | 7 94   | 11 34 | 7 94   | 11 30 | 7 94   | 11 25 | 7 95   | 11 20 | 7 95   | 281  |
| 80   | 10 56 | -7 93  | 10 53 | -7 93  | 10 49 | -7 94  | 10 45 | -7 94  | 10 41 | -7 94  | 280  |
| 81   | 10 14 | -7 93  | 10 11 | -7 93  | 10 08 | -7 93  | 10 05 | -7 93  | 10 02 | -7 93  | 279  |
| 82   | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | 278  |
| 83   | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | 277  |
| 84   | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | 276  |
| 85   | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | ...   | ...    | 275  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1947.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 0    | 39 38 | +9 180 | 38 38 | +9 180 | 37 38 | +9 180 | 36 38 | +9 180 | 35 38 | +9 180 | 360  |
| 1    | 39 38 | 9 179  | 38 38 | 9 179  | 37 38 | 9 179  | 36 38 | 9 179  | 35 38 | 9 179  | 359  |
| 2    | 39 36 | 9 177  | 38 36 | 9 177  | 37 37 | 9 177  | 36 37 | 9 178  | 35 37 | 9 178  | 358  |
| 3    | 39 34 | 9 176  | 38 34 | 9 176  | 37 34 | 9 176  | 36 34 | 9 176  | 35 35 | 9 176  | 357  |
| 4    | 39 31 | 9 175  | 38 31 | 9 175  | 37 31 | 9 175  | 36 31 | 9 175  | 35 32 | 9 175  | 356  |
| 5    | 39 26 | +9 174 | 38 27 | +9 174 | 37 27 | +9 174 | 36 28 | +9 174 | 35 28 | +9 174 | 355  |
| 6    | 39 21 | 9 172  | 38 22 | 9 172  | 37 22 | 9 172  | 36 23 | 9 173  | 35 23 | 9 173  | 354  |
| 7    | 39 15 | 9 171  | 38 16 | 9 171  | 37 16 | 9 171  | 36 17 | 9 171  | 35 18 | 9 171  | 353  |
| 8    | 39 08 | 9 170  | 38 09 | 9 170  | 37 10 | 9 170  | 36 11 | 9 170  | 35 12 | 9 170  | 352  |
| 9    | 39 00 | 9 168  | 38 01 | 9 169  | 37 02 | 9 169  | 36 03 | 9 169  | 35 05 | 9 169  | 351  |
| 10   | 38 51 | +9 167 | 37 52 | +9 167 | 36 54 | +9 168 | 35 55 | +9 168 | 34 57 | +9 168 | 350  |
| 11   | 38 41 | 9 166  | 37 43 | 9 166  | 36 45 | 9 166  | 35 46 | 9 166  | 34 48 | 9 167  | 349  |
| 12   | 38 30 | 9 165  | 37 32 | 9 165  | 36 34 | 9 165  | 35 36 | 9 165  | 34 38 | 9 165  | 348  |
| 13   | 38 19 | 9 163  | 37 21 | 9 164  | 36 23 | 9 164  | 35 26 | 9 164  | 34 28 | 9 164  | 347  |
| 14   | 38 06 | 9 162  | 37 09 | 9 162  | 36 12 | 9 163  | 35 14 | 9 163  | 34 17 | 9 163  | 346  |
| 15   | 37 53 | +9 161 | 36 56 | +9 161 | 35 59 | +9 161 | 35 02 | +9 162 | 34 05 | +9 162 | 345  |
| 16   | 37 38 | 9 160  | 36 42 | 9 160  | 35 46 | 9 160  | 34 49 | 9 160  | 33 53 | 9 161  | 344  |
| 17   | 37 23 | 9 159  | 36 27 | 9 159  | 35 31 | 9 159  | 34 35 | 9 159  | 33 39 | 9 160  | 343  |
| 18   | 37 07 | 9 157  | 36 12 | 9 158  | 35 16 | 9 158  | 34 21 | 9 158  | 33 25 | 9 158  | 342  |
| 19   | 36 51 | 9 156  | 35 56 | 9 156  | 35 01 | 9 157  | 34 05 | 9 157  | 33 10 | 9 157  | 341  |
| 20   | 36 33 | +9 155 | 35 39 | +9 155 | 34 44 | +9 156 | 33 49 | +9 156 | 32 55 | +9 156 | 340  |
| 21   | 36 15 | 9 154  | 35 21 | 9 154  | 34 27 | 9 154  | 33 33 | 9 155  | 32 38 | 9 155  | 339  |
| 22   | 35 55 | 9 153  | 35 02 | 9 153  | 34 09 | 9 153  | 33 15 | 9 154  | 32 21 | 9 154  | 338  |
| 23   | 35 36 | 9 151  | 34 43 | 9 152  | 33 50 | 9 152  | 32 57 | 9 152  | 32 04 | 9 153  | 337  |
| 24   | 35 15 | 9 150  | 34 23 | 9 151  | 33 30 | 9 151  | 32 38 | 9 151  | 31 45 | 9 152  | 336  |
| 25   | 34 54 | +9 149 | 34 02 | +9 150 | 33 10 | +9 150 | 32 18 | +9 150 | 31 26 | +9 150 | 335  |
| 26   | 34 31 | 9 148  | 33 40 | 9 148  | 32 49 | 9 149  | 31 58 | 9 149  | 31 06 | 9 149  | 334  |
| 27   | 34 09 | 9 147  | 33 18 | 9 147  | 32 28 | 9 148  | 31 37 | 9 148  | 30 46 | 9 148  | 333  |
| 28   | 33 45 | 9 146  | 32 55 | 9 146  | 32 06 | 9 147  | 31 15 | 9 147  | 30 25 | 9 147  | 332  |
| 29   | 33 21 | 9 145  | 32 32 | 9 145  | 31 43 | 9 145  | 30 53 | 9 146  | 30 04 | 9 146  | 331  |
| 30   | 32 56 | +8 144 | 32 08 | +9 144 | 31 19 | +9 144 | 30 30 | +9 145 | 29 41 | +9 145 | 330  |
| 31   | 32 31 | 8 143  | 31 43 | 8 143  | 30 55 | 9 143  | 30 07 | 9 144  | 29 18 | 9 144  | 329  |
| 32   | 32 05 | 8 142  | 31 18 | 8 142  | 30 30 | 8 142  | 29 43 | 9 143  | 28 55 | 9 143  | 328  |
| 33   | 31 38 | 8 140  | 30 52 | 8 141  | 30 05 | 8 141  | 29 18 | 8 142  | 28 31 | 9 142  | 327  |
| 34   | 31 11 | 8 139  | 30 25 | 8 140  | 29 39 | 8 140  | 28 53 | 8 141  | 28 07 | 8 141  | 326  |
| 35   | 30 43 | +8 138 | 29 58 | +8 139 | 29 13 | +8 139 | 28 27 | +8 140 | 27 41 | +8 140 | 325  |
| 36   | 30 14 | 8 137  | 29 30 | 8 138  | 28 46 | 8 138  | 28 01 | 8 139  | 27 16 | 8 139  | 324  |
| 37   | 29 45 | 8 136  | 29 02 | 8 137  | 28 18 | 8 137  | 27 34 | 8 137  | 26 50 | 8 138  | 323  |
| 38   | 29 16 | 8 135  | 28 33 | 8 136  | 27 50 | 8 136  | 27 07 | 8 137  | 26 23 | 8 137  | 322  |
| 39   | 28 46 | 8 134  | 28 04 | 8 135  | 27 21 | 8 135  | 26 39 | 8 136  | 25 56 | 8 136  | 321  |
| 40   | 28 15 | +8 133 | 27 34 | +8 134 | 26 52 | +8 134 | 26 10 | +8 135 | 25 28 | +8 135 | 320  |
| 41   | 27 44 | 8 132  | 27 04 | 8 133  | 26 23 | 8 133  | 25 42 | 8 134  | 25 00 | 8 134  | 319  |
| 42   | 27 13 | 8 132  | 26 33 | 8 132  | 25 53 | 8 132  | 25 12 | 8 133  | 24 32 | 8 133  | 318  |
| 43   | 26 41 | 8 131  | 26 02 | 8 131  | 25 22 | 8 131  | 24 43 | 8 132  | 24 03 | 8 132  | 317  |
| 44   | 26 08 | 8 130  | 25 30 | 8 130  | 24 51 | 8 130  | 24 12 | 8 131  | 23 33 | 8 131  | 316  |
| 45   | 25 36 | +8 129 | 24 58 | +8 129 | 24 20 | +8 129 | 23 42 | +8 130 | 23 03 | +8 130 | 315  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1947.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 25 36 +8 | 129 | 24 58 +8 | 129 | 24 20 +8 | 129 | 23 42 +8 | 130 | 23 03 +8 | 130 | 315  |
| 46   | 25 02 8  | 128 | 24 25 8  | 128 | 23 48 8  | 129 | 23 11 8  | 129 | 22 33 8  | 129 | 314  |
| 47   | 24 29 8  | 127 | 23 52 8  | 127 | 23 16 8  | 128 | 22 39 8  | 128 | 22 02 8  | 128 | 313  |
| 48   | 23 54 8  | 126 | 23 19 8  | 126 | 22 43 8  | 127 | 22 08 8  | 127 | 21 31 8  | 127 | 312  |
| 49   | 23 20 8  | 125 | 22 45 8  | 125 | 22 11 8  | 126 | 21 35 8  | 126 | 21 00 8  | 126 | 311  |
| 50   | 22 45 +8 | 124 | 22 11 +8 | 125 | 21 37 +8 | 125 | 21 03 +8 | 125 | 20 28 +8 | 126 | 310  |
| 51   | 22 10 8  | 123 | 21 37 8  | 124 | 21 04 8  | 124 | 20 30 8  | 124 | 19 56 8  | 125 | 309  |
| 52   | 21 34 7  | 123 | 21 02 8  | 123 | 20 29 8  | 123 | 19 57 8  | 123 | 19 23 8  | 124 | 308  |
| 53   | 20 59 7  | 122 | 20 27 8  | 122 | 19 55 8  | 122 | 19 23 8  | 123 | 18 51 8  | 123 | 307  |
| 54   | 20 22 7  | 121 | 19 52 7  | 121 | 19 20 8  | 121 | 18 49 8  | 122 | 18 18 8  | 122 | 306  |
| 55   | 19 46 +7 | 120 | 19 16 +7 | 120 | 18 45 +8 | 121 | 18 15 +8 | 121 | 17 44 +8 | 121 | 305  |
| 56   | 19 09 7  | 119 | 18 40 7  | 119 | 18 10 7  | 120 | 17 40 8  | 120 | 17 10 8  | 120 | 304  |
| 57   | 18 32 7  | 118 | 18 03 7  | 119 | 17 35 7  | 119 | 17 06 8  | 119 | 16 36 8  | 119 | 303  |
| 58   | 17 54 7  | 117 | 17 27 7  | 118 | 16 59 7  | 118 | 16 30 8  | 118 | 16 02 8  | 119 | 302  |
| 59   | 17 17 7  | 117 | 16 50 7  | 117 | 16 23 7  | 117 | 15 55 7  | 117 | 15 27 8  | 118 | 301  |
| 60   | 16 39 +7 | 116 | 16 13 +7 | 116 | 15 46 +7 | 116 | 15 19 +7 | 117 | 14 52 +8 | 117 | 300  |
| 61   | 16 01 7  | 115 | 15 35 7  | 115 | 15 09 7  | 116 | 14 44 7  | 116 | 14 17 8  | 116 | 299  |
| 62   | 15 22 7  | 114 | 14 57 7  | 115 | 14 33 7  | 115 | 14 07 7  | 115 | 13 42 7  | 115 | 298  |
| 63   | 14 44 7  | 114 | 14 20 7  | 114 | 13 55 7  | 114 | 13 31 7  | 114 | 13 06 7  | 114 | 297  |
| 64   | 14 05 7  | 113 | 13 41 7  | 113 | 13 18 7  | 113 | 12 54 7  | 113 | 12 31 7  | 114 | 296  |
| 65   | 13 26 +7 | 112 | 13 03 +7 | 112 | 12 41 +7 | 112 | 12 18 +7 | 113 | 11 55 +7 | 113 | 295  |
| 66   | 12 46 7  | 111 | 12 25 7  | 111 | 12 03 7  | 112 | 11 41 7  | 112 | 11 18 7  | 112 | 294  |
| 67   | 12 07 7  | 110 | 11 46 7  | 111 | 11 25 7  | 111 | 11 04 7  | 111 | 10 42 7  | 111 | 293  |
| 68   | 11 27 7  | 110 | 11 07 7  | 110 | 10 47 7  | 110 | 10 26 +7 | 110 | 10 06 +7 | 110 | 292  |
| 69   | 10 47 7  | 109 | 10 28 +7 | 109 | 10 08 +7 | 109 | ...      | ... | ...      | ... | 291  |
| 70   | 10 08 +7 | 108 | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 290  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1947.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 57 16-18 | 180 | 56 16-18 | 180 | 55 16-18 | 180 | 54 16-18 | 180 | 53 16-18 | 180 | 360  |
| 1    | 57 15 18 | 178 | 56 15 18 | 178 | 55 15 18 | 178 | 54 16 18 | 178 | 53 16 18 | 178 | 359  |
| 2    | 57 13 18 | 176 | 56 14 18 | 176 | 55 14 18 | 177 | 54 14 18 | 177 | 53 14 18 | 177 | 358  |
| 3    | 57 10 18 | 175 | 56 10 18 | 175 | 55 11 18 | 175 | 54 11 18 | 175 | 53 11 18 | 175 | 357  |
| 4    | 57 05 18 | 173 | 56 06 18 | 173 | 55 06 18 | 173 | 54 07 18 | 173 | 53 07 18 | 173 | 356  |
| 5    | 56 59-18 | 171 | 56 00-18 | 171 | 55 01-18 | 171 | 54 02-18 | 172 | 53 02-18 | 172 | 355  |
| 6    | 56 52 17 | 169 | 55 53 17 | 170 | 54 54 18 | 170 | 53 55 18 | 170 | 52 56 18 | 170 | 354  |
| 7    | 56 44 17 | 167 | 55 45 17 | 168 | 54 46 17 | 168 | 53 48 17 | 168 | 52 49 17 | 169 | 353  |
| 8    | 56 34 17 | 166 | 55 36 17 | 166 | 54 37 17 | 166 | 53 39 17 | 167 | 52 41 17 | 167 | 352  |
| 9    | 56 23 17 | 164 | 55 25 17 | 164 | 54 27 17 | 165 | 53 29 17 | 165 | 52 31 17 | 165 | 351  |
| 10   | 56 10-17 | 162 | 55 13-17 | 163 | 54 16-17 | 163 | 53 18-17 | 164 | 52 21-17 | 164 | 350  |
| 11   | 55 57 17 | 161 | 55 00 17 | 161 | 54 03 17 | 161 | 53 06 17 | 162 | 52 09 17 | 162 | 349  |
| 12   | 55 42 17 | 159 | 54 46 17 | 159 | 53 50 17 | 160 | 52 53 17 | 160 | 51 57 17 | 161 | 348  |
| 13   | 55 26 17 | 157 | 54 31 17 | 158 | 53 35 17 | 158 | 52 39 17 | 159 | 51 43 17 | 159 | 347  |
| 14   | 55 09 17 | 156 | 54 15 17 | 156 | 53 20 17 | 157 | 52 24 17 | 157 | 51 29 17 | 158 | 346  |
| 15   | 54 51-17 | 154 | 53 57-17 | 155 | 53 03-17 | 155 | 52 08-17 | 156 | 51 14-17 | 156 | 345  |
| 16   | 54 32 17 | 152 | 53 39 17 | 153 | 52 45 17 | 154 | 51 51 17 | 154 | 50 57 17 | 155 | 344  |
| 17   | 54 12 17 | 151 | 53 19 17 | 151 | 52 26 17 | 152 | 51 33 17 | 153 | 50 40 17 | 153 | 343  |
| 18   | 53 51 16 | 149 | 52 59 16 | 150 | 52 07 17 | 151 | 51 14 17 | 151 | 50 22 17 | 152 | 342  |
| 19   | 53 28 16 | 148 | 52 38 16 | 148 | 51 46 16 | 149 | 50 55 17 | 150 | 50 03 17 | 150 | 341  |
| 20   | 53 05-16 | 146 | 52 15-16 | 147 | 51 25-16 | 148 | 50 34-16 | 148 | 49 43-17 | 149 | 340  |
| 21   | 52 41 16 | 145 | 51 52 16 | 145 | 51 02 16 | 146 | 50 12 16 | 147 | 49 22 16 | 147 | 339  |
| 22   | 52 16 16 | 143 | 51 28 16 | 144 | 50 39 16 | 145 | 49 50 16 | 145 | 49 00 16 | 146 | 338  |
| 23   | 51 51 16 | 142 | 51 03 16 | 143 | 50 15 16 | 143 | 49 27 16 | 144 | 48 38 16 | 145 | 337  |
| 24   | 51 24 16 | 140 | 50 37 16 | 141 | 49 50 16 | 142 | 49 03 16 | 143 | 48 15 16 | 143 | 336  |
| 25   | 50 56-16 | 139 | 50 11-16 | 140 | 49 25-16 | 141 | 48 38-16 | 141 | 47 51-16 | 142 | 335  |
| 26   | 50 28 15 | 138 | 49 44 16 | 139 | 48 58 16 | 139 | 48 13 16 | 140 | 47 27 16 | 141 | 334  |
| 27   | 49 59 15 | 136 | 49 16 15 | 137 | 48 31 16 | 138 | 47 47 16 | 139 | 47 01 16 | 139 | 333  |
| 28   | 49 30 15 | 135 | 48 47 15 | 136 | 48 04 15 | 137 | 47 20 16 | 137 | 46 35 16 | 138 | 332  |
| 29   | 49 00 15 | 134 | 48 18 15 | 135 | 47 35 15 | 135 | 46 52 16 | 136 | 46 09 16 | 137 | 331  |
| 30   | 48 29-15 | 133 | 47 48-15 | 133 | 47 06-15 | 134 | 46 24-15 | 135 | 45 42-16 | 136 | 330  |
| 31   | 47 57 15 | 131 | 47 17 15 | 132 | 46 37 15 | 133 | 45 55 15 | 134 | 45 14 15 | 134 | 329  |
| 32   | 47 25 15 | 130 | 46 46 15 | 131 | 46 06 15 | 132 | 45 26 15 | 132 | 44 45 15 | 133 | 328  |
| 33   | 46 52 15 | 129 | 46 14 15 | 130 | 45 36 15 | 131 | 44 56 15 | 131 | 44 16 15 | 132 | 327  |
| 34   | 46 19 14 | 128 | 45 42 15 | 129 | 45 04 15 | 129 | 44 26 15 | 130 | 43 47 15 | 131 | 326  |
| 35   | 45 45-14 | 127 | 45 09-15 | 127 | 44 32-15 | 128 | 43 55-15 | 129 | 43 17-15 | 130 | 325  |
| 36   | 45 11 14 | 125 | 44 36 14 | 126 | 44 00 15 | 127 | 43 23 15 | 128 | 42 46 15 | 129 | 324  |
| 37   | 44 36 14 | 124 | 44 02 14 | 125 | 43 27 15 | 126 | 42 51 15 | 127 | 42 15 15 | 127 | 323  |
| 38   | 44 01 14 | 123 | 43 28 14 | 124 | 42 54 14 | 125 | 42 19 15 | 126 | 41 44 15 | 126 | 322  |
| 39   | 43 25 14 | 122 | 42 53 14 | 123 | 42 20 14 | 124 | 41 46 15 | 124 | 41 12 15 | 125 | 321  |
| 40   | 42 49-14 | 121 | 42 18-14 | 122 | 41 46-14 | 123 | 41 13-14 | 123 | 40 40-15 | 124 | 320  |
| 41   | 42 12 14 | 120 | 41 42 14 | 121 | 41 11 14 | 122 | 40 39 14 | 122 | 40 07 15 | 123 | 319  |
| 42   | 41 36 14 | 119 | 41 06 14 | 120 | 40 36 14 | 121 | 40 05 14 | 121 | 39 34 15 | 122 | 318  |
| 43   | 40 58 14 | 118 | 40 30 14 | 119 | 40 01 14 | 120 | 39 31 14 | 120 | 39 00 14 | 121 | 317  |
| 44   | 40 21 13 | 117 | 39 53 14 | 118 | 39 25 14 | 119 | 38 56 14 | 119 | 38 26 14 | 120 | 316  |
| 45   | 39 43-13 | 116 | 39 16-14 | 117 | 38 49-14 | 118 | 38 21-14 | 118 | 37 52-14 | 119 | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 39 43-13 | 116 | 39 16-14 | 117 | 38 49-14 | 118 | 38 21-14 | 118 | 37 52-14 | 119 | 315  |
| 46   | 39 05 13 | 115 | 38 39 14 | 116 | 38 12 14 | 117 | 37 45 14 | 117 | 37 17 14 | 118 | 314  |
| 47   | 38 26 13 | 114 | 38 01 13 | 115 | 37 36 14 | 116 | 37 09 14 | 116 | 36 42 14 | 117 | 313  |
| 48   | 37 47 13 | 113 | 37 23 13 | 114 | 36 59 14 | 115 | 36 33 14 | 115 | 36 07 14 | 116 | 312  |
| 49   | 37 08 13 | 112 | 36 45 13 | 113 | 36 21 14 | 114 | 35 57 14 | 114 | 35 32 14 | 115 | 311  |
| 50   | 36 29-13 | 111 | 36 07-13 | 112 | 35 44-14 | 113 | 35 20-14 | 113 | 34 56-14 | 114 | 310  |
| 51   | 35 49 13 | 111 | 35 28 13 | 111 | 35 06 13 | 112 | 34 43 14 | 113 | 34 20 14 | 113 | 309  |
| 52   | 35 09 13 | 110 | 34 49 13 | 110 | 34 28 13 | 111 | 34 06 14 | 112 | 33 44 14 | 112 | 308  |
| 53   | 34 29 13 | 109 | 34 10 13 | 109 | 33 50 13 | 110 | 33 29 14 | 111 | 33 07 14 | 111 | 307  |
| 54   | 33 49 13 | 108 | 33 30 13 | 109 | 33 11 13 | 109 | 32 51 13 | 110 | 32 30 14 | 110 | 306  |
| 55   | 33 09-13 | 107 | 32 51-13 | 108 | 32 32-13 | 108 | 32 13-13 | 109 | 31 53-14 | 110 | 305  |
| 56   | 32 28 13 | 106 | 32 11 13 | 107 | 31 53 13 | 107 | 31 35 13 | 108 | 31 16 14 | 109 | 304  |
| 57   | 31 47 13 | 105 | 31 31 13 | 106 | 31 14 13 | 107 | 30 57 13 | 107 | 30 39 14 | 108 | 303  |
| 58   | 31 06 13 | 105 | 30 51 13 | 105 | 30 35 13 | 106 | 30 18 13 | 106 | 30 01 14 | 107 | 302  |
| 59   | 30 25 13 | 104 | 30 11 13 | 104 | 29 56 13 | 105 | 29 40 13 | 105 | 29 24 13 | 106 | 301  |
| 60   | 29 44-13 | 103 | 29 30-13 | 104 | 29 16-13 | 104 | 29 01-13 | 105 | 28 46-13 | 105 | 300  |
| 61   | 29 03 12 | 102 | 28 50 13 | 103 | 28 36 13 | 103 | 28 22 13 | 104 | 28 08 13 | 104 | 299  |
| 62   | 28 21 12 | 101 | 28 09 13 | 102 | 27 56 13 | 102 | 27 43 13 | 103 | 27 30 13 | 103 | 298  |
| 63   | 27 40 12 | 101 | 27 28 13 | 101 | 27 16 13 | 102 | 27 04 13 | 102 | 26 51 13 | 103 | 297  |
| 64   | 26 58 12 | 100 | 26 47 13 | 100 | 26 36 13 | 101 | 26 25 13 | 101 | 26 13 13 | 102 | 296  |
| 65   | 26 16-12 | 99  | 26 06-13 | 100 | 25 56-13 | 100 | 25 45-13 | 101 | 25 34-13 | 101 | 295  |
| 66   | 25 34 12 | 98  | 25 25 13 | 99  | 25 16 13 | 99  | 25 06 13 | 100 | 24 56 13 | 100 | 294  |
| 67   | 24 52 12 | 98  | 24 44 13 | 98  | 24 36 13 | 99  | 24 26 13 | 99  | 24 17 13 | 99  | 293  |
| 68   | 24 10 12 | 97  | 24 03 13 | 97  | 23 55 13 | 98  | 23 47 13 | 98  | 23 38 13 | 99  | 292  |
| 69   | 23 28 12 | 96  | 23 22 12 | 97  | 23 15 13 | 97  | 23 07 13 | 97  | 22 59 13 | 98  | 291  |
| 70   | 22 46-12 | 95  | 22 40-12 | 96  | 22 34-13 | 96  | 22 27-13 | 97  | 22 20-13 | 97  | 290  |
| 71   | 22 04 12 | 95  | 21 59 12 | 95  | 21 53 13 | 95  | 21 47 13 | 96  | 21 41 13 | 96  | 289  |
| 72   | 21 22 12 | 94  | 21 17 12 | 94  | 21 13 13 | 95  | 21 08 13 | 95  | 21 02 13 | 95  | 288  |
| 73   | 20 39 12 | 93  | 20 36 12 | 94  | 20 32 13 | 94  | 20 28 13 | 94  | 20 23 13 | 95  | 287  |
| 74   | 19 57 12 | 92  | 19 54 12 | 93  | 19 51 13 | 93  | 19 48 13 | 94  | 19 44 13 | 94  | 286  |
| 75   | 19 15-12 | 92  | 19 13-12 | 92  | 19 10-13 | 92  | 19 08-13 | 93  | 19 05-13 | 93  | 285  |
| 76   | 18 32 12 | 91  | 18 31 12 | 91  | 18 30 13 | 92  | 18 28 13 | 92  | 18 25 13 | 92  | 284  |
| 77   | 17 50 12 | 90  | 17 50 12 | 91  | 17 49 13 | 91  | 17 48 13 | 91  | 17 46 13 | 92  | 283  |
| 78   | 17 08 12 | 90  | 17 08 12 | 90  | 17 08 13 | 90  | 17 08 13 | 91  | 17 07 13 | 91  | 282  |
| 79   | 16 25 12 | 89  | 16 26 12 | 89  | 16 27 13 | 90  | 16 28 13 | 90  | 16 28 13 | 90  | 281  |
| 80   | 15 43-12 | 88  | 15 45-12 | 88  | 15 46-13 | 89  | 15 48-13 | 89  | 15 48-13 | 89  | 280  |
| 81   | 15 01 12 | 88  | 15 03 12 | 88  | 15 06 13 | 88  | 15 07 13 | 88  | 15 09 13 | 89  | 279  |
| 82   | 14 19 12 | 87  | 14 22 12 | 87  | 14 25 13 | 87  | 14 28 13 | 88  | 14 30 13 | 88  | 278  |
| 83   | 13 37 12 | 86  | 13 40 12 | 86  | 13 44 13 | 87  | 13 48 13 | 87  | 13 51 13 | 87  | 277  |
| 84   | 12 54 12 | 85  | 12 59 12 | 86  | 13 04 13 | 86  | 13 08 13 | 86  | 13 12 13 | 86  | 276  |
| 85   | 12 12-12 | 85  | 12 18-12 | 85  | 12 23-13 | 85  | 12 28-13 | 85  | 12 33-13 | 86  | 275  |
| 86   | 11 30 12 | 84  | 11 36 12 | 84  | 11 42 13 | 84  | 11 48 13 | 85  | 11 54 13 | 85  | 274  |
| 87   | 10 48 12 | 83  | 10 55 12 | 84  | 11 02 13 | 84  | 11 08 13 | 84  | 11 15 13 | 84  | 273  |
| 88   | 10 07-12 | 83  | 10 14-13 | 83  | 10 22-13 | 83  | 10 29-13 | 83  | 10 36-13 | 83  | 272  |
| 89   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 271  |
| 90   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 270  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 32 46+18 | 180 | 31 46+18 | 180 | 30 46+18 | 180 | 29 46+18 | 180 | 28 46+18 | 180 | 360  |
| 1    | 32 45 18 | 179 | 31 45 18 | 179 | 30 45 18 | 179 | 29 45 18 | 179 | 28 46 18 | 179 | 359  |
| 2    | 32 44 18 | 178 | 31 44 18 | 178 | 30 44 18 | 178 | 29 44 18 | 178 | 28 44 18 | 178 | 358  |
| 3    | 32 42 18 | 177 | 31 42 18 | 177 | 30 42 18 | 177 | 29 42 18 | 177 | 28 43 18 | 177 | 357  |
| 4    | 32 39 18 | 175 | 31 39 18 | 175 | 30 39 18 | 175 | 29 40 18 | 176 | 28 40 18 | 176 | 356  |
| 5    | 32 35+18 | 174 | 31 35+18 | 174 | 30 36+18 | 174 | 29 36+18 | 174 | 28 36+18 | 174 | 355  |
| 6    | 32 30 18 | 173 | 31 31 18 | 173 | 30 31 18 | 173 | 29 32 18 | 173 | 28 32 18 | 173 | 354  |
| 7    | 32 25 18 | 172 | 31 25 18 | 172 | 30 26 18 | 172 | 29 27 18 | 172 | 28 27 18 | 172 | 353  |
| 8    | 32 18 18 | 171 | 31 19 18 | 171 | 30 20 18 | 171 | 29 21 18 | 171 | 28 22 18 | 171 | 352  |
| 9    | 32 11 17 | 170 | 31 12 17 | 170 | 30 13 18 | 170 | 29 14 18 | 170 | 28 15 18 | 170 | 351  |
| 10   | 32 03+17 | 168 | 31 04+17 | 169 | 30 06+17 | 169 | 29 07+17 | 169 | 28 08+17 | 169 | 350  |
| 11   | 31 54 17 | 167 | 30 56 17 | 167 | 29 57 17 | 168 | 28 59 17 | 168 | 28 00 17 | 168 | 349  |
| 12   | 31 44 17 | 166 | 30 46 17 | 166 | 29 48 17 | 166 | 28 50 17 | 167 | 27 51 17 | 167 | 348  |
| 13   | 31 34 17 | 165 | 30 36 17 | 165 | 29 38 17 | 165 | 28 40 17 | 165 | 27 42 17 | 166 | 347  |
| 14   | 31 23 17 | 164 | 30 25 17 | 164 | 29 27 17 | 164 | 28 30 17 | 164 | 27 32 17 | 165 | 346  |
| 15   | 31 10+17 | 163 | 30 13+17 | 163 | 29 16+17 | 163 | 28 18+17 | 163 | 27 21+17 | 163 | 345  |
| 16   | 30 58 17 | 162 | 30 01 17 | 162 | 29 04 17 | 162 | 28 07 17 | 162 | 27 09 17 | 162 | 344  |
| 17   | 30 44 17 | 161 | 29 47 17 | 161 | 28 51 17 | 161 | 27 54 17 | 161 | 26 57 17 | 161 | 343  |
| 18   | 30 29 17 | 159 | 29 33 17 | 160 | 28 37 17 | 160 | 27 41 17 | 160 | 26 44 17 | 160 | 342  |
| 19   | 30 14 17 | 158 | 29 18 17 | 159 | 28 22 17 | 159 | 27 27 17 | 159 | 26 31 17 | 159 | 341  |
| 20   | 29 58+17 | 157 | 29 03+17 | 158 | 28 07+17 | 158 | 27 12+17 | 158 | 26 16+17 | 158 | 340  |
| 21   | 29 41 17 | 156 | 28 47 17 | 156 | 27 52 17 | 157 | 26 56 17 | 157 | 26 01 17 | 157 | 339  |
| 22   | 29 24 17 | 155 | 28 30 17 | 155 | 27 35 17 | 156 | 26 40 17 | 156 | 25 46 17 | 156 | 338  |
| 23   | 29 06 17 | 154 | 28 12 17 | 154 | 27 18 17 | 155 | 26 24 17 | 155 | 25 29 17 | 155 | 337  |
| 24   | 28 47 17 | 153 | 27 53 17 | 153 | 27 00 17 | 154 | 26 06 17 | 154 | 25 12 17 | 154 | 336  |
| 25   | 28 27+17 | 152 | 27 34+17 | 152 | 26 41+17 | 152 | 25 48+17 | 153 | 24 55+17 | 153 | 335  |
| 26   | 28 07 17 | 151 | 27 15 17 | 151 | 26 22 17 | 151 | 25 29 17 | 152 | 24 37 17 | 152 | 334  |
| 27   | 27 46 16 | 150 | 26 54 16 | 150 | 26 02 17 | 150 | 25 10 17 | 151 | 24 18 17 | 151 | 333  |
| 28   | 27 25 16 | 149 | 26 33 16 | 149 | 25 42 16 | 149 | 24 50 17 | 150 | 23 58 17 | 150 | 332  |
| 29   | 27 02 16 | 148 | 26 12 16 | 148 | 25 21 16 | 148 | 24 30 16 | 149 | 23 38 17 | 149 | 331  |
| 30   | 26 40+16 | 147 | 25 49+16 | 147 | 24 59+16 | 147 | 24 08+16 | 148 | 23 18+16 | 148 | 330  |
| 31   | 26 16 16 | 146 | 25 26 16 | 146 | 24 37 16 | 146 | 23 47 16 | 147 | 22 57 16 | 147 | 329  |
| 32   | 25 52 16 | 145 | 25 03 16 | 145 | 24 14 16 | 145 | 23 24 16 | 146 | 22 35 16 | 146 | 328  |
| 33   | 25 27 16 | 144 | 24 39 16 | 144 | 23 50 16 | 144 | 23 01 16 | 145 | 22 12 16 | 145 | 327  |
| 34   | 25 02 16 | 143 | 24 14 16 | 143 | 23 26 16 | 143 | 22 38 16 | 144 | 21 50 16 | 144 | 326  |
| 35   | 24 36+16 | 142 | 23 49+16 | 142 | 23 02+16 | 142 | 22 14+16 | 143 | 21 26+16 | 143 | 325  |
| 36   | 24 10 16 | 141 | 23 23 16 | 141 | 22 36 16 | 142 | 21 49 16 | 142 | 21 02 16 | 142 | 324  |
| 37   | 23 43 16 | 140 | 22 57 16 | 140 | 22 11 16 | 141 | 21 24 16 | 141 | 20 38 16 | 141 | 323  |
| 38   | 23 15 16 | 139 | 22 30 16 | 139 | 21 45 16 | 140 | 20 59 16 | 140 | 20 13 16 | 140 | 322  |
| 39   | 22 47 15 | 138 | 22 03 16 | 138 | 21 18 16 | 139 | 20 33 16 | 139 | 19 47 16 | 139 | 321  |
| 40   | 22 19+15 | 137 | 21 35+16 | 138 | 20 51+16 | 138 | 20 06+16 | 138 | 19 22+16 | 138 | 320  |
| 41   | 21 50 15 | 136 | 21 07 15 | 137 | 20 23 16 | 137 | 19 39 16 | 137 | 18 55 16 | 137 | 319  |
| 42   | 21 20 15 | 135 | 20 38 15 | 136 | 19 55 15 | 136 | 19 12 16 | 136 | 18 28 16 | 136 | 318  |
| 43   | 20 51 15 | 135 | 20 08 15 | 135 | 19 26 15 | 135 | 18 44 15 | 135 | 18 01 16 | 136 | 317  |
| 44   | 20 20 15 | 134 | 19 39 15 | 134 | 18 57 15 | 134 | 18 15 15 | 134 | 17 33 15 | 135 | 316  |
| 45   | 19 49+15 | 133 | 19 09+15 | 133 | 18 28+15 | 133 | 17 46+15 | 133 | 17 05+15 | 134 | 315  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ$  + Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ$  - Tabulated Azimuth. } p. 91.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 19 49+15 | 133 | 19 09+15 | 133 | 18 28+15 | 133 | 17 46+15 | 133 | 17 05+15 | 134 | 315  |
| 46   | 19 18 15 | 132 | 18 38 15 | 132 | 17 58 15 | 132 | 17 17 15 | 133 | 16 37 15 | 133 | 314  |
| 47   | 18 46 15 | 131 | 18 07 15 | 131 | 17 27 15 | 132 | 16 48 15 | 132 | 16 08 15 | 132 | 313  |
| 48   | 18 14 15 | 130 | 17 35 15 | 130 | 16 56 15 | 131 | 16 17 15 | 131 | 15 38 15 | 131 | 312  |
| 49   | 17 41 15 | 129 | 17 04 15 | 130 | 16 25 15 | 130 | 15 47 15 | 130 | 15 08 15 | 130 | 311  |
| 50   | 17 09+15 | 128 | 16 31+15 | 129 | 15 54+15 | 129 | 15 16+15 | 129 | 14 38+15 | 129 | 310  |
| 51   | 16 35 14 | 128 | 15 59 15 | 128 | 15 22 15 | 128 | 14 45 15 | 128 | 14 08 15 | 128 | 309  |
| 52   | 16 02 14 | 127 | 15 26 15 | 127 | 14 50 15 | 127 | 14 13 15 | 127 | 13 37 15 | 128 | 308  |
| 53   | 15 27 14 | 126 | 14 52 14 | 126 | 14 17 15 | 126 | 13 41 15 | 127 | 13 06 15 | 127 | 307  |
| 54   | 14 53 14 | 125 | 14 19 14 | 125 | 13 44 15 | 126 | 13 09 15 | 126 | 12 34 15 | 126 | 306  |
| 55   | 14 18+14 | 124 | 13 45+14 | 125 | 13 11+14 | 125 | 12 37+15 | 125 | 12 02+15 | 125 | 305  |
| 56   | 13 43 14 | 124 | 13 10 14 | 124 | 12 37 14 | 124 | 12 04 15 | 124 | 11 30 15 | 124 | 304  |
| 57   | 13 08 14 | 123 | 12 36 14 | 123 | 12 03 14 | 123 | 11 30 14 | 123 | 10 58 15 | 123 | 303  |
| 58   | 12 32 14 | 122 | 12 01 14 | 122 | 11 29 14 | 122 | 10 57 14 | 122 | 10 25+15 | 123 | 302  |
| 59   | 11 56 14 | 121 | 11 25 14 | 121 | 10 54 14 | 121 | 10 23+14 | 122 | ...      | ... | 301  |
| 60   | 11 20+14 | 120 | 10 50+14 | 121 | 10 19+14 | 121 | ...      | ... | ...      | ... | 300  |
| 61   | 10 43 14 | 120 | 10 14+14 | 120 | ...      | ... | ...      | ... | ...      | ... | 299  |
| 62   | 10 07+14 | 119 | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 298  |
| 63   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 297  |
| 64   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 296  |
| 65   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 295  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1944.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 0    | 36 45 | +4 180 | 35 45 | +4 180 | 34 45 | +4 180 | 33 45 | +4 180 | 32 45 | +4 180 | 360  |
| 1    | 36 44 | 4 179  | 35 45 | 4 179  | 34 45 | 4 179  | 33 45 | 4 179  | 32 45 | 4 179  | 359  |
| 2    | 36 43 | 4 178  | 35 43 | 4 178  | 34 43 | 4 178  | 33 43 | 4 178  | 32 44 | 4 178  | 358  |
| 3    | 36 41 | 4 176  | 35 41 | 4 176  | 34 41 | 4 176  | 33 41 | 4 176  | 32 41 | 4 176  | 357  |
| 4    | 36 38 | 4 175  | 35 38 | 4 175  | 34 38 | 4 175  | 33 38 | 4 175  | 32 39 | 4 175  | 356  |
| 5    | 36 34 | +4 174 | 35 34 | +4 174 | 34 34 | +4 174 | 33 35 | +4 174 | 32 35 | +4 174 | 355  |
| 6    | 36 29 | 4 173  | 35 29 | 4 173  | 34 30 | 4 173  | 33 30 | 4 173  | 32 31 | 4 173  | 354  |
| 7    | 36 23 | 4 171  | 35 23 | 4 171  | 34 24 | 4 172  | 33 25 | 4 172  | 32 25 | 4 172  | 353  |
| 8    | 36 16 | 4 170  | 35 17 | 4 170  | 34 18 | 4 170  | 33 19 | 4 171  | 32 19 | 4 171  | 352  |
| 9    | 36 08 | 4 169  | 35 09 | 4 169  | 34 10 | 4 169  | 33 12 | 4 169  | 32 13 | 4 169  | 351  |
| 10   | 36 00 | +4 168 | 35 01 | +4 168 | 34 02 | +4 168 | 33 04 | +4 168 | 32 05 | +4 168 | 350  |
| 11   | 35 50 | 4 167  | 34 52 | 4 167  | 33 53 | 4 167  | 32 55 | 4 167  | 31 57 | 4 167  | 349  |
| 12   | 35 40 | 4 165  | 34 42 | 4 166  | 33 44 | 4 166  | 32 46 | 4 166  | 31 48 | 4 166  | 348  |
| 13   | 35 29 | 4 164  | 34 31 | 4 164  | 33 33 | 4 165  | 32 35 | 4 165  | 31 38 | 4 165  | 347  |
| 14   | 35 17 | 4 163  | 34 19 | 4 163  | 33 22 | 4 163  | 32 24 | 4 164  | 31 27 | 4 164  | 346  |
| 15   | 35 04 | +4 162 | 34 07 | +4 162 | 33 10 | +4 162 | 32 13 | +4 162 | 31 16 | +4 163 | 345  |
| 16   | 34 50 | 4 161  | 33 54 | 4 161  | 32 57 | 4 161  | 32 00 | 4 161  | 31 03 | 4 161  | 344  |
| 17   | 34 36 | 4 159  | 33 40 | 4 160  | 32 43 | 4 160  | 31 47 | 4 160  | 30 51 | 4 160  | 343  |
| 18   | 34 20 | 4 158  | 33 25 | 4 159  | 32 29 | 4 159  | 31 33 | 4 159  | 30 37 | 4 159  | 342  |
| 19   | 34 04 | 4 157  | 33 09 | 4 157  | 32 14 | 4 158  | 31 18 | 4 158  | 30 23 | 4 158  | 341  |
| 20   | 33 47 | +4 156 | 32 53 | +4 156 | 31 58 | +4 156 | 31 03 | +4 157 | 30 08 | +4 157 | 340  |
| 21   | 33 30 | 4 155  | 32 35 | 4 155  | 31 41 | 4 155  | 30 46 | 4 156  | 29 52 | 4 156  | 339  |
| 22   | 33 11 | 4 154  | 32 18 | 4 154  | 31 24 | 4 154  | 30 30 | 4 155  | 29 35 | 4 155  | 338  |
| 23   | 32 52 | 4 153  | 31 59 | 4 153  | 31 06 | 4 153  | 30 12 | 4 153  | 29 18 | 4 154  | 337  |
| 24   | 32 32 | 4 151  | 31 40 | 4 152  | 30 47 | 4 152  | 29 54 | 4 152  | 29 01 | 4 153  | 336  |
| 25   | 32 12 | +4 150 | 31 20 | +4 151 | 30 27 | +4 151 | 29 35 | +4 151 | 28 42 | +4 152 | 335  |
| 26   | 31 50 | 4 149  | 30 59 | 4 150  | 30 07 | 4 150  | 29 15 | 4 150  | 28 23 | 4 150  | 334  |
| 27   | 31 28 | 4 148  | 30 37 | 4 149  | 29 46 | 4 149  | 28 55 | 4 149  | 28 03 | 4 149  | 333  |
| 28   | 31 06 | 4 147  | 30 15 | 4 147  | 29 25 | 4 148  | 28 34 | 4 148  | 27 43 | 4 148  | 332  |
| 29   | 30 42 | 4 146  | 29 53 | 4 146  | 29 03 | 4 147  | 28 12 | 4 147  | 27 22 | 4 147  | 331  |
| 30   | 30 19 | +4 145 | 29 29 | +4 145 | 28 40 | +4 146 | 27 50 | +4 146 | 27 01 | +4 146 | 330  |
| 31   | 29 54 | 4 144  | 29 05 | 4 144  | 28 17 | 4 145  | 27 28 | 4 145  | 26 38 | 4 145  | 329  |
| 32   | 29 29 | 4 143  | 28 41 | 4 143  | 27 53 | 4 144  | 27 04 | 4 144  | 26 16 | 4 144  | 328  |
| 33   | 29 03 | 4 142  | 28 16 | 4 142  | 27 28 | 4 143  | 26 40 | 4 143  | 25 52 | 4 143  | 327  |
| 34   | 28 36 | 4 141  | 27 50 | 4 141  | 27 03 | 4 142  | 26 16 | 4 142  | 25 29 | 4 142  | 326  |
| 35   | 28 09 | +4 140 | 27 23 | +4 140 | 26 37 | +4 141 | 25 51 | +4 141 | 25 04 | +4 141 | 325  |
| 36   | 27 42 | 4 139  | 26 57 | 4 139  | 26 11 | 4 140  | 25 25 | 4 140  | 24 39 | 4 140  | 324  |
| 37   | 27 14 | 4 138  | 26 29 | 4 138  | 25 44 | 4 139  | 24 59 | 4 139  | 24 14 | 4 139  | 323  |
| 38   | 26 45 | 4 137  | 26 01 | 4 137  | 25 17 | 4 138  | 24 33 | 4 138  | 23 48 | 4 138  | 322  |
| 39   | 26 16 | 4 136  | 25 33 | 4 136  | 24 49 | 4 137  | 24 06 | 4 137  | 23 22 | 4 137  | 321  |
| 40   | 25 46 | +4 135 | 25 04 | +4 135 | 24 21 | +4 136 | 23 38 | +4 136 | 22 55 | +4 136 | 320  |
| 41   | 25 16 | 3 134  | 24 34 | 4 134  | 23 52 | 4 135  | 23 10 | 4 135  | 22 27 | 4 135  | 319  |
| 42   | 24 45 | 3 133  | 24 04 | 4 134  | 23 23 | 4 134  | 22 41 | 4 134  | 22 00 | 4 134  | 318  |
| 43   | 24 14 | 3 132  | 23 34 | 3 133  | 22 53 | 4 133  | 22 12 | 4 133  | 21 31 | 4 134  | 317  |
| 44   | 23 43 | 3 131  | 23 03 | 3 132  | 22 23 | 3 132  | 21 43 | 4 132  | 21 03 | 4 133  | 316  |
| 45   | 23 11 | +3 130 | 22 32 | +3 131 | 21 53 | +3 131 | 21 13 | +4 131 | 20 33 | +4 132 | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1955.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 23 11 +3 | 130 | 22 32 +3 | 131 | 21 53 +3 | 131 | 21 13 +4 | 131 | 20 33 +4 | 132 | 315  |
| 46   | 22 38 3  | 130 | 22 00 3  | 130 | 21 22 3  | 130 | 20 43 3  | 130 | 20 04 4  | 131 | 314  |
| 47   | 22 05 3  | 129 | 21 28 3  | 129 | 20 50 3  | 129 | 20 12 3  | 130 | 19 34 4  | 130 | 313  |
| 48   | 21 32 3  | 128 | 20 55 3  | 128 | 20 18 3  | 128 | 19 41 3  | 129 | 19 04 3  | 129 | 312  |
| 49   | 20 59 3  | 127 | 20 22 3  | 127 | 19 46 3  | 127 | 19 10 3  | 128 | 18 33 3  | 128 | 311  |
| 50   | 20 24 +3 | 126 | 19 49 +3 | 126 | 19 14 +3 | 127 | 18 38 +3 | 127 | 18 02 +3 | 127 | 310  |
| 51   | 19 50 3  | 125 | 19 15 3  | 125 | 18 41 3  | 126 | 18 05 3  | 126 | 17 30 3  | 126 | 309  |
| 52   | 19 15 3  | 124 | 18 41 3  | 125 | 18 07 3  | 125 | 17 33 3  | 125 | 16 58 3  | 125 | 308  |
| 53   | 18 40 3  | 123 | 18 07 3  | 124 | 17 34 3  | 124 | 17 00 3  | 124 | 16 26 3  | 125 | 307  |
| 54   | 18 05 3  | 123 | 17 32 3  | 123 | 17 00 3  | 123 | 16 27 3  | 123 | 15 54 3  | 124 | 306  |
| 55   | 17 29 +3 | 122 | 16 57 +3 | 122 | 16 25 +3 | 122 | 15 53 +3 | 123 | 15 21 +3 | 123 | 305  |
| 56   | 16 53 3  | 121 | 16 22 3  | 121 | 15 51 3  | 122 | 15 19 3  | 122 | 14 48 3  | 122 | 304  |
| 57   | 16 16 3  | 120 | 15 46 3  | 120 | 15 16 3  | 121 | 14 45 3  | 121 | 14 14 3  | 121 | 303  |
| 58   | 15 40 3  | 119 | 15 10 3  | 120 | 14 41 3  | 120 | 14 11 3  | 120 | 13 41 3  | 120 | 302  |
| 59   | 15 03 3  | 119 | 14 34 3  | 119 | 14 05 3  | 119 | 13 36 3  | 119 | 13 07 3  | 119 | 301  |
| 60   | 14 25 +3 | 118 | 13 57 +3 | 118 | 13 29 +3 | 118 | 13 01 +3 | 118 | 12 32 +3 | 119 | 300  |
| 61   | 13 48 3  | 117 | 13 21 3  | 117 | 12 53 3  | 117 | 12 26 3  | 118 | 11 58 3  | 118 | 299  |
| 62   | 13 10 3  | 116 | 12 44 3  | 116 | 12 17 3  | 117 | 11 50 3  | 117 | 11 23 3  | 117 | 298  |
| 63   | 12 32 3  | 115 | 12 06 3  | 116 | 11 40 3  | 116 | 11 14 3  | 116 | 10 48 3  | 116 | 297  |
| 64   | 11 54 3  | 115 | 11 29 3  | 115 | 11 04 3  | 115 | 10 38 3  | 115 | 10 13 +3 | 115 | 296  |
| 65   | 11 15 +3 | 114 | 10 51 +3 | 114 | 10 27 +3 | 114 | 10 02 +3 | 114 | ...      | ... | 295  |
| 66   | 10 37 +3 | 113 | 10 13 +3 | 113 | ...      | ... | ...      | ... | ...      | ... | 294  |
| 67   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 293  |
| 68   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 292  |
| 69   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 291  |
| 70   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 290  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1955.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 0    | 53 17 | -4 180 | 52 17 | -4 180 | 51 17 | -4 180 | 50 17 | -4 180 | 49 17 | -4 180 | 360  |
| 1    | 53 16 | 4 178  | 52 16 | 4 178  | 51 16 | 4 178  | 50 16 | 4 178  | 49 16 | 4 178  | 359  |
| 2    | 53 14 | 4 177  | 52 14 | 4 177  | 51 15 | 4 177  | 50 15 | 4 177  | 49 15 | 4 177  | 358  |
| 3    | 53 11 | 4 175  | 52 11 | 4 175  | 51 12 | 4 175  | 50 12 | 4 175  | 49 12 | 4 175  | 357  |
| 4    | 53 07 | 4 173  | 52 07 | 4 174  | 51 08 | 4 174  | 50 08 | 4 174  | 49 09 | 4 174  | 356  |
| 5    | 53 01 | -4 172 | 52 02 | -4 172 | 51 03 | -4 172 | 50 03 | -4 172 | 49 04 | -4 172 | 355  |
| 6    | 52 55 | 4 170  | 51 56 | 4 170  | 50 57 | 4 171  | 49 57 | 4 171  | 48 58 | 4 171  | 354  |
| 7    | 52 47 | 4 169  | 51 48 | 4 169  | 50 49 | 4 169  | 49 50 | 4 169  | 48 51 | 4 169  | 353  |
| 8    | 52 38 | 4 167  | 51 39 | 4 167  | 50 41 | 4 167  | 49 42 | 4 168  | 48 44 | 4 168  | 352  |
| 9    | 52 28 | 4 165  | 51 30 | 4 166  | 50 32 | 4 166  | 49 33 | 4 166  | 48 35 | 4 166  | 351  |
| 10   | 52 16 | -4 164 | 51 19 | -4 164 | 50 21 | -4 164 | 49 23 | -4 165 | 48 25 | -4 165 | 350  |
| 11   | 52 04 | 4 162  | 51 07 | 4 163  | 50 09 | 4 163  | 49 12 | 4 163  | 48 15 | 4 164  | 349  |
| 12   | 51 50 | 4 161  | 50 54 | 4 161  | 49 57 | 4 161  | 49 00 | 4 162  | 48 03 | 4 162  | 348  |
| 13   | 51 36 | 4 159  | 50 40 | 4 159  | 49 43 | 4 160  | 48 47 | 4 160  | 47 50 | 4 161  | 347  |
| 14   | 51 20 | 4 157  | 50 24 | 4 158  | 49 29 | 4 158  | 48 33 | 4 159  | 47 37 | 4 159  | 346  |
| 15   | 51 03 | -4 156 | 50 08 | -4 156 | 49 13 | -4 157 | 48 18 | -4 157 | 47 23 | -4 158 | 345  |
| 16   | 50 45 | 4 154  | 49 51 | 4 155  | 48 57 | 4 155  | 48 02 | 4 156  | 47 07 | 4 156  | 344  |
| 17   | 50 27 | 4 153  | 49 33 | 4 154  | 48 39 | 4 154  | 47 45 | 4 155  | 46 51 | 4 155  | 343  |
| 18   | 50 07 | 4 152  | 49 14 | 4 152  | 48 21 | 4 153  | 47 28 | 4 153  | 46 34 | 4 154  | 342  |
| 19   | 49 46 | 4 150  | 48 54 | 4 151  | 48 02 | 4 151  | 47 09 | 4 152  | 46 16 | 4 152  | 341  |
| 20   | 49 25 | -4 149 | 48 33 | -4 149 | 47 42 | -4 150 | 46 50 | -4 150 | 45 57 | -4 151 | 340  |
| 21   | 49 02 | 4 147  | 48 11 | 4 148  | 47 21 | 4 148  | 46 29 | 4 149  | 45 38 | 4 150  | 339  |
| 22   | 48 39 | 4 146  | 47 49 | 4 147  | 46 59 | 4 147  | 46 08 | 4 148  | 45 17 | 4 148  | 338  |
| 23   | 48 15 | 4 145  | 47 25 | 4 145  | 46 36 | 4 146  | 45 46 | 4 146  | 44 56 | 4 147  | 337  |
| 24   | 47 50 | 4 143  | 47 01 | 4 144  | 46 13 | 4 144  | 45 24 | 4 145  | 44 34 | 4 146  | 336  |
| 25   | 47 24 | -4 142 | 46 36 | -4 143 | 45 49 | -4 143 | 45 00 | -4 144 | 44 12 | -4 144 | 335  |
| 26   | 46 57 | 4 141  | 46 11 | 4 141  | 45 24 | 4 142  | 44 36 | 4 142  | 43 49 | 4 143  | 334  |
| 27   | 46 30 | 4 139  | 45 44 | 4 140  | 44 58 | 4 141  | 44 11 | 4 141  | 43 25 | 4 142  | 333  |
| 28   | 46 02 | 4 138  | 45 17 | 4 139  | 44 32 | 4 139  | 43 46 | 4 140  | 43 00 | 4 141  | 332  |
| 29   | 45 33 | 4 137  | 44 49 | 4 137  | 44 05 | 4 138  | 43 20 | 4 139  | 42 35 | 4 139  | 331  |
| 30   | 45 04 | -4 136 | 44 21 | -4 136 | 43 37 | -4 137 | 42 53 | -4 138 | 42 09 | -4 138 | 330  |
| 31   | 44 34 | 4 134  | 43 52 | 4 135  | 43 09 | 4 136  | 42 26 | 4 136  | 41 42 | 4 137  | 329  |
| 32   | 44 03 | 3 133  | 43 22 | 4 134  | 42 40 | 4 135  | 41 58 | 4 135  | 41 15 | 4 136  | 328  |
| 33   | 43 32 | 3 132  | 42 51 | 3 133  | 42 11 | 4 133  | 41 29 | 4 134  | 40 47 | 4 135  | 327  |
| 34   | 43 00 | 3 131  | 42 21 | 3 132  | 41 41 | 4 132  | 41 00 | 4 133  | 40 19 | 4 133  | 326  |
| 35   | 42 28 | -3 130 | 41 49 | -3 130 | 41 10 | -3 131 | 40 30 | -4 132 | 39 50 | -4 132 | 325  |
| 36   | 41 55 | 3 129  | 41 17 | 3 129  | 40 39 | 3 130  | 40 00 | 3 131  | 39 21 | 4 131  | 324  |
| 37   | 41 21 | 3 128  | 40 45 | 3 128  | 40 07 | 3 129  | 39 29 | 3 130  | 38 51 | 4 130  | 323  |
| 38   | 40 48 | 3 126  | 40 12 | 3 127  | 39 35 | 3 128  | 38 58 | 3 128  | 38 21 | 3 129  | 322  |
| 39   | 40 13 | 3 125  | 39 38 | 3 126  | 39 03 | 3 127  | 38 27 | 3 127  | 37 50 | 3 128  | 321  |
| 40   | 39 38 | -3 124 | 39 04 | -3 125 | 38 30 | -3 126 | 37 54 | -3 126 | 37 19 | -3 127 | 320  |
| 41   | 39 03 | 3 123  | 38 30 | 3 124  | 37 56 | 3 125  | 37 22 | 3 125  | 36 47 | 3 126  | 319  |
| 42   | 38 28 | 3 122  | 37 55 | 3 123  | 37 22 | 3 124  | 36 49 | 3 124  | 36 15 | 3 125  | 318  |
| 43   | 37 51 | 3 121  | 37 20 | 3 122  | 36 48 | 3 123  | 36 15 | 3 123  | 35 42 | 3 124  | 317  |
| 44   | 37 15 | 3 120  | 36 45 | 3 121  | 36 13 | 3 122  | 35 42 | 3 122  | 35 10 | 3 123  | 316  |
| 45   | 36 38 | -3 119 | 36 09 | -3 120 | 35 38 | -3 121 | 35 08 | -3 121 | 34 36 | -3 122 | 315  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1955.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 45   | 36 38 | -3 119 | 36 09 | -3 120 | 35 38 | -3 121 | 35 08 | -3 121 | 34 36 | -3 122 | 315  |
| 46   | 36 01 | 3 118  | 35 32 | 3 119  | 35 03 | 3 120  | 34 33 | 3 120  | 34 03 | 3 121  | 314  |
| 47   | 35 24 | 3 117  | 34 56 | 3 118  | 34 27 | 3 119  | 33 58 | 3 119  | 33 29 | 3 120  | 313  |
| 48   | 34 46 | 3 116  | 34 19 | 3 117  | 33 51 | 3 118  | 33 23 | 3 118  | 32 54 | 3 119  | 312  |
| 49   | 34 08 | 3 116  | 33 42 | 3 116  | 33 15 | 3 117  | 32 48 | 3 117  | 32 20 | 3 118  | 311  |
| 50   | 33 29 | -3 115 | 33 04 | -3 115 | 32 38 | -3 116 | 32 12 | -3 116 | 31 45 | -3 117 | 310  |
| 51   | 32 51 | 3 114  | 32 26 | 3 114  | 32 01 | 3 115  | 31 36 | 3 115  | 31 10 | 3 116  | 309  |
| 52   | 32 12 | 3 113  | 31 48 | 3 113  | 31 24 | 3 114  | 30 59 | 3 115  | 30 34 | 3 115  | 308  |
| 53   | 31 33 | 3 112  | 31 10 | 3 113  | 30 47 | 3 113  | 30 23 | 3 114  | 29 58 | 3 114  | 307  |
| 54   | 30 53 | 3 111  | 30 31 | 3 112  | 30 09 | 3 112  | 29 46 | 3 113  | 29 22 | 3 113  | 306  |
| 55   | 30 14 | -3 110 | 29 53 | -3 111 | 29 31 | -3 111 | 29 09 | -3 112 | 28 46 | -3 112 | 305  |
| 56   | 29 34 | 3 109  | 29 13 | 3 110  | 28 53 | 3 110  | 28 32 | 3 111  | 28 10 | 3 112  | 304  |
| 57   | 28 54 | 3 109  | 28 34 | 3 109  | 28 14 | 3 110  | 27 54 | 3 110  | 27 33 | 3 111  | 303  |
| 58   | 28 13 | 3 108  | 27 55 | 3 108  | 27 36 | 3 109  | 27 16 | 3 109  | 26 56 | 3 110  | 302  |
| 59   | 27 33 | 3 107  | 27 15 | 3 107  | 26 57 | 3 108  | 26 38 | 3 108  | 26 19 | 3 109  | 301  |
| 60   | 26 52 | -3 106 | 26 35 | -3 107 | 26 18 | -3 107 | 26 00 | -3 108 | 25 42 | -3 108 | 300  |
| 61   | 26 12 | 3 105  | 25 55 | 3 106  | 25 39 | 3 106  | 25 22 | 3 107  | 25 04 | 3 107  | 299  |
| 62   | 25 31 | 3 105  | 25 15 | 3 105  | 25 00 | 3 105  | 24 43 | 3 106  | 24 27 | 3 106  | 298  |
| 63   | 24 49 | 3 104  | 24 35 | 3 104  | 24 20 | 3 105  | 24 05 | 3 105  | 23 49 | 3 106  | 297  |
| 64   | 24 08 | 3 103  | 23 55 | 3 103  | 23 40 | 3 104  | 23 26 | 3 104  | 23 11 | 3 105  | 296  |
| 65   | 23 27 | -3 102 | 23 14 | -3 103 | 23 01 | -3 103 | 22 47 | -3 103 | 22 33 | -3 104 | 295  |
| 66   | 22 45 | 3 101  | 22 33 | 3 102  | 22 21 | 3 102  | 22 08 | 3 103  | 21 55 | 3 103  | 294  |
| 67   | 22 04 | 3 101  | 21 53 | 3 101  | 21 41 | 3 101  | 21 29 | 3 102  | 21 16 | 3 102  | 293  |
| 68   | 21 22 | 3 100  | 21 12 | 3 100  | 21 01 | 3 101  | 20 50 | 3 101  | 20 38 | 3 101  | 292  |
| 69   | 20 40 | 3 99   | 20 31 | 3 100  | 20 21 | 3 100  | 20 10 | 3 100  | 19 59 | 3 101  | 291  |
| 70   | 19 59 | -3 98  | 19 50 | -3 99  | 19 40 | -3 99  | 19 31 | -3 99  | 19 21 | -3 100 | 290  |
| 71   | 19 17 | 3 98   | 19 09 | 3 98   | 19 00 | 3 98   | 18 51 | 3 99   | 18 42 | 3 99   | 289  |
| 72   | 18 35 | 3 97   | 18 27 | 3 97   | 18 20 | 3 98   | 18 11 | 3 98   | 18 03 | 3 98   | 288  |
| 73   | 17 53 | 3 96   | 17 46 | 3 97   | 17 39 | 3 97   | 17 32 | 3 97   | 17 24 | 3 97   | 287  |
| 74   | 17 11 | 3 95   | 17 05 | 3 96   | 16 59 | 3 96   | 16 52 | 3 96   | 16 45 | 3 97   | 286  |
| 75   | 16 28 | -3 95  | 16 23 | -3 95  | 16 18 | -3 95  | 16 12 | -3 96  | 16 06 | -3 96  | 285  |
| 76   | 15 46 | 3 94   | 15 42 | 3 94   | 15 37 | 3 95   | 15 32 | 3 95   | 15 27 | 3 95   | 284  |
| 77   | 15 04 | 3 93   | 15 00 | 3 94   | 14 57 | 3 94   | 14 52 | 3 94   | 14 48 | 3 94   | 283  |
| 78   | 14 22 | 3 93   | 14 19 | 3 93   | 14 16 | 3 93   | 14 13 | 3 93   | 14 09 | 3 94   | 282  |
| 79   | 13 40 | 3 92   | 13 38 | 3 92   | 13 35 | 3 92   | 13 33 | 3 93   | 13 30 | 3 93   | 281  |
| 80   | 12 57 | -3 91  | 12 56 | -3 91  | 12 54 | -3 92  | 12 53 | -3 92  | 12 51 | -3 92  | 280  |
| 81   | 12 15 | 3 90   | 12 15 | 3 91   | 12 14 | 3 91   | 12 13 | 3 91   | 12 11 | 3 91   | 279  |
| 82   | 11 33 | 3 90   | 11 33 | 3 90   | 11 33 | 3 90   | 11 33 | 3 90   | 11 32 | 3 91   | 278  |
| 83   | 10 51 | 3 89   | 10 52 | 3 89   | 10 52 | 3 89   | 10 53 | 3 90   | 10 53 | 3 90   | 277  |
| 84   | 10 09 | -3 88  | 10 10 | -3 89  | 10 12 | -3 89  | 10 13 | -3 89  | 10 14 | -3 89  | 276  |
| 85   | ...   |        | ...   |        | ...   |        | ...   |        | ...   |        | 275  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1955.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 74 25-15 | 0   | 75 25-15 | 0   | 76 25-15 | 0   | 77 25-15 | 0   | 78 25-15 | 0   | 360  |
| 1    | 74 24 15 | 2   | 75 24 15 | 2   | 76 24 15 | 2   | 77 24 15 | 2   | 78 24 15 | 2   | 359  |
| 2    | 74 22 15 | 4   | 75 22 15 | 4   | 76 22 15 | 4   | 77 22 15 | 5   | 78 21 15 | 5   | 358  |
| 3    | 74 19 15 | 5   | 75 18 15 | 6   | 76 18 15 | 6   | 77 18 15 | 7   | 78 17 15 | 7   | 357  |
| 4    | 74 14 15 | 7   | 75 13 15 | 8   | 76 13 14 | 8   | 77 12 14 | 9   | 78 11 15 | 10  | 356  |
| 5    | 74 08-14 | 9   | 75 07-14 | 10  | 76 06-14 | 10  | 77 05-14 | 11  | 78 04-14 | 12  | 355  |
| 6    | 74 01 14 | 11  | 75 00 14 | 11  | 75 58 14 | 12  | 76 57 14 | 13  | 77 55 14 | 14  | 354  |
| 7    | 73 52 14 | 12  | 74 51 14 | 13  | 75 49 14 | 14  | 76 47 14 | 15  | 77 45 14 | 16  | 353  |
| 8    | 73 42 14 | 14  | 74 41 14 | 15  | 75 38 14 | 16  | 76 36 14 | 17  | 77 33 13 | 18  | 352  |
| 9    | 73 32 14 | 16  | 74 29 14 | 17  | 75 26 13 | 18  | 76 23 13 | 19  | 77 20 13 | 21  | 351  |
| 10   | 73 20-13 | 17  | 74 17-13 | 18  | 75 13-13 | 20  | 76 10-13 | 21  | 77 05-13 | 22  | 350  |
| 11   | 73 06 13 | 19  | 74 03 13 | 20  | 74 59 13 | 21  | 75 55 13 | 23  | 76 50 12 | 24  | 349  |
| 12   | 72 52 13 | 20  | 73 48 13 | 21  | 74 44 12 | 23  | 75 39 12 | 24  | 76 33 12 | 26  | 348  |
| 13   | 72 37 13 | 22  | 73 33 12 | 23  | 74 27 12 | 24  | 75 22 12 | 26  | 76 15 12 | 28  | 347  |
| 14   | 72 21 12 | 23  | 73 16 12 | 24  | 74 10 12 | 26  | 75 04 11 | 27  | 75 57 11 | 29  | 346  |
| 15   | 72 04-12 | 24  | 72 58-12 | 26  | 73 52-11 | 27  | 74 45-11 | 29  | 75 37-11 | 31  | 345  |
| 16   | 71 46 12 | 26  | 72 40 11 | 27  | 73 33 11 | 29  | 74 25 11 | 30  | 75 16 10 | 32  | 344  |
| 17   | 71 27 11 | 27  | 72 20 11 | 28  | 73 13 11 | 30  | 74 04 10 | 32  | 74 55 10 | 33  | 343  |
| 18   | 71 08 11 | 28  | 72 00 11 | 29  | 72 52 10 | 31  | 73 43 10 | 33  | 74 33 10 | 35  | 342  |
| 19   | 70 47 11 | 29  | 71 39 10 | 31  | 72 31 10 | 32  | 73 21 10 | 34  | 74 10 9  | 36  | 341  |
| 20   | 70 26-10 | 30  | 71 18-10 | 32  | 72 09-10 | 33  | 72 58-9  | 35  | 73 47-9  | 37  | 340  |
| 21   | 70 05 10 | 31  | 70 56 10 | 33  | 71 46 9  | 34  | 72 35 9  | 36  | 73 23 8  | 38  | 339  |
| 22   | 69 43 10 | 32  | 70 33 9  | 34  | 71 23 9  | 35  | 72 11 8  | 37  | 72 58 8  | 39  | 338  |
| 23   | 69 20 9  | 33  | 70 10 9  | 34  | 70 59 9  | 36  | 71 47 8  | 38  | 72 33 8  | 40  | 337  |
| 24   | 68 57 9  | 34  | 69 46 9  | 35  | 70 34 8  | 37  | 71 22 8  | 39  | 72 08 7  | 41  | 336  |
| 25   | 68 33-9  | 35  | 69 22-8  | 36  | 70 10-8  | 38  | 70 57-7  | 39  | 71 42-7  | 41  | 335  |
| 26   | 68 08 8  | 35  | 68 57 8  | 37  | 69 44 7  | 38  | 70 31 7  | 40  | 71 16 7  | 42  | 334  |
| 27   | 67 44 8  | 36  | 68 32 8  | 38  | 69 19 7  | 39  | 70 05 7  | 41  | 70 50 6  | 43  | 333  |
| 28   | 67 19 8  | 37  | 68 06 7  | 38  | 68 53 7  | 40  | 69 38 6  | 41  | 70 23 6  | 43  | 332  |
| 29   | 66 53 7  | 37  | 67 40 7  | 39  | 68 27 6  | 40  | 69 12 6  | 42  | 69 56 6  | 44  | 331  |
| 30   | 66 27-7  | 38  | 67 14-7  | 39  | 68 00-6  | 41  | 68 45-6  | 43  | 69 28-5  | 44  | 330  |
| 31   | 66 01 7  | 38  | 66 47 6  | 40  | 67 33 6  | 41  | 68 17 5  | 43  | 69 00 5  | 45  | 329  |
| 32   | 65 34 6  | 39  | 66 21 6  | 40  | 67 06 5  | 42  | 67 50 5  | 44  | 68 33 5  | 45  | 328  |
| 33   | 65 08 6  | 39  | 65 53 6  | 41  | 66 38 5  | 42  | 67 22 5  | 44  | 68 04 4  | 46  | 327  |
| 34   | 64 40 6  | 40  | 65 26 5  | 41  | 66 11 5  | 43  | 66 54 4  | 44  | 67 36 4  | 46  | 326  |
| 35   | 64 13-5  | 40  | 64 58-5  | 42  | 65 43-5  | 43  | 66 26-4  | 45  | 67 08-4  | 46  | 325  |
| 36   | 63 46 5  | 41  | 64 31 5  | 42  | 65 15 4  | 44  | 65 57 4  | 45  | 66 39 3  | 47  | 324  |
| 37   | 63 18 5  | 41  | 64 03 4  | 42  | 64 46 4  | 44  | 65 29 4  | 45  | 66 10 3  | 47  | 323  |
| 38   | 62 50 4  | 41  | 63 34 4  | 43  | 64 18 4  | 44  | 65 00 3  | 46  | 65 42 3  | 47  | 322  |
| 39   | 62 22 4  | 42  | 63 06 4  | 43  | 63 49 3  | 44  | 64 32 3  | 46  | 65 13 3  | 47  | 321  |
| 40   | 61 53-4  | 42  | 62 37-4  | 43  | 63 21-3  | 45  | 64 03-3  | 46  | 64 44-2  | 48  | 320  |
| 41   | 61 25 4  | 42  | 62 09 3  | 44  | 62 52 3  | 45  | 63 34 2  | 46  | 64 15 2  | 48  | 319  |
| 42   | 60 56 3  | 43  | 61 40 3  | 44  | 62 23 3  | 45  | 63 05 2  | 47  | 63 45 2  | 48  | 318  |
| 43   | 60 27 3  | 43  | 61 11 3  | 44  | 61 54 2  | 45  | 62 35 2  | 47  | 63 16 2  | 48  | 317  |
| 44   | 59 59 3  | 43  | 60 42 3  | 44  | 61 25 2  | 45  | 62 06 2  | 47  | 62 47 1  | 48  | 316  |
| 45   | 59 30-3  | 43  | 60 13-2  | 44  | 60 55-2  | 46  | 61 37-1  | 47  | 62 17-1  | 48  | 315  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1945.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 59 30 -3 | 43  | 60 13 -2 | 44  | 60 55 -2 | 46  | 61 37 -1 | 47  | 62 17 -1 | 48  | 315  |
| 46   | 59 01 2  | 43  | 59 44 2  | 44  | 60 26 2  | 46  | 61 08 1  | 47  | 61 48 1  | 48  | 314  |
| 47   | 58 31 2  | 43  | 59 15 2  | 45  | 59 57 1  | 46  | 60 38 1  | 47  | 61 19 -1 | 48  | 313  |
| 48   | 58 02 2  | 44  | 58 45 1  | 45  | 59 28 1  | 46  | 60 09 1  | 47  | 60 49 0  | 48  | 312  |
| 49   | 57 33 2  | 44  | 58 16 1  | 45  | 58 58 1  | 46  | 59 39 -1 | 47  | 60 20 0  | 48  | 311  |
| 50   | 57 04 -1 | 44  | 57 47 -1 | 45  | 58 29 -1 | 46  | 59 10 0  | 47  | 59 50 0  | 48  | 310  |
| 51   | 56 34 1  | 44  | 57 17 1  | 45  | 57 59 0  | 46  | 58 40 0  | 47  | 59 21 0  | 48  | 309  |
| 52   | 56 05 1  | 44  | 56 48 -1 | 45  | 57 30 0  | 46  | 58 11 0  | 47  | 58 51 0  | 48  | 308  |
| 53   | 55 36 -1 | 44  | 56 18 0  | 45  | 57 00 0  | 46  | 57 42 0  | 47  | 58 22 +1 | 48  | 307  |
| 54   | 55 06 0  | 44  | 55 49 0  | 45  | 56 31 0  | 46  | 57 12 +1 | 47  | 57 53 1  | 48  | 306  |
| 55   | 54 37 0  | 44  | 55 19 0  | 45  | 56 02 0  | 46  | 56 43 +1 | 47  | 57 23 +1 | 48  | 305  |
| 56   | 54 07 0  | 44  | 54 50 0  | 45  | 55 32 +1 | 46  | 56 13 1  | 47  | 56 54 1  | 48  | 304  |
| 57   | 53 38 0  | 44  | 54 21 +1 | 45  | 55 03 1  | 46  | 55 44 1  | 47  | 56 24 2  | 48  | 303  |
| 58   | 53 08 0  | 44  | 53 51 1  | 45  | 54 33 1  | 46  | 55 15 1  | 47  | 55 55 2  | 48  | 302  |
| 59   | 52 39 +1 | 44  | 53 22 1  | 45  | 54 04 1  | 46  | 54 45 2  | 47  | 55 26 2  | 48  | 301  |
| 60   | 52 09 +1 | 44  | 52 52 +1 | 45  | 53 35 +2 | 46  | 54 16 +2 | 47  | 54 57 +2 | 48  | 300  |
| 61   | 51 40 1  | 44  | 52 23 1  | 45  | 53 05 2  | 46  | 53 47 2  | 47  | 54 28 2  | 48  | 299  |
| 62   | 51 11 1  | 44  | 51 54 2  | 45  | 52 36 2  | 46  | 53 18 2  | 46  | 53 59 3  | 47  | 298  |
| 63   | 50 41 2  | 44  | 51 25 2  | 45  | 52 07 2  | 45  | 52 49 2  | 46  | 53 30 3  | 47  | 297  |
| 64   | 50 12 2  | 44  | 50 55 2  | 44  | 51 38 2  | 45  | 52 20 3  | 46  | 53 01 3  | 47  | 296  |
| 65   | 49 43 +2 | 43  | 50 26 +2 | 44  | 51 09 +3 | 45  | 51 51 +3 | 46  | 52 32 +3 | 47  | 295  |
| 66   | 49 14 2  | 43  | 49 57 2  | 44  | 50 40 3  | 45  | 51 22 3  | 46  | 52 03 3  | 47  | 294  |
| 67   | 48 45 2  | 43  | 49 28 3  | 44  | 50 11 3  | 45  | 50 53 3  | 46  | 51 35 4  | 47  | 293  |
| 68   | 48 16 3  | 43  | 48 59 3  | 44  | 49 42 3  | 45  | 50 24 3  | 46  | 51 06 4  | 46  | 292  |
| 69   | 47 47 3  | 43  | 48 30 3  | 44  | 49 13 3  | 45  | 49 56 4  | 45  | 50 38 4  | 46  | 291  |
| 70   | 47 18 +3 | 43  | 48 02 +3 | 44  | 48 45 +3 | 44  | 49 27 +4 | 45  | 50 09 +4 | 46  | 290  |
| 71   | 46 49 3  | 43  | 47 33 3  | 43  | 48 16 4  | 44  | 48 59 4  | 45  | 49 41 4  | 46  | 289  |
| 72   | 46 20 3  | 43  | 47 04 4  | 43  | 47 48 4  | 44  | 48 31 4  | 45  | 49 13 4  | 46  | 288  |
| 73   | 45 52 4  | 42  | 46 36 4  | 43  | 47 19 4  | 44  | 48 02 4  | 45  | 48 45 5  | 45  | 287  |
| 74   | 45 23 4  | 42  | 46 07 4  | 43  | 46 51 4  | 44  | 47 34 4  | 44  | 48 17 5  | 45  | 286  |
| 75   | 44 55 +4 | 42  | 45 39 +4 | 43  | 46 23 +4 | 43  | 47 06 +5 | 44  | 47 49 +5 | 45  | 285  |
| 76   | 44 26 4  | 42  | 45 11 4  | 43  | 45 55 5  | 43  | 46 38 5  | 44  | 47 21 5  | 45  | 284  |
| 77   | 43 58 4  | 42  | 44 43 5  | 42  | 45 27 5  | 43  | 46 10 5  | 44  | 46 54 5  | 44  | 283  |
| 78   | 43 30 4  | 41  | 44 15 5  | 42  | 44 59 5  | 43  | 45 43 5  | 43  | 46 26 5  | 44  | 282  |
| 79   | 43 02 5  | 41  | 43 47 5  | 42  | 44 31 5  | 43  | 45 15 5  | 43  | 45 59 6  | 44  | 281  |
| 80   | 42 34 +5 | 41  | 43 19 +5 | 42  | 44 04 +5 | 42  | 44 48 +5 | 43  | 45 32 +6 | 44  | 280  |
| 81   | 42 06 5  | 41  | 42 52 5  | 41  | 43 36 5  | 42  | 44 21 6  | 43  | 45 04 6  | 43  | 279  |
| 82   | 41 39 5  | 41  | 42 24 5  | 41  | 43 09 6  | 42  | 43 53 6  | 42  | 44 37 6  | 43  | 278  |
| 83   | 41 11 5  | 40  | 41 57 6  | 41  | 42 42 6  | 42  | 43 26 6  | 42  | 44 11 6  | 43  | 277  |
| 84   | 40 44 6  | 40  | 41 29 6  | 41  | 42 15 6  | 41  | 43 00 6  | 42  | 43 44 6  | 43  | 276  |
| 85   | 40 17 +6 | 40  | 41 02 +6 | 40  | 41 48 +6 | 41  | 42 33 +6 | 42  | 43 18 +7 | 42  | 275  |
| 86   | 39 49 6  | 40  | 40 35 6  | 40  | 41 21 6  | 41  | 42 06 6  | 41  | 42 51 7  | 42  | 274  |
| 87   | 39 22 6  | 39  | 40 09 6  | 40  | 40 54 6  | 40  | 41 40 7  | 41  | 42 25 7  | 42  | 273  |
| 88   | 38 56 6  | 39  | 39 42 6  | 40  | 40 28 7  | 40  | 41 14 7  | 41  | 41 59 7  | 41  | 272  |
| 89   | 38 29 6  | 39  | 39 16 7  | 39  | 40 02 7  | 40  | 40 48 7  | 40  | 41 33 7  | 41  | 271  |
| 90   | 38 02 +7 | 39  | 38 49 +7 | 39  | 39 36 +7 | 40  | 40 22 +7 | 40  | 41 07 +7 | 41  | 270  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ +$  Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ -$  Tabulated Azimuth. } p. 91.  
 No correction for date is necessary until 1945.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 90   | 38 02 +7 | 39  | 38 49 +7 | 39  | 39 36 +7 | 40  | 40 22 +7 | 40  | 41 07 +7 | 41  | 270  |
| 91   | 37 36 7  | 38  | 38 23 7  | 39  | 39 10 7  | 39  | 39 56 7  | 40  | 40 42 7  | 40  | 269  |
| 92   | 37 10 7  | 38  | 37 57 7  | 38  | 38 44 7  | 39  | 39 30 7  | 39  | 40 16 8  | 40  | 268  |
| 93   | 36 44 7  | 38  | 37 31 7  | 38  | 38 18 7  | 39  | 39 05 8  | 39  | 39 51 8  | 40  | 267  |
| 94   | 36 18 7  | 37  | 37 06 7  | 38  | 37 53 7  | 38  | 38 40 8  | 39  | 39 26 8  | 39  | 266  |
| 95   | 35 52 +7 | 37  | 36 40 +7 | 38  | 37 27 +8 | 38  | 38 14 +8 | 39  | 39 01 +8 | 39  | 265  |
| 96   | 35 27 7  | 37  | 36 15 8  | 37  | 37 02 8  | 38  | 37 50 8  | 38  | 38 37 8  | 39  | 264  |
| 97   | 35 02 8  | 37  | 35 50 8  | 37  | 36 37 8  | 37  | 37 25 8  | 38  | 38 12 8  | 38  | 263  |
| 98   | 34 36 8  | 36  | 35 25 8  | 37  | 36 13 8  | 37  | 37 00 8  | 38  | 37 48 8  | 38  | 262  |
| 99   | 34 11 8  | 36  | 35 00 8  | 36  | 35 48 8  | 37  | 36 36 8  | 37  | 37 24 9  | 38  | 261  |
| 100  | 33 47 +8 | 36  | 34 35 +8 | 36  | 35 24 +8 | 36  | 36 12 +9 | 37  | 37 00 +9 | 37  | 260  |
| 101  | 33 22 8  | 35  | 34 11 8  | 36  | 35 00 9  | 36  | 35 48 9  | 36  | 36 36 9  | 37  | 259  |
| 102  | 32 58 8  | 35  | 33 47 9  | 35  | 34 36 9  | 36  | 35 24 9  | 36  | 36 13 9  | 37  | 258  |
| 103  | 32 34 9  | 35  | 33 23 9  | 35  | 34 12 9  | 35  | 35 01 9  | 36  | 35 49 9  | 36  | 257  |
| 104  | 32 10 9  | 34  | 32 59 9  | 35  | 33 48 9  | 35  | 34 37 9  | 35  | 35 26 9  | 36  | 256  |
| 105  | 31 46 +9 | 34  | 32 36 +9 | 34  | 33 25 +9 | 35  | 34 14 +9 | 35  | 35 03 +9 | 35  | 255  |
| 106  | 31 22 9  | 34  | 32 12 9  | 34  | 33 02 9  | 34  | 33 51 9  | 35  | 34 41 9  | 35  | 254  |
| 107  | 30 59 9  | 33  | 31 49 9  | 34  | 32 39 9  | 34  | 33 29 9  | 34  | 34 18 10 | 35  | 253  |
| 108  | 30 36 9  | 33  | 31 26 9  | 33  | 32 16 9  | 34  | 33 06 10 | 34  | 33 56 10 | 34  | 252  |
| 109  | 30 13 9  | 32  | 31 04 9  | 33  | 31 54 10 | 33  | 32 44 10 | 33  | 33 34 10 | 34  | 251  |
| 110  | 29 50+10 | 32  | 30 41+10 | 32  | 31 32+10 | 33  | 32 22+10 | 33  | 33 12+10 | 33  | 250  |
| 111  | 29 28 10 | 32  | 30 19 10 | 32  | 31 10 10 | 32  | 32 00 10 | 33  | 32 50 10 | 33  | 249  |
| 112  | 29 06 10 | 31  | 29 57 10 | 32  | 30 48 10 | 32  | 31 39 10 | 32  | 32 29 10 | 33  | 248  |
| 113  | 28 44 10 | 31  | 29 35 10 | 31  | 30 26 10 | 32  | 31 17 10 | 32  | 32 08 10 | 32  | 247  |
| 114  | 28 22 10 | 31  | 29 14 10 | 31  | 30 05 10 | 31  | 30 56 10 | 32  | 31 47 10 | 32  | 246  |
| 115  | 28 01+10 | 30  | 28 52+10 | 31  | 29 44+10 | 31  | 30 35+10 | 31  | 31 27+11 | 31  | 245  |
| 116  | 27 39 10 | 30  | 28 31 10 | 30  | 29 23 11 | 30  | 30 15 11 | 31  | 31 06 11 | 31  | 244  |
| 117  | 27 18 10 | 29  | 28 11 11 | 30  | 29 02 11 | 30  | 29 54 11 | 30  | 30 46 11 | 31  | 243  |
| 118  | 26 58 11 | 29  | 27 50 11 | 29  | 28 42 11 | 30  | 29 34 11 | 30  | 30 26 11 | 30  | 242  |
| 119  | 26 37 11 | 29  | 27 30 11 | 29  | 28 22 11 | 29  | 29 14 11 | 29  | 30 06 11 | 30  | 241  |
| 120  | 26 17+11 | 28  | 27 10+11 | 29  | 28 02+11 | 29  | 28 55+11 | 29  | 29 47+11 | 29  | 240  |
| 121  | 25 57 11 | 28  | 26 50 11 | 28  | 27 43 11 | 28  | 28 35 11 | 29  | 29 28 11 | 29  | 239  |
| 122  | 25 37 11 | 28  | 26 30 11 | 28  | 27 23 11 | 28  | 28 16 11 | 28  | 29 09 11 | 28  | 238  |
| 123  | 25 18 11 | 27  | 26 11 11 | 27  | 27 04 11 | 28  | 27 57 11 | 28  | 28 50 11 | 28  | 237  |
| 124  | 24 59 11 | 27  | 25 52 11 | 27  | 26 46 11 | 27  | 27 39 12 | 27  | 28 32 12 | 28  | 236  |
| 125  | 24 40+11 | 26  | 25 34+11 | 26  | 26 27+12 | 27  | 27 21+12 | 27  | 28 14+12 | 27  | 235  |
| 126  | 24 21 11 | 26  | 25 15 12 | 26  | 26 09 12 | 26  | 27 03 12 | 26  | 27 56 12 | 27  | 234  |
| 127  | 24 03 12 | 25  | 24 57 12 | 26  | 25 51 12 | 26  | 26 45 12 | 26  | 27 39 12 | 26  | 233  |
| 128  | 23 45 12 | 25  | 24 39 12 | 25  | 25 33 12 | 25  | 26 27 12 | 26  | 27 21 12 | 26  | 232  |
| 129  | 23 27 12 | 25  | 24 22 12 | 25  | 25 16 12 | 25  | 26 10 12 | 25  | 27 04 12 | 25  | 231  |
| 130  | 23 10+12 | 24  | 24 04+12 | 24  | 24 59+12 | 25  | 25 53+12 | 25  | 26 48+12 | 25  | 230  |
| 131  | 22 52 12 | 24  | 23 47 12 | 24  | 24 42 12 | 24  | 25 37 12 | 24  | 26 31 12 | 24  | 229  |
| 132  | 22 36 12 | 23  | 23 31 12 | 23  | 24 25 12 | 24  | 25 20 12 | 24  | 26 15 12 | 24  | 228  |
| 133  | 22 19 12 | 23  | 23 14 12 | 23  | 24 09 12 | 23  | 25 04 12 | 23  | 25 59 12 | 24  | 227  |
| 134  | 22 03 12 | 22  | 22 58 12 | 23  | 23 53 12 | 23  | 24 49 13 | 23  | 25 44 13 | 23  | 226  |
| 135  | 21 47+12 | 22  | 22 42+13 | 22  | 23 38+13 | 22  | 24 33+13 | 22  | 25 28+13 | 23  | 225  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1945.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 135  | 21 47+12 | 22  | 22 42+13 | 22  | 23 38+13 | 22  | 24 33+13 | 22  | 25 28+13 | 23  | 225  |
| 136  | 21 31 13 | 22  | 22 27 13 | 22  | 23 22 13 | 22  | 24 18 13 | 22  | 25 13 13 | 22  | 224  |
| 137  | 21 16 13 | 21  | 22 12 13 | 21  | 23 07 13 | 21  | 24 03 13 | 22  | 24 59 13 | 22  | 223  |
| 138  | 21 01 13 | 21  | 21 57 13 | 21  | 22 53 13 | 21  | 23 49 13 | 21  | 24 44 13 | 21  | 222  |
| 139  | 20 46 13 | 20  | 21 42 13 | 20  | 22 38 13 | 20  | 23 34 13 | 21  | 24 30 13 | 21  | 221  |
| 140  | 20 31+13 | 20  | 21 28+13 | 20  | 22 24+13 | 20  | 23 20+13 | 20  | 24 17+13 | 20  | 220  |
| 141  | 20 17 13 | 19  | 21 14 13 | 19  | 22 10 13 | 19  | 23 07 13 | 20  | 24 03 13 | 20  | 219  |
| 142  | 20 04 13 | 19  | 21 00 13 | 19  | 21 57 13 | 19  | 22 53 13 | 19  | 23 50 13 | 19  | 218  |
| 143  | 19 50 13 | 18  | 20 47 13 | 18  | 21 44 13 | 19  | 22 40 13 | 19  | 23 37 13 | 19  | 217  |
| 144  | 19 37 13 | 18  | 20 34 13 | 18  | 21 31 13 | 18  | 22 28 13 | 18  | 23 25 13 | 18  | 216  |
| 145  | 19 24+13 | 17  | 20 21+13 | 17  | 21 18+13 | 18  | 22 15+13 | 18  | 23 12+13 | 18  | 215  |
| 146  | 19 12 13 | 17  | 20 09 13 | 17  | 21 06 13 | 17  | 22 03 14 | 17  | 23 01 14 | 17  | 214  |
| 147  | 19 00 13 | 16  | 19 57 14 | 17  | 20 54 14 | 17  | 21 52 14 | 17  | 22 49 14 | 17  | 213  |
| 148  | 18 48 14 | 16  | 19 45 14 | 16  | 20 43 14 | 16  | 21 40 14 | 16  | 22 38 14 | 16  | 212  |
| 149  | 18 36 14 | 15  | 19 34 14 | 16  | 20 32 14 | 16  | 21 29 14 | 16  | 22 27 14 | 16  | 211  |
| 150  | 18 25+14 | 15  | 19 23+14 | 15  | 20 21+14 | 15  | 21 19+14 | 15  | 22 16+14 | 15  | 210  |
| 151  | 18 14 14 | 15  | 19 12 14 | 15  | 20 10 14 | 15  | 21 08 14 | 15  | 22 06 14 | 15  | 209  |
| 152  | 18 04 14 | 14  | 19 02 14 | 14  | 20 00 14 | 14  | 20 58 14 | 14  | 21 56 14 | 14  | 208  |
| 153  | 17 54 14 | 14  | 18 52 14 | 14  | 19 50 14 | 14  | 20 48 14 | 14  | 21 47 14 | 14  | 207  |
| 154  | 17 44 14 | 13  | 18 42 14 | 13  | 19 41 14 | 13  | 20 39 14 | 13  | 21 37 14 | 13  | 206  |
| 155  | 17 35+14 | 13  | 18 33+14 | 13  | 19 32+14 | 13  | 20 30+14 | 13  | 21 28+14 | 13  | 205  |
| 156  | 17 26 14 | 12  | 18 24 14 | 12  | 19 23 14 | 12  | 20 21 14 | 12  | 21 20 14 | 12  | 204  |
| 157  | 17 17 14 | 12  | 18 16 14 | 12  | 19 14 14 | 12  | 20 13 14 | 12  | 21 11 14 | 12  | 203  |
| 158  | 17 09 14 | 11  | 18 07 14 | 11  | 19 06 14 | 11  | 20 05 14 | 11  | 21 04 14 | 11  | 202  |
| 159  | 17 01 14 | 11  | 18 00 14 | 11  | 18 58 14 | 11  | 19 57 14 | 11  | 20 56 14 | 11  | 201  |
| 160  | 16 53+14 | 10  | 17 52+14 | 10  | 18 51+14 | 10  | 19 50+14 | 10  | 20 49+14 | 10  | 200  |
| 161  | 16 46 14 | 10  | 17 45 14 | 10  | 18 44 14 | 10  | 19 43 14 | 10  | 20 42 14 | 10  | 199  |
| 162  | 16 39 14 | 9   | 17 38 14 | 9   | 18 37 14 | 9   | 19 36 14 | 9   | 20 35 14 | 9   | 198  |
| 163  | 16 32 14 | 9   | 17 32 14 | 9   | 18 31 14 | 9   | 19 30 14 | 9   | 20 29 14 | 9   | 197  |
| 164  | 16 26 14 | 8   | 17 26 14 | 8   | 18 25 14 | 8   | 19 24 14 | 8   | 20 23 14 | 8   | 196  |
| 165  | 16 21+15 | 8   | 17 20+15 | 8   | 18 19+15 | 8   | 19 18+15 | 8   | 20 18+15 | 8   | 195  |
| 166  | 16 15 15 | 7   | 17 14 15 | 7   | 18 14 15 | 7   | 19 13 15 | 7   | 20 13 15 | 7   | 194  |
| 167  | 16 10 15 | 7   | 17 09 15 | 7   | 18 09 15 | 7   | 19 08 15 | 7   | 20 08 15 | 7   | 193  |
| 168  | 16 05 15 | 6   | 17 05 15 | 6   | 18 04 15 | 6   | 19 04 15 | 6   | 20 03 15 | 6   | 192  |
| 169  | 16 01 15 | 6   | 17 01 15 | 6   | 18 00 15 | 6   | 19 00 15 | 6   | 19 59 15 | 6   | 191  |
| 170  | 15 57+15 | 5   | 16 57+15 | 5   | 17 56+15 | 5   | 18 56+15 | 5   | 19 56+15 | 5   | 190  |
| 171  | 15 54 15 | 5   | 16 53 15 | 5   | 17 53 15 | 5   | 18 53 15 | 5   | 19 52 15 | 5   | 189  |
| 172  | 15 50 15 | 4   | 16 50 15 | 4   | 17 50 15 | 4   | 18 49 15 | 4   | 19 49 15 | 4   | 188  |
| 173  | 15 48 15 | 4   | 16 47 15 | 4   | 17 47 15 | 4   | 18 47 15 | 4   | 19 46 15 | 4   | 187  |
| 174  | 15 45 15 | 3   | 16 45 15 | 3   | 17 45 15 | 3   | 18 44 15 | 3   | 19 44 15 | 3   | 186  |
| 175  | 15 43+15 | 3   | 16 43+15 | 3   | 17 43+15 | 3   | 18 42+15 | 3   | 19 42+15 | 3   | 185  |
| 176  | 15 41 15 | 2   | 16 41 15 | 2   | 17 41 15 | 2   | 18 41 15 | 2   | 19 41 15 | 2   | 184  |
| 177  | 15 40 15 | 2   | 16 40 15 | 2   | 17 40 15 | 2   | 18 39 15 | 2   | 19 39 15 | 2   | 183  |
| 178  | 15 39 15 | 1   | 16 39 15 | 1   | 17 39 15 | 1   | 18 39 15 | 1   | 19 38 15 | 1   | 182  |
| 179  | 15 39 15 | 1   | 16 38 15 | 1   | 17 38 15 | 1   | 18 38 15 | 1   | 19 38 15 | 1   | 181  |
| 180  | 15 38+15 | 0   | 16 38+15 | 0   | 17 38+15 | 0   | 18 38+15 | 0   | 19 38+15 | 0   | 180  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1945.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 0    | 28 24 | -5 180 | 27 24 | -5 180 | 26 24 | -5 180 | 25 24 | -5 180 | 24 24 | -5 180 | 360  |
| 1    | 28 23 | 5 179  | 27 23 | 5 179  | 26 23 | 5 179  | 25 23 | 5 179  | 24 23 | 5 179  | 359  |
| 2    | 28 22 | 5 178  | 27 22 | 5 178  | 26 22 | 5 178  | 25 22 | 5 178  | 24 22 | 5 178  | 358  |
| 3    | 28 20 | 5 177  | 27 20 | 5 177  | 26 20 | 5 177  | 25 20 | 5 177  | 24 21 | 5 177  | 357  |
| 4    | 28 17 | 5 176  | 27 17 | 5 176  | 26 18 | 5 176  | 25 18 | 5 176  | 24 18 | 5 176  | 356  |
| 5    | 28 13 | -5 175 | 27 14 | -5 175 | 26 14 | -5 175 | 25 14 | -5 175 | 24 15 | -5 175 | 355  |
| 6    | 28 09 | 5 173  | 27 09 | 5 174  | 26 10 | 5 174  | 25 10 | 5 174  | 24 11 | 5 174  | 354  |
| 7    | 28 04 | 5 172  | 27 04 | 5 172  | 26 05 | 5 173  | 25 06 | 5 173  | 24 06 | 5 173  | 353  |
| 8    | 27 58 | 5 171  | 26 59 | 5 171  | 25 59 | 5 171  | 25 00 | 5 172  | 24 01 | 5 172  | 352  |
| 9    | 27 51 | 5 170  | 26 52 | 5 170  | 25 53 | 5 170  | 24 54 | 5 170  | 23 55 | 5 171  | 351  |
| 10   | 27 43 | -5 169 | 26 45 | -5 169 | 25 46 | -5 169 | 24 47 | -5 169 | 23 48 | -5 170 | 350  |
| 11   | 27 35 | 5 168  | 26 36 | 5 168  | 25 38 | 5 168  | 24 39 | 5 168  | 23 40 | 5 168  | 349  |
| 12   | 27 26 | 5 167  | 26 28 | 5 167  | 25 29 | 5 167  | 24 31 | 5 167  | 23 32 | 5 167  | 348  |
| 13   | 27 16 | 5 166  | 26 18 | 5 166  | 25 20 | 5 166  | 24 22 | 5 166  | 23 23 | 5 166  | 347  |
| 14   | 27 05 | 5 165  | 26 08 | 5 165  | 25 10 | 5 165  | 24 12 | 5 165  | 23 14 | 5 165  | 346  |
| 15   | 26 54 | -5 164 | 25 56 | -5 164 | 24 59 | -5 164 | 24 01 | -5 164 | 23 04 | -5 164 | 345  |
| 16   | 26 42 | 5 163  | 25 45 | 5 163  | 24 47 | 5 163  | 23 50 | 5 163  | 22 53 | 5 163  | 344  |
| 17   | 26 29 | 5 162  | 25 32 | 5 162  | 24 35 | 5 162  | 23 38 | 5 162  | 22 41 | 5 162  | 343  |
| 18   | 26 15 | 5 161  | 25 19 | 5 161  | 24 22 | 5 161  | 23 25 | 5 161  | 22 29 | 5 161  | 342  |
| 19   | 26 01 | 5 160  | 25 05 | 5 160  | 24 09 | 5 160  | 23 12 | 5 160  | 22 16 | 5 160  | 341  |
| 20   | 25 46 | -5 159 | 24 50 | -5 159 | 23 54 | -5 159 | 22 58 | -5 159 | 22 02 | -5 159 | 340  |
| 21   | 25 30 | 5 158  | 24 35 | 5 158  | 23 39 | 5 158  | 22 44 | 5 158  | 21 48 | 5 158  | 339  |
| 22   | 25 14 | 5 157  | 24 19 | 5 157  | 23 24 | 5 157  | 22 28 | 5 157  | 21 33 | 5 157  | 338  |
| 23   | 24 57 | 5 156  | 24 02 | 5 156  | 23 07 | 5 156  | 22 13 | 5 156  | 21 18 | 5 156  | 337  |
| 24   | 24 39 | 5 155  | 23 45 | 5 155  | 22 50 | 5 155  | 21 56 | 5 155  | 21 02 | 5 155  | 336  |
| 25   | 24 20 | -5 154 | 23 27 | -5 154 | 22 33 | -5 154 | 21 39 | -5 154 | 20 45 | -5 154 | 335  |
| 26   | 24 01 | 5 153  | 23 08 | 5 153  | 22 15 | 5 153  | 21 21 | 5 153  | 20 28 | 5 153  | 334  |
| 27   | 23 41 | 5 152  | 22 49 | 5 152  | 21 56 | 5 152  | 21 03 | 5 152  | 20 10 | 5 152  | 333  |
| 28   | 23 21 | 5 151  | 22 29 | 5 151  | 21 36 | 5 151  | 20 44 | 5 151  | 19 51 | 5 151  | 332  |
| 29   | 23 00 | 5 150  | 22 08 | 5 150  | 21 16 | 5 150  | 20 24 | 5 150  | 19 32 | 5 150  | 331  |
| 30   | 22 38 | -5 149 | 21 47 | -5 149 | 20 56 | -5 149 | 20 04 | -5 149 | 19 12 | -5 150 | 330  |
| 31   | 22 16 | 5 148  | 21 25 | 5 148  | 20 34 | 5 148  | 19 43 | 5 148  | 18 52 | 5 149  | 329  |
| 32   | 21 53 | 5 147  | 21 03 | 5 147  | 20 12 | 5 147  | 19 22 | 5 147  | 18 32 | 5 148  | 328  |
| 33   | 21 30 | 5 146  | 20 40 | 5 146  | 19 50 | 5 146  | 19 00 | 5 147  | 18 10 | 5 147  | 327  |
| 34   | 21 05 | 5 145  | 20 16 | 5 145  | 19 27 | 5 145  | 18 38 | 5 146  | 17 48 | 5 146  | 326  |
| 35   | 20 41 | -5 144 | 19 52 | -5 144 | 19 04 | -5 144 | 18 15 | -5 145 | 17 26 | -5 145 | 325  |
| 36   | 20 16 | 4 143  | 19 28 | 5 143  | 18 40 | 5 144  | 17 52 | 5 144  | 17 03 | 5 144  | 324  |
| 37   | 19 50 | 4 142  | 19 03 | 5 142  | 18 15 | 5 143  | 17 28 | 5 143  | 16 40 | 5 143  | 323  |
| 38   | 19 24 | 4 141  | 18 37 | 4 142  | 17 50 | 5 142  | 17 03 | 5 142  | 16 16 | 5 142  | 322  |
| 39   | 18 57 | 4 140  | 18 11 | 4 141  | 17 25 | 4 141  | 16 38 | 5 141  | 15 52 | 5 141  | 321  |
| 40   | 18 30 | -4 140 | 17 44 | -4 140 | 16 59 | -4 140 | 16 13 | -4 140 | 15 27 | -5 140 | 320  |
| 41   | 18 02 | 4 139  | 17 17 | 4 139  | 16 32 | 4 139  | 15 47 | 4 139  | 15 01 | 4 139  | 319  |
| 42   | 17 34 | 4 138  | 16 50 | 4 138  | 16 05 | 4 138  | 15 20 | 4 138  | 14 36 | 4 139  | 318  |
| 43   | 17 05 | 4 137  | 16 22 | 4 137  | 15 38 | 4 137  | 14 54 | 4 137  | 14 10 | 4 138  | 317  |
| 44   | 16 36 | 4 136  | 15 53 | 4 136  | 15 10 | 4 136  | 14 26 | 4 137  | 13 43 | 4 137  | 316  |
| 45   | 16 07 | -4 135 | 15 24 | -4 135 | 14 41 | -4 136 | 13 59 | -4 136 | 13 16 | -4 136 | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ - \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1952.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 16 07 -4 | 135 | 15 24 -4 | 135 | 14 41 -4 | 136 | 13 59 -4 | 136 | 13 16 -4 | 136 | 315  |
| 46   | 15 36 4  | 134 | 14 55 4  | 135 | 14 13 4  | 135 | 13 31 4  | 135 | 12 48 4  | 135 | 314  |
| 47   | 15 06 4  | 133 | 14 25 4  | 134 | 13 43 4  | 134 | 13 02 4  | 134 | 12 20 4  | 134 | 313  |
| 48   | 14 35 4  | 133 | 13 55 4  | 133 | 13 14 4  | 133 | 12 33 4  | 133 | 11 52 4  | 133 | 312  |
| 49   | 14 04 4  | 132 | 13 24 4  | 132 | 12 44 4  | 132 | 12 04 4  | 132 | 11 24 4  | 132 | 311  |
| 50   | 13 32 -4 | 131 | 12 53 -4 | 131 | 12 14 -4 | 131 | 11 34 -4 | 131 | 10 54 -4 | 132 | 310  |
| 51   | 13 00 4  | 130 | 12 21 4  | 130 | 11 43 4  | 131 | 11 04 4  | 131 | 10 25 -4 | 131 | 309  |
| 52   | 12 28 4  | 129 | 11 50 4  | 130 | 11 12 4  | 130 | 10 34 4  | 130 | ...      | ... | 308  |
| 53   | 11 55 4  | 129 | 11 18 4  | 129 | 10 40 4  | 129 | 10 03 -4 | 129 | ...      | ... | 307  |
| 54   | 11 22 4  | 128 | 10 45 4  | 128 | 10 08 -4 | 128 | ...      | ... | ...      | ... | 306  |
| 55   | 10 48 -4 | 127 | 10 12 -4 | 127 | ...      | ... | ...      | ... | ...      | ... | 305  |
| 56   | 10 14 -4 | 126 | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 304  |
| 57   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 303  |
| 58   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 302  |
| 59   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 301  |
| 60   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 300  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ - \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 85   | 15 12 +3 | 81  | 15 21 +3 | 82  | 15 30 +4 | 82  | 15 38 +4 | 82  | 15 46 +4 | 83  | 275  |
| 86   | 14 31 3  | 81  | 14 40 4  | 81  | 14 49 4  | 81  | 14 58 4  | 82  | 15 07 4  | 82  | 274  |
| 87   | 13 49 3  | 80  | 13 59 4  | 80  | 14 09 4  | 81  | 14 19 4  | 81  | 14 28 4  | 81  | 273  |
| 88   | 13 07 3  | 79  | 13 18 4  | 80  | 13 29 4  | 80  | 13 39 4  | 80  | 13 49 4  | 80  | 272  |
| 89   | 12 26 3  | 79  | 12 37 4  | 79  | 12 49 4  | 79  | 13 00 4  | 79  | 13 11 4  | 80  | 271  |
| 90   | 11 45 +3 | 78  | 11 57 +4 | 78  | 12 09 +4 | 78  | 12 21 +4 | 79  | 12 32 +4 | 79  | 270  |
| 91   | 11 03 3  | 77  | 11 16 4  | 78  | 11 29 4  | 78  | 11 42 4  | 78  | 11 54 4  | 78  | 269  |
| 92   | 10 22 +3 | 77  | 10 36 +4 | 77  | 10 49 4  | 77  | 11 03 4  | 77  | 11 16 4  | 77  | 268  |
| 93   | ...      | ... | ...      | ... | 10 10 +4 | 76  | 10 24 +4 | 77  | 10 37 +4 | 77  | 267  |
| 94   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 266  |
| 95   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 265  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1952.

| LAT. | 45°      |       | 46°      |       | 47°      |       | 48°      |       | 49°      |       | LAT. |
|------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|------|
| H.A. | Alt.     | Az.   | Alt.     | Az.   | Alt.     | Az.   | Alt.     | Az.   | Alt.     | Az.   | H.A. |
| 0    | 61 38 +5 | 180   | 60 38 +5 | 180   | 59 38 +5 | 180   | 58 38 +5 | 180   | 57 39 +5 | 180   | 360  |
| 1    | 61 38    | 5 178 | 60 38    | 5 178 | 59 38    | 5 178 | 58 38    | 5 178 | 57 38    | 5 178 | 359  |
| 2    | 61 35    | 5 176 | 60 36    | 5 176 | 59 36    | 5 176 | 58 36    | 5 176 | 57 36    | 5 176 | 358  |
| 3    | 61 32    | 5 174 | 60 32    | 5 174 | 59 32    | 5 174 | 58 33    | 5 174 | 57 33    | 5 175 | 357  |
| 4    | 61 27    | 5 172 | 60 27    | 5 172 | 59 28    | 5 172 | 58 28    | 5 173 | 57 29    | 5 173 | 356  |
| 5    | 61 20 +5 | 170   | 60 21 +5 | 170   | 59 22 +5 | 171   | 58 22 +5 | 171   | 57 23 +5 | 171   | 355  |
| 6    | 61 12    | 5 168 | 60 13    | 5 168 | 59 14    | 5 169 | 58 15    | 5 169 | 57 17    | 5 169 | 354  |
| 7    | 61 02    | 5 166 | 60 04    | 5 166 | 59 06    | 5 167 | 58 07    | 5 167 | 57 09    | 5 168 | 353  |
| 8    | 60 51    | 5 164 | 59 54    | 5 165 | 58 56    | 5 165 | 57 58    | 5 165 | 57 00    | 5 166 | 352  |
| 9    | 60 39    | 5 162 | 59 42    | 5 163 | 58 44    | 5 163 | 57 47    | 5 164 | 56 49    | 5 164 | 351  |
| 10   | 60 25 +5 | 160   | 59 29 +5 | 161   | 58 32 +5 | 161   | 57 35 +5 | 162   | 56 38 +5 | 162   | 350  |
| 11   | 60 10    | 5 158 | 59 15    | 5 159 | 58 18    | 5 160 | 57 22    | 5 160 | 56 26    | 5 161 | 349  |
| 12   | 59 54    | 5 157 | 58 59    | 5 157 | 58 04    | 5 158 | 57 08    | 5 158 | 56 12    | 5 159 | 348  |
| 13   | 59 37    | 5 155 | 58 42    | 5 156 | 57 48    | 5 156 | 56 53    | 5 157 | 55 57    | 5 157 | 347  |
| 14   | 59 18    | 5 153 | 58 25    | 5 154 | 57 31    | 5 154 | 56 36    | 5 155 | 55 42    | 5 156 | 346  |
| 15   | 58 58 +5 | 151   | 58 06 +5 | 152   | 57 12 +5 | 153   | 56 19 +5 | 153   | 55 25 +5 | 154   | 345  |
| 16   | 58 37    | 5 150 | 57 45    | 5 150 | 56 53    | 5 151 | 56 00    | 5 152 | 55 07    | 5 153 | 344  |
| 17   | 58 15    | 5 148 | 57 24    | 5 149 | 56 33    | 5 149 | 55 41    | 5 150 | 54 49    | 5 151 | 343  |
| 18   | 57 52    | 5 146 | 57 02    | 5 147 | 56 12    | 5 148 | 55 21    | 5 149 | 54 29    | 5 149 | 342  |
| 19   | 57 28    | 5 145 | 56 39    | 5 145 | 55 49    | 5 146 | 54 59    | 5 147 | 54 09    | 5 148 | 341  |
| 20   | 57 03 +4 | 143   | 56 15 +5 | 144   | 55 26 +5 | 145   | 54 37 +5 | 146   | 53 47 +5 | 146   | 340  |
| 21   | 56 37    | 4 141 | 55 50    | 4 142 | 55 02    | 5 143 | 54 14    | 5 144 | 53 25    | 5 145 | 339  |
| 22   | 56 10    | 4 140 | 55 24    | 4 141 | 54 37    | 5 142 | 53 50    | 5 143 | 53 02    | 5 143 | 338  |
| 23   | 55 42    | 4 138 | 54 57    | 4 139 | 54 11    | 4 140 | 53 25    | 5 141 | 52 38    | 5 142 | 337  |
| 24   | 55 14    | 4 137 | 54 30    | 4 138 | 53 45    | 4 139 | 52 59    | 4 140 | 52 13    | 5 141 | 336  |
| 25   | 54 44 +4 | 135   | 54 01 +4 | 136   | 53 17 +4 | 137   | 52 33 +4 | 138   | 51 48 +4 | 139   | 335  |
| 26   | 54 14    | 4 134 | 53 32    | 4 135 | 52 49    | 4 136 | 52 06    | 4 137 | 51 22    | 4 138 | 334  |
| 27   | 53 43    | 4 133 | 53 02    | 4 134 | 52 21    | 4 135 | 51 38    | 4 136 | 50 55    | 4 136 | 333  |
| 28   | 53 12    | 4 131 | 52 32    | 4 132 | 51 51    | 4 133 | 51 10    | 4 134 | 50 28    | 4 135 | 332  |
| 29   | 52 40    | 4 130 | 52 01    | 4 131 | 51 21    | 4 132 | 50 41    | 4 133 | 49 59    | 4 134 | 331  |
| 30   | 52 07 +4 | 129   | 51 29 +4 | 130   | 50 50 +4 | 131   | 50 11 +4 | 132   | 49 31 +4 | 132   | 330  |
| 31   | 51 34    | 4 127 | 50 57    | 4 128 | 50 19    | 4 129 | 49 41    | 4 130 | 49 01    | 4 131 | 329  |
| 32   | 51 00    | 4 126 | 50 24    | 4 127 | 49 47    | 4 128 | 49 10    | 4 129 | 48 32    | 4 130 | 328  |
| 33   | 50 25    | 4 125 | 49 50    | 4 126 | 49 15    | 4 127 | 48 38    | 4 128 | 48 01    | 4 129 | 327  |
| 34   | 49 50    | 4 124 | 49 16    | 4 125 | 48 42    | 4 126 | 48 06    | 4 127 | 47 30    | 4 128 | 326  |
| 35   | 49 15 +4 | 123   | 48 42 +4 | 124   | 48 08 +4 | 125   | 47 34 +4 | 125   | 46 59 +4 | 126   | 325  |
| 36   | 48 39    | 4 122 | 48 07    | 4 122 | 47 34    | 4 123 | 47 01    | 4 124 | 46 27    | 4 125 | 324  |
| 37   | 48 03    | 4 120 | 47 32    | 4 121 | 47 00    | 4 122 | 46 28    | 4 123 | 45 54    | 4 124 | 323  |
| 38   | 47 26    | 4 119 | 46 56    | 4 120 | 46 25    | 4 121 | 45 54    | 4 122 | 45 22    | 4 123 | 322  |
| 39   | 46 49    | 4 118 | 46 20    | 4 119 | 45 50    | 4 120 | 45 20    | 4 121 | 44 48    | 4 122 | 321  |
| 40   | 46 11 +4 | 117   | 45 43 +4 | 118   | 45 15 +4 | 119   | 44 45 +4 | 120   | 44 15 +4 | 121   | 320  |
| 41   | 45 33    | 4 116 | 45 06    | 4 117 | 44 39    | 4 118 | 44 10    | 4 119 | 43 41    | 4 120 | 319  |
| 42   | 44 55    | 4 115 | 44 29    | 4 116 | 44 02    | 4 117 | 43 35    | 4 118 | 43 06    | 4 119 | 318  |
| 43   | 44 16    | 4 114 | 43 51    | 4 115 | 43 26    | 4 116 | 42 59    | 4 117 | 42 32    | 4 118 | 317  |
| 44   | 43 38    | 4 113 | 43 14    | 4 114 | 42 49    | 4 115 | 42 23    | 4 116 | 41 57    | 4 117 | 316  |
| 45   | 42 58 +4 | 112   | 42 35 +4 | 113   | 42 11 +4 | 114   | 41 47 +4 | 115   | 41 21 +4 | 116   | 315  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1952.

| LAT. | 45°   |        | 46°   |        | 47°   |        | 48°   |        | 49°   |        | LAT. |
|------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|------|
| H.A. | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | Alt.  | Az.    | H.A. |
| 45   | 42 58 | +4 112 | 42 35 | +4 113 | 42 11 | +4 114 | 41 47 | +4 115 | 41 21 | +4 116 | 315  |
| 46   | 42 19 | 4 111  | 41 57 | 4 112  | 41 34 | 4 113  | 41 10 | 4 114  | 40 46 | 4 115  | 314  |
| 47   | 41 39 | 4 110  | 41 18 | 4 111  | 40 56 | 4 112  | 40 33 | 4 113  | 40 10 | 4 114  | 313  |
| 48   | 41 00 | 4 109  | 40 39 | 4 110  | 40 18 | 4 111  | 39 56 | 4 112  | 39 34 | 4 113  | 312  |
| 49   | 40 19 | 4 109  | 40 00 | 4 109  | 39 40 | 4 110  | 39 19 | 4 111  | 38 57 | 4 112  | 311  |
| 50   | 39 39 | +4 108 | 39 21 | +4 108 | 39 01 | +4 109 | 38 41 | +4 110 | 38 20 | +4 111 | 310  |
| 51   | 38 59 | 4 107  | 38 41 | 4 108  | 38 23 | 4 108  | 38 03 | 4 109  | 37 43 | 4 110  | 309  |
| 52   | 38 18 | 4 106  | 38 01 | 4 107  | 37 44 | 4 107  | 37 25 | 4 108  | 37 06 | 4 109  | 308  |
| 53   | 37 37 | 4 105  | 37 21 | 4 106  | 37 04 | 4 106  | 36 47 | 4 107  | 36 29 | 4 108  | 307  |
| 54   | 36 56 | 4 104  | 36 41 | 4 105  | 36 25 | 4 106  | 36 09 | 4 106  | 35 51 | 4 107  | 306  |
| 55   | 36 15 | +3 103 | 36 01 | +4 104 | 35 46 | +4 105 | 35 30 | +4 105 | 35 14 | +4 106 | 305  |
| 56   | 35 34 | 3 103  | 35 20 | 4 103  | 35 06 | 4 104  | 34 51 | 4 105  | 34 36 | 4 105  | 304  |
| 57   | 34 52 | 3 102  | 34 40 | 4 102  | 34 26 | 4 103  | 34 12 | 4 104  | 33 58 | 4 104  | 303  |
| 58   | 34 11 | 3 101  | 33 59 | 4 102  | 33 46 | 4 102  | 33 33 | 4 103  | 33 20 | 4 104  | 302  |
| 59   | 33 29 | 3 100  | 33 18 | 4 101  | 33 06 | 4 101  | 32 54 | 4 102  | 32 41 | 4 103  | 301  |
| 60   | 32 47 | +3 99  | 32 37 | +4 100 | 32 26 | +4 101 | 32 15 | +4 101 | 32 03 | +4 102 | 300  |
| 61   | 32 05 | 3 99   | 31 56 | 4 99   | 31 46 | 4 100  | 31 36 | 4 100  | 31 24 | 4 101  | 299  |
| 62   | 31 23 | 3 98   | 31 15 | 3 98   | 31 06 | 4 99   | 30 56 | 4 100  | 30 46 | 4 100  | 298  |
| 63   | 30 41 | 3 97   | 30 34 | 3 98   | 30 25 | 4 98   | 30 16 | 4 99   | 30 07 | 4 99   | 297  |
| 64   | 29 59 | 3 96   | 29 52 | 3 97   | 29 45 | 4 97   | 29 37 | 4 98   | 29 28 | 4 99   | 296  |
| 65   | 29 17 | +3 96  | 29 11 | +3 96  | 29 04 | +4 97  | 28 57 | +4 97  | 28 49 | +4 98  | 295  |
| 66   | 28 35 | 3 95   | 28 29 | 3 95   | 28 24 | 4 96   | 28 17 | 4 96   | 28 10 | 4 97   | 294  |
| 67   | 27 52 | 3 94   | 27 48 | 3 95   | 27 43 | 4 95   | 27 37 | 4 96   | 27 31 | 4 96   | 293  |
| 68   | 27 10 | 3 93   | 27 06 | 3 94   | 27 02 | 4 94   | 26 57 | 4 95   | 26 52 | 4 95   | 292  |
| 69   | 26 28 | 3 93   | 26 25 | 3 93   | 26 21 | 4 94   | 26 17 | 4 94   | 26 13 | 4 95   | 291  |
| 70   | 25 45 | +3 92  | 25 43 | +3 92  | 25 41 | +4 93  | 25 37 | +4 93  | 25 34 | +4 94  | 290  |
| 71   | 25 03 | 3 91   | 25 02 | 3 92   | 25 00 | 4 92   | 24 57 | 4 93   | 24 54 | 4 93   | 289  |
| 72   | 24 21 | 3 90   | 24 20 | 3 91   | 24 19 | 4 91   | 24 17 | 4 92   | 24 15 | 4 92   | 288  |
| 73   | 23 38 | 3 90   | 23 38 | 3 90   | 23 38 | 4 91   | 23 37 | 4 91   | 23 36 | 4 91   | 287  |
| 74   | 22 56 | 3 89   | 22 57 | 3 89   | 22 57 | 4 90   | 22 57 | 4 90   | 22 57 | 4 91   | 286  |
| 75   | 22 14 | +3 88  | 22 15 | +3 89  | 22 16 | +4 89  | 22 17 | +4 90  | 22 17 | +4 90  | 285  |
| 76   | 21 31 | 3 88   | 21 34 | 3 88   | 21 35 | 4 88   | 21 37 | 4 89   | 21 38 | 4 89   | 284  |
| 77   | 20 49 | 3 87   | 20 52 | 3 87   | 20 55 | 4 88   | 20 57 | 4 88   | 20 59 | 4 88   | 283  |
| 78   | 20 07 | 3 86   | 20 11 | 3 87   | 20 14 | 4 87   | 20 17 | 4 87   | 20 19 | 4 88   | 282  |
| 79   | 19 25 | 3 86   | 19 29 | 3 86   | 19 33 | 4 86   | 19 37 | 4 87   | 19 40 | 4 87   | 281  |
| 80   | 18 42 | +3 85  | 18 48 | +3 85  | 18 52 | +4 86  | 18 57 | +4 86  | 19 01 | +4 86  | 280  |
| 81   | 18 00 | 3 84   | 18 06 | 3 85   | 18 12 | 4 85   | 18 17 | 4 85   | 18 22 | 4 85   | 279  |
| 82   | 17 18 | 3 84   | 17 25 | 3 84   | 17 31 | 4 84   | 17 37 | 4 84   | 17 43 | 4 85   | 278  |
| 83   | 16 36 | 3 83   | 16 43 | 3 83   | 16 51 | 4 83   | 16 57 | 4 84   | 17 04 | 4 84   | 277  |
| 84   | 15 54 | 3 82   | 16 02 | 3 82   | 16 10 | 4 83   | 16 17 | 4 83   | 16 25 | 4 83   | 276  |
| 85   | 15 12 | +3 81  | 15 21 | +3 82  | 15 30 | +4 82  | 15 38 | +4 82  | 15 46 | +4 83  | 275  |

For continuation, see page 79.

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1952.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 34 10-19 | 180 | 33 10-19 | 180 | 32 10-19 | 180 | 31 10-19 | 180 | 30 10-19 | 180 | 360  |
| 1    | 34 10 19 | 179 | 33 10 19 | 179 | 32 10 19 | 179 | 31 10 19 | 179 | 30 10 19 | 179 | 359  |
| 2    | 34 08 19 | 178 | 33 08 19 | 178 | 32 09 19 | 178 | 31 09 19 | 178 | 30 09 19 | 178 | 358  |
| 3    | 34 06 19 | 176 | 33 06 19 | 176 | 32 06 19 | 177 | 31 07 19 | 177 | 30 07 19 | 177 | 357  |
| 4    | 34 03 19 | 175 | 33 03 19 | 175 | 32 04 19 | 175 | 31 04 19 | 175 | 30 04 19 | 175 | 356  |
| 5    | 33 59-19 | 174 | 33 00-19 | 174 | 32 00-19 | 174 | 31 00-19 | 174 | 30 01-19 | 174 | 355  |
| 6    | 33 54 19 | 173 | 32 55 19 | 173 | 31 55 19 | 173 | 30 56 19 | 173 | 29 56 19 | 173 | 354  |
| 7    | 33 49 19 | 172 | 32 49 19 | 172 | 31 50 19 | 172 | 30 51 19 | 172 | 29 51 19 | 172 | 353  |
| 8    | 33 42 19 | 171 | 32 43 19 | 171 | 31 44 19 | 171 | 30 45 19 | 171 | 29 45 19 | 171 | 352  |
| 9    | 33 35 19 | 169 | 32 36 19 | 169 | 31 37 19 | 170 | 30 38 19 | 170 | 29 39 19 | 170 | 351  |
| 10   | 33 27-19 | 168 | 32 28-19 | 168 | 31 29-19 | 168 | 30 30-19 | 169 | 29 32-19 | 169 | 350  |
| 11   | 33 17 19 | 167 | 32 19 19 | 167 | 31 21 19 | 167 | 30 22 19 | 167 | 29 23 19 | 168 | 349  |
| 12   | 33 08 18 | 166 | 32 09 18 | 166 | 31 11 18 | 166 | 30 13 19 | 166 | 29 15 19 | 166 | 348  |
| 13   | 32 57 18 | 165 | 31 59 18 | 165 | 31 01 18 | 165 | 30 03 18 | 165 | 29 05 18 | 165 | 347  |
| 14   | 32 45 18 | 164 | 31 48 18 | 164 | 30 50 18 | 164 | 29 52 18 | 164 | 28 55 18 | 164 | 346  |
| 15   | 32 33-18 | 162 | 31 36-18 | 163 | 30 38-18 | 163 | 29 41-18 | 163 | 28 44-18 | 163 | 345  |
| 16   | 32 20 18 | 161 | 31 23 18 | 162 | 30 26 18 | 162 | 29 29 18 | 162 | 28 32 18 | 162 | 344  |
| 17   | 32 06 18 | 160 | 31 09 18 | 160 | 30 13 18 | 161 | 29 16 18 | 161 | 28 20 18 | 161 | 343  |
| 18   | 31 51 18 | 159 | 30 55 18 | 159 | 29 59 18 | 160 | 29 03 18 | 160 | 28 06 18 | 160 | 342  |
| 19   | 31 35 18 | 158 | 30 40 18 | 158 | 29 44 18 | 158 | 28 48 18 | 159 | 27 52 18 | 159 | 341  |
| 20   | 31 19-18 | 157 | 30 24-18 | 157 | 29 29-18 | 157 | 28 33-18 | 158 | 27 38-18 | 158 | 340  |
| 21   | 31 02 18 | 156 | 30 07 18 | 156 | 29 13 18 | 156 | 28 18 18 | 156 | 27 23 18 | 157 | 339  |
| 22   | 30 44 18 | 155 | 29 50 18 | 155 | 28 56 18 | 155 | 28 01 18 | 155 | 27 07 18 | 156 | 338  |
| 23   | 30 26 18 | 154 | 29 32 18 | 154 | 28 38 18 | 154 | 27 44 18 | 154 | 26 50 18 | 155 | 337  |
| 24   | 30 07 18 | 153 | 29 13 18 | 153 | 28 20 18 | 153 | 27 27 18 | 153 | 26 33 18 | 153 | 336  |
| 25   | 29 47-18 | 151 | 28 54-18 | 152 | 28 01-18 | 152 | 27 08-18 | 152 | 26 15-18 | 152 | 335  |
| 26   | 29 26 18 | 150 | 28 34 18 | 151 | 27 42 18 | 151 | 26 49 18 | 151 | 25 57 18 | 151 | 334  |
| 27   | 29 05 17 | 149 | 28 13 18 | 150 | 27 21 18 | 150 | 26 29 18 | 150 | 25 37 18 | 150 | 333  |
| 28   | 28 43 17 | 148 | 27 52 17 | 149 | 27 01 17 | 149 | 26 09 18 | 149 | 25 18 18 | 149 | 332  |
| 29   | 28 20 17 | 147 | 27 30 17 | 148 | 26 39 17 | 148 | 25 48 17 | 148 | 24 57 18 | 148 | 331  |
| 30   | 27 57-17 | 146 | 27 07-17 | 147 | 26 17-17 | 147 | 25 27-17 | 147 | 24 36-17 | 147 | 330  |
| 31   | 27 33 17 | 145 | 26 44 17 | 146 | 25 54 17 | 146 | 25 05 17 | 146 | 24 15 17 | 146 | 329  |
| 32   | 27 09 17 | 144 | 26 20 17 | 145 | 25 31 17 | 145 | 24 42 17 | 145 | 23 53 17 | 145 | 328  |
| 33   | 26 44 17 | 143 | 25 55 17 | 144 | 25 07 17 | 144 | 24 19 17 | 144 | 23 30 17 | 144 | 327  |
| 34   | 26 18 17 | 142 | 25 30 17 | 143 | 24 43 17 | 143 | 23 55 17 | 143 | 23 07 17 | 143 | 326  |
| 35   | 25 52-17 | 141 | 25 05-17 | 142 | 24 18-17 | 142 | 23 31-17 | 142 | 22 43-17 | 142 | 325  |
| 36   | 25 25 17 | 140 | 24 39 17 | 141 | 23 52 17 | 141 | 23 06 17 | 141 | 22 19 17 | 141 | 324  |
| 37   | 24 58 17 | 139 | 24 12 17 | 140 | 23 26 17 | 140 | 22 40 17 | 140 | 21 54 17 | 140 | 323  |
| 38   | 24 30 16 | 138 | 23 45 17 | 139 | 23 00 17 | 139 | 22 14 17 | 139 | 21 29 17 | 139 | 322  |
| 39   | 24 01 16 | 137 | 23 17 16 | 138 | 22 33 17 | 138 | 21 48 17 | 138 | 21 03 17 | 139 | 321  |
| 40   | 23 32-16 | 136 | 22 49-16 | 137 | 22 05-17 | 137 | 21 21-17 | 137 | 20 37-17 | 138 | 320  |
| 41   | 23 03 16 | 136 | 22 20 16 | 136 | 21 37 16 | 136 | 20 54 17 | 136 | 20 10 17 | 137 | 319  |
| 42   | 22 33 16 | 135 | 21 51 16 | 135 | 21 08 16 | 135 | 20 26 16 | 135 | 19 43 17 | 136 | 318  |
| 43   | 22 03 16 | 134 | 21 21 16 | 134 | 20 39 16 | 134 | 19 57 16 | 135 | 19 15 17 | 135 | 317  |
| 44   | 21 32 16 | 133 | 20 51 16 | 133 | 20 10 16 | 133 | 19 29 16 | 134 | 18 47 16 | 134 | 316  |
| 45   | 21 01-16 | 132 | 20 20-16 | 132 | 19 40-16 | 133 | 19 00-16 | 133 | 18 19-16 | 133 | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 21 01-16 | 132 | 20 20-16 | 132 | 19 40-16 | 133 | 19 00-16 | 133 | 18 19-16 | 133 | 315  |
| 46   | 20 29 16 | 131 | 19 49 16 | 131 | 19 10 16 | 132 | 18 30 16 | 132 | 17 50 16 | 132 | 314  |
| 47   | 19 57 16 | 130 | 19 18 16 | 130 | 18 39 16 | 131 | 18 00 16 | 131 | 17 21 16 | 131 | 313  |
| 48   | 19 24 16 | 129 | 18 46 16 | 130 | 18 08 16 | 130 | 17 29 16 | 130 | 16 51 16 | 130 | 312  |
| 49   | 18 51 15 | 128 | 18 14 16 | 129 | 17 36 16 | 129 | 16 59 16 | 129 | 16 21 16 | 129 | 311  |
| 50   | 18 18-15 | 128 | 17 41-16 | 128 | 17 04-16 | 128 | 16 27-16 | 128 | 15 50-16 | 129 | 310  |
| 51   | 17 44 15 | 127 | 17 08 15 | 127 | 16 32 16 | 127 | 15 56 16 | 127 | 15 19 16 | 128 | 309  |
| 52   | 17 10 15 | 126 | 16 35 15 | 126 | 15 59 16 | 126 | 15 24 16 | 127 | 14 48 16 | 127 | 308  |
| 53   | 16 36 15 | 125 | 16 01 15 | 125 | 15 26 15 | 126 | 14 52 16 | 126 | 14 17 16 | 126 | 307  |
| 54   | 16 01 15 | 124 | 15 27 15 | 124 | 14 53 15 | 125 | 14 19 16 | 125 | 13 45 16 | 125 | 306  |
| 55   | 15 26-15 | 123 | 14 53-15 | 124 | 14 19-15 | 124 | 13 46-15 | 124 | 13 12-16 | 124 | 305  |
| 56   | 14 50 15 | 123 | 14 18 15 | 123 | 13 45 15 | 123 | 13 13 15 | 123 | 12 40 16 | 123 | 304  |
| 57   | 14 15 15 | 122 | 13 43 15 | 122 | 13 11 15 | 122 | 12 39 15 | 122 | 12 07 16 | 123 | 303  |
| 58   | 13 38 15 | 121 | 13 08 15 | 121 | 12 37 15 | 121 | 12 05 15 | 122 | 11 34 15 | 122 | 302  |
| 59   | 13 02 15 | 120 | 12 32 15 | 120 | 12 02 15 | 121 | 11 31 15 | 121 | 11 01 15 | 121 | 301  |
| 60   | 12 25-15 | 119 | 11 56-15 | 120 | 11 26-15 | 120 | 10 57-15 | 120 | 10 27-15 | 120 | 300  |
| 61   | 11 49 15 | 119 | 11 20 15 | 119 | 10 51 15 | 119 | 10 22-15 | 119 | ...      | ... | 299  |
| 62   | 11 11 14 | 118 | 10 44 15 | 118 | 10 15-15 | 118 | ...      | ... | ...      | ... | 298  |
| 63   | 10 34-14 | 117 | 10 07-15 | 117 | ...      | ... | ...      | ... | ...      | ... | 297  |
| 64   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 296  |
| 65   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 295  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 55 52+19 | 180 | 54 52+19 | 180 | 53 52+19 | 180 | 52 52+19 | 180 | 51 52+19 | 180 | 360  |
| 1    | 55 51 19 | 178 | 54 51 19 | 178 | 53 51 19 | 178 | 52 51 19 | 178 | 51 51 19 | 178 | 359  |
| 2    | 55 49 19 | 177 | 54 49 19 | 177 | 53 49 19 | 177 | 52 49 19 | 177 | 51 50 19 | 177 | 358  |
| 3    | 55 46 19 | 175 | 54 46 19 | 175 | 53 46 19 | 175 | 52 47 19 | 175 | 51 47 19 | 175 | 357  |
| 4    | 55 41 19 | 173 | 54 42 19 | 173 | 53 42 19 | 173 | 52 43 19 | 174 | 51 43 19 | 174 | 356  |
| 5    | 55 36+19 | 171 | 54 36+19 | 172 | 53 37+19 | 172 | 52 38+19 | 172 | 51 38+19 | 172 | 355  |
| 6    | 55 28 19 | 170 | 54 29 19 | 170 | 53 30 19 | 170 | 52 31 19 | 170 | 51 32 19 | 171 | 354  |
| 7    | 55 20 19 | 168 | 54 21 19 | 168 | 53 23 19 | 168 | 52 24 19 | 169 | 51 25 19 | 169 | 353  |
| 8    | 55 11 18 | 166 | 54 12 18 | 166 | 53 14 19 | 167 | 52 16 19 | 167 | 51 17 19 | 167 | 352  |
| 9    | 55 00 18 | 164 | 54 02 18 | 165 | 53 04 18 | 165 | 52 06 18 | 166 | 51 08 18 | 166 | 351  |
| 10   | 54 48+18 | 163 | 53 51+18 | 163 | 52 53+18 | 164 | 51 55+18 | 164 | 50 58+18 | 164 | 350  |
| 11   | 54 35 18 | 161 | 53 38 18 | 162 | 52 41 18 | 162 | 51 44 18 | 162 | 50 47 18 | 163 | 349  |
| 12   | 54 20 18 | 160 | 53 24 18 | 160 | 52 28 18 | 160 | 51 31 18 | 161 | 50 34 18 | 161 | 348  |
| 13   | 54 05 18 | 158 | 53 09 18 | 158 | 52 14 18 | 159 | 51 18 18 | 159 | 50 21 18 | 160 | 347  |
| 14   | 53 49 18 | 156 | 52 54 18 | 157 | 51 58 18 | 157 | 51 03 18 | 158 | 50 07 18 | 158 | 346  |
| 15   | 53 31+18 | 155 | 52 37+18 | 155 | 51 42+18 | 156 | 50 47+18 | 156 | 49 52+18 | 157 | 345  |
| 16   | 53 12 18 | 153 | 52 19 18 | 154 | 51 25 18 | 154 | 50 31 18 | 155 | 49 36 18 | 155 | 344  |
| 17   | 52 53 18 | 152 | 52 00 18 | 152 | 51 07 18 | 153 | 50 13 18 | 153 | 49 19 18 | 154 | 343  |
| 18   | 52 32 18 | 150 | 51 40 18 | 151 | 50 47 18 | 151 | 49 55 18 | 152 | 49 02 18 | 152 | 342  |
| 19   | 52 10 17 | 149 | 51 19 17 | 149 | 50 27 18 | 150 | 49 35 18 | 150 | 48 43 18 | 151 | 341  |
| 20   | 51 48+17 | 147 | 50 57+17 | 148 | 50 06+17 | 148 | 49 15+18 | 149 | 48 23+18 | 150 | 340  |
| 21   | 51 24 17 | 146 | 50 35 17 | 146 | 49 44 17 | 147 | 48 54 17 | 148 | 48 03 18 | 148 | 339  |
| 22   | 51 00 17 | 144 | 50 11 17 | 145 | 49 22 17 | 146 | 48 32 17 | 146 | 47 42 17 | 147 | 338  |
| 23   | 50 35 17 | 143 | 49 47 17 | 144 | 48 58 17 | 144 | 48 09 17 | 145 | 47 20 17 | 146 | 337  |
| 24   | 50 09 17 | 141 | 49 22 17 | 142 | 48 34 17 | 143 | 47 46 17 | 144 | 46 57 17 | 144 | 336  |
| 25   | 49 42+17 | 140 | 48 56+17 | 141 | 48 09+17 | 142 | 47 22+17 | 142 | 46 34+17 | 143 | 335  |
| 26   | 49 14 17 | 139 | 48 29 17 | 140 | 47 43 17 | 140 | 46 57 17 | 141 | 46 10 17 | 142 | 334  |
| 27   | 48 46 16 | 137 | 48 02 17 | 138 | 47 17 17 | 139 | 46 31 17 | 140 | 45 45 17 | 140 | 333  |
| 28   | 48 17 16 | 136 | 47 33 16 | 137 | 46 49 17 | 138 | 46 05 17 | 138 | 45 20 17 | 139 | 332  |
| 29   | 47 47 16 | 135 | 47 05 16 | 136 | 46 21 16 | 136 | 45 38 17 | 137 | 44 54 17 | 138 | 331  |
| 30   | 47 17+16 | 134 | 46 35+16 | 134 | 45 53+16 | 135 | 45 10+17 | 136 | 44 27+17 | 137 | 330  |
| 31   | 46 46 16 | 132 | 46 05 16 | 133 | 45 24 16 | 134 | 44 42 16 | 135 | 44 00 17 | 135 | 329  |
| 32   | 46 14 16 | 131 | 45 34 16 | 132 | 44 54 16 | 133 | 44 13 16 | 133 | 43 32 16 | 134 | 328  |
| 33   | 45 42 16 | 130 | 45 03 16 | 131 | 44 24 16 | 132 | 43 44 16 | 132 | 43 03 16 | 133 | 327  |
| 34   | 45 09 16 | 129 | 44 31 16 | 130 | 43 53 16 | 130 | 43 14 16 | 131 | 42 34 16 | 132 | 326  |
| 35   | 44 36+15 | 128 | 43 59+16 | 128 | 43 21+16 | 129 | 42 43+16 | 130 | 42 04+16 | 131 | 325  |
| 36   | 44 02 15 | 127 | 43 26 16 | 127 | 42 49 16 | 128 | 42 12 16 | 129 | 41 34 16 | 130 | 324  |
| 37   | 43 28 15 | 126 | 42 53 15 | 126 | 42 17 16 | 127 | 41 41 16 | 128 | 41 04 16 | 128 | 323  |
| 38   | 42 53 15 | 124 | 42 19 15 | 125 | 41 44 16 | 126 | 41 09 16 | 127 | 40 33 16 | 127 | 322  |
| 39   | 42 18 15 | 123 | 41 45 15 | 124 | 41 11 15 | 125 | 40 36 16 | 126 | 40 01 16 | 126 | 321  |
| 40   | 41 42+15 | 122 | 41 10+15 | 123 | 40 37+15 | 124 | 40 03+16 | 124 | 39 29+16 | 125 | 320  |
| 41   | 41 06 15 | 121 | 40 35 15 | 122 | 40 03 15 | 123 | 39 30 15 | 123 | 38 57 16 | 124 | 319  |
| 42   | 40 30 15 | 120 | 39 59 15 | 121 | 39 28 15 | 122 | 38 56 15 | 122 | 38 24 16 | 123 | 318  |
| 43   | 39 53 15 | 119 | 39 23 15 | 120 | 38 53 15 | 121 | 38 22 15 | 121 | 37 51 15 | 122 | 317  |
| 44   | 39 16 14 | 118 | 38 47 15 | 119 | 38 18 15 | 120 | 37 48 15 | 120 | 37 17 15 | 121 | 316  |
| 45   | 38 38+14 | 117 | 38 11+15 | 118 | 37 42+15 | 119 | 37 13+15 | 119 | 36 43+15 | 120 | 315  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 38 38+14 | 117 | 38 11+15 | 118 | 37 42+15 | 119 | 37 13+15 | 119 | 36 43+15 | 120 | 315  |
| 46   | 38 00 14 | 116 | 37 34 15 | 117 | 37 06 15 | 118 | 36 38 15 | 118 | 36 09 15 | 119 | 314  |
| 47   | 37 22 14 | 115 | 36 56 14 | 116 | 36 30 15 | 117 | 36 02 15 | 117 | 35 35 15 | 118 | 313  |
| 48   | 36 44 14 | 114 | 36 19 14 | 115 | 35 53 15 | 116 | 35 27 15 | 116 | 35 00 15 | 117 | 312  |
| 49   | 36 05 14 | 114 | 35 41 14 | 114 | 35 16 15 | 115 | 34 51 15 | 115 | 34 24 15 | 116 | 311  |
| 50   | 35 26+14 | 113 | 35 03+14 | 113 | 34 39+14 | 114 | 34 14+15 | 115 | 33 49+15 | 115 | 310  |
| 51   | 34 47 14 | 112 | 34 24 14 | 112 | 34 01 14 | 113 | 33 38 15 | 114 | 33 13 15 | 114 | 309  |
| 52   | 34 07 14 | 111 | 33 46 14 | 111 | 33 23 14 | 112 | 33 01 15 | 113 | 32 37 15 | 113 | 308  |
| 53   | 33 28 14 | 110 | 33 07 14 | 111 | 32 45 14 | 111 | 32 24 15 | 112 | 32 01 15 | 112 | 307  |
| 54   | 32 48 14 | 109 | 32 28 14 | 110 | 32 07 14 | 110 | 31 46 14 | 111 | 31 25 15 | 111 | 306  |
| 55   | 32 07+14 | 108 | 31 48+14 | 109 | 31 29+14 | 109 | 31 09+14 | 110 | 30 48+15 | 111 | 305  |
| 56   | 31 27 14 | 107 | 31 09 14 | 108 | 30 50 14 | 109 | 30 31 14 | 109 | 30 11 15 | 110 | 304  |
| 57   | 30 47 14 | 107 | 30 29 14 | 107 | 30 11 14 | 108 | 29 53 14 | 108 | 29 34 15 | 109 | 303  |
| 58   | 30 06 14 | 106 | 29 49 14 | 106 | 29 32 14 | 107 | 29 15 14 | 107 | 28 56 14 | 108 | 302  |
| 59   | 29 25 13 | 105 | 29 09 14 | 105 | 28 53 14 | 106 | 28 36 14 | 107 | 28 19 14 | 107 | 301  |
| 60   | 28 44+13 | 104 | 28 29+14 | 105 | 28 14+14 | 105 | 27 58+14 | 106 | 27 41+14 | 106 | 300  |
| 61   | 28 03 13 | 103 | 27 49 14 | 104 | 27 34 14 | 104 | 27 19 14 | 105 | 27 03 14 | 105 | 299  |
| 62   | 27 22 13 | 103 | 27 08 14 | 103 | 26 54 14 | 104 | 26 40 14 | 104 | 26 25 14 | 105 | 298  |
| 63   | 26 40 13 | 102 | 26 28 14 | 102 | 26 15 14 | 103 | 26 01 14 | 103 | 25 47 14 | 104 | 297  |
| 64   | 25 59 13 | 101 | 25 47 14 | 101 | 25 35 14 | 102 | 25 22 14 | 102 | 25 09 14 | 103 | 296  |
| 65   | 25 17+13 | 100 | 25 06+13 | 101 | 24 55+14 | 101 | 24 43+14 | 102 | 24 31+14 | 102 | 295  |
| 66   | 24 35 13 | 99  | 24 25 13 | 100 | 24 15 14 | 100 | 24 04 14 | 101 | 23 52 14 | 101 | 294  |
| 67   | 23 53 13 | 99  | 23 44 13 | 99  | 23 34 14 | 100 | 23 24 14 | 100 | 23 14 14 | 100 | 293  |
| 68   | 23 11 13 | 98  | 23 03 13 | 98  | 22 54 14 | 99  | 22 45 14 | 99  | 22 35 14 | 100 | 292  |
| 69   | 22 29 13 | 97  | 22 22 13 | 98  | 22 14 14 | 98  | 22 05 14 | 98  | 21 56 14 | 99  | 291  |
| 70   | 21 47+13 | 96  | 21 40+13 | 97  | 21 33+14 | 97  | 21 25+14 | 98  | 21 17+14 | 98  | 290  |
| 71   | 21 05 13 | 96  | 20 59 13 | 96  | 20 53 14 | 96  | 20 46 14 | 97  | 20 38 14 | 97  | 289  |
| 72   | 20 23 13 | 95  | 20 18 13 | 95  | 20 12 14 | 96  | 20 06 14 | 96  | 19 59 14 | 96  | 288  |
| 73   | 19 41 13 | 94  | 19 36 13 | 95  | 19 31 14 | 95  | 19 26 14 | 95  | 19 20 14 | 96  | 287  |
| 74   | 18 59 13 | 94  | 18 55 13 | 94  | 18 51 14 | 94  | 18 46 14 | 95  | 18 41 14 | 95  | 286  |
| 75   | 18 16+13 | 93  | 18 13+13 | 93  | 18 10+14 | 93  | 18 06+14 | 94  | 18 02+14 | 94  | 285  |
| 76   | 17 34 13 | 92  | 17 32 13 | 92  | 17 29 14 | 93  | 17 26 14 | 93  | 17 23 14 | 93  | 284  |
| 77   | 16 52 13 | 91  | 16 50 13 | 92  | 16 48 14 | 92  | 16 46 14 | 92  | 16 44 14 | 92  | 283  |
| 78   | 16 09 13 | 91  | 16 09 13 | 91  | 16 07 13 | 91  | 16 06 14 | 92  | 16 04 14 | 92  | 282  |
| 79   | 15 27 13 | 90  | 15 27 13 | 90  | 15 27 13 | 91  | 15 26 14 | 91  | 15 25 14 | 91  | 281  |
| 80   | 14 45+13 | 89  | 14 46+13 | 90  | 14 46+13 | 90  | 14 46+14 | 90  | 14 46+14 | 90  | 280  |
| 81   | 14 03 13 | 89  | 14 04 13 | 89  | 14 05 13 | 89  | 14 06 14 | 89  | 14 07 14 | 90  | 279  |
| 82   | 13 20 13 | 88  | 13 23 13 | 88  | 13 24 13 | 88  | 13 26 14 | 89  | 13 27 14 | 89  | 278  |
| 83   | 12 38 13 | 87  | 12 41 13 | 87  | 12 44 14 | 88  | 12 46 14 | 88  | 12 48 14 | 88  | 277  |
| 84   | 11 56 13 | 86  | 12 00 13 | 87  | 12 03 14 | 87  | 12 06 14 | 87  | 12 09 14 | 87  | 276  |
| 85   | 11 14+13 | 86  | 11 18+13 | 86  | 11 22+14 | 86  | 11 26+14 | 86  | 11 30+14 | 87  | 275  |
| 86   | 10 32+13 | 85  | 10 37+13 | 85  | 10 42 14 | 85  | 10 47 14 | 86  | 10 51 14 | 86  | 274  |
| 87   | ...      | ... | ...      | ... | 10 01+14 | 85  | 10 07+14 | 85  | 10 12+14 | 85  | 273  |
| 88   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 272  |
| 89   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 271  |
| 90   | ...      | ... | ...      | ... | ...      | ... | ...      | ... | ...      | ... | 270  |

{ For argument H.A. on the left, True Azimuth =  $180^\circ + \text{Tabulated Azimuth}$ . } See  
 { For argument H.A. on the right, True Azimuth =  $180^\circ - \text{Tabulated Azimuth}$ . } p. 91.  
 No correction for date is necessary until 1944.

| LAT. | 45°      |       | 46°      |       | 47°      |       | 48°      |       | 49°      |       | LAT. |
|------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|------|
| H.A. | Alt.     | Az.   | Alt.     | Az.   | Alt.     | Az.   | Alt.     | Az.   | Alt.     | Az.   | H.A. |
| 0    | ...      | ...   | ...      | ...   | ...      | ...   | ...      | ...   | 79 44 +3 | 180   | 360  |
| 1    | ...      | ...   | ...      | ...   | ...      | ...   | ...      | ...   | 79 42    | 3 176 | 359  |
| 2    | ...      | ...   | ...      | ...   | ...      | ...   | ...      | ...   | 79 38    | 3 171 | 358  |
| 3    | ...      | ...   | ...      | ...   | ...      | ...   | ...      | ...   | 79 30    | 3 167 | 357  |
| 4    | ...      | ...   | ...      | ...   | ...      | ...   | ...      | ...   | 79 20    | 3 163 | 356  |
| 5    | ...      | ...   | ...      | ...   | ...      | ...   | ...      | ...   | 79 07 +3 | 159   | 355  |
| 6    | ...      | ...   | ...      | ...   | ...      | ...   | 79 46 +3 | 153   | 78 52    | 3 155 | 354  |
| 7    | ...      | ...   | ...      | ...   | ...      | ...   | 79 26    | 3 149 | 78 34    | 3 151 | 353  |
| 8    | ...      | ...   | ...      | ...   | 79 52 +3 | 142   | 79 04    | 3 145 | 78 14    | 3 148 | 352  |
| 9    | ...      | ...   | ...      | ...   | 79 26    | 3 138 | 78 40    | 3 142 | 77 52    | 3 145 | 351  |
| 10   | ...      | ...   | 79 39 +3 | 131   | 78 58 +3 | 135   | 78 14 +3 | 138   | 77 29 +3 | 141   | 350  |
| 11   | 79 42 +2 | 124   | 79 07    | 2 128 | 78 28    | 3 132 | 77 47    | 3 135 | 77 03    | 3 138 | 349  |
| 12   | 79 06    | 2 121 | 78 33    | 2 125 | 77 57    | 3 129 | 77 18    | 3 132 | 76 36    | 3 136 | 348  |
| 13   | 78 29    | 2 118 | 77 59    | 2 123 | 77 25    | 2 126 | 76 48    | 3 130 | 76 08    | 3 133 | 347  |
| 14   | 77 52    | 2 116 | 77 23    | 2 120 | 76 51    | 2 124 | 76 16    | 2 127 | 75 39    | 3 130 | 346  |
| 15   | 77 13 +2 | 114   | 76 47 +2 | 118   | 76 17 +2 | 122   | 75 44 +2 | 125   | 75 08 +3 | 128   | 345  |
| 16   | 76 34    | 2 112 | 76 10    | 2 116 | 75 42    | 2 120 | 75 11    | 2 123 | 74 37    | 2 126 | 344  |
| 17   | 75 55    | 2 110 | 75 32    | 2 114 | 75 06    | 2 118 | 74 37    | 2 121 | 74 05    | 2 124 | 343  |
| 18   | 75 15    | 2 109 | 74 54    | 2 112 | 74 29    | 2 116 | 74 02    | 2 119 | 73 31    | 2 122 | 342  |
| 19   | 74 34    | 2 107 | 74 15    | 2 111 | 73 52    | 2 114 | 73 26    | 2 117 | 72 58    | 2 120 | 341  |
| 20   | 73 54 +2 | 106   | 73 36 +2 | 109   | 73 14 +2 | 112   | 72 50 +2 | 115   | 72 23 +2 | 118   | 340  |
| 21   | 73 13    | 2 105 | 72 56    | 2 108 | 72 36    | 2 111 | 72 14    | 2 114 | 71 48    | 2 116 | 339  |
| 22   | 72 32    | 2 103 | 72 16    | 2 106 | 71 58    | 2 109 | 71 37    | 2 112 | 71 13    | 2 115 | 338  |
| 23   | 71 50    | 2 102 | 71 36    | 2 105 | 71 19    | 2 108 | 70 59    | 2 111 | 70 37    | 2 113 | 337  |
| 24   | 71 09    | 2 101 | 70 56    | 2 104 | 70 40    | 2 107 | 70 22    | 2 109 | 70 01    | 2 112 | 336  |
| 25   | 70 27 +2 | 100   | 70 15 +2 | 103   | 70 01 +2 | 105   | 69 44 +2 | 108   | 69 24 +2 | 110   | 335  |
| 26   | 69 45    | 2 99  | 69 35    | 2 102 | 69 21    | 2 104 | 69 05    | 2 107 | 68 47    | 2 109 | 334  |
| 27   | 69 03    | 2 98  | 68 54    | 2 100 | 68 41    | 2 103 | 68 27    | 2 105 | 68 10    | 2 108 | 333  |
| 28   | 68 21    | 1 97  | 68 13    | 2 99  | 68 02    | 2 102 | 67 48    | 2 104 | 67 32    | 2 107 | 332  |
| 29   | 67 39    | 1 96  | 67 31    | 2 98  | 67 21    | 2 101 | 67 09    | 2 103 | 66 54    | 2 105 | 331  |
| 30   | 66 57 +1 | 95    | 66 50 +2 | 98    | 66 41 +2 | 100   | 66 30 +2 | 102   | 66 16 +2 | 104   | 330  |
| 31   | 66 15    | 1 94  | 66 09    | 2 97  | 66 01    | 2 99  | 65 50    | 2 101 | 65 38    | 2 103 | 329  |
| 32   | 65 32    | 1 94  | 65 27    | 2 96  | 65 20    | 2 98  | 65 11    | 2 100 | 64 59    | 2 102 | 328  |
| 33   | 64 50    | 1 93  | 64 46    | 2 95  | 64 40    | 2 97  | 64 31    | 2 99  | 64 21    | 2 101 | 327  |
| 34   | 64 08    | 1 92  | 64 04    | 2 94  | 63 59    | 2 96  | 63 52    | 2 98  | 63 42    | 2 100 | 326  |
| 35   | 63 25 +1 | 91    | 63 23 +2 | 93    | 63 18 +2 | 95    | 63 12 +2 | 97    | 63 03 +2 | 99    | 325  |
| 36   | 62 43    | 1 90  | 62 41    | 2 92  | 62 38    | 2 94  | 62 32    | 2 96  | 62 25    | 2 98  | 324  |
| 37   | 62 00    | 1 90  | 62 00    | 2 92  | 61 57    | 2 94  | 61 52    | 2 95  | 61 46    | 2 97  | 323  |
| 38   | 61 18    | 1 89  | 61 18    | 2 91  | 61 16    | 2 93  | 61 12    | 2 95  | 61 06    | 2 96  | 322  |
| 39   | 60 36    | 1 88  | 60 36    | 2 90  | 60 35    | 2 92  | 60 32    | 2 94  | 60 27    | 2 95  | 321  |
| 40   | 59 53 +1 | 88    | 59 55 +2 | 89    | 59 54 +2 | 91    | 59 52 +2 | 93    | 59 48 +2 | 95    | 320  |
| 41   | 59 11    | 1 87  | 59 13    | 2 89  | 59 13    | 2 90  | 59 12    | 2 92  | 59 09    | 2 94  | 319  |
| 42   | 58 28    | 1 86  | 58 31    | 2 88  | 58 32    | 2 90  | 58 32    | 2 91  | 58 30    | 2 93  | 318  |
| 43   | 57 46    | 1 86  | 57 50    | 2 87  | 57 52    | 2 89  | 57 52    | 2 91  | 57 50    | 2 92  | 317  |
| 44   | 57 04    | 1 85  | 57 08    | 2 87  | 57 11    | 2 88  | 57 12    | 2 90  | 57 11    | 2 91  | 316  |
| 45   | 56 22 +1 | 85    | 56 26 +2 | 86    | 56 30 +2 | 88    | 56 31 +2 | 89    | 56 32 +2 | 91    | 315  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1958.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 45   | 56 22 +1 | 85  | 56 26 +2 | 86  | 56 30 +2 | 88  | 56 31 +2 | 89  | 56 32 +2 | 91  | 315  |
| 46   | 55 39 1  | 84  | 55 45 2  | 85  | 55 49 2  | 87  | 55 51 2  | 88  | 55 52 2  | 90  | 314  |
| 47   | 54 57 1  | 83  | 55 03 2  | 85  | 55 08 2  | 86  | 55 11 2  | 88  | 55 13 2  | 89  | 313  |
| 48   | 54 15 1  | 83  | 54 22 2  | 84  | 54 27 2  | 86  | 54 31 2  | 87  | 54 34 2  | 88  | 312  |
| 49   | 53 33 2  | 82  | 53 40 2  | 84  | 53 47 2  | 85  | 53 51 2  | 86  | 53 54 2  | 88  | 311  |
| 50   | 52 51 +2 | 82  | 52 59 +2 | 83  | 53 06 +2 | 84  | 53 11 +2 | 86  | 53 15 +2 | 87  | 310  |
| 51   | 52 09 2  | 81  | 52 18 2  | 82  | 52 25 2  | 84  | 52 31 2  | 85  | 52 36 2  | 86  | 309  |
| 52   | 51 27 2  | 81  | 51 37 2  | 82  | 51 44 2  | 83  | 51 51 2  | 84  | 51 56 2  | 86  | 308  |
| 53   | 50 45 2  | 80  | 50 55 2  | 81  | 51 04 2  | 82  | 51 11 2  | 84  | 51 17 2  | 85  | 307  |
| 54   | 50 04 2  | 79  | 50 14 2  | 81  | 50 23 2  | 82  | 50 31 2  | 83  | 50 38 2  | 84  | 306  |
| 55   | 49 22 +2 | 79  | 49 33 +2 | 80  | 49 43 +2 | 81  | 49 52 +2 | 82  | 49 59 +2 | 84  | 305  |
| 56   | 48 41 2  | 78  | 48 52 2  | 79  | 49 03 2  | 81  | 49 12 2  | 82  | 49 20 2  | 83  | 304  |
| 57   | 47 59 2  | 78  | 48 11 2  | 79  | 48 22 2  | 80  | 48 32 2  | 81  | 48 41 2  | 82  | 303  |
| 58   | 47 18 2  | 77  | 47 30 2  | 78  | 47 42 2  | 79  | 47 53 2  | 80  | 48 02 2  | 82  | 302  |
| 59   | 46 36 2  | 77  | 46 50 2  | 78  | 47 02 2  | 79  | 47 13 2  | 80  | 47 23 2  | 81  | 301  |
| 60   | 45 55 +2 | 76  | 46 09 +2 | 77  | 46 22 +2 | 78  | 46 34 +2 | 79  | 46 44 +2 | 80  | 300  |
| 61   | 45 14 2  | 76  | 45 28 2  | 77  | 45 42 2  | 78  | 45 54 2  | 79  | 46 05 2  | 80  | 299  |
| 62   | 44 33 2  | 75  | 44 48 2  | 76  | 45 02 2  | 77  | 45 15 2  | 78  | 45 27 2  | 79  | 298  |
| 63   | 43 52 2  | 75  | 44 08 2  | 76  | 44 22 2  | 76  | 44 36 2  | 77  | 44 48 2  | 78  | 297  |
| 64   | 43 11 2  | 74  | 43 27 2  | 75  | 43 42 2  | 76  | 43 57 2  | 77  | 44 10 2  | 78  | 296  |
| 65   | 42 31 +2 | 74  | 42 47 +2 | 74  | 43 03 +2 | 75  | 43 18 +2 | 76  | 43 31 +2 | 77  | 295  |
| 66   | 41 50 2  | 73  | 42 07 2  | 74  | 42 23 2  | 75  | 42 39 2  | 76  | 42 53 2  | 77  | 294  |
| 67   | 41 09 2  | 72  | 41 27 2  | 73  | 41 44 2  | 74  | 42 00 2  | 75  | 42 15 2  | 76  | 293  |
| 68   | 40 29 2  | 72  | 40 47 2  | 73  | 41 05 2  | 74  | 41 21 2  | 74  | 41 37 2  | 75  | 292  |
| 69   | 39 49 2  | 71  | 40 07 2  | 72  | 40 25 2  | 73  | 40 42 2  | 74  | 40 59 2  | 75  | 291  |
| 70   | 39 09 +2 | 71  | 39 28 +2 | 72  | 39 46 +2 | 72  | 40 04 +2 | 73  | 40 21 +2 | 74  | 290  |
| 71   | 38 29 2  | 70  | 38 48 2  | 71  | 39 07 2  | 72  | 39 26 2  | 73  | 39 43 2  | 73  | 289  |
| 72   | 37 49 2  | 70  | 38 09 2  | 71  | 38 29 2  | 71  | 38 47 2  | 72  | 39 05 2  | 73  | 288  |
| 73   | 37 09 2  | 69  | 37 30 2  | 70  | 37 50 2  | 71  | 38 09 2  | 72  | 38 28 2  | 72  | 287  |
| 74   | 36 29 2  | 69  | 36 51 2  | 70  | 37 11 2  | 70  | 37 31 2  | 71  | 37 50 2  | 72  | 286  |
| 75   | 35 50 +2 | 68  | 36 12 +2 | 69  | 36 33 +2 | 70  | 36 53 +2 | 70  | 37 13 +2 | 71  | 285  |
| 76   | 35 11 2  | 68  | 35 33 2  | 68  | 35 55 2  | 69  | 36 16 2  | 70  | 36 36 2  | 71  | 284  |
| 77   | 34 31 2  | 67  | 34 54 2  | 68  | 35 17 2  | 69  | 35 38 2  | 69  | 35 59 2  | 70  | 283  |
| 78   | 33 52 2  | 67  | 34 16 2  | 67  | 34 39 2  | 68  | 35 01 2  | 69  | 35 22 2  | 69  | 282  |
| 79   | 33 14 2  | 66  | 33 37 2  | 67  | 34 01 2  | 67  | 34 23 2  | 68  | 34 45 2  | 69  | 281  |
| 80   | 32 35 +2 | 66  | 32 59 +2 | 66  | 33 23 +2 | 67  | 33 46 +2 | 68  | 34 09 +2 | 68  | 280  |
| 81   | 31 56 2  | 65  | 32 21 2  | 66  | 32 45 2  | 66  | 33 09 2  | 67  | 33 32 2  | 68  | 279  |
| 82   | 31 18 2  | 65  | 31 43 2  | 65  | 32 08 2  | 66  | 32 32 2  | 66  | 32 56 2  | 67  | 278  |
| 83   | 30 40 2  | 64  | 31 06 2  | 65  | 31 31 2  | 65  | 31 56 2  | 66  | 32 20 2  | 66  | 277  |
| 84   | 30 02 2  | 64  | 30 28 2  | 64  | 30 54 2  | 65  | 31 19 2  | 65  | 31 44 2  | 66  | 276  |
| 85   | 29 24 +2 | 63  | 29 51 +2 | 64  | 30 17 +2 | 64  | 30 43 +2 | 65  | 31 08 +2 | 65  | 275  |
| 86   | 28 46 2  | 63  | 29 13 2  | 63  | 29 40 2  | 64  | 30 07 2  | 64  | 30 33 2  | 65  | 274  |
| 87   | 28 08 2  | 62  | 28 36 2  | 63  | 29 04 2  | 63  | 29 31 2  | 64  | 29 57 2  | 64  | 273  |
| 88   | 27 31 2  | 62  | 27 59 2  | 62  | 28 27 2  | 62  | 28 55 2  | 63  | 29 22 2  | 63  | 272  |
| 89   | 26 54 2  | 61  | 27 23 2  | 61  | 27 51 2  | 62  | 28 19 2  | 62  | 28 47 2  | 63  | 271  |
| 90   | 26 17 +2 | 60  | 26 46 +2 | 61  | 27 15 +2 | 61  | 27 44 +2 | 62  | 28 12 +2 | 62  | 270  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth } p. 90.  
 No correction for date is necessary until 1958.

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 90   | 26 17 +2 | 60  | 26 46 +2 | 61  | 27 15 +2 | 61  | 27 44 +2 | 62  | 28 12 +2 | 62  | 270  |
| 91   | 25 40 2  | 60  | 26 10 2  | 60  | 26 40 2  | 61  | 27 09 2  | 61  | 27 37 2  | 62  | 269  |
| 92   | 25 04 2  | 59  | 25 34 2  | 60  | 26 04 2  | 60  | 26 34 2  | 61  | 27 03 2  | 61  | 268  |
| 93   | 24 27 2  | 59  | 24 58 2  | 59  | 25 29 2  | 60  | 25 59 2  | 60  | 26 28 2  | 60  | 267  |
| 94   | 23 51 2  | 58  | 24 22 2  | 59  | 24 53 2  | 59  | 25 24 2  | 59  | 25 54 2  | 60  | 266  |
| 95   | 23 15 +2 | 58  | 23 47 +2 | 58  | 24 19 +2 | 58  | 24 50 +2 | 59  | 25 20 +2 | 59  | 265  |
| 96   | 22 40 2  | 57  | 23 12 2  | 58  | 23 44 2  | 58  | 24 15 2  | 58  | 24 47 2  | 59  | 264  |
| 97   | 22 04 2  | 57  | 22 37 2  | 57  | 23 09 2  | 57  | 23 41 2  | 58  | 24 13 2  | 58  | 263  |
| 98   | 21 29 2  | 56  | 22 02 2  | 56  | 22 35 2  | 57  | 23 08 2  | 57  | 23 40 2  | 57  | 262  |
| 99   | 20 54 2  | 56  | 21 27 2  | 56  | 22 01 2  | 56  | 22 34 2  | 57  | 23 07 2  | 57  | 261  |
| 100  | 20 19 +2 | 55  | 20 53 +2 | 55  | 21 27 +2 | 56  | 22 01 +2 | 56  | 22 34 +2 | 56  | 260  |
| 101  | 19 44 2  | 54  | 20 19 2  | 55  | 20 54 2  | 55  | 21 28 2  | 55  | 22 02 2  | 56  | 259  |
| 102  | 19 10 2  | 54  | 19 45 2  | 54  | 20 20 2  | 54  | 20 55 2  | 55  | 21 29 2  | 55  | 258  |
| 103  | 18 36 2  | 53  | 19 12 2  | 54  | 19 47 2  | 54  | 20 22 2  | 54  | 20 57 2  | 54  | 257  |
| 104  | 18 02 2  | 53  | 18 38 2  | 53  | 19 14 2  | 53  | 19 50 2  | 54  | 20 25 3  | 54  | 256  |
| 105  | 17 29 +2 | 52  | 18 05 +2 | 52  | 18 42 +2 | 53  | 19 18 +2 | 53  | 19 54 +3 | 53  | 255  |
| 106  | 16 55 2  | 52  | 17 32 2  | 52  | 18 09 2  | 52  | 18 46 3  | 52  | 19 23 3  | 53  | 254  |
| 107  | 16 22 2  | 51  | 17 00 2  | 51  | 17 37 2  | 52  | 18 14 3  | 52  | 18 51 3  | 52  | 253  |
| 108  | 15 50 2  | 50  | 16 28 2  | 51  | 17 05 3  | 51  | 17 43 3  | 51  | 18 20 3  | 51  | 252  |
| 109  | 15 17 2  | 50  | 15 56 2  | 50  | 16 34 3  | 50  | 17 12 3  | 51  | 17 50 3  | 51  | 251  |
| 110  | 14 45 +2 | 49  | 15 24 +3 | 49  | 16 03 +3 | 50  | 16 41 +3 | 50  | 17 20 +3 | 50  | 250  |
| 111  | 14 13 3  | 49  | 14 52 3  | 49  | 15 32 3  | 49  | 16 11 3  | 49  | 16 50 3  | 50  | 249  |
| 112  | 13 41 3  | 48  | 14 21 3  | 48  | 15 01 3  | 48  | 15 41 3  | 49  | 16 20 3  | 49  | 248  |
| 113  | 13 10 3  | 48  | 13 50 3  | 48  | 14 31 3  | 48  | 15 11 3  | 48  | 15 50 3  | 48  | 247  |
| 114  | 12 39 3  | 47  | 13 20 3  | 47  | 14 00 3  | 47  | 14 41 3  | 47  | 15 21 3  | 48  | 246  |
| 115  | 12 08 +3 | 46  | 12 50 +3 | 46  | 13 31 +3 | 47  | 14 12 +3 | 47  | 14 53 +3 | 47  | 245  |
| 116  | 11 38 3  | 46  | 12 20 3  | 46  | 13 01 3  | 46  | 13 43 3  | 46  | 14 24 3  | 46  | 244  |
| 117  | 11 08 3  | 45  | 11 50 3  | 45  | 12 32 3  | 45  | 13 14 3  | 46  | 13 56 3  | 46  | 243  |
| 118  | 10 38 3  | 44  | 11 21 3  | 45  | 12 03 3  | 45  | 12 46 3  | 45  | 13 28 3  | 45  | 242  |
| 119  | 10 09 +3 | 44  | 10 52 3  | 44  | 11 35 3  | 44  | 12 18 3  | 44  | 13 00 3  | 44  | 241  |
| 120  | ...      |     | 10 23 +3 | 43  | 11 07 +3 | 44  | 11 50 +3 | 44  | 12 33 +3 | 44  | 240  |
| 121  | ...      |     | ...      |     | 10 39 3  | 43  | 11 22 3  | 43  | 12 06 3  | 43  | 239  |
| 122  | ...      |     | ...      |     | 10 11 +3 | 42  | 10 55 3  | 42  | 11 39 3  | 42  | 238  |
| 123  | ...      |     | ...      |     | ...      |     | 10 29 3  | 42  | 11 13 3  | 42  | 237  |
| 124  | ...      |     | ...      |     | ...      |     | 10 02 +3 | 41  | 10 47 3  | 41  | 236  |
| 125  | ...      |     | ...      |     | ...      |     | ...      |     | 10 22 +3 | 41  | 235  |

{ For argument H.A. on the left, True Azimuth =  $360^\circ$  - Tabulated Azimuth. } See  
 { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.  
 No correction for date is necessary until 1958.



# NORTH LATITUDES

## III.—CONVERSION OF TABULATED AZIMUTH TO TRUE AZIMUTH

| Tabulated Azimuth | True Azimuth        |                        | Tabulated Azimuth | True Azimuth        |                        | Tabulated Azimuth | True Azimuth        |                        | Tabulated Azimuth | True Azimuth        |                        |
|-------------------|---------------------|------------------------|-------------------|---------------------|------------------------|-------------------|---------------------|------------------------|-------------------|---------------------|------------------------|
|                   | W.                  | E.                     |                   | W.                  | E.                     |                   | W.                  | E.                     |                   | W.                  | E.                     |
|                   | H.A. less than 180° | H.A. greater than 180° |                   | H.A. less than 180° | H.A. greater than 180° |                   | H.A. less than 180° | H.A. greater than 180° |                   | H.A. less than 180° | H.A. greater than 180° |
| 0                 | 360                 | 000                    | 45                | 315                 | 045                    | 90                | 270                 | 090                    | 135               | 225                 | 135                    |
| 1                 | 359                 | 001                    | 46                | 314                 | 046                    | 91                | 269                 | 091                    | 136               | 224                 | 136                    |
| 2                 | 358                 | 002                    | 47                | 313                 | 047                    | 92                | 268                 | 092                    | 137               | 223                 | 137                    |
| 3                 | 357                 | 003                    | 48                | 312                 | 048                    | 93                | 267                 | 093                    | 138               | 222                 | 138                    |
| 4                 | 356                 | 004                    | 49                | 311                 | 049                    | 94                | 266                 | 094                    | 139               | 221                 | 139                    |
| 5                 | 355                 | 005                    | 50                | 310                 | 050                    | 95                | 265                 | 095                    | 140               | 220                 | 140                    |
| 6                 | 354                 | 006                    | 51                | 309                 | 051                    | 96                | 264                 | 096                    | 141               | 219                 | 141                    |
| 7                 | 353                 | 007                    | 52                | 308                 | 052                    | 97                | 263                 | 097                    | 142               | 218                 | 142                    |
| 8                 | 352                 | 008                    | 53                | 307                 | 053                    | 98                | 262                 | 098                    | 143               | 217                 | 143                    |
| 9                 | 351                 | 009                    | 54                | 306                 | 054                    | 99                | 261                 | 099                    | 144               | 216                 | 144                    |
| 10                | 350                 | 010                    | 55                | 305                 | 055                    | 100               | 260                 | 100                    | 145               | 215                 | 145                    |
| 11                | 349                 | 011                    | 56                | 304                 | 056                    | 101               | 259                 | 101                    | 146               | 214                 | 146                    |
| 12                | 348                 | 012                    | 57                | 303                 | 057                    | 102               | 258                 | 102                    | 147               | 213                 | 147                    |
| 13                | 347                 | 013                    | 58                | 302                 | 058                    | 103               | 257                 | 103                    | 148               | 212                 | 148                    |
| 14                | 346                 | 014                    | 59                | 301                 | 059                    | 104               | 256                 | 104                    | 149               | 211                 | 149                    |
| 15                | 345                 | 015                    | 60                | 300                 | 060                    | 105               | 255                 | 105                    | 150               | 210                 | 150                    |
| 16                | 344                 | 016                    | 61                | 299                 | 061                    | 106               | 254                 | 106                    | 151               | 209                 | 151                    |
| 17                | 343                 | 017                    | 62                | 298                 | 062                    | 107               | 253                 | 107                    | 152               | 208                 | 152                    |
| 18                | 342                 | 018                    | 63                | 297                 | 063                    | 108               | 252                 | 108                    | 153               | 207                 | 153                    |
| 19                | 341                 | 019                    | 64                | 296                 | 064                    | 109               | 251                 | 109                    | 154               | 206                 | 154                    |
| 20                | 340                 | 020                    | 65                | 295                 | 065                    | 110               | 250                 | 110                    | 155               | 205                 | 155                    |
| 21                | 339                 | 021                    | 66                | 294                 | 066                    | 111               | 249                 | 111                    | 156               | 204                 | 156                    |
| 22                | 338                 | 022                    | 67                | 293                 | 067                    | 112               | 248                 | 112                    | 157               | 203                 | 157                    |
| 23                | 337                 | 023                    | 68                | 292                 | 068                    | 113               | 247                 | 113                    | 158               | 202                 | 158                    |
| 24                | 336                 | 024                    | 69                | 291                 | 069                    | 114               | 246                 | 114                    | 159               | 201                 | 159                    |
| 25                | 335                 | 025                    | 70                | 290                 | 070                    | 115               | 245                 | 115                    | 160               | 200                 | 160                    |
| 26                | 334                 | 026                    | 71                | 289                 | 071                    | 116               | 244                 | 116                    | 161               | 199                 | 161                    |
| 27                | 333                 | 027                    | 72                | 288                 | 072                    | 117               | 243                 | 117                    | 162               | 198                 | 162                    |
| 28                | 332                 | 028                    | 73                | 287                 | 073                    | 118               | 242                 | 118                    | 163               | 197                 | 163                    |
| 29                | 331                 | 029                    | 74                | 286                 | 074                    | 119               | 241                 | 119                    | 164               | 196                 | 164                    |
| 30                | 330                 | 030                    | 75                | 285                 | 075                    | 120               | 240                 | 120                    | 165               | 195                 | 165                    |
| 31                | 329                 | 031                    | 76                | 284                 | 076                    | 121               | 239                 | 121                    | 166               | 194                 | 166                    |
| 32                | 328                 | 032                    | 77                | 283                 | 077                    | 122               | 238                 | 122                    | 167               | 193                 | 167                    |
| 33                | 327                 | 033                    | 78                | 282                 | 078                    | 123               | 237                 | 123                    | 168               | 192                 | 168                    |
| 34                | 326                 | 034                    | 79                | 281                 | 079                    | 124               | 236                 | 124                    | 169               | 191                 | 169                    |
| 35                | 325                 | 035                    | 80                | 280                 | 080                    | 125               | 235                 | 125                    | 170               | 190                 | 170                    |
| 36                | 324                 | 036                    | 81                | 279                 | 081                    | 126               | 234                 | 126                    | 171               | 189                 | 171                    |
| 37                | 323                 | 037                    | 82                | 278                 | 082                    | 127               | 233                 | 127                    | 172               | 188                 | 172                    |
| 38                | 322                 | 038                    | 83                | 277                 | 083                    | 128               | 232                 | 128                    | 173               | 187                 | 173                    |
| 39                | 321                 | 039                    | 84                | 276                 | 084                    | 129               | 231                 | 129                    | 174               | 186                 | 174                    |
| 40                | 320                 | 040                    | 85                | 275                 | 085                    | 130               | 230                 | 130                    | 175               | 185                 | 175                    |
| 41                | 319                 | 041                    | 86                | 274                 | 086                    | 131               | 229                 | 131                    | 176               | 184                 | 176                    |
| 42                | 318                 | 042                    | 87                | 273                 | 087                    | 132               | 228                 | 132                    | 177               | 183                 | 177                    |
| 43                | 317                 | 043                    | 88                | 272                 | 088                    | 133               | 227                 | 133                    | 178               | 182                 | 178                    |
| 44                | 316                 | 044                    | 89                | 271                 | 089                    | 134               | 226                 | 134                    | 179               | 181                 | 179                    |
| 45                | 315                 | 045                    | 90                | 270                 | 090                    | 135               | 225                 | 135                    | 180               | 180                 | 180                    |

# SOUTH LATITUDES

## III.—CONVERSION OF TABULATED AZIMUTH TO TRUE AZIMUTH

| Tabulated Azimuth | True Azimuth        |                        | Tabulated Azimuth | True Azimuth        |                        | Tabulated Azimuth | True Azimuth        |                        | Tabulated Azimuth | True Azimuth        |                        |
|-------------------|---------------------|------------------------|-------------------|---------------------|------------------------|-------------------|---------------------|------------------------|-------------------|---------------------|------------------------|
|                   | W.                  | E.                     |                   | W.                  | E.                     |                   | W.                  | E.                     |                   | W.                  | E.                     |
|                   | H.A. less than 180° | H.A. greater than 180° |                   | H.A. less than 180° | H.A. greater than 180° |                   | H.A. less than 180° | H.A. greater than 180° |                   | H.A. less than 180° | H.A. greater than 180° |
| 0                 | 180                 | 180                    | 45                | 225                 | 135                    | 90                | 270                 | 090                    | 135               | 315                 | 045                    |
| 1                 | 181                 | 179                    | 46                | 226                 | 134                    | 91                | 271                 | 089                    | 136               | 316                 | 044                    |
| 2                 | 182                 | 178                    | 47                | 227                 | 133                    | 92                | 272                 | 088                    | 137               | 317                 | 043                    |
| 3                 | 183                 | 177                    | 48                | 228                 | 132                    | 93                | 273                 | 087                    | 138               | 318                 | 042                    |
| 4                 | 184                 | 176                    | 49                | 229                 | 131                    | 94                | 274                 | 086                    | 139               | 319                 | 041                    |
| 5                 | 185                 | 175                    | 50                | 230                 | 130                    | 95                | 275                 | 085                    | 140               | 320                 | 040                    |
| 6                 | 186                 | 174                    | 51                | 231                 | 129                    | 96                | 276                 | 084                    | 141               | 321                 | 039                    |
| 7                 | 187                 | 173                    | 52                | 232                 | 128                    | 97                | 277                 | 083                    | 142               | 322                 | 038                    |
| 8                 | 188                 | 172                    | 53                | 233                 | 127                    | 98                | 278                 | 082                    | 143               | 323                 | 037                    |
| 9                 | 189                 | 171                    | 54                | 234                 | 126                    | 99                | 279                 | 081                    | 144               | 324                 | 036                    |
| 10                | 190                 | 170                    | 55                | 235                 | 125                    | 100               | 280                 | 080                    | 145               | 325                 | 035                    |
| 11                | 191                 | 169                    | 56                | 236                 | 124                    | 101               | 281                 | 079                    | 146               | 326                 | 034                    |
| 12                | 192                 | 168                    | 57                | 237                 | 123                    | 102               | 282                 | 078                    | 147               | 327                 | 033                    |
| 13                | 193                 | 167                    | 58                | 238                 | 122                    | 103               | 283                 | 077                    | 148               | 328                 | 032                    |
| 14                | 194                 | 166                    | 59                | 239                 | 121                    | 104               | 284                 | 076                    | 149               | 329                 | 031                    |
| 15                | 195                 | 165                    | 60                | 240                 | 120                    | 105               | 285                 | 075                    | 150               | 330                 | 030                    |
| 16                | 196                 | 164                    | 61                | 241                 | 119                    | 106               | 286                 | 074                    | 151               | 331                 | 029                    |
| 17                | 197                 | 163                    | 62                | 242                 | 118                    | 107               | 287                 | 073                    | 152               | 332                 | 028                    |
| 18                | 198                 | 162                    | 63                | 243                 | 117                    | 108               | 288                 | 072                    | 153               | 333                 | 027                    |
| 19                | 199                 | 161                    | 64                | 244                 | 116                    | 109               | 289                 | 071                    | 154               | 334                 | 026                    |
| 20                | 200                 | 160                    | 65                | 245                 | 115                    | 110               | 290                 | 070                    | 155               | 335                 | 025                    |
| 21                | 201                 | 159                    | 66                | 246                 | 114                    | 111               | 291                 | 069                    | 156               | 336                 | 024                    |
| 22                | 202                 | 158                    | 67                | 247                 | 113                    | 112               | 292                 | 068                    | 157               | 337                 | 023                    |
| 23                | 203                 | 157                    | 68                | 248                 | 112                    | 113               | 293                 | 067                    | 158               | 338                 | 022                    |
| 24                | 204                 | 156                    | 69                | 249                 | 111                    | 114               | 294                 | 066                    | 159               | 339                 | 021                    |
| 25                | 205                 | 155                    | 70                | 250                 | 110                    | 115               | 295                 | 065                    | 160               | 340                 | 020                    |
| 26                | 206                 | 154                    | 71                | 251                 | 109                    | 116               | 296                 | 064                    | 161               | 341                 | 019                    |
| 27                | 207                 | 153                    | 72                | 252                 | 108                    | 117               | 297                 | 063                    | 162               | 342                 | 018                    |
| 28                | 208                 | 152                    | 73                | 253                 | 107                    | 118               | 298                 | 062                    | 163               | 343                 | 017                    |
| 29                | 209                 | 151                    | 74                | 254                 | 106                    | 119               | 299                 | 061                    | 164               | 344                 | 016                    |
| 30                | 210                 | 150                    | 75                | 255                 | 105                    | 120               | 300                 | 060                    | 165               | 345                 | 015                    |
| 31                | 211                 | 149                    | 76                | 256                 | 104                    | 121               | 301                 | 059                    | 166               | 346                 | 014                    |
| 32                | 212                 | 148                    | 77                | 257                 | 103                    | 122               | 302                 | 058                    | 167               | 347                 | 013                    |
| 33                | 213                 | 147                    | 78                | 258                 | 102                    | 123               | 303                 | 057                    | 168               | 348                 | 012                    |
| 34                | 214                 | 146                    | 79                | 259                 | 101                    | 124               | 304                 | 056                    | 169               | 349                 | 011                    |
| 35                | 215                 | 145                    | 80                | 260                 | 100                    | 125               | 305                 | 055                    | 170               | 350                 | 010                    |
| 36                | 216                 | 144                    | 81                | 261                 | 099                    | 126               | 306                 | 054                    | 171               | 351                 | 009                    |
| 37                | 217                 | 143                    | 82                | 262                 | 098                    | 127               | 307                 | 053                    | 172               | 352                 | 008                    |
| 38                | 218                 | 142                    | 83                | 263                 | 097                    | 128               | 308                 | 052                    | 173               | 353                 | 007                    |
| 39                | 219                 | 141                    | 84                | 264                 | 096                    | 129               | 309                 | 051                    | 174               | 354                 | 006                    |
| 40                | 220                 | 140                    | 85                | 265                 | 095                    | 130               | 310                 | 050                    | 175               | 355                 | 005                    |
| 41                | 221                 | 139                    | 86                | 266                 | 094                    | 131               | 311                 | 049                    | 176               | 356                 | 004                    |
| 42                | 222                 | 138                    | 87                | 267                 | 093                    | 132               | 312                 | 048                    | 177               | 357                 | 003                    |
| 43                | 223                 | 137                    | 88                | 268                 | 092                    | 133               | 313                 | 047                    | 178               | 358                 | 002                    |
| 44                | 224                 | 136                    | 89                | 269                 | 091                    | 134               | 314                 | 046                    | 179               | 359                 | 001                    |
| 45                | 225                 | 135                    | 90                | 270                 | 090                    | 135               | 315                 | 045                    | 180               | 360                 | 000                    |

# WEST LONGITUDES

## IV.—CONVERSION OF LOCAL MEAN TIME TO GREENWICH MEAN TIME

|        | Longitude West |        |        |                |        |        |             |        |        |             |        |        |        |
|--------|----------------|--------|--------|----------------|--------|--------|-------------|--------|--------|-------------|--------|--------|--------|
|        | 180° 165° 150° |        |        | 135° 120° 105° |        |        | 90° 75° 60° |        |        | 45° 30° 15° |        |        | 0°     |
| Zone   | +12            | +11    | +10    | +9             | +8     | +7     | +6          | +5     | +4     | +3          | +2     | +1     | 0      |
| L.M.T. | G.M.T.         | G.M.T. | G.M.T. | G.M.T.         | G.M.T. | G.M.T. | G.M.T.      | G.M.T. | G.M.T. | G.M.T.      | G.M.T. | G.M.T. | G.M.T. |
| 0001   | 1200           | 1100   | 1000   | 0900           | 0800   | 0700   | 0600        | 0500   | 0400   | 0300        | 0200   | 0100   | 0001   |
| 0100   | 1300           | 1200   | 1100   | 1000           | 0900   | 0800   | 0700        | 0600   | 0500   | 0400        | 0300   | 0200   | 0100   |
| 0200   | 1400           | 1300   | 1200   | 1100           | 1000   | 0900   | 0800        | 0700   | 0600   | 0500        | 0400   | 0300   | 0200   |
| 0300   | 1500           | 1400   | 1300   | 1200           | 1100   | 1000   | 0900        | 0800   | 0700   | 0600        | 0500   | 0400   | 0300   |
| 0400   | 1600           | 1500   | 1400   | 1300           | 1200   | 1100   | 1000        | 0900   | 0800   | 0700        | 0600   | 0500   | 0400   |
| 0500   | 1700           | 1600   | 1500   | 1400           | 1300   | 1200   | 1100        | 1000   | 0900   | 0800        | 0700   | 0600   | 0500   |
| 0600   | 1800           | 1700   | 1600   | 1500           | 1400   | 1300   | 1200        | 1100   | 1000   | 0900        | 0800   | 0700   | 0600   |
| 0700   | 1900           | 1800   | 1700   | 1600           | 1500   | 1400   | 1300        | 1200   | 1100   | 1000        | 0900   | 0800   | 0700   |
| 0800   | 2000           | 1900   | 1800   | 1700           | 1600   | 1500   | 1400        | 1300   | 1200   | 1100        | 1000   | 0900   | 0800   |
| 0900   | 2100           | 2000   | 1900   | 1800           | 1700   | 1600   | 1500        | 1400   | 1300   | 1200        | 1100   | 1000   | 0900   |
| 1000   | 2200           | 2100   | 2000   | 1900           | 1800   | 1700   | 1600        | 1500   | 1400   | 1300        | 1200   | 1100   | 1000   |
| 1100   | 2300           | 2200   | 2100   | 2000           | 1900   | 1800   | 1700        | 1600   | 1500   | 1400        | 1300   | 1200   | 1100   |
| 1200   | 2359           | 2300   | 2200   | 2100           | 2000   | 1900   | 1800        | 1700   | 1600   | 1500        | 1400   | 1300   | 1200   |
| 1300   | 0100           | 2359   | 2300   | 2200           | 2100   | 2000   | 1900        | 1800   | 1700   | 1600        | 1500   | 1400   | 1300   |
| 1400   | 0200           | 0100   | 2359   | 2300           | 2200   | 2100   | 2000        | 1900   | 1800   | 1700        | 1600   | 1500   | 1400   |
| 1500   | 0300           | 0200   | 0100   | 2359           | 2300   | 2200   | 2100        | 2000   | 1900   | 1800        | 1700   | 1600   | 1500   |
| 1600   | 0400           | 0300   | 0200   | 0100           | 2359   | 2300   | 2200        | 2100   | 2000   | 1900        | 1800   | 1700   | 1600   |
| 1700   | 0500           | 0400   | 0300   | 0200           | 0100   | 2359   | 2300        | 2200   | 2100   | 2000        | 1900   | 1800   | 1700   |
| 1800   | 0600           | 0500   | 0400   | 0300           | 0200   | 0100   | 2359        | 2300   | 2200   | 2100        | 2000   | 1900   | 1800   |
| 1900   | 0700           | 0600   | 0500   | 0400           | 0300   | 0200   | 0100        | 2359   | 2300   | 2200        | 2100   | 2000   | 1900   |
| 2000   | 0800           | 0700   | 0600   | 0500           | 0400   | 0300   | 0200        | 0100   | 2359   | 2300        | 2200   | 2100   | 2000   |
| 2100   | 0900           | 0800   | 0700   | 0600           | 0500   | 0400   | 0300        | 0200   | 0100   | 2359        | 2300   | 2200   | 2100   |
| 2200   | 1000           | 0900   | 0800   | 0700           | 0600   | 0500   | 0400        | 0300   | 0200   | 0100        | 2359   | 2300   | 2200   |
| 2300   | 1100           | 1000   | 0900   | 0800           | 0700   | 0600   | 0500        | 0400   | 0300   | 0200        | 0100   | 2359   | 2300   |
| 2359   | 1200           | 1100   | 1000   | 0900           | 0800   | 0700   | 0600        | 0500   | 0400   | 0300        | 0200   | 0100   | 2359   |

G.M.T. figures in roman type—Greenwich date SAME as local date.

G.M.T. figures in heavy type—Greenwich date ONE DAY AHEAD of local date.

This table gives the Greenwich date and Greenwich mean time (G.M.T.) corresponding to the local date and local mean time (L.M.T.) for any place in longitude west. Entering the table with the longitude heading nearest to the dead reckoning longitude, and the L.M.T. to the nearest hour, the approximate G.M.T. is taken out directly, the Greenwich date being determined by the rules above.

To avoid confusion, midnight is given as 2359 for the day just ending, and as 0001 for the day just beginning.

*Example.*—Required the approximate G.M.T. at L.M.T. 23<sup>h</sup> 37<sup>m</sup>, January 17 in longitude 110° W.

Long. 105° W. (approx.)

| Approx. | Hrs. | Date    |
|---------|------|---------|
| L.M.T.  | 2359 | Jan. 17 |
| G.M.T.  | 0700 | Jan. 18 |

# EAST LONGITUDES

## IV.—CONVERSION OF LOCAL MEAN TIME TO GREENWICH MEAN TIME

| Longitude East |        |        |        |        |        |        |        |        |        |        |        |        | Zone   |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°             | 15°    | 30°    | 45°    | 60°    | 75°    | 90°    | 105°   | 120°   | 135°   | 150°   | 165°   | 180°   |        |
| 0              | -1     | -2     | -3     | -4     | -5     | -6     | -7     | -8     | -9     | -10    | -11    | -12    |        |
| G.M.T.         | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | G.M.T. | L.M.T. |
| 0001           | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 0001   |
| 0100           | 0001   | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 0100   |
| 0200           | 0100   | 0001   | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 0200   |
| 0300           | 0200   | 0100   | 0001   | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 0300   |
| 0400           | 0300   | 0200   | 0100   | 0001   | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 0400   |
| 0500           | 0400   | 0300   | 0200   | 0100   | 0001   | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 0500   |
| 0600           | 0500   | 0400   | 0300   | 0200   | 0100   | 0001   | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 0600   |
| 0700           | 0600   | 0500   | 0400   | 0300   | 0200   | 0100   | 0001   | 2300   | 2200   | 2100   | 2000   | 1900   | 0700   |
| 0800           | 0700   | 0600   | 0500   | 0400   | 0300   | 0200   | 0100   | 0001   | 2300   | 2200   | 2100   | 2000   | 0800   |
| 0900           | 0800   | 0700   | 0600   | 0500   | 0400   | 0300   | 0200   | 0100   | 0001   | 2300   | 2200   | 2100   | 0900   |
| 1000           | 0900   | 0800   | 0700   | 0600   | 0500   | 0400   | 0300   | 0200   | 0100   | 0001   | 2300   | 2200   | 1000   |
| 1100           | 1000   | 0900   | 0800   | 0700   | 0600   | 0500   | 0400   | 0300   | 0200   | 0100   | 0001   | 2300   | 1100   |
| 1200           | 1100   | 1000   | 0900   | 0800   | 0700   | 0600   | 0500   | 0400   | 0300   | 0200   | 0100   | 0001   | 1200   |
| 1300           | 1200   | 1100   | 1000   | 0900   | 0800   | 0700   | 0600   | 0500   | 0400   | 0300   | 0200   | 0100   | 1300   |
| 1400           | 1300   | 1200   | 1100   | 1000   | 0900   | 0800   | 0700   | 0600   | 0500   | 0400   | 0300   | 0200   | 1400   |
| 1500           | 1400   | 1300   | 1200   | 1100   | 1000   | 0900   | 0800   | 0700   | 0600   | 0500   | 0400   | 0300   | 1500   |
| 1600           | 1500   | 1400   | 1300   | 1200   | 1100   | 1000   | 0900   | 0800   | 0700   | 0600   | 0500   | 0400   | 1600   |
| 1700           | 1600   | 1500   | 1400   | 1300   | 1200   | 1100   | 1000   | 0900   | 0800   | 0700   | 0600   | 0500   | 1700   |
| 1800           | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 1100   | 1000   | 0900   | 0800   | 0700   | 0600   | 1800   |
| 1900           | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 1100   | 1000   | 0900   | 0800   | 0700   | 1900   |
| 2000           | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 1100   | 1000   | 0900   | 0800   | 2000   |
| 2100           | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 1100   | 1000   | 0900   | 2100   |
| 2200           | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 1100   | 1000   | 2200   |
| 2300           | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 1100   | 2300   |
| 2359           | 2300   | 2200   | 2100   | 2000   | 1900   | 1800   | 1700   | 1600   | 1500   | 1400   | 1300   | 1200   | 2359   |

G.M.T. figures in roman type—Greenwich date SAME as local date.

G.M.T. figures in italic type—Greenwich date ONE DAY BEHIND local date.

This table gives the Greenwich date and Greenwich mean time (G.M.T.) corresponding to the local date and local mean time (L.M.T.) for any place in longitude east. Entering the table with the longitude heading nearest to the dead reckoning longitude, and the L.M.T. to the nearest hour, the *approximate* G.M.T. is taken out directly, the Greenwich date being determined by the rules above.

To avoid confusion, midnight is given as 2359 for the day just ending, and as 0001 for the day just beginning.

*Example.*—Required the approximate G.M.T. at L.M.T. 02<sup>h</sup> 17<sup>m</sup>, August 8 in longitude 62° E.

| Long. 60° E. (approx.) |      |        |
|------------------------|------|--------|
| Approx.                | Hrs. | Date   |
| L.M.T.                 | 0200 | Aug. 8 |
| G.M.T.                 | 2200 | Aug. 7 |

0°

## DECLINATION SAME NAME AS LATITUDE

0°

| LAT. | 45°      |     | 46°      |     | 47°      |     | 48°      |     | 49°      |     | LAT. |
|------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|------|
| H.A. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | Alt.     | Az. | H.A. |
| 0    | 45 01+60 | 180 | 44 01+60 | 180 | 43 01+60 | 180 | 42 01+60 | 180 | 41 01+60 | 180 | 360  |
| 1    | 45 00 60 | 179 | 44 00 60 | 179 | 43 00 60 | 179 | 42 00 60 | 179 | 41 00 60 | 179 | 359  |
| 2    | 44 59 60 | 177 | 43 59 60 | 177 | 42 59 60 | 177 | 41 59 60 | 177 | 40 59 60 | 177 | 358  |
| 3    | 44 56 60 | 176 | 43 56 60 | 176 | 42 56 60 | 176 | 41 57 60 | 176 | 40 57 60 | 176 | 357  |
| 4    | 44 52 60 | 174 | 43 53 60 | 174 | 42 53 60 | 175 | 41 53 60 | 175 | 40 54 60 | 175 | 356  |
| 5    | 44 48+60 | 173 | 43 48+60 | 173 | 42 49+59 | 173 | 41 49+60 | 173 | 40 50+59 | 173 | 355  |
| 6    | 44 42 60 | 172 | 43 43 59 | 172 | 42 43 60 | 172 | 41 44 60 | 172 | 40 45 59 | 172 | 354  |
| 7    | 44 35 60 | 170 | 43 36 60 | 170 | 42 37 60 | 170 | 41 38 60 | 171 | 40 39 59 | 171 | 353  |
| 8    | 44 28 59 | 169 | 43 29 59 | 169 | 42 30 59 | 169 | 41 31 59 | 169 | 40 32 60 | 169 | 352  |
| 9    | 44 19 59 | 167 | 43 20 60 | 168 | 42 22 59 | 168 | 41 23 59 | 168 | 40 24 60 | 168 | 351  |
| 10   | 44 09+59 | 166 | 43 11+59 | 166 | 42 13+59 | 166 | 41 14+59 | 167 | 40 16+59 | 167 | 350  |
| 11   | 43 58 59 | 165 | 43 00 59 | 165 | 42 02 59 | 165 | 41 04 60 | 165 | 40 06 60 | 166 | 349  |
| 12   | 43 47 58 | 163 | 42 49 59 | 164 | 41 52 58 | 164 | 40 54 59 | 164 | 39 56 59 | 164 | 348  |
| 13   | 43 34 58 | 162 | 42 37 58 | 162 | 41 40 58 | 162 | 40 42 59 | 163 | 39 45 59 | 163 | 347  |
| 14   | 43 20 58 | 161 | 42 24 58 | 161 | 41 27 58 | 161 | 40 30 59 | 161 | 39 33 59 | 162 | 346  |
| 15   | 43 06+58 | 159 | 42 10+58 | 160 | 41 13+59 | 160 | 40 17+58 | 160 | 39 20+59 | 160 | 345  |
| 16   | 42 50 58 | 158 | 41 55 57 | 158 | 40 59 58 | 159 | 40 03 58 | 159 | 39 07 58 | 159 | 344  |
| 17   | 42 34 57 | 157 | 41 39 57 | 157 | 40 43 58 | 157 | 39 48 58 | 158 | 38 52 59 | 158 | 343  |
| 18   | 42 17 57 | 155 | 41 22 57 | 156 | 40 27 58 | 156 | 39 32 58 | 156 | 38 37 58 | 157 | 342  |
| 19   | 41 58 57 | 154 | 41 04 58 | 154 | 40 10 58 | 155 | 39 16 57 | 155 | 38 21 58 | 155 | 341  |
| 20   | 41 39+57 | 153 | 40 46+57 | 153 | 39 52+57 | 154 | 38 59+57 | 154 | 38 05+57 | 154 | 340  |
| 21   | 41 20 56 | 152 | 40 27 56 | 152 | 39 34 57 | 152 | 38 41 57 | 153 | 37 47 57 | 153 | 339  |
| 22   | 40 59 56 | 150 | 40 07 56 | 151 | 39 14 57 | 151 | 38 22 57 | 151 | 37 29 57 | 152 | 338  |
| 23   | 40 37 56 | 149 | 39 46 56 | 149 | 38 54 57 | 150 | 38 02 57 | 150 | 37 10 57 | 151 | 337  |
| 24   | 40 15 56 | 148 | 39 24 56 | 148 | 38 33 56 | 149 | 37 42 56 | 149 | 36 50 57 | 149 | 336  |
| 25   | 39 52+55 | 147 | 39 02+56 | 147 | 38 12+55 | 147 | 37 21+56 | 148 | 36 30+56 | 148 | 335  |
| 26   | 39 29 54 | 145 | 38 39 55 | 146 | 37 49 56 | 146 | 36 59 56 | 147 | 36 09 56 | 147 | 334  |
| 27   | 39 04 55 | 144 | 38 15 55 | 145 | 37 26 55 | 145 | 36 37 55 | 146 | 35 47 56 | 146 | 333  |
| 28   | 38 39 54 | 143 | 37 51 55 | 144 | 37 03 54 | 144 | 36 14 55 | 144 | 35 25 56 | 145 | 332  |
| 29   | 38 13 54 | 142 | 37 26 54 | 142 | 36 38 55 | 143 | 35 50 55 | 143 | 35 02 55 | 144 | 331  |
| 30   | 37 47+53 | 141 | 37 00+54 | 141 | 36 13+54 | 142 | 35 26+55 | 142 | 34 39+54 | 143 | 330  |
| 31   | 37 20 53 | 140 | 36 34 53 | 140 | 35 48 54 | 141 | 35 01 54 | 141 | 34 14 55 | 141 | 329  |
| 32   | 36 52 53 | 139 | 36 07 53 | 139 | 35 21 54 | 139 | 34 36 54 | 140 | 33 50 54 | 140 | 328  |
| 33   | 36 23 53 | 137 | 35 39 53 | 138 | 34 54 54 | 138 | 34 09 54 | 139 | 33 24 54 | 139 | 327  |
| 34   | 35 54 53 | 136 | 35 11 53 | 137 | 34 27 53 | 137 | 33 43 53 | 138 | 32 58 54 | 138 | 326  |
| 35   | 35 25+52 | 135 | 34 42+52 | 136 | 33 59+53 | 136 | 33 16+53 | 137 | 32 32+53 | 137 | 325  |
| 36   | 34 55 51 | 134 | 34 13 52 | 135 | 33 30 53 | 135 | 32 48 53 | 136 | 32 05 53 | 136 | 324  |
| 37   | 34 24 51 | 133 | 33 43 52 | 134 | 33 01 53 | 134 | 32 19 53 | 135 | 31 37 53 | 135 | 323  |
| 38   | 33 53 51 | 132 | 33 13 51 | 133 | 32 32 52 | 133 | 31 51 52 | 134 | 31 09 53 | 134 | 322  |
| 39   | 33 21 51 | 131 | 32 42 51 | 132 | 32 02 51 | 132 | 31 21 52 | 133 | 30 41 52 | 133 | 321  |
| 40   | 32 49+50 | 130 | 32 10+51 | 131 | 31 31+51 | 131 | 30 52+51 | 132 | 30 12+52 | 132 | 320  |
| 41   | 32 16 51 | 129 | 31 38 51 | 130 | 31 00 51 | 130 | 30 21 52 | 131 | 29 42 52 | 131 | 319  |
| 42   | 31 43 50 | 128 | 31 06 50 | 129 | 30 29 50 | 129 | 29 51 51 | 130 | 29 12 52 | 130 | 318  |
| 43   | 31 10 49 | 127 | 30 33 50 | 128 | 29 57 50 | 128 | 29 19 51 | 129 | 28 42 51 | 129 | 317  |
| 44   | 30 36 49 | 126 | 30 00 50 | 127 | 29 24 50 | 127 | 28 48 51 | 128 | 28 11 51 | 128 | 316  |
| 45   | 30 01+49 | 125 | 29 27+49 | 126 | 28 51+50 | 126 | 28 16+50 | 127 | 27 40+51 | 127 | 315  |

In North { For argument H.A. on the left, True Azimuth = 360° - Tabulated Azimuth. } See  
 Latitudes { For argument H.A. on the right, True Azimuth = Tabulated Azimuth. } p. 90.