

HUGHES' TABLES

FOR

SEA AND AIR NAVIGATION

COMPILED BY

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1944

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CORRECTION TO OBSERVED ALTITUDE OF SUN'S LOWER LIMB FOR REFRACTION, PARALLAX AND SEMI-DIAMETER

The correction is always added to the observed altitude.

App. Alt.*	Jan. 1 to Feb. 5	Feb. 6 to Mar. 5	Mar. 6 to Mar. 28	Mar. 29 to Apr. 10	Apr. 20 to May 14	May 15 to Aug. 23	Aug. 24 to Sept. 17	Sept. 18 to Oct. 9	Oct. 10 to Nov. 1	Nov. 2 to Nov. 20	Nov. 21 to Dec. 31
3 20	+ 3.3	+ 3.2	+ 3.1	+ 3.0	+ 2.9	+ 2.8	+ 2.9	+ 3.0	+ 3.1	+ 3.2	+ 3.3
3 40	4.2	4.1	4.0	3.9	3.8	3.7	3.8	3.9	4.0	4.1	4.2
4 00	4.9	4.8	4.7	4.6	4.5	4.4	4.5	4.6	4.7	4.8	4.9
4 20	5.6	5.5	5.4	5.3	5.2	5.1	5.2	5.3	5.4	5.5	5.6
4 40	6.2	6.1	6.0	5.9	5.8	5.7	5.8	5.9	6.0	6.1	6.2
5 00	+ 6.8	+ 6.7	+ 6.6	+ 6.5	+ 6.4	+ 6.3	+ 6.4	+ 6.5	+ 6.6	+ 6.7	+ 6.8
5 30	7.5	7.4	7.3	7.2	7.1	7.0	7.1	7.2	7.3	7.4	7.5
6 00	8.1	8.0	7.9	7.8	7.7	7.6	7.7	7.8	7.9	8.0	8.1
6 30	8.7	8.6	8.5	8.4	8.3	8.2	8.3	8.4	8.5	8.6	8.7
7 00	9.2	9.1	9.0	8.9	8.8	8.7	8.8	8.9	9.0	9.1	9.2
7 30	+ 9.6	+ 9.5	+ 9.4	+ 9.3	+ 9.2	+ 9.1	+ 9.2	+ 9.3	+ 9.4	+ 9.5	+ 9.6
8 00	10.0	9.9	9.8	9.7	9.6	9.5	9.6	9.7	9.8	9.9	10.0
8 30	10.4	10.3	10.2	10.1	10.0	9.9	10.0	10.1	10.2	10.3	10.4
9 00	10.7	10.6	10.5	10.4	10.3	10.2	10.3	10.4	10.5	10.6	10.7
9 30	11.0	10.9	10.8	10.7	10.6	10.5	10.6	10.7	10.8	10.9	11.0
10	+ 11.2	+ 11.1	+ 11.0	+ 10.9	+ 10.8	+ 10.7	+ 10.8	+ 10.9	+ 11.0	+ 11.1	+ 11.2
11	11.7	11.6	11.5	11.4	11.3	11.2	11.3	11.4	11.5	11.6	11.7
12	12.1	12.0	11.9	11.8	11.7	11.6	11.7	11.8	11.9	12.0	12.1
13	12.4	12.3	12.2	12.1	12.0	11.9	12.0	12.1	12.2	12.3	12.4
14	12.7	12.6	12.5	12.4	12.3	12.2	12.3	12.4	12.5	12.6	12.7
15	+ 12.9	+ 12.8	+ 12.7	+ 12.6	+ 12.5	+ 12.4	+ 12.5	+ 12.6	+ 12.7	+ 12.8	+ 12.9
16	13.2	13.1	13.0	12.9	12.8	12.7	12.8	12.9	13.0	13.1	13.2
17	13.4	13.3	13.2	13.1	13.0	12.9	13.0	13.1	13.2	13.3	13.4
18	13.5	13.4	13.3	13.2	13.1	13.0	13.1	13.2	13.3	13.4	13.5
19	13.7	13.6	13.5	13.4	13.3	13.2	13.3	13.4	13.5	13.6	13.7
20	+ 13.8	+ 13.7	+ 13.6	+ 13.5	+ 13.4	+ 13.3	+ 13.4	+ 13.5	+ 13.6	+ 13.7	+ 13.8
22	14.1	14.0	13.9	13.8	13.7	13.6	13.7	13.8	13.9	14.0	14.1
24	14.3	14.2	14.1	14.0	13.9	13.8	13.9	14.0	14.1	14.2	14.3
26	14.5	14.4	14.3	14.2	14.1	14.0	14.1	14.2	14.3	14.4	14.5
28	14.6	14.5	14.4	14.3	14.2	14.1	14.2	14.3	14.4	14.5	14.6
30	+ 14.8	+ 14.7	+ 14.6	+ 14.5	+ 14.4	+ 14.3	+ 14.4	+ 14.5	+ 14.6	+ 14.7	+ 14.8
32	14.9	14.8	14.7	14.6	14.5	14.4	14.5	14.6	14.7	14.8	14.9
34	15.0	14.9	14.8	14.7	14.6	14.5	14.6	14.7	14.8	14.9	15.0
36	15.1	15.0	14.9	14.8	14.7	14.6	14.7	14.8	14.9	15.0	15.1
38	15.2	15.1	15.0	14.9	14.8	14.7	14.8	14.9	15.0	15.1	15.2
40	+ 15.3	+ 15.2	+ 15.1	+ 15.0	+ 14.9	+ 14.8	+ 14.9	+ 15.0	+ 15.1	+ 15.2	+ 15.3
45	15.5	15.4	15.3	15.2	15.1	15.0	15.1	15.2	15.3	15.4	15.5
50	15.6	15.5	15.4	15.3	15.2	15.1	15.2	15.3	15.4	15.5	15.6
55	15.7	15.6	15.5	15.4	15.3	15.2	15.3	15.4	15.5	15.6	15.7
60	15.8	15.7	15.6	15.5	15.4	15.3	15.4	15.5	15.6	15.7	15.8
65	+ 15.9	+ 15.8	+ 15.7	+ 15.6	+ 15.5	+ 15.4	+ 15.5	+ 15.6	+ 15.7	+ 15.8	+ 15.9
70	16.0	15.9	15.8	15.7	15.6	15.5	15.6	15.7	15.8	15.9	16.0
75	16.1	16.0	15.9	15.8	15.7	15.6	15.7	15.8	15.9	16.0	16.1
80	16.2	16.1	16.0	15.9	15.8	15.7	15.8	15.9	16.0	16.1	16.2
90	+ 16.3	+ 16.2	+ 16.1	+ 16.0	+ 15.9	+ 15.8	+ 15.9	+ 16.0	+ 16.1	+ 16.2	+ 16.3

* The correction for dip, given on page 171, should be applied before entering this table.

CORRECTION TO OBSERVED ALTITUDE OF MOON'S LOWER LIMB
FOR REFRACTION, PARALLAX AND SEMI-DIAMETER

The correction is always added to the observed altitude.

App. Alt.* Lower Limb	Horizontal Parallax							
	54'	55'	56'	57'	58'	59'	60'	61'
5 00	+58.8	+60.0	+61.3	+62.6	63.8	+65.1	+66.4	67.7
5 30	59.5	60.7	62.0	63.3	64.5	65.8	67.1	68.3
6 00	60.1	61.3	62.6	63.9	65.1	66.4	67.7	68.9
6 30	60.6	61.8	63.1	64.4	65.6	66.9	68.2	69.4
7 00	61.0	62.3	63.5	64.8	66.1	67.3	68.6	69.9
7 30	+61.4	+62.6	+63.9	+65.2	66.4	+67.7	+69.0	70.2
8 00	61.7	63.0	64.2	65.5	66.8	68.0	69.3	70.6
8 30	62.0	63.3	64.5	65.8	67.0	68.3	69.6	70.8
9 00	62.2	63.5	64.8	66.0	67.3	68.5	69.8	71.1
9 30	62.4	63.7	65.0	66.2	67.5	68.7	70.0	71.3
10	+62.6	+63.9	+65.2	+66.4	+67.7	+68.9	70.2	+71.5
11	62.9	64.2	65.4	66.7	67.9	69.2	70.5	71.7
12	63.1	64.4	65.6	66.9	68.1	69.4	70.7	71.9
13	63.3	64.5	65.8	67.0	68.3	69.5	70.8	72.0
14	63.3	64.6	65.8	67.1	68.3	69.6	70.8	72.1
15	+63.4	+64.6	+65.8	67.1	+68.3	+69.6	70.8	+72.0
16	63.3	64.6	65.8	67.0	68.3	69.5	70.7	72.0
17	63.3	64.5	65.7	67.0	68.3	69.4	70.7	71.9
18	63.2	64.4	65.6	66.9	68.1	69.3	70.5	71.7
19	63.0	64.2	65.5	66.7	67.9	69.1	70.4	71.6
20	+62.9	64.1	+65.3	+66.5	67.7	+68.9	+70.2	71.4
21	62.7	63.9	65.1	66.3	67.5	68.7	69.9	71.1
22	62.5	63.6	64.9	66.1	67.3	68.5	69.7	70.9
23	62.2	63.4	64.6	65.8	67.0	68.2	69.4	70.6
24	61.9	63.1	64.3	65.5	66.7	67.9	69.1	70.3
25	+61.7	+62.8	64.0	+65.2	+66.4	+67.6	+68.8	+69.9
26	61.3	62.5	63.7	64.9	66.0	67.2	68.4	69.6
27	61.0	62.2	63.3	64.5	65.7	66.8	68.0	69.2
28	60.6	61.8	63.0	64.1	65.3	66.5	67.6	68.8
29	60.3	61.4	62.6	63.7	64.9	66.0	67.2	68.3
30	+59.9	+61.0	62.2	+63.3	+64.5	+65.6	+66.8	+67.9
31	59.8	60.6	61.7	62.9	64.0	65.2	66.3	67.4
32	59.1	60.2	61.3	62.4	63.5	64.7	65.8	66.9
33	58.6	59.7	60.8	62.0	63.1	64.2	65.3	66.4
34	58.1	59.2	60.3	61.4	62.5	63.7	64.8	65.9
35	+57.7	+58.7	+59.9	+60.9	62.0	+63.1	+64.2	+65.3
36	57.2	58.2	59.3	60.4	61.5	62.6	63.7	64.8
37	56.7	57.7	58.8	59.9	61.0	62.0	63.1	64.2
38	56.1	57.2	58.3	59.3	60.4	61.4	62.5	63.6
39	55.6	56.6	57.7	58.8	59.8	60.9	61.9	63.0
40	+55.0	+56.1	+57.1	+58.2	+59.2	+60.3	+61.3	+62.3
41	54.5	55.5	56.5	57.6	58.6	59.6	60.7	61.7
42	53.9	54.9	55.9	56.9	58.0	59.0	60.0	61.0
43	53.3	54.3	55.3	56.3	57.3	58.3	59.3	60.4
44	52.7	53.7	54.7	55.7	56.7	57.7	58.7	59.7
45	+52.1	+53.0	+54.0	+55.0	+56.0	+57.0	+58.0	+59.0

* The correction for dip, given on page 171, should be applied before entering this table.

This table, for use with bubble sextant observations, gives the correction to be added to an observed altitude of the Moon to allow for parallax. The correction for refraction, given in Table XVII on page 182, should be subtracted before this table is entered. The Moon's horizontal parallax is taken from the *Almanac* to the nearest minute of arc, and the appropriate column of this table selected. The left-hand member of each column represents the observed altitude after correction for refraction, and the right-hand member gives the correction for parallax.

Example.—An observer at a height of 10,000 feet observes the altitude of the Moon as 12° 33'. The Moon's horizontal parallax is 59'. What is the true altitude?

Observed altitude	12 33
Refraction (Table H, page 182)	-3
Altitude corrected for refraction	12 30
Parallax correction	+58
True altitude	13 28

Moon's Horizontal Parallax

54'	55'	56'	57'	58'	59'	60'	61'
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
6 59 56	6 55 55	6 51 56	6 47 57	6 44 58	6 40 59	6 37 60	6 34 61
13 05 53	12 58 54	12 51 55	12 44 56	12 37 57	12 31 58	12 24 59	12 18 60
17 09 52	17 00 53	16 51 54	16 42 55	16 33 56	16 24 57	16 16 58	16 08 59
20 27 51	20 16 52	20 05 53	19 54 54	19 43 55	19 33 56	19 23 57	19 14 58
23 18 50	23 03 51	22 53 52	22 40 53	22 28 54	22 17 55	22 05 56	21 54 57
25 51 49	25 37 50	25 23 51	25 09 52	24 56 53	24 43 54	24 30 55	24 18 56
28 12 48	27 56 49	27 41 50	27 26 51	27 11 52	26 57 53	26 43 54	26 30 55
30 22 47	30 05 48	29 49 49	29 34 50	29 17 51	29 01 52	28 46 53	28 32 54
32 25 46	32 06 47	31 49 48	31 31 49	31 14 50	30 58 51	30 42 52	30 27 53
34 21 45	34 01 46	33 42 47	33 24 48	33 06 49	32 49 50	32 32 51	32 15 52
36 11 44	35 50 45	35 30 46	35 11 47	34 52 48	34 34 49	34 16 50	33 58 51
37 57 43	37 35 44	37 14 45	36 54 46	36 34 47	36 14 48	35 56 49	35 37 50
39 39 42	39 16 43	38 54 44	38 32 45	38 12 46	37 51 47	37 32 48	37 12 49
41 17 41	40 53 42	40 30 43	40 08 44	39 46 45	39 25 46	39 04 47	38 44 48
42 52 40	42 27 41	42 03 42	41 40 43	41 17 44	40 55 45	40 34 46	40 13 47
44 24 39	43 59 40	43 34 41	43 10 42	42 46 43	42 23 44	42 01 45	41 39 46
45 54 38	45 28 39	45 02 40	44 37 41	44 12 42	43 48 43	43 25 44	43 03 45
47 22 37	46 55 38	46 28 39	46 02 40	45 36 41	45 12 42	44 48 43	44 24 44
48 48 36	48 19 37	47 52 38	47 25 39	46 59 40	46 33 41	46 08 42	45 44 43
50 12 35	49 42 36	49 14 37	48 46 38	48 19 39	47 53 40	47 27 41	47 02 42
51 34 34	51 04 35	50 34 36	50 05 37	49 38 38	49 10 39	48 44 40	48 18 41
52 55 33	52 23 34	51 53 35	51 23 36	50 55 37	50 27 38	50 00 39	49 33 40

In critical cases ascend.

Moon's Horizontal Parallax

54'	55'	56'	57'	58'	59'	60'	61'
52 55	52 23	51 53	51 23	50 55	50 27	50 00	49 33
54 14	53 42	53 10	52 40	52 11	51 42	51 14	50 47
55 32	54 59	54 27	53 55	53 25	52 56	52 27	51 59
56 49	56 15	55 42	55 10	54 38	54 08	53 39	53 10
58 04	57 29	56 55	56 23	55 51	55 20	54 49	54 20
59 19	58 43	58 08	57 35	57 02	56 30	55 59	55 29
60 33	59 55	59 20	58 46	58 12	57 40	57 08	56 37
61 45	61 08	60 31	59 56	59 22	58 48	58 16	57 44
62 57	62 19	61 42	61 05	60 30	59 55	59 23	58 51
64 29	63 29	62 51	62 14	61 38	61 03	60 29	59 56
65 19	64 39	64 00	63 22	62 45	62 10	61 35	61 01
66 29	65 48	65 08	64 29	63 52	63 15	62 40	62 05
67 38	66 56	66 15	65 35	64 58	64 20	63 44	63 09
68 47	68 04	67 22	66 42	66 03	65 25	64 48	64 12
69 55	69 11	68 29	67 47	67 07	66 29	65 51	65 14
71 03	70 18	69 35	68 52	68 12	67 32	66 54	66 16
72 10	71 24	70 40	69 57	69 15	68 33	67 56	67 18
73 17	72 30	71 45	71 01	70 19	69 37	68 57	68 19
74 23	73 36	72 49	72 05	71 21	70 39	69 59	69 19
75 29	74 41	73 54	73 08	72 24	71 41	71 00	70 19
76 35	75 45	74 57	74 11	73 26	72 42	72 00	71 19
77 40	76 50	76 01	75 14	74 28	73 43	73 00	72 18
78 45	77 54	77 04	76 16	75 29	74 44	74 00	73 18
79 50	78 58	78 07	77 18	76 31	75 44	75 00	74 16
80 55	80 02	79 10	78 20	77 31	76 44	75 59	75 15
82 00	81 05	80 12	79 21	78 32	77 44	76 58	76 13
83 04	82 08	81 15	80 23	79 33	78 44	77 57	77 11
84 08	83 12	82 17	81 24	80 33	79 43	78 55	78 09
85 12	84 15	83 19	82 25	81 33	80 43	79 54	79 06
86 16	85 17	84 21	83 26	82 33	81 42	80 52	80 04
87 20	86 20	85 22	84 27	83 33	82 41	81 50	81 01
88 24	87 23	86 24	85 27	84 32	83 39	82 48	81 58
89 28	88 26	87 26	86 28	85 32	84 38	83 46	82 55
90 00	89 28	88 27	87 28	86 32	85 37	84 43	83 52
	90 00	89 29	88 29	87 31	86 35	85 41	84 49
		90 00	90 00	89 30	88 32	87 34	86 42
				90 00	90 00	89 30	88 33
						90 00	89 31
							90 00

In critical cases ascend.