



SUPPLEMENT TO THE AMERICAN EPHEMERIS, 1917

TABLES

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E TIMES OF RISING AND SETTING OF THE SUN AND MOON 1917 AND 1918

PUBLISHED BY THE NAUTICAL ALMANAC OFFICE, U. S. NAVAL OBSERVATORY, UNDER THE AU-THORITY OF THE SECRETARY OF THE NAVY. SOLD BY THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. PRICE FIFTEEN CENTS



WASHINGTON GOVERNMENT PRINTING OFFICE 1917







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U. S. NAVAL OBSERVATORY.

Capt. J. A. Hoodswrawn, U.S. N., Superintendent.

TABLES

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U. S. NAVAL OBSERVATORY.

Capt. J. A. HOOGEWERFF, U. S. N., Superintendent.

ASTRONOMICAL COUNCIL.

Capt. J. A. HOOGEWERFF, U. S. N. Prof. A. HALL, U. S. N. Lieut. Comdr. J. P. MURDOCK, U. S. N. Assistant Astronomer G. A. HILL. Prof. W. S. EICHELBERGER, U. S. N. Assistant Astronomer J. C. HAMMOND. Prof. F. B. LITTELL, U. S. N. Assistant Astronomer H. R. MORGAN.

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November, 1916. 2

PREFACE.

It having been decided to include in future volumes of the American Ephemeris and Nautical Almanac and of the American Nautical Almanac, beginning with the editions for 1919, tables giving the times of rising and setting of the Sun and Moon in the form contained in the following pages, this supplement containing the corresponding tables for 1917 and 1918 is issued that information on this subject might be available for immediate use.

J. A. HOOGEWERFF,

Captain, U.S. N.,

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Superintendent Naval Observatory. WASHINGTON, November, 1916.

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U. S. NAVAL ODSERVATORY

Capt. J. A. Homenwillerv, U. S. N., Superinterment

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Captain, U. S. N. ... Superintendent Naval Observatory.

WASHINGTON, November, 1916.

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LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
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LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
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LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian. For sunrise in southern latitudes see page 24.

Date.	Lat.	0	5	+1	.0°	+2	20°	+3	0°	+3	5°	+4	0°	+4	5°	+5	50°	+8	52°	+5	4°	+5	6°	+5	8°	+6	0°
Feb.	15 16 17 18 19	h 18 18 18 18 18	m 11 11 11 11 10	h 18 18 18 18 18	m 20 19 19 19 19 18	h 18 18 18 18 18	m 29 28 28 28 27 27	h 18 18 18 18 18	m 40 39 38 37 36	h 18 18 18 18 18	m 46 45 44 42 41	h 18 18 18 18 18	m 53 51 50 49 47	h 19 18 18 18 18	m 1 59 57 56 54	h 19 19 19 19 19	m 10 8 6 4 3	h 19 19 19 19 19	m 14 12 10 8 6	h 19 19 19 19 19	m 19 17 15 13 11	h 19 19 19 19 19	m 25 22 20 18 15	h 19 19 19 19 19	m 31 28 26 23 20	h 19 19 19 19 19	m 37 34 32 29 26
	20 21 22 23 24	18 18 18 18 18	10 10 10 10 10	18 18 18 18 18	18 18 17 17 16	18 18 18 18 18	26 25 25 24 23	18 18 18 18 18	35 34 33 32 31	18 18 18 18 18	40 39 38 37 35	18 18 18 18 18	46 44 43 42 40	18 18 18 18 18	53 51 49 48 46	19 18 18 18 18	1 59 57 55 53	19 19 19 18 18	4 2 0 58 56	19 19 19 19 19 18	8 6 4 2 59	19 19 19 19 19	13 10 8 6 3	19 19 19 19 19	18 15 13 10 7	19 19 19 19 19	23 20 18 15 12
Mar.	25 26 27 28 1	18 18 18 18 18	10 10 9 9 9	18 18 18 18 18	16 16 15 15 14	18 18 18 18 18	22 22 21 20 20	18 18 18 18 18	30 29 28 27 26	18 18 18 18 18	34 33 32 30 29	18 18 18 18 18	39 37 36 34 33	18 18 18 18 18	44 43 41 39 37	18 18 18 18 18	51 49 47 45 43	18 18 18 18 18	54 52 50 47 45	18 18 18 18 18	57 55 52 50 48	19 18 18 18 18	1 58 56 53 51	19 19 18 18 18	5 2 59 57 54	19 19 19 19 19 18	9 6 3 0 58
	2 3 4 5 6	18 18 18 18 18	9 9 8 8 8	18 18 18 18 18	14 13 13 12 12	18 18 18 18 18	19 18 17 16 16	18 18 18 18 18	25 23 22 21 20	18 18 18 18 18	28 27 25 24 22	18 18 18 18 18	32 30 28 27 25	18 18 18 18 18	36 34 32 30 28	18 18 18 18 18	41 39 37 34 32	18 18 18 18 18	43 41 38 36 34	18 18 18 18 18	45 43 41 38 36	18 18 18 18 18	48 46 43 40 38	18 18 18 18 18	51 48 46 43 40	18 18 18 18 18	55 52 49 46 43
	7 8 9 10 11	18 18 18 18 18	8 7 7 7 7	18 18 18 18 18	11 11 10 10 9	18 18 18 18 18	15 14 13 12 12	18 18 18 18 18	19 18 17 16 14	18 18 18 18 18	21 20 19 17 16	18 18 18 18 18	24 22 21 19 18	18 18 18 18 18	27 25 23 21 19	18 18 18 18 18	30 28 26 24 22	18 18 18 18 18	32 29 27 25 23	18 18 18 18 18	33 31 29 26 24	18 18 18 18 18	35 33 30 28 25	18 18 18 18 18	37 35 32 29 26	18 18 18 18 18	40 37 34 31 28
1044444	12 13 14 15 16	18 18 18 18 18	6 6 6 6 5	18 18 18 18 18	9 8 7 7 6	18 18 18 18 18	11 10 9 8 7	18 18 18 18 18	13 12 11 10 8	18 18 18 18 18	14 13 12 10 9	18 18 18 18 18	16 14 13 11 10	18 18 18 18 18	18 16 14 12 10	18 18 18 18 18	20 17 15 13 11	18 18 18 18 18	20 18 16 13 11	18 18 18 18 18	21 19 16 14 12	18 18 18 18 18	22 20 17 14 12	18 18 18 18 18	24 21 18 15 12	18 18 18 18 18	25 22 19 16 13
44410 4444 4444 4444 4	17 18 19 20 21	18 18 18 18 18	5 5 4 4 4	18 18 18 18 18	65543	18 18 18 18 18	66543	18 18 18 18 18	76542	18 18 18 18 18	86532	18 18 18 18 18	8 6 5 3 1	18 18 18 18 18	8 6 4 3 1	18 18 18 18 18	9 6 4 2 0	18 18 18 18 18	96420	18 18 18 18 18 17	9 6 4 2 59	18 18 18 18 18 17	9 7 4 1 59	18 18 18 18 18 17	10 7 4 1 58	18 18 18 18 18	10 7 4 1 58
松肥肥湯湯	22 23 24 25 26	18 18 18 18 18	4 3 3 2 2	18 18 18 18 18	3 2 2 1 0	18 18 18 17 17	2 1 0 59 58	18 18 17 17 17	1 0 59 57 56	18 17 17 17 17	0 59 58 56 55	18 17 17 17 17	0 58 57 55 53	17 17 17 17 17	59 57 55 53 51	17 17 17 17 17	58 56 53 51 49	17 17 17 17 17	58 55 53 50 48	17 17 17 17 17	57 54 52 49 47	17 17 17 17 17	56 53 51 48 45	17 17 17 17 17	55 53 50 47 44	17 17 17 17 17	54 52 48 46 42
· 本市市市市 ·	27 28 29 30 31	18 18 18 18 18	2 2 1 1 1	18 17 17 17 17	0 59 59 58 58	17 17 17 17 17	58 57 56 55 54	17 17 17 17 17	55 54 53 51 50	17 17 17 17 17	54 52 51 49 48	17 17 17 17 17	52 50 48 47 45	17 17 17 17 17	50 48 46 44 42	17 17 17 17 17	47 45 42 40 38	17 17 17 17 17	46 43 41 39 36	17 17 17 17 17	44 42 39 37 34	17 17 17 17 17	43 40 38 35 32	17 17 17 17 17	41 38 36 33 30	17 17 17 17 17	39 36 33 30 27
Apr.	1 2	18 18	00	17 17	57 57	17 17	53 52	17	49 48	17 17	46 45	17 17	44 42	17 17	40 38	17	36 34	17	34 32	17 17	32 30	17 17	30 27	17 17	27 24	17 17	24 21

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Feb.	16 17 18 19 20	h m 6 18 6 18 6 18 6 18 6 17 6 17	h m 6 9 6 9 6 9 6 9 6 9 6 10	h m 6 0 6 0 6 0 6 1 6 1	h m 5 49 5 50 5 51 5 51 5 52	h m 5 43 5 44 5 45 5 45 5 46 5 47	h m 5 36 5 38 5 39 5 40 5 41	h m 5 29 5 30 5 31 5 33 5 34	h m 5 19 5 21 5 23 5 24 5 26	h m 5 15 5 17 5 19 5 20 5 22	h m 5 10 5 12 5 14 5 16 5 18	h m 5 5 5 7 5 9 5 11 5 14	h m 4 59 5 1 5 4 5 6 5 8	h m 4 52 4 55 4 58 5 0 5 3
17 0 17 0 17 0 17 0 10 07	21 22 23 24 25	$\begin{array}{c} 6 & 17 \\ 6 & 17 \\ 6 & 17 \\ 6 & 17 \\ 6 & 17 \\ 6 & 17 \end{array}$	6 10 6 10 6 10 6 10 6 10 6 10	6 2 6 2 6 3 6 3 6 4	$5 53 \\ 5 54 \\ 5 54 \\ 5 55 \\ 5 55 \\ 5 56$	5 48 5 49 5 50 5 51 5 52	5 42 5 43 5 45 5 46 5 47	5 36 5 37 5 38 5 40 5 41	$5 28 \\ 5 30 \\ 5 31 \\ 5 33 \\ 5 35 $	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 5 & 20 \\ 5 & 22 \\ 5 & 24 \\ 5 & 26 \\ 5 & 28 \end{array}$	5 16 5 18 5 20 5 22 5 24	$5 11 \\ 5 13 \\ 5 16 \\ 5 18 \\ 5 20$	5 6 5 8 5 11 5 13 5 16
Mar.	26 27 28 1 2	6 16 6 16 6 16 6 16 6 16 6 16	6 10 6 10 6 10 6 10 6 10 6 11	$\begin{array}{c} 6 & 4 \\ 6 & 4 \\ 6 & 5 \\ 6 & 5 \\ 6 & 5 \end{array}$	5 57 5 57 5 58 5 59 6 0	553 553 554 555 556	5 48 5 49 5 50 5 51 5 52	5 43 5 44 5 45 5 45 5 47 5 48	5 36 5 38 5 40 5 41 5 43	5 33 5 35 5 37 5 39 5 41	5 30 5 32 5 34 5 36 5 38	5 27 5 29 5 31 5 33 5 35	5 23 5 25 5 27 5 30 5 32	5 18 5 21 5 23 5 26 5 28
16 39 16 36 16 38 16 30	34567	$\begin{array}{c} 6 & 15 \\ 6 & 15 \\ 6 & 15 \\ 6 & 15 \\ 6 & 15 \\ 6 & 15 \end{array}$	6 11 6 11 6 11 6 11 6 11 6 11	6 6 6 6 6 6 6 7 6 7	$\begin{array}{ccc} 6 & 0 \\ 6 & 1 \\ 6 & 2 \\ 6 & 2 \\ 6 & 3 \end{array}$	$\begin{array}{cccc} 5 & 57 \\ 5 & 58 \\ 5 & 59 \\ 6 & 0 \\ 6 & 0 \end{array}$	553 555 556 557 558	5 49 5 51 5 52 5 53 5 55	5 44 5 46 5 48 5 49 5 51	5 42 5 44 5 46 5 48 5 50	5 40 5 42 5 44 5 46 5 48	5 37 5 39 5 42 5 44 5 46	5 34 5 37 5 39 5 41 5 44	5 31 5 34 5 36 5 38 5 41
	8 9 10 11 12	$\begin{array}{c} 6 & 14 \\ 6 & 14 \\ 6 & 14 \\ 6 & 14 \\ 6 & 13 \end{array}$	6 11 6 11 6 11 6 11 6 11 6 11	6 7 6 8 6 8 6 8 6 9	$\begin{array}{cccc} 6 & 4 \\ 6 & 4 \\ 6 & 5 \\ 6 & 5 \\ 6 & 6 \end{array}$	$\begin{array}{cccc} 6 & 1 \\ 6 & 2 \\ 6 & 3 \\ 6 & 4 \\ 6 & 5 \end{array}$	$ \begin{array}{c} 5 & 59 \\ 6 & 0 \\ 6 & 1 \\ 6 & 2 \\ 6 & 3 \end{array} $	5 56 5 57 5 59 6 0 6 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} 5 & 51 \\ 5 & 53 \\ 5 & 55 \\ 5 & 56 \\ 5 & 58 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5 48 5 50 5 52 5 54 5 56	5 46 5 48 5 50 5 52 5 55	5 44 5 46 5 48 5 51 5 53
	13 14 15 16 17	6 13 6 13 6 12 6 12 6 12 6 12	6 11 6 11 6 11 6 11 6 11 6 11	6 9 6 9 6 10 6 10 6 10 6 10	6 7 6 7 6 8 6 9 6 9	6 5 6 6 6 7 6 8 6 9	6 4 6 5 6 6 6 7 6 8	$\begin{array}{cccc} 6 & 3 \\ 6 & 4 \\ 6 & 5 \\ 6 & 6 \\ 6 & 8 \end{array}$	$\begin{array}{cccc} 6 & 1 \\ 6 & 2 \\ 6 & 4 \\ 6 & 6 \\ 6 & 7 \end{array}$	6 0 6 2 6 4 6 5 6 7	$5 59 \\ 6 1 \\ 6 3 \\ 6 5 \\ 6 7$	5 58 6 0 6 2 6 4 6 6	5 57 5 59 6 2 6 4 6 6	$ \begin{array}{c} 5 & 56 \\ 5 & 58 \\ 6 & 1 \\ 6 & 3 \\ 6 & 6 \end{array} $
	18 19 20 21 22	$\begin{array}{c} 6 & 12 \\ 6 & 11 \\ 6 & 11 \\ 6 & 11 \\ 6 & 10 \end{array}$	6 11 6 11 6 11 6 11 6 11	6 10 6 11 6 11 6 11 6 12	$\begin{array}{c} 6 & 10 \\ 6 & 10 \\ 6 & 11 \\ 6 & 12 \\ 6 & 13 \end{array}$	6 10 6 10 6 11 6 12 6 13	6 9 6 10 6 11 6 12 6 13	6 9 6 10 6 12 6 13 6 14	6 9 6 10 6 12 6 14 6 15	6 9 6 10 6 12 6 14 6 16	6 9 6 10 6 12 6 14 6 16	6 8 6 10 6 12 6 14 6 17	6 8 6 11 6 13 6 15 6 17	6 8 6 11 6 13 6 15 6 18
	23 24 25 26 27	$\begin{array}{c} 6 & 10 \\ 6 & 10 \\ 6 & 9 \\ 6 & 9 \\ 6 & 9 \\ 6 & 9 \end{array}$	6 11 6 11 6 11 6 11 6 11 6 11	6 12 6 12 6 12 6 13 6 13 6 13	$\begin{array}{c} 6 & 13 \\ 6 & 14 \\ 6 & 14 \\ 6 & 15 \\ 6 & 15 \\ 6 & 15 \end{array}$	$\begin{array}{c} 6 & 14 \\ 6 & 14 \\ 6 & 15 \\ 6 & 16 \\ 6 & 17 \end{array}$	6 14 6 16 6 16 6 18 6 18	6 16 6 17 6 18 6 19 6 21	$\begin{array}{c} 6 & 17 \\ 6 & 18 \\ 6 & 20 \\ 6 & 22 \\ 6 & 23 \end{array}$	$\begin{array}{c} 6 & 17 \\ 6 & 19 \\ 6 & 21 \\ 6 & 22 \\ 6 & 24 \end{array}$	$\begin{array}{c} 6 & 18 \\ 6 & 20 \\ 6 & 22 \\ 6 & 24 \\ 6 & 26 \end{array}$	6 19 6 21 6 23 6 25 6 27	6 20 6 22 6 24 6 26 6 28	6 20 6 23 6 25 6 28 6 30
Apr.	28 29 30 31 1	$\begin{array}{cccc} 6 & 8 \\ 6 & 8 \\ 6 & 8 \\ 6 & 8 \\ 6 & 7 \end{array}$	6 11 6 11 6 11 6 11 6 11 6 11	$\begin{array}{c} 6 & 13 \\ 6 & 13 \\ 6 & 14 \\ 6 & 14 \\ 6 & 14 \end{array}$	$\begin{array}{c} 6 & 16 \\ 6 & 17 \\ 6 & 17 \\ 6 & 18 \\ 6 & 18 \\ 6 & 18 \end{array}$	6 18 6 18 6 19 6 20 6 21	6 20 6 20 6 22 6 22 6 22 6 24	6 22 6 23 6 24 6 26 6 27	$\begin{array}{c} 6 & 25 \\ 6 & 26 \\ 6 & 28 \\ 6 & 29 \\ 6 & 31 \end{array}$	6 26 6 28 6 29 6 31 6 33	6 27 6 29 6 31 6 33 6 35	6 29 6 30 6 33 6 35 6 37	$\begin{array}{c} 6 & 31 \\ 6 & 33 \\ 6 & 35 \\ 6 & 37 \\ 6 & 40 \end{array}$	6 32 6 35 6 37 6 40 6 42
	23	6 7 6 7	6 10 6 10	6 14 6 15	6 19 6 20	6 22 6 22	6 24 6 26	6 28 6 29	6 32 6 34	6 34 6 36	6 37 6 38	6 39 6 41	6 42 6 44	6 45 6 47

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day. To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunrise in southern latitudes see page 24. there are a latitude mediated in the second se

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Apr.	1 2 3 4 5	h m 18 0 18 0 18 0 18 0 17 59	h m 17 57 17 57 17 56 17 56 17 55 17 55	h m 17 53 17 52 17 52 17 51 17 50	h m 17 49 17 48 17 47 17 45 17 44	h m 17 46 17 45 17 44 17 42 17 41	h m 17 44 17 42 17 40 17 39 17 37	h m 17 40 17 38 17 36 17 34 17 33	h m 17 36 17 34 17 32 17 30 17 27	h m 17 34 17 32 17 30 17 27 17 25	h m 17 32 17 30 17 27 17 25 17 22	h m 17 30 17 27 17 24 17 22 17 19	h m 17 27 17 24 17 21 17 19 17 16	h m 17 24 17 21 17 18 17 15 17 12
1000 000 000 000 000 000 000 000 000 00	6 7 8 9 10	17 59 17 59 17 58 17 58 17 58 17 58	$\begin{array}{c} 17 \ 54 \\ 17 \ 54 \\ 17 \ 53 \\ 17 \ 52 \\ 17 \ 52 \\ 17 \ 52 \end{array}$	17 49 17 48 17 48 17 47 17 46	17 43 17 42 17 41 17 40 17 38	17 40 17 38 17 37 17 36 17 34	17 36 17 34 17 32 17 31 17 29	17 31 17 29 17 27 17 25 17 24	17 25 17 23 17 21 17 19 17 17	17 23 17 20 17 18 17 16 17 14	17 20 17 17 17 15 17 12 17 12 17 10	17 16 17 14 17 11 17 9 17 6	$\begin{array}{c} 17 \ 13 \\ 17 \ 10 \\ 17 \ 8 \\ 17 \ 5 \\ 17 \ 2 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
社会にある	11 12 13 14 15	17 58 17 57 17 57 17 57 17 57 17 57	$\begin{array}{c} 17 \ 52 \\ 17 \ 51 \\ 17 \ 50 \\ 17 \ 50 \\ 17 \ 50 \\ 17 \ 50 \end{array}$	17 45 17 44 17 43 17 42 17 42	17 37 17 36 17 35 17 34 17 33	17 33 17 32 17 30 17 29 17 28	17 28 17 26 17 25 17 23 17 23 17 22	17 22 17 20 17 18 17 16 17 15	17 15 17 13 17 11 17 8 17 6	$\begin{array}{c} 17 \ 11 \\ 17 \ 9 \\ 17 \ 7 \\ 17 \ 5 \\ 17 \ 2 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} 17 & 4 \\ 17 & 1 \\ 16 & 59 \\ 16 & 56 \\ 16 & 54 \end{array}$	16 59 16 56 16 54 16 51 16 48	$16 54 \\ 16 51 \\ 16 48 \\ 16 45 \\ 16 42$
10 10 10 10 10 10 10 10 10 10 10 10 10 1	16 17 18 19 20	17 56 17 56 17 56 17 56 17 56 17 55	17 49 17 48 17 48 17 47 17 47	17 41 17 40 17 39 17 39 17 38	17 32 17 31 17 30 17 29 17 28	17 26 17 25 17 24 17 23 17 21	17 20 17 19 17 17 17 16 17 14	$\begin{array}{c} 17 \ 13 \\ 17 \ 11 \\ 17 \ 10 \\ 17 \ 8 \\ 17 \ 6 \end{array}$	$\begin{array}{cccc} 17 & 4 \\ 17 & 2 \\ 17 & 0 \\ 16 & 58 \\ 16 & 56 \end{array}$	$\begin{array}{r} 17 & 0 \\ 16 & 58 \\ 16 & 56 \\ 16 & 54 \\ 16 & 52 \end{array}$	16 56 16 54 16 51 16 49 16 47	$\begin{array}{c} 16 \ 51 \\ 16 \ 48 \\ 16 \ 46 \\ 16 \ 44 \\ 16 \ 41 \end{array}$	16 46 16 43 16 40 16 38 16 35	16 39 16 36 16 33 16 30 16 28
11日本 11日本	21 22 23 24 25	17 55 17 55 17 55 17 55 17 55 17 54	17 46 17 46 17 46 17 45 17 45 17 45	17 37 17 36 17 36 17 35 17 34	17 26 17 25 17 24 17 24 17 24 17 22	17 20 17 19 17 18 17 17 17 15	17 13 17 12 17 10 17 9 17 7	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{r} 16 \ 54 \\ 16 \ 52 \\ 16 \ 50 \\ 16 \ 49 \\ 16 \ 47 \end{array}$	$\begin{array}{r} 16\ 50\\ 16\ 48\\ 16\ 46\\ 16\ 43\\ 16\ 41\\ \end{array}$	16 44 16 42 16 40 16 38 16 35	16 39 16 36 16 34 16 31 16 29	$\begin{array}{c} 16 \ 32 \\ 16 \ 29 \\ 16 \ 27 \\ 16 \ 24 \\ 16 \ 22 \end{array}$	16 25 16 22 16 19 16 16 16 13
6 6 6 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	26 27 28 29 30	17 54 17 54 17 54 17 54 17 54 17 54	$17 \ 44 \\ 17 \ 44 \\ 17 \ 44 \\ 17 \ 43 \\ 10 \ 43 \ 43 \\ 10 \ 43 \ 43 \\ 10 \ 43 \ 43 \ 43 \ 43 \ 43 \ 43 \ 43 \ 4$	17 34 17 33 17 32 17 32 17 31	17 21 17 20 17 20 17 19 17 18	17 14 17 13 17 12 17 11 17 11 17 10	$\begin{array}{cccc} 17 & 6 \\ 17 & 5 \\ 17 & 3 \\ 17 & 2 \\ 17 & 1 \end{array}$	$\begin{array}{r} 16\ 56\\ 16\ 55\\ 16\ 53\\ 16\ 52\\ 16\ 50\\ \end{array}$	16 45 16 43 16 41 16 39 16 38	16 39 16 37 16 35 16 33 16 31	16 33 16 31 16 29 16 27 16 25	16 26 16 24 16 22 16 20 16 17	16 19 16 17 16 14 16 12 16 9	$\begin{array}{c} 16 \ 10 \\ 16 \ 8 \\ 16 \ 5 \\ 16 \ 2 \\ 15 \ 59 \end{array}$
May	1 2 3 4 5	$17 54 \\ 17 53 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 1$	$17 42 \\ 17 42 \\ 17 42 \\ 17 42 \\ 17 42 \\ 17 41$	17 31 17 30 17 29 17 29 17 28	17 17 17 17 16 17 15 17 14 17 13	17 9 17 8 17 7 17 6 17 5	$\begin{array}{ccc} 17 & 0 \\ 16 & 58 \\ 16 & 57 \\ 16 & 56 \\ 16 & 55 \end{array}$	$\begin{array}{r} 16 \ 49 \\ 16 \ 47 \\ 16 \ 46 \\ 16 \ 44 \\ 16 \ 43 \end{array}$	16 36 16 34 16 32 16 30 16 29	$16 30 \\ 16 28 \\ 16 26 \\ 16 24 \\ 16 22$	$\begin{array}{c} 16 \ 23 \\ 16 \ 21 \\ 16 \ 18 \\ 16 \ 17 \\ 16 \ 15 \end{array}$	$\begin{array}{c} 16 \ 15 \\ 16 \ 13 \\ 16 \ 11 \\ 16 \ 8 \\ 16 \ 6 \end{array}$	$\begin{array}{cccc} 16 & 6 \\ 16 & 4 \\ 16 & 2 \\ 15 & 59 \\ 15 & 57 \end{array}$	$15 57 \\ 15 54 \\ 15 51 \\ 15 49 \\ 15 46$
000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6 7 8 9 10	$\begin{array}{c} 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \end{array}$	17 41 17 40 17 40 17 40 17 40 17 40	17 28 17 27 17 27 17 26 17 26 17 26	17 12 17 12 17 11 17 11 17 10 17 10	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 16 \ 54 \\ 16 \ 52 \\ 16 \ 51 \\ 16 \ 50 \\ 16 \ 49 \end{array}$	$\begin{array}{c} 16 \ 42 \\ 16 \ 40 \\ 16 \ 39 \\ 16 \ 38 \\ 16 \ 36 \end{array}$	$\begin{array}{c} 16 \ 27 \\ 16 \ 25 \\ 16 \ 24 \\ 16 \ 22 \\ 16 \ 21 \end{array}$	16 20 16 18 16 17 16 15 16 13	$\begin{array}{c} 16 \ 13 \\ 16 \ 11 \\ 16 \ 9 \\ 16 \ 7 \\ 16 \ 5 \end{array}$	$\begin{array}{cccc} 16 & 4 \\ 16 & 2 \\ 16 & 0 \\ 15 & 58 \\ 15 & 56 \end{array}$	$\begin{array}{c} 15 \ 54 \\ 15 \ 52 \\ 15 \ 50 \\ 15 \ 48 \\ 15 \ 45 \end{array}$	$\begin{array}{c} 15 \ 43 \\ 15 \ 41 \\ 15 \ 38 \\ 15 \ 36 \\ 15 \ 33 \end{array}$
6 35 6 57 6 57 6 57	11 12 13 14 15	$\begin{array}{r} 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \end{array}$	17 40 17 39 17 39 17 39 17 39 17 39	$\begin{array}{c} 17 \ 25 \\ 17 \ 25 \\ 17 \ 24 \\ 17 \ 24 \\ 17 \ 24 \\ 17 \ 24 \end{array}$	179178178177176	$\begin{array}{r} 16 \ 59 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 57 \\ 16 \ 56 \end{array}$	$\begin{array}{r} 16 \ 48 \\ 16 \ 47 \\ 16 \ 46 \\ 16 \ 45 \\ 16 \ 44 \end{array}$	$\begin{array}{r} 16 \ 35 \\ 16 \ 34 \\ 16 \ 33 \\ 16 \ 32 \\ 16 \ 30 \end{array}$	16 19 16 18 16 16 16 15 16 13	$\begin{array}{c} 16 \ 12 \\ 16 \ 10 \\ 16 \ 8 \\ 16 \ 7 \\ 16 \ 5 \end{array}$	$\begin{array}{cccc} 16 & 3 \\ 16 & 2 \\ 16 & 0 \\ 15 & 58 \\ 15 & 56 \end{array}$	$\begin{array}{c} 15 \ 54 \\ 15 \ 52 \\ 15 \ 50 \\ 15 \ 48 \\ 15 \ 46 \end{array}$	$\begin{array}{c} 15 \ 43 \\ 15 \ 41 \\ 15 \ 39 \\ 15 \ 37 \\ 15 \ 35 \end{array}$	$15 \ 31 \\ 15 \ 28 \\ 15 \ 26 \\ 15 \ 24 \\ 15 \ 21$
	16 17	17 53 17 53	17 39 17 38	17 23 17 23	17 6 17 5	16 55 16 54	16 44 16 42	16 29 16 28	16 12 16 11	$\begin{array}{ccc} 16 & 4 \\ 16 & 2 \end{array}$	15 55 15 53	15 44 15 43	15 33 15 30	15 19 15 17

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Date.	Lat.	0	0	+	10°	+	20°	+	30°	+	35°	+	40°	+	45°	+	50°	+	52°	+	54°	+	56°	+{	58°	+6	0°
Apr.	2 3 4 5 6	h 6 6 6 6 6	m 7 7 6 6 6	h 6 6 6 6 6	m 10 10 10 10 10	h 6 6 6 6	m 14 15 15 15 16	h 6 6 6 6	m 19 20 20 21 21	h 6 6 6 6	m 22 22 23 23 24 25	h 6 6 6 6	m 24 26 26 28 29	h 6 6 6 6	m 28 29 31 32 33	h 6 6 6 6	m 32 34 36 37 39	h 6 6 6 6	m 34 36 38 40 41	h 6 6 6 6	m 37 38 40 42 44	h 6 6 6 6 6	m 39 41 43 45 47	h 6 6 6 6	m 42 44 46 48 51	h 6 6 6 6 6	m45 47 50 52 54
15 9 15 9 15 9 15 58	7 8 9 10 11	6 6 6 6 6	65555	6 6 6 6 6	10 10 10 10 10	6 6 6 6 6	16 16 16 17 17	6 6 6 6 6	22 23 23 24 24	6 6 6 6 6	25 26 27 28 29	6 6 6 6 6	30 31 32 33 34	6 6 6 6 6	34 36 37 38 40	6 6 6 6 6	40 42 43 45 46	6 6 6 6 6	43 45 46 48 50	6 6 6 6	46 48 50 51 53	6 6 6 6	49 51 53 55 57	6 6 6 7	53 55 57 59 2	6 6 7 7 7	57 59 2 4 7
14 55 14 55 14 55 14 51 14 51	12 13 14 15 16	6 6 6 6 6	4 4 4 4 3	6 6 6 6 6	10 10 10 10 10	6 6 6 6 6	17 17 18 18 18	6 6 6 6 6	25 26 26 27 27	6 6 6 6	29 30 31 32 33	66666	35 36 37 38 39	6 6 6 6 6	41 42 43 45 46	6 6 6 6 6	48 50 51 53 54	6 6 6 6 6	51 53 55 57 58	6 6 6 7 7	55 57 59 1 3	6 7 7 7 7	59 1 3 5 7	7777777	4 6 8 10 13	77777	9 12 14 16 19
14 48 14 47 14 47 14 40 14 48 14 48	17 18 19 20 21	6 6 6 6 6	333322	6 6 6 6 6	10 10 11 11 11	6 6 6 6 6	19 19 19 20 20	6 6 6 6	28 29 29 30 30	6 6 6 6 6	33 34 35 36 37	6 6 6 6 6	40 41 42 43 44	6 6 6 6 6	47 48 50 51 52	6 6 6 7 7	56 57 59 0 2	7 7 7 7 7	0 2 3 5 7	7 7 7 7 7	4 6 8 10 12	777777	9 12 14 16 18	7 7 7 7 7	15 17 20 22 24	777777	21 24 26 29 31
14 42 14 44 14 40 14 59 14 58	22 23 24 25 26	6 6 6 6	2 2 2 2 2 1	6 6 6 6 6	11 11 11 11 11	6 6 6 6 6	20 20 21 21 21 22	6 6 6 6 6	31 32 32 33 34	6 6 6 6	38: 38 39 40 41	6 6 6 6 6	45 46 47 48 49	6 6 6 6 6	53 55 56 57 58	777777	4 5 7 8 10	7 7 7 7 7	8 10 12 14 15	7 7 7 7 7	14 16 18 19 21	777777	20 22 24 26 28	7 7 7 7 7	26 28 31 33 35	77777	34 36 39 41 44
May	27 28 29 30 1	6 6 6 6	1 1 1 1 0	6 6 6 6 6	11 11 11 11 11	6 6 6 6 6	22 22 22 23 23	6 6 6 6 6	34 35 36 36 37	6 6 6 6 6	42 42 43 44 45	6 6 6 6 6	50 51 52 53 54	7 7 7 7 7	0 1 2 3 5	7 7 7 7 7	11 13 14 16 18	7 7 7 7 7	17 19 20 22 24	7 7 7 7 7	23 25 27 29 30	777777	30 32 34 36 38	7 7 7 7 7	38 40 42 44 46	777777	46 49 51 54 56
	2 3 4 5 6	6 6 6 6 6	000000	6 6 6 6 6	12 12 12 12 12 12	6 6 6 6 6	24 24 24 25 25	6 6 6 6 6	38 38 39 40 40	6 6 6 6 6	46 46 47 48 49	6 6 6 6	55 56 57 58 59	7 7 7 7 7	6 7 8 10 11	77777	19 21 22 24 25	77777	25 27 29 30 32	7 7 7 7 7	32 34 36 38 40	77777	40 42 44 46 48	777777	49 51 53 55 57	788888	58 1 4 6 8
	7 8 9 10 11	6 6 6 6	0 0 0 0 0	6 6 6 6 6	12 12 13 13 13	6 6 6 6 6	26 26 26 27 27	6 6 6 6 6	41 41 42 43 43	6 6 6 6 6	50 50 51 52 53	777777	0 1 2 3 4	7 7 7 7 7	12 13 14 16 17	777777	27 28 30 31 33	77777	34 35 37 38 40	7 7 7 7 7	41 43 45 47 48	7 7 7 7 7	50 52 54 56 58	8 8 8 8 8 8 8	0 2 4 6 8	88888	11 13 16 18 21
14 38 14 38 14 40 14 40	12 13 14 15 16	6 6 6 6 6	0 0 0 0 0	6 6 6 6 6	13 13 13 14 14	6 6 6 6 6	28 28 28 29 29	6 6 6 6	44 45 45 46 46	6 6 6 6 6	54 54 55 56 57	777777	5 6 7 8 9	7 7 7 7 7	18 19 20 22 23	77777	34 36 37 38 40	77777	42 43 45 46 48	7 7 7 7 7	50 52 54 55 57	88888	0 2 3 5 7	88888	10 13 15 17 19	88888	23 25 28 30 32
25 M	17 18	6	0	66	14 14	66	29 30	66	47 48	66	58 58	777	10 10	77	24 25	77	41 42	77	49 51	78	58 0	88	9 11	88	21 23	88	35 37

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
May	17 18 19 20 21	h m 17 53 17 53 17 53 17 53 17 53 17 53	h m 17 38 17 38 17 38 17 38 17 38 17 38	h m 17 23 17 23 17 22 17 22 17 22 17 22	h m 17 5 17 4 17 4 17 4 17 3	h m 16 54 16 54 16 53 16 53 16 53	h m 16 42 16 42 16 41 16 40 16 39	h m 16 28 16 27 16 26 16 25 16 24	h m 1611 1610 168 167 166	h m 16 2 16 1 16 0 15 58 15 57	h m 15 53 15 52 15 50 15 49 15 47	h m 15 43 15 41 15 39 15 38 15 36	h m 15 30 15 29 15 27 15 25 15 23	h m 15 17 15 14 15 12 15 10 15 8
6 52 7 7 7 6 6 52 7 7 7 7 6 6	22 23 24 25 26	17 53 17 53 17 53 17 53 17 53 17 53	17 38 17 38 17 38 17 38 17 38 17 38	17 21 17 21 17 21 17 21 17 21 17 21 17 21	$\begin{array}{cccc} 17 & 2 \\ 17 & 2 \\ 17 & 2 \\ 17 & 2 \\ 17 & 1 \\ 17 & 1 \\ 17 & 1 \end{array}$	$\begin{array}{c} 16 \ 51 \\ 16 \ 51 \\ 16 \ 50 \\ 16 \ 50 \\ 16 \ 49 \end{array}$	16 38 16 38 16 37 16 37 16 36	$\begin{array}{c} 16 \ 23 \\ 16 \ 23 \\ 16 \ 22 \\ 16 \ 21 \\ 16 \ 20 \end{array}$	16 5 16 4 16 2 16 1 16 1 16 0	$\begin{array}{c} 15 \ 56 \\ 15 \ 54 \\ 15 \ 53 \\ 15 \ 52 \\ 15 \ 51 \end{array}$	$\begin{array}{c} 15 \ 46 \\ 15 \ 44 \\ 15 \ 43 \\ 15 \ 42 \\ 15 \ 41 \end{array}$	$15 34 \\ 15 33 \\ 15 31 \\ 15 30 \\ 15 28$	$\begin{array}{c} 15 \ 21 \\ 15 \ 20 \\ 15 \ 18 \\ 15 \ 16 \\ 15 \ 15 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
マ 「 「 「 」 「 」 「 」 「 」 「 」 「 」 「 」 「 」 「 」 「 」 「 」 「 」 「 」 「 」 」 」 「 」 「 」 」 」 「 」 」	27 28 29 30 31	17 54 17 54 17 54 17 54 17 54 17 54	17 38 17 37 17 37 17 37 17 38 17 38	17 20 17 20 17 20 17 20 17 20 17 20	17 0 17 0 17 0 17 0 17 0 16 59	16 49 16 48 16 48 16 48 16 48 16 47	$16 35 \\ 16 35 \\ 16 34 \\ 16 34 \\ 16 33$	16 19 16 19 16 18 16 17 16 17	$\begin{array}{ccc} 16 & 0 \\ 15 & 59 \\ 15 & 57 \\ 15 & 57 \\ 15 & 56 \end{array}$	15 50 15 49 15 48 15 47 15 46	$\begin{array}{c} 15 \ 40 \\ 15 \ 38 \\ 15 \ 37 \\ 15 \ 36 \\ 15 \ 35 \end{array}$	$\begin{array}{c} 15 \ 27 \\ 15 \ 26 \\ 15 \ 25 \\ 15 \ 24 \\ 15 \ 22 \end{array}$	$\begin{array}{c} 15 \ 13 \\ 15 \ 12 \\ 15 \ 10 \\ 15 \ 9 \\ 15 \ 8 \end{array}$	14 56 14 55 14 53 14 51 14 50
June	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	17 54 17 54 17 54 17 55 17 55	17 38 17 38 17 38 17 38 17 38 17 38	17 20 17 20 17 20 17 20 17 20 17 20	16 59 16 59 16 59 16 58 16 58	16 47 16 47 16 46 16 46 16 46	16 33 16 32 16 32 16 32 16 32 16 32	16 16 16 16 16 15 16 15 16 14	$15 55 \\ 15 55 \\ 15 54 \\ 15 53 \\ 15 53 \\ 15 53$	15 45 15 45 15 44 15 43 15 42	15 34 15 33 15 32 15 32 15 31	15 21 15 20 15 19 15 18 15 18	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	14 48 14 47 14 46 14 44 14 43
「日本の日間」	6 7 8 9 10	17 55 17 55 17 55 17 56 17 56 17 56	17 38 17 38 17 38 17 38 17 38 17 38	17 20 17 20 17 20 17 20 17 20 17 20	$\begin{array}{r} 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \end{array}$	16 46 16 46 16 46 16 45 16 45	16 31 16 31 16 31 16 31 16 31 16 30	16 14 16 14 16 13 16 13 16 13	$\begin{array}{c} 15 \ 52 \\ 15 \ 52 \\ 15 \ 52 \\ 15 \ 51 \\ 15 \ 51 \end{array}$	15 42 15 41 15 41 15 40 15 40	15 30 15 30 15 29 15 29 15 28	$15 17 \\ 15 16 \\ 15 15 \\ 15 15 \\ 15 15 \\ 15 14$	15 1 15 0 14 59 14 59 14 58	14 42 14 41 14 40 14 39 14 38
	11 12 13 14 15	17 56 17 56 17 56 17 56 17 56 17 57	17 38 17 39 17 39 17 39 17 39 17 39	17 20 17 20 17 20 17 20 17 20 17 20	16 58 16 58 16 58 16 58 16 58 16 58	16 45 16 45 16 45 16 45 16 45 16 45	16 30 16 30 16 30 16 30 16 30 16 30	$\begin{array}{c} 16 \ 13 \\ 16 \ 12 \\ 16 \ 12 \\ 16 \ 12 \\ 16 \ 12 \\ 16 \ 12 \\ 16 \ 12 \end{array}$	15 50 15 50 15 50 15 50 15 50 15 50	15 40 15 40 15 39 15 39 15 39	$\begin{array}{c} 15 \ 28 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \end{array}$	$15 14 \\ 15 13 \\ 15 1$	14 57 14 57 14 56 14 56 14 56	14 38 14 37 14 36 14 36 14 36
	16 17 18 19 20	17 57 17 57 17 57 17 57 17 58 17 58	17 39 17 40 17 40 17 40 17 40 17 40	17 20 17 20 17 21 17 21 17 21 17 21 17 21	16 58 16 59 16 59 16 59 16 59 16 59	$\begin{array}{c} 16 \ 45 \\ 16 \ 45 \\ 16 \ 46 \\ 16 \ 46 \\ 16 \ 46 \\ 16 \ 46 \end{array}$	16 30 16 30 16 30 16 31 16 31	16 12 16 12 16 12 16 13 16 13 16 13	$\begin{array}{c} 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \end{array}$	15 39 15 39 15 39 15 39 15 39 15 39	$\begin{array}{c} 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \end{array}$	$\begin{array}{c} 15 \ 12 \\ 15 \ 12 \\ 15 \ 12 \\ 15 \ 12 \\ 15 \ 12 \\ 15 \ 13 \end{array}$	$\begin{array}{c} 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \end{array}$	$14 \ 35 \\ 14 \ 35 \ 35 \\ 14 \ 35 \ 35 \\ 14 \ 35 \ 35 \ 35 \ 35 \ 35 \ 35 \ 35 \ 3$
8 13 8 18 8 18 8 18 8 21 8 21	21 22 23 24 25	17 58 17 58 17 58 17 58 17 59 17 59	17 40 17 41 17 41 17 41 17 41 17 41	17 21 17 22 17 22 17 22 17 22 17 22	16 59 17 0 17 0 17 0 17 0 17 0	16 46 16 46 16 47 16 47 16 47	$\begin{array}{c} 16 \ 31 \\ 16 \ 31 \\ 16 \ 32 \\ 16 \ 32 \\ 16 \ 32 \\ 16 \ 32 \end{array}$	16 13 16 13 16 14 16 14 16 14 16 14	$\begin{array}{c} 15 \ 50 \\ 15 \ 51 \\ 15 \ 51 \\ 15 \ 51 \\ 15 \ 51 \\ 15 \ 52 \end{array}$	15 40 15 40 15 40 15 40 15 41	$\begin{array}{c} 15 \ 27 \\ 15 \ 27 \\ 15 \ 28 \\ 15 \ 28 \\ 15 \ 29 \end{array}$	$15 13 \\ 15 13 \\ 15 14 \\ 15 1$	14 56 14 56 14 57 14 57 14 57 14 58	14 36 14 36 14 36 14 37 14 37
2011年1月1日	26 27 28 29 30	$\begin{array}{c} 17 \ 59 \\ 17 \ 59 \\ 17 \ 59 \\ 18 \ 0 \\ 18 \ 0 \\ 18 \ 0 \end{array}$	17 41 17 42 17 42 17 42 17 42 17 42	17 22 17 23 17 23 17 23 17 23 17 24	17 0 17 1 17 1 17 2 17 2 17 2 17 2	16 48 16 48 16 48 16 49 16 49	16 33 16 33 16 33 16 34 16 34	16 15 16 15 16 16 16 16 16 16 16 16	$\begin{array}{c} 15 \ 52 \\ 15 \ 53 \\ 15 \ 53 \\ 15 \ 54 \\ 15 \ 54 \end{array}$	$15 41 \\ 15 42 \\ 15 42 \\ 15 43 \\ 15 43 \\ 15 44$	$15 29 \\ 15 30 \\ 15 30 \\ 15 31 \\ 15 32$	$15 15 \\ 15 15 \\ 15 16 \\ 15 17 \\ 15 18$	14 58 14 59 15 0 15 0 15 1	14 38 14 38 14 39 14 40 14 41
July	1 2	18 0 18 0	17 43 17 43	17 24 17 24	17 2 17 3	16 50 16 50	16 35 16 35	16 17 16 18	15 55 15 56	15 44 15 45	15 32 15 33	15 18 15 19	$ \begin{array}{cccc} 15 & 2 \\ 15 & 3 \end{array} $	14 42 14 43

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian. For sunset in southern latitudes see page 24.

Date.	Lat.	0)°	+	10°	+:	20°	+:	30°	+:	35°	+	40°	+	45°	+	50°	+	52°	+{	54°	+{	56°	+8	58°	+60°
May	18 19 20 21 22	h 6 6 6 6 6	m 0 0 0 0 0	h 6 6 6 6 6	m 14 14 15 15 15	h 6 6 6 6	m 30 30 31 31 31	h 6 6 6 6	m 48 48 49 50 50	h 6 7 7 7	m 58 59 0 1 1	h77777	m 10 11 12 13 14	h 7 7 7 7 7	m 25 26 27 28 29	h 7 7 7 7	m 42 44 45 46 48	h 777777777777777777777777777777777777	m 51 52 54 55 57	h 8 8 8 8 8	m02356	h 8 8 8 8 8	m 11 13 14 16 18	h 8 8 8 8 8 8	m 23 25 27 29 31	h m 8 37 8 39 8 42 8 44 8 46
14 40 14 50 14 50 14 50	23 24 25 26 27	6 6 6 6 6	0 0 0 0 0	6 6 6 6 6	15 16 16 16 16	6 6 6 6 6	32 32 33 33 34	6 6 6 6 6	51 52 52 53 53	77777	23445	777777	15 16 17 17 18	77777	30 31 32 33 34	77777	49 50 52 53 54	7 7 8 8 8	58 59 1 2 3	8 8 8 8 8 8	8 10 11 12 14	88888	20 21 23 24 26	88888	33 35 36 38 40	8 48 8 50 8 52 8 55 8 55 8 57
June	28 29 30 31 1	6 6 6 6 6	1 1 1 1 1	6 6 6 6	17 17 17 17 17 18	-6 6 6 6 6	34 34 35 35 35	6 6 6 6 6	54 54 55 56 56	7 7 7 7 7	6 6 7 8 8	777777	19 20 21 21 21 22	777777	35 36 37 38 39	7 7 7 7 8	55 56 57 58 0	8 8 8 8 8 8 8	56789	8 8 8 8 8 8 8	15 17 18 19 20	8 8 8 8 8 8 8	28 29 31 32 34	88888	42 44 45 47 48	
15 10 16 10 16 10 16 10	2 3 4 5 6	6 6 6 6	122222	6 6 6 6 6	18 18 18 19 19	6 6 6 6 6	36 36 37 37 37	6 6 6 6 6	57 57 58 58 59	777777	9 9 10 10 11	777777	23 24 24 25 26	77777	40 40 41 42 43	8 8 8 8 8 8 8	0 2 2 3 4	88888	10 12 13 14 15	8 8 8 8 8 8 8	22 23 24 25 26	8 8 8 8 8 8 8 8	35 36 37 39 40	888888	50 51 53 54 55	9 8 9 10 9 11 9 13 9 14
	7 8 9 10 11	6 6 6 6 6	22333	6 6 6 6 6	19 20 20 20 20 20	6 6 6 6 6	38 38 38 39 39	67777 7777	59 0 0 0	77777	12 12 13 13 14	777777	26 27 27 28 28	777777	43 44 45 45 46	8 8 8 8 8 8	56778	8 8 8 8 8 8 8	16 16 17 18 19	88888	27 28 29 30 31	8 8 8 8 8 8 8	41 42 43 44 45	8 8 8 9 9	56 58 59 0 1	9 16 9 17 9 18 9 20 9 21
	12 13 14 15 16	6 6 6 6 6	3 4 4 4 4	6 6 6 6 6	21 21 21 21 21 22	6 6 6 6 6	39 40 40 40 41	77777	1 2 2 2 2 2	777777	14 14 15 15 16	77777	29 29 30 30 31	777777	46 47 48 48 48	88888	9 9 10 10 11	88888	19 20 21 21 21 22	88888	32 32 33 34 34	88888	46 46 47 48 48	9 9 9 9 9	23445	9 22 9 23 9 24 9 25 9 25
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	22 23 24 25 26	6 6 6 6 6 6	56666	6 6 6 6 6	23 23 23 24 24	6 6 6 6 6	42 42 42 42 42 43	77777	44455	777777	17 17 18 18 18	77777	32 32 33 33 33	77777	50 50 50 51 51	8 8 8 8 8 8 8	13 13 13 13 13	88888	24 24 24 24 24 24	8 8 8 8 8 8	36 36 36 36 36	88888	50 51 51 51 51 51	9 9 9 9 9	77887	9 28 9 28 9 28 9 28 9 28 9 28
July	27 28 29 30 1	6666 66	67777 7777	6 6 6 6 6	24 24 24 24 25	6 6 6 6 6	43 43 43 43 43	77777	55555	77777	18 18 18 18 18	77777	33 33 33 33 33	77777	51 51 50 50 50	888888	13 13 13 13 13 13	88888	24 24 24 24 23	888888	36 36 36 36 35	88888	50 50 50 50 49	9 9 9 9 9	77766	9 27 9 27 9 27 9 26 9 26
	23	66	88	66	25 25	66	43 43	77	55	777	18 18	77	33 32	77	50 50	8	12 12	8	23 22	88	35 34	8	49 48	99	5 4	9 25 9 24

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Date.	Lat.	0	•	+:	10°	+:	20°	+3	30°	+:	35°	+	40°	+-	45°	+	50°	+	52°	+{	54°	+	56°	+5	58°	+6	0°
July	1 2 3 4 5	h 18 18 18 18 18	m 0 0 0 1 1	h 17 17 17 17 17	m 43 43 43 44 44	b 17 17 17 17 17	m 24 24 25 25 25	h 17 17 17 17 17	m23344	h 16 16 16 16	m 50 50 50 51 51	h 16 16 16 16	m 35 35 36 36 36	h 16 16 16 16	m 17 18 18 19 20	h 15 15 15 15 15	m 55 56 56 56 57 58	h 15 15 15 15	m 44 45 46 47 47	h 15 15 15 15	m 32 33 34 35 36	h 15 15 15 15	m 18 19 20 21 22	h 15 15 15 15 15	m23456	h 14 14 14 14 14	m 42 43 44 46 47
「お田田町に	6 7 8 9 10	18 18 18 18 18	$ \begin{array}{c} 1 \\ 1 \\ 1 \\ 2 \\ 2 \end{array} $	17 17 17 17 17	44 44 45 45	17 17 17 17 17	26 26 26 27 27	17 17 17 17 17	45566	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16$	52 52 53 54 54	16 16 16 16	38 38 39 40 40	$ \begin{array}{ } 16 \\ $	20 21 22 22 23	$ \begin{array}{r} 15 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ \end{array} $	59 0 1 2	$ \begin{array}{c} 15 \\$	48 49 50 51 52	$ \begin{array}{r} 15 \\$	37 38 39 40 41	$ \begin{array}{r} 15 \\$	23 24 26 27 28	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	8 9 10 12 13	14 14 14 14 14	49 50 52 53 55
	11 12 13 14 15	18 18 18 18 18	222222	17 17 17 17 17	$45 \\ 46 \\ 46 \\ 46 \\ 46 \\ 46$	17 17 17 17 17	28 28 28 29 29	17 17 17 17 17	78889	16 16 16 16 16 16 1	55 55 56 57 57	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16$	41 42 42 43 44	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16$	24 25 26 27 28	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16$	3 4 6 8	$ \begin{array}{c} 15 \\$	53 55 56 57 58	$ \begin{array}{c} 15 \\$	42 44 45 46 47	$ \begin{array}{c} 15 \\$	30 31 32 34 35	$ \begin{array}{r} 15 \\$	14 16 18 19 21	14 14 15 15 15	57 58 0 2 4
1131102 5131102 5131202	16 17 18 19 20	18 18 18 18 18	22233	17 17 17 17 17	46 47 47 47 47	17 17 17 17 17	29 30 30 30 30 31	17 17 17 17 17	10 10 11 11 12	16 16 16 17 17	58 59 59 0 1	16 16 16 16	44 45 46 47 48	16 16 16 16	28 29 30 31 32	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ \end{array} $	9 10 11 12 14	15 16 16 16 16 16 1	59 0 2 3 4	$ \begin{array}{r} 15 \\$	49 50 52 53 54	$ \begin{array}{r} 15 \\$	37 38 40 41 43	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	23 24 26 28 30	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	6 8 10 12 14
12 49 49 49 49 12 49 49 49 49 49 49 12 49 49 49 49 49 49 12 49 49 49 49 49 49 49 49 49 49 49 49 49	21 22 23 24 25	18 18 18 18 18	00 00 00 00 00	17 17 17 17 17	48 48 48 48 48	17 17 17 17 17	31 32 32 32 33	17 17 17 17 17	$12 \\ 13 \\ 14 \\ 14 \\ 15 \\ 15$	17 17 17 17 17	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 4 \end{array} $	$ \begin{array}{r} 16 \\ 16 \\ 16 \\ 16$	49 49 50 51 52	16 16 16 16	33 34 36 37 38	$ \begin{array}{r} 16 \\ 16 \\ 16 \\ 16$	15 16 17 19 20	16 16 16 16	6 7 9 10 12	$ \begin{array}{r} 15 \\ 15 \\ 15 \\ 16 \\ 16 \\ 16 \\ \end{array} $	$56 \\ 58 \\ 59 \\ 1 \\ 2$	15 15 15 15	$\begin{array}{r} 45 \\ 46 \\ 48 \\ 50 \\ 52 \end{array}$	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	32 34 36 38 39	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	16 18 21 23 25
の日月月日日日	26 27 28 29 30	18 18 18 18 18	හ හ හ හ	17 17 17 17 17	48 49 49 49 49	17 17 17 17 17	33 34 34 34 35	17 17 17 17 17	15 16 17 17 18	17 17 17 17 17	56678	16 16 16 16	$53 \\ 54 \\ 55 \\ 56 \\ 56 \\ 56$	16 16 16 16	39 40 41 42 43	16 16 16 16	21 22 24 25 27	16 16 16 16	13 14 16 17 19	16 16 16 16	4 5 7 9 10	$ \begin{array}{c} 15 \\ 15 \\ 15 \\ 16 \end{array} $	53 55 57 58 0	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	41 43 45 47 50	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	27 30 32 34 37
Aug.	31 1 2 3 4	18 18 18 18 18	33322	17 17 17 17 17	49 50 50 50 50	17 17 17 17 17	35 35 36 36 36	17 17 17 17 17	18 19 20 20 21	17 17 17 17 17	9 9 10 11 12	16 16 16 17 17	57 58 59 0 1	16 16 16 16	44 46 47 48 49	16 16 16 16	28 30 31 32 34	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16 \\ 16 \end{array} $	20 22 24 25 27	16 16 16 16	12 14 15 17 19	$ \begin{array}{c} 16 \\ 16 \\ 16 $	2 4 6 8 10	$15 \\ 15 \\ 15 \\ 15 \\ 16 \\ 16 \\ 16 \\ 15 \\ 16 \\ 16$	52 54 56 58 0	$15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\$	39 41 44 46 48
	56789	18 18 18 18 18	22222	17 17 17 17 17	50 50 50 50 50	17 17 17 17 17	37 37 37 38 38	17 17 17 17 17	21 22 23 23 23 24	17 17 17 17 17	$12 \\ 13 \\ 14 \\ 15 \\ 16$	17 17 17 17 17	23456	16 16 16 16	50 51 52 54 55	16 16 16 16	35 37 38 40 41	16 16 16 16	28 30 31 33 35	$16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16$	20 22 24 26 28	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ \end{array} $	$12 \\ 14 \\ 16 \\ 18 \\ 20$	$16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16$	2 4 6 9 11	$15 \\ 15 \\ 15 \\ 15 \\ 16$	51 53 56 58 0
10000000000000000000000000000000000000	10 11 12 13 14	18 18 18 18 18	222211	17 17 17 17 17	50 51 51 51 51	17 17 17 17 17	38 39 39 39 39 40	17 17 17 17 17	24 25 26 26 27	17 17 17 17 17	16 17 18 18 19	17 17 17 17 17	7 8 9 10 11	16 16 16 17 17	56 57 58 0 1	16 16 16 16 16	42 44 45 47 48	$ \begin{array}{c} 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ \end{array} $	36 38 40 41 43	$ \begin{array}{r} 16 \\$	29 31 33 35 36	16 16 16 16	22 24 26 27 29	16 16 16 16 16	13 15 17 19 21	16 16 16 16 16	3 5 8 10 12
9 25 9 21	15 16	18 18	1	17 17	51 51	17 17	40 40	17 17	27 28	17 17	20 21	17 17	12 12	17	23	16 16	50 51	16 16	44 46	16 16	38 40	16 16	31 33	16 16	24 26	16 16	15 17

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

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Date.	Lat.	0	0	+	10°	+	20°	+:	30°	+:	35°	+4	40°	+4	45°	+8	50°	+5	52°	+5	54°	+5	56°	+5	80	+60°
July	2 3 4 5 6	h 6 6 6 6 6	m 8 8 8 8 8	h 6 6 6 6	m 25 25 25 25 25 25	h 6 6 6 6	m 43 43 43 43 43 43	h7777777	855555	h7777777	m 18 18 18 18 18 17	h 7 7 7 7	m 33 32 32 32 32 32	h 7 7 7 7 7	m 50 50 50 49 49	h 8 8 8 8 8 8 8	m 12 12 12 12 11 11	h 8 8 8 8 8 8	m 23 22 22 22 21	h 8 8 8 8 8 8	m 35 34 34 34 33 33	h 8 8 8 8 8 8	in 49 48 48 48 47 46	h 9 9 9 9 9	m 5 4 4 3 2	h m 9 25 9 24 9 23 9 22 9 21
	7 8 9 10 11	6 6 6 6	8 8 8 8 9 9 9	6 6 6 6 6	$25 \\ 25 \\ 25 \\ 25 \\ 25 \\ 25 \\ 25$	6 6 6 6 6	43 43 43 43 43	777777	54444	7 7 7 7 7	17 17 16 16 16	7 7 7 7 7	32 31 31 30 30	777777	49 48 48 47 47	8 8 8 8 8 8 8	10 10 9 8 8	88888	20 20 19 18 18	8 8 8 8 8 8 8	32 31 30 30 29	88888	46 45 44 43 42	99888	1 0 59 58 57	9 20 9 19 9 18 9 16 9 15
16 41 16 46 16 46 16 47	12 13 14 15 16	6 6 6 6 6	9 9 9 9 9	6 6 6 6 6	25 25 25 25 25 25	6 6 6 6 6	43 43 43 43 42	777777	43332	777777	16 15 15 15 15 14	77777	30 29 29 28 28	7 7 7 7 7 7	46 46 45 44 44	8 8 8 8 8 8	76543	8 8 8 8 8 8 8 8	17 16 15 14 13	8 8 8 8 8	28 27 26 25 24	888888	41 39 38 37 36	88888	56 54 53 51 50	9 13 9 12 9 10 9 8 9 7
14 64 10 14 68 10 17 70 17 71	17 18 19 20 21	6 6 6 6 6	9 10 10 10 10	6 6 6 6 6	$25 \\ 25 \\ 25 \\ 25 \\ 25 \\ 25 \\ 25 \\ 25$	6 6 6 6 6	42 42 42 42 42 41	777777	2 2 1 1 0	77777	14 13 12 12 12 11	77777	27 26 26 25 24	777777	43 42 41 40 39	8 8 8 7 7	2 1 0 59 58	88888	12 11 10 8 7	88888	22 21 20 18 17	88888	34 33 32 30 28	88888	48 47 45 43 42	9 5 9 3 9 1 8 59 8 57
	22 23 24 25 26	6 6 6 6 6	10 10 10 10 10	6 6 6 6 6	25 25 24 24 24 24	6 6 6 6 6 6	41 41 40 40 40	7 6 6 6 6	0 59 59 58 58	777777	11 10 10 9 8	77777	23 23 22 21 20	777777	38 38 36 36 36 34	77777	57 56 55 53 52	88888	65320	8 8 8 8 8 8 8	16 14 13 11 10	8 8 8 8 8 8	27 25 24 22 20	888888	40 38 36 34 32	8 55 8 53 8 51 8 49 8 46
1711	27 28 29 30 31	6 6 6 6 6	10 10 10 10 10	6 6 6 6 6	24 24 24 23 23	6 6 6 6 6	39 39 38 38 38 37	6 6 6 6 6	57 56 56 55 54	77777	77654	777777	19 ⁻ 18 17 16 15	77777	33 32 31 30 29	77777	51 49 48 46 45	777777	59 57 56 54 53	88888	86531	88888	18 17 15 13 11	8 8 8 8 8	30 28 26 24 22	8 44 8 42 8 39 8 37 8 35
Aug.	12345	6 6 6 6 6	10 9 9 9 9	6 6 6 6 6	23 22 22 22 22 22	6 6 6 6 6	37 37 36 36 35	6 6 6 6 6	54 53 52 51 50	77777	3 2 2 1 0	77777	14 13 12 11 10	77777	27 26 25 24 22	77777	44 42 40 39 37	77777	51 49 48 46 44	77777	59 58 56 54 52	88888	97531	888888	20 17 15 13 11	8 32 8 30 8 27 8 25 8 22
	6 7 8 9 10	6 6 6 6 6	9 9 9 9 9 9 9 8	6 6 6 6 6	21 21 21 20 20	6 6 6 6 6	35 34 33 33 32	6 6 6 6 6	50 49 48 47 46	6 6 6 6 6	59 58 57 56 54	77777	9 8 6 5 4	777777	21 19 18 16 15	77777	36 34 32 30 28	77777	42 40 39 37 35	77777	50 48 46 44 42	777777	59 56 54 52 50	888887	8 6 3 1 59	8 19 8 17 8 14 8 11 8 9
2007122 2007122 2007122	$11 \\ 12 \\ 13 \\ 14 \\ 15$	6 6 6 6 6	888888	6 6 6 6	20 19 19 19 18 18	6 6 6 6 6	32 31 30 30 29	6 6 6 6	45 44 44 43 42	6 6 6 6 6	54 52 51 50 49	7 7 7 6 6	3 2 0 59 58	777777	14 12 10 9 7	77777	27 25 23 21 20	777777	33 31 29 27 25	77777	40 38 36 34 31	777777	48 45 43 41 38	777777	56 54 51 48 46	8 6 8 3 8 0 7 58 7 55
1 81	16 17 70	6 6 331	8 7 	6 6	18 17 7	66	28 27	66	41 40	66	48 47	66	56 55	777	6 4	777	18 16	777	23 21	777	29 27	77	36 34	777	44 41	7 52 7 49

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Aug.	16 17 18 19 20	h m 18 1 18 0 18 0 18 0 18 0 18 0	h m 17 51 17 51 17 51 17 51 17 51 17 51	h m 17 40 17 41 17 41 17 41 17 41 17 41	h m 17 28 17 28 17 29 17 30 17 30	h m 17 21 17 22 17 22 17 23 17 23 17 24	h m 17 12 17 14 17 14 17 14 17 15 17 16	h m 17 3 17 4 17 6 17 7 17 8	h m 16 51 16 53 16 54 16 56 16 57	h m 16 46 16 48 16 49 16 51 16 52	h m 16 40 16 42 16 44 16 45 16 47	h m 16 33 16 35 16 35 16 37 16 39 16 41	h m 16 26 16 28 16 30 16 32 16 34	h m 16 17 16 20 16 22 16 25 16 27
9 20 9 28 9 28 9 16	21 22 23 24 25	18 0 17 59 17 59 17 59 17 59 17 58	17 51 17 51 17 51 17 51 17 51 17 51	17 42 17 42 17 42 17 42 17 42 17 43	17 31 17 31 17 32 17 33 17 33	17 24 17 25 17 26 17 27 17 28	17 17 17 18 17 19 17 20 17 21	17 9 17 10 17 11 17 13 17 14	16 59 17 0 17 2 17 3 17 5	$\begin{array}{c} 16 \ 54 \\ 16 \ 56 \\ 16 \ 57 \\ 16 \ 59 \\ 17 \ 1 \end{array}$	$\begin{array}{r} 16 \ 49 \\ 16 \ 51 \\ 16 \ 52 \\ 16 \ 54 \\ 16 \ 56 \end{array}$	16 43 16 45 16 47 16 49 16 51	16 37 16 39 16 41 16 43 16 45	16 29 16 32 16 34 16 36 16 39
9 13 9 19 9 19 7 8	26 27 28 29 30	17 58 17 58 17 58 17 58 17 57 17 57	17 51 17 51 17 51 17 51 17 51 17 51	17 43 17 43 17 43 17 43 17 44 17 44	17 34 17 34 17 35 17 35 17 36	17 28 17 29 17 30 17 30 17 31	17 22 17 23 17 24 17 25 17 26	17 15 17 16 17 17 17 18 17 20	17 6 17 8 17 9 17 11 17 12	$\begin{array}{cccc} 17 & 2 \\ 17 & 4 \\ 17 & 6 \\ 17 & 7 \\ 17 & 9 \end{array}$	16 58 17 0 17 1 17 3 17 5	$\begin{array}{c} 16 \ 53 \\ 16 \ 55 \\ 16 \ 57 \\ 16 \ 59 \\ 17 \ 1 \end{array}$	$16 47 \\ 16 50 \\ 16 52 \\ 16 54 \\ 16 56$	16 41 16 44 16 46 16 48 16 51
Sept	31 1 2 3 4	$\begin{array}{c} 17 \ 57 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \end{array}$	17 51 17 51 17 51 17 51 17 50 17 50	17 44 17 44 17 45 17 45 17 45	17 36 17 37 17 38 17 38 17 39	17 32 17 33 17 33 17 34 17 35	17 27 17 28 17 29 17 30 17 31	17 21 17 22 17 23 17 24 17 26	17 14 17 15 17 17 17 18 17 20	17 10 17 12 17 14 17 15 17 17	17 7 17 8 17 10 17 12 17 14	17 3 17 5 17 7 17 9 17 10	$\begin{array}{cccc} 16 & 58 \\ 17 & 0 \\ 17 & 2 \\ 17 & 5 \\ 17 & 7 \end{array}$	16 53 16 56 16 58 17 0 17 3
8,55 8,55 9,51 8,49 8,49	5 6 7 8 9	17 55 17 55 17 54 17 54 17 54	17 50 17 50 17 50 17 50 17 50 17 50	17 45 17 46 17 46 17 46 17 46 17 46	17 39 17 40 17 40 17 41 17 41	17 36 17 36 17 37 17 38 17 39	17 32 17 32 17 34 17 34 17 35	17 27 17 28 17 29 17 30 17 32	17 21 17 23 17 24 17 26 17 27	17 19 17 20 17 22 17 24 17 25	17 16 17 18 17 19 17 21 17 23	17 12 17 14 17 16 17 18 17 20	17 9 17 11 17 13 17 15 17 18	17 5 17 7 17 10 17 12 17 14
8 43 8 43 8 32 8 32 8 37 8 37 8 37	10 11 12 13 14	17 54 17 53 17 53 17 53 17 53 17 52	17 50 17 50 17 50 17 50 17 50 17 50	17 46 17 47 17 47 17 47 17 47 17 47	17 42 17 42 17 43 17 44 17 44	17 39 17 40 17 41 17 42 17 42	17 36 17 37 17 38 17 39 17 40	17 33 17 34 17 35 17 36 17 38	17 29 17 30 17 32 17 33 17 35	17 27 17 28 17 30 17 32 17 33	17 25 17 26 17 28 17 30 17 32	17 22 17 24 17 26 17 28 17 30	17 20 17 22 17 24 17 26 17 28	17 17 17 19 17 22 17 24 17 26
	15 16 17 18 19	17 52 17 51 17 51 17 51 17 51 17 50	17 50 17 50 17 50 17 49 17 49	17 47 17 48 17 48 17 48 17 48 17 48	17 45 17 45 17 46 17 46 17 47	17 43 17 44 17 44 17 45 17 46	17 41 17 42 17 43 17 44 17 45	17 39 17 40 17 41 17 42 17 44	17 36 17 38 17 39 17 41 17 42	17 35 17 37 17 38 17 40 17 42	17 34 17 35 17 37 17 39 17 41	17 32 17 34 17 36 17 38 17 40	17 30 17 32 17 35 17 37 17 39	17 28 17 31 17 33 17 36 17 38
8 11 8 14 8 14 9 14 9 14 9 14	20 21 22 23 24	17 50 17 50 17 49 17 49 17 48	17 49 17 49 17 49 17 49 17 49 17 49	17 48 17 49 17 49 17 49 17 49 17 49	17 47 17 48 17 48 17 49 17 50	17 47 17 47 17 48 17 49 17 50	17 46 17 47 17 48 17 49 17 50	17 45 17 46 17 47 17 48 17 50	17 44 17 45 17 47 17 48 17 50	17 43 17 45 17 46 17 48 17 50	17 42 17 44 17 46 17 48 17 50	17 42 17 44 17 46 17 48 17 50	17 41 17 43 17 45 17 47 17 50	17 40 17 43 17 45 17 47 17 50
000000 000000 7.2.8.2.8	25 26 27 28 29	17 48 17 48 17 48 17 47 17 47	17 49 17 49 17 49 17 49 17 49 17 49	17 50 17 50 17 50 17 50 17 50	17 50 17 51 17 51 17 52 17 52	17 50 17 51 17 52 17 53 17 53	17 51 17 52 17 53 17 54 17 55	17 51 17 52 17 53 17 55 17 56	17 51 17 53 17 54 17 56 17 57	17 51 17 53 17 55 17 56 17 58	17 52 17 53 17 55 17 57 17 59	17 52 17 54 17 56 17 58 18 0	$\begin{array}{c} 17 \ 52 \\ 17 \ 54 \\ 17 \ 56 \\ 17 \ 58 \\ 18 \ 0 \end{array}$	$\begin{array}{c} 17 \ 52 \\ 17 \ 54 \\ 17 \ 57 \\ 17 \ 59 \\ 18 \ 2 \end{array}$
Oct.	30 1	17 47	17 49 17 49	17 51 17 51	17 53 17 53	17 54 17 55	17 56 17 56	17 57 17 58	17 59 18 0	18 0 18 1	18 1 18 2	18 2 18 4	18 2 18 5	18 4 18 6

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian. For sunset in southern latitudes see page 24.

Date.	Lat.	0	0	+1	10°	+2	20°	+;	30°	+3	35°	+4	10°	+4	45°	+5	50°	+8	52°	+	54°	+	56°	+5	58°	+60°
Aug.	17 18 19 20 21	h 6 6 6 6	m 7 7 7 6	h 6 6 6 6	m 17 16 16 16 16	h 6 6 6 6	m 27 27 26 25 25	h 6 6 6 6	m 40 39 38 37 36	h 6 6 6 6	m 47 46 44 43 42	h 6 6 6 6	m 55 53 52 51 49	h 7 7 6 6	m 4 3 1 59 58	h 7 7 7 7 7	m 16 14 12 10 8	h 7 7 7 7 7	m 21 19 17 15 13	h 7 7 7 7	m 27 25 23 20 18	h777777	m 34 31 29 26 24	h7777777	m 41 38 36 33 31	h m 7 49 7 46 7 44 7 41 7 38
18 18 18 20 18 20 18 25 18 25 18 28	22 23 24 25 26	6 6 6 6 6	66655 5	6 6 6 6 6	15 14 14 13 13	6 6 6 6 6	24 23 23 22 21	6 6 6 6 6	34 33 32 31 30	6 6 6 6 6	41 39 38 37 36	6 6 6 6 6	48 46 45 43 42	6 6 6 6 6	56 54 52 51 49	77776	6 4 2 0 58	7 7 7 7 7	11 8 6 4 2	777777	16 14 11 9 6	77777	22 19 16 14 12	777777	28 25 22 20 17	7 35 7 32 7 29 7 26 7 23
18 30 18 38 18 35 18 35 18 35 18 40	27 28 29 30 31	6 6 6 6 6	54444	6 6 6 6	12 12 11 10 10	6 6 6 6 6	20 19 18 17 16	6666	29 28 27 25 24	6 6 6 6 6	34 33 32 30 29	66666	40 39 37 36 34	6 6 6 6 6	$47 \\ 46 \\ 44 \\ 42 \\ 40$	6 6 6 6 6	56 54 52 50 48	7 6 6 6 6	0 58 55 53 51	7 7 6 6 6	4 2 59 57 55	7 7 7 7 6	9 6 4 1 59	777777	14 12 9 6 3	7 20 7 18 7 14 7 12 7 8
Sept.	1 2 3 4 5	6 6 6 6 6	33322	6 6 6 6 6	9 9 8 8 7	6 6 6 6 6	16 15 14 13 12	6 6 6 6 6	23 22 21 20 18	6 6 6 6 6	28 26 25 24 22	6 6 6 6 6	33 31 29 28 26	6 6 6 6 6	38 36 35 33 31	6 6 6 6	45 43 41 39 37	6 6 6 6 6	49 46 44 42 40	6 6 6 6 6	52 50 47 45 43	6 6 6 6 6	56 54 51 48 46	7 6 6 6 6	$ \begin{array}{c} 1 \\ 58 \\ 55 \\ 52 \\ 50 \\ \end{array} $	7 6 7 2 7 0 6 56 6 54
	6 7 8 9 10	6 6 6 6 6	$2 \\ 1 \\ 1 \\ 0 \\ 0 \\ 0$	6 6 6 6 6	6 6 5 4 4	6 6 6 6	11 10 10 9 8	6 6 6 6 6	17 16 15 14 12	6 6 6 6 6	21 19 18 16 15	6 6 6 6 6	24 23 21 20 18	6 6 6 6 6 6	29 27 25 24 22	6 6 6 6	35 32 30 28 26	6 6 6 6	37 35 33 30 28	6 6 6 6 6	40 38 35 33 30	6 6 6 6 6	43 41 38 35 33	6666 66	47 44 41 38 35	6 50 6 48 6 44 6 41 6 38
19 8 19 10 19 15 19 18	11 12 13 14 15	66555 55	0 0 59 59 59 58	6 6 6 6 6	3 3 2 1 1	6 6 6 6 6	76543	6 6 6 6 6	11 10 9 7 6	6 6 6 6 6	14 12 11 9 8	6 6 6 6 6	16 15 13 12 10	6 6 6 6 6	20 18 16 14 12	6 6 6 6 6	24 22 20 17 15	6 6 6 6 6	26 23 21 19 16	6 6 6 6 6	28 25 23 20 18	6 6 6 6 6	30 27 25 22 19	6 6 6 6 6	33 30 27 24 21	6 35 6 32 6 29 6 26 6 23
	16 17 18 19 20	55555	58 58 58 57 57	66555	0 0 59 58 58	666 65	2 1 0 59	6 6 6 6 6	5 4 2 1 0	6 6 6 6 6	65 42 1	6 6 6 6 6	87532	6 6 6 6 6	10 8 6 5 3	6 6 6 6 6 6	13 11 8 6 3	66666	14 12 9 7 5	6 6 6 6 6	15 13 10 8 5	6 6 6 6 6	17 14 11 9 6	6 6 6 6 6	18 16 13 10 7	6 20 6 17 6 14 6 11 6 8
	21 22 23 24 25	55555	56 56 56 55 55	5 5 5 5 5 5 5 5	57 56 56 55 54	55555	58 57 56 55 54	55555	59 57 56 55 54	55555	59 58 56 55 53	65555	0 59 57 55 53	65555	1 59 57 55 53	66555 5	2 0 57 55 53	66555	$2 \\ 0 \\ 58 \\ 55 \\ 53 $	66555	3 0 58 55 53	6 6 5 5 5 5	3 1 58 55 53	66555 55	4 1 58 56 53	$ \begin{array}{cccc} 6 & 5 \\ 6 & 2 \\ 5 & 59 \\ 5 & 56 \\ 5 & 53 \\ \end{array} $
12 46 12 46 13 54 15 54 15 56 15 56	26 27 28 29 30	55555	55 54 54 54 53	55555	54 53 53 52 51	55555	53 52 51 50 50	55555	52 51 50 49 47	55555	52 50 49 48 46	55555	52 50 48 47 45	55555	51 49 47 46 44	55555	51 48 46 44 42	55555	51 48 46 44 41	55555	50 48 45 43 40	55555	50 47 45 42 40	55555	50 47 44 41 38	5 50 5 46 5 44 5 40 5 37
Oct.	$\frac{1}{2}$	55	53 53	55	51 50	55	49 48	55	46 45	55	45 44	55	44 42	55	42 40	55	40 38	55	39 37	55	38 36	55	37 34	55	36 33	5 34 5 31

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

		1	1 .	1	1	1	1	I	1	1	1	1	(1
Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Oct.	12345	h m 17 46 17 46 17 46 17 45 17 45	h m 17 49 17 49 17 48 17 48 17 48 17 48	h m 17 51 17 51 17 52 17 52 17 52 17 52	h m 17 53 17 54 17 55 17 55 17 55 17 56	h m 17 55 17 56 17 56 17 57 17 58	h m 17 56 17 58 17 58 18 0 18 0	h m 17 58 18 0 18 1 18 2 18 3	h m 18 0 18 2 18 4 18 5 18 7	h m 18 1 18 3 18 5 18 6 18 8	h m 18 2 18 4 18 6 18 8 18 10	h m 18 4 18 6 18 8 18 10 18 12	h m 18 5 18 7 18 9 18 11 18 14	h m 18 6 18 9 18 11 18 13 18 16
1777788 1777788 1988	6 7 8 9 10	17 45 17 44 17 44 17 44 17 44 17 44	17 48 17 48 17 48 17 48 17 48 17 48	$\begin{array}{c} 17 \ 52 \\ 17 \ 52 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \end{array}$	$\begin{array}{r} 17 \ 56 \\ 17 \ 57 \\ 17 \ 58 \\ 17 \ 58 \\ 17 \ 59 \end{array}$	$\begin{array}{cccc} 17 & 59 \\ 18 & 0 \\ 18 & 0 \\ 18 & 1 \\ 18 & 2 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18 5 18 6 18 7 18 8 18 10	18 8 18 10 18 11 18 13 18 14	18 10 18 12 18 13 18 15 18 15 18 17	18 12 18 14 18 15 18 17 18 19	18 14 18 16 18 18 18 20 18 22	18 16 18 18 18 20 18 22 18 25	18 18 18 20 18 23 18 25 18 25 18 28
1911年1月1日の1911年1月1日の1911年1月1日の1911年1月1日の1911日の	11 12 13 14 15	17 43 17 43 17 43 17 43 17 43 17 42	17 48 17 48 17 48 17 48 17 48 17 48	$17 54 \\ 17 54 \\ 17 54 \\ 17 55 \\ 17 5$	180180181181182	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18 7 18 8 18 9 18 10 18 11	18 11 18 12 18 14 18 15 18 16	18 16 18 18 18 19 18 21 18 22	18 18 18 20 18 22 18 24 18 24 18 26	18 21 18 23 18 25 18 27 18 27 18 28	18 24 18 26 18 28 18 30 18 32	18 27 18 29 18 31 18 34 18 36	18 30 18 33 18 35 18 38 18 40
0 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16 17 18 19 20	17 42 17 42 17 42 17 42 17 42 17 42	17 49 17 49 17 49 17 49 17 49 17 49	$\begin{array}{r} 17 \ 55 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 57 \end{array}$	183184184185186	18 7 18 8 18 9 18 10 18 10	18 12 18 13 18 14 18 15 18 16	18 18 18 19 18 20 18 21 18 23	18 24 18 26 18 27 18 29 18 30	18 27 18 29 18 31 18 32 18 34	18 30 18 32 18 34 18 36 18 38	18 34 18 36 18 38 18 40 18 42	18 38 18 40 18 43 18 45 18 45 18 47	18 43 18 45 18 48 18 50 18 53
80000000000000000000000000000000000000	21 22 23 24 25	17 41 17 41 17 41 17 41 17 41 17 41	17 49 17 49 17 49 17 50 17 50	17 57 17 58 17 58 17 58 17 58 17 59	186187188188189	18 11 18 12 18 13 18 14 18 15	18 17 18 18 18 19 18 21 18 22	18 24 18 26 18 27 18 28 18 29	18 32 18 34 18 35 18 37 18 39	18 36 18 38 18 39 18 41 18 43	18 40 18 42 18 44 18 46 18 48	18 44 18 47 18 49 18 51 18 53	$\begin{array}{r} 18 \ 50 \\ 18 \ 52 \\ 18 \ 54 \\ 18 \ 56 \\ 18 \ 59 \end{array}$	$\begin{array}{cccc} 18 & 55 \\ 18 & 58 \\ 19 & 0 \\ 19 & 3 \\ 19 & 5 \end{array}$
(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	26 27 28 29 30	17 41 17 41 17 40 17 40 17 40 17 40	17 50 17 50 17 50 17 50 17 50 17 50	$\begin{array}{cccc} 17 & 59 \\ 18 & 0 \\ 18 & 0 \\ 18 & 0 \\ 18 & 1 \end{array}$	18 10 18 11 18 11 18 12 18 12 18 13	18 16 18 17 18 18 18 19 18 20	18 23 18 24 18 25 18 26 18 27	18 31 18 32 18 34 18 35 18 36	18 40 18 42 18 44 18 45 18 45 18 47	18 45 18 47 18 48 18 50 18 52	$\begin{array}{c} 18 \ 50 \\ 18 \ 52 \\ 18 \ 54 \\ 18 \ 56 \\ 18 \ 58 \end{array}$	$\begin{array}{c} 18 \ 55 \\ 18 \ 57 \\ 18 \ 59 \\ 19 \ 1 \\ 19 \ 4 \end{array}$	19 1 19 3 19 6 19 8 19 10	19 8 19 10 19 13 19 16 19 18
Nov.	31 1 2 3 4	17 40 17 40 17 40 17 40 17 40 17 40	17 51 17 51 17 51 17 51 17 51 17 52	$\begin{array}{cccc} 18 & 1 \\ 18 & 2 \\ 18 & 2 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \end{array}$	18 14 18 14 18 15 18 16 18 17	18 20 18 21 18 22 18 23 18 23 18 24	18 28 18 30 18 31 18 32 18 33	18 38 18 39 18 40 18 42 18 43	$\begin{array}{r} 18 \ 49 \\ 18 \ 50 \\ 18 \ 52 \\ 18 \ 54 \\ 18 \ 55 \end{array}$	18 54 18 56 18 57 18 59 19 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19 6 19 8 19 10 19 12 19 14	19 13 19 15 19 17 19 20 19 22	19 21 19 23 19 26 19 28 19 31
0.659.05°	56789	17 40 17 40 17 40 17 40 17 41	$\begin{array}{c} 17 \ 52 \\ 17 \ 52 \\ 17 \ 52 \\ 17 \ 52 \\ 17 \ 52 \\ 17 \ 53 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18 17 18 18 18 19 18 20 18 21	18 25 18 26 18 27 18 28 18 29	18 34 18 35 18 36 18 38 18 39	18 44 18 46 18 47 18 49 18 50	18 57 18 59 19 0 19 2 19 4	19 3 19 5 19 6 19 8 19 10	19 9 19 11 19 13 19 15 19 17	19 16 19 18 19 20 19 23 19 25	19 24 19 27 19 29 19 31 19 34	19 33 19 36 19 39 19 41 19 44
1000 000 000 000 000 000 000 000 000 00	10 11 12 13 14	17 41 17 41 17 41 17 41 17 41 17 41	$17 53 \\ 17 54 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 1$	186187188188189	$\begin{array}{c} 18 \ 22 \\ 18 \ 22 \\ 18 \ 23 \\ 18 \ 24 \\ 18 \ 25 \end{array}$	18 30 18 31 18 32 18 33 18 34	18 40 18 41 18 42 18 43 18 43	$\begin{array}{r} 18 \ 51 \\ 18 \ 53 \\ 18 \ 54 \\ 18 \ 56 \\ 18 \ 57 \end{array}$	19 5 19 7 19 9 19 10 19 12	19 12 19 14 19 15 19 17 19 19	19 19 19 21 19 23 19 25 19 26	19 27 19 29 19 31 19 33 19 33	19 36 19 38 19 41 19 43 19 45	19 46 19 49 19 51 19 54 19 56
	15 16	17 41 17 42	17 55 17 55	18 9 18 10	18 26 18 26	18 35 18 36	18 46 18 47	18 58 19 0	19 14 19 15	19 21 19 22	19 28 19 30	19 37 19 39	19 47 19 50	$ \begin{array}{c} 19 59 \\ 20 1 \end{array} $

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian. For sunset in southern latitudes see page 24.

The second se	and the second second				100 million 100 million 100 million								
Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Oct. 2 3 4 5 6	h m 5 53 5 52 5 52 5 52 5 52 5 52 5 52	h m 5 50 5 50 5 49 5 48 5 48	h m 5 48 5 47 5 46 5 45 5 45 5 44	h m 5 45 5 44 5 43 5 41 5 40	h m 5 44 5 42 5 41 5 39 5 38	h m 5 42 5 40 5 39 5 37 5 35	h m 5 40 5 38 5 36 5 34 5 32	h m 5 38 5 35 5 33 5 31 5 29	h m 5 37 5 34 5 32 5 30 5 28	h m 5 36 5 33 5 31 5 28 5 26	h m 5 34 5 32 5 29 5 26 5 24	h m 5 33 5 30 5 27 5 24 5 22	h m 5 31 5 28 5 26 5 22 5 20
7 8 9 10 11	$5 51 \\ 5 51 \\ 5 51 \\ 5 51 \\ 5 50 \\ $	5 47 5 47 5 46 5 46 5 46 5 45	5 43 5 43 5 42 5 41 5 40	5 39 5 38 5 37 5 36 5 34	5 36 5 35 5 34 5 33 5 31	5 34 5 32 5 31 5 29 5 28	5 31 5 29 5 27 5 25 5 23	5 27 5 25 5 23 5 20 5 18	5 25 5 23 5 21 5 18 5 16	5 23 5 21 5 18 5 16 5 14	$5 21 \\ 5 19 \\ 5 16 \\ 5 14 \\ 5 11$	5 19 5 16 5 14 5 11 5 8	$5 16 \\ 5 14 \\ 5 10 \\ 5 8 \\ 5 5 $
12 13 14 15 16	5 50 5 50 5 49 5 49 5 49 5 49	5 45 5 44 5 44 5 43 5 43	5 39 5 38 5 38 5 33 5 37 5 36	5 33 5 32 5 31 5 30 5 29	5 30 5 29 5 27 5 26 5 25	5 26 5 24 5 23 5 22 5 20	5 22 5 20 5 18 5 16 5 15	5 16 5 14 5 12 5 10 5 8	$5 14 \\ 5 12 \\ 5 10 \\ 5 7 \\ 5 5 $	5 11 5 9 5 7 5 4 5 2 $11 $	5 8 5 6 5 3 5 1 4 58	5 5 5 2 5 0 4 57 4 54	5 2 4 59 4 56 4 53 4 50
17 18 19 20 21	5 49 5 49 5 48 5 48 5 48 5 48	5 42 5 42 5 41 5 41 5 41 5 40	5 35 5 35 5 34 5 33 5 33	5 28 5 27 5 26 5 25 5 25 5 24	5 23 5 22 5 21 5 20 5 19	5 18 5 17 5 16 5 14 5 13	$ \begin{array}{r} 5 & 13 \\ 5 & 11 \\ 5 & 9 \\ 5 & 8 \\ 5 & 6 \end{array} $	5 6 5 4 5 2 5 0 4 58	5 3 5 1 4 59 4 57 4 54	$5 0 \\ 4 57 \\ 4 55 \\ 4 53 \\ 4 50$	$\begin{array}{r} 4 & 56 \\ 4 & 53 \\ 4 & 51 \\ 4 & 48 \\ 4 & 46 \end{array}$	4 52 4 49 4 46 4 44 4 41	4 47 4 44 4 41 4 38 4 36
22 23 24 25 26	5 48 5 48 5 48 5 48 5 48 5 47	$5 40 5 40 5 39 5 39 5 39 5 39 5 39 \\ $	5 32 5 31 5 31 5 31 5 30 5 29	5 23 5 22 5 21 5 20 5 19	5 17 5 16 5 15 5 15 5 14 5 13	$ \begin{array}{r} 5 & 11 \\ 5 & 10 \\ 5 & 9 \\ 5 & 7 \\ 5 & 6 \end{array} $	5 4 5 3 5 1 5 0 4 58	4 56 4 54 4 52 4 50 4 49	4 52 4 50 4 48 4 46 4 44	4 48 4 46 4 44 4 42 4 40	4 44 4 41 4 39 4 37 4 34	4 38 4 36 4 33 4 31 4 28	4 32 4 30 4 27 4 24 4 22
27 28 29 30 31	5 47 5 47 5 47 5 47 5 47 5 47	5 38 5 38 5 38 5 38 5 37 5 37	5 29 5 28 5 28 5 28 5 27 5 26	5 18 5 17 5 16 5 15 5 14	5 12 5 11 5 10 5 8 5 8	5 5 5 3 5 2 5 1 5 0	4 57 4 55 4 54 4 52 4 51	4 47 4 45 4 43 4 41 4 40	4 42 4 40 4 38 4 37 4 35	4 37 4 35 4 33 4 31 4 29	4 32 4 30 4 27 4 25 4 23	4 26 4 23 4 21 4 18 4 16	4 19 4 16 4 14 4 11 4 8
Nov. 1 2 3 4 5	5 47 5 47 5 47 5 47 5 47 5 47 5 47	$5 \ 37 \\ 5 \ 36 \ 36 \\ 5 \ 36 \ 36 \ $	5 26 5 25 5 25 5 25 5 24 5 24 5 24	5 14 5 13 5 12 5 11 5 10	5 6 5 6 5 4 5 4 5 3	4 58 4 57 4 56 4 55 4 54	4 49 4 48 4 46 4 45 4 44	4 38 4 36 4 34 4 33 4 31	4 33 4 31 4 29 4 27 4 26	4 27 4 25 4 23 4 21 4 19	4 21 4 18 4 16 4 14 4 12	4 14 4 11 4 9 4 7 4 4	4 6 4 3 4 0 3 58 3 55
6 7 8 9 10	5 47 5 47 5 47 5 47 5 47 5 48	5 36 5 36 5 35 5 35 5 35 5 35	5 24 5 23 5 23 5 23 5 22 5 22	5 10 5 9 5 8 5 8 5 7	$ \begin{array}{r} 5 & 2 \\ 5 & 1 \\ 5 & 0 \\ 4 & 59 \\ 4 & 58 \end{array} $	$\begin{array}{c} 4 & 53 \\ 4 & 52 \\ 4 & 51 \\ 4 & 50 \\ 4 & 49 \end{array}$	4 42 4 41 4 40 4 39 4 37	4 30 4 28 4 27 4 25 4 24	4 24 4 22 4 20 4 19 4 17	4 17 4 16 4 14 4 12 4 10	$\begin{array}{c} 4 & 10 \\ 4 & 8 \\ 4 & 6 \\ 4 & 4 \\ 4 & 2 \end{array}$	4 2 4 0 3 58 3 55 3 53	3 53 3 50 3 48 3 46 3 43
$11 \\ 12 \\ 13 \\ 14 \\ 15$	5 48 5 48 5 48 5 48 5 48 5 48	5 35 5 35 5 35 5 35 5 35 5 35	5 22 5 21 5 21 5 21 5 21 5 21 5 20	5 6 5 5 5 5 5 5 5 4	4 58 4 57 4 56 4 56 4 55	4 48 4 47 4 46 4 45 4 44	4 36 4 35 4 34 4 33 4 32	4 22 4 21 4 19 4 18 4 17	4 16 4 14 4 13 4 11 4 10	$ \begin{array}{r} 4 & 8 \\ 4 & 7 \\ 4 & 5 \\ 4 & 4 \\ 4 & 2 \end{array} $	4 0 3 58 3 57 3 55 3 53	3 51 3 49 3 47 3 45 3 43	3 41 3 38 3 36 3 34 3 32
16 17	5 48 5 48	5 35 5 35	5 20 5 20	5453	4 54 4 54	4 44 4 43	4 31 4 30	4 16 4 14	4 8 4 7	4 0 3 59	3 52 3 50	3 41 3 39	3 30 3 27

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov. 16 17 18 19 20	h m 17 42 17 42 17 42 17 42 17 42 17 42	h m 17 55 17 56 17 56 17 56 17 57 17 57	h m 18 10 18 10 18 11 18 12 18 12	h m 18 26 18 27 18 28 18 29 18 30	h m 18 36 18 37 18 38 18 39 18 40	h m 18 47 18 48 18 49 18 50 18 51	h m 19 0 19 1 19 2 19 4 19 5	h m 19 15 19 17 19 18 19 20 19 22	h m 19 22 19 24 19 26 19 28 19 29	h m 19 30 19 32 19 34 19 36 19 38	h m 19 39 19 42 19 44 19 46 19 48	h m 19 50 19 52 19 54 19 56 19 58	h m 20 1 20 4 20 6 20 9 20 11
21 22 23 24 25	17 42 17 43 17 43 17 43 17 43 17 44	17 57 17 58 17 58 17 58 17 59 17 59	18 13 18 14 18 14 18 14 18 15 18 15 18 15	$18 \ 31 \\ 18 \ 31 \\ 18 \ 32 \\ 18 \ 33 \\ 18 \ 34$	18 41 18 42 18 43 18 44 18 45	$\begin{array}{r} 18 \ 52 \\ 18 \ 54 \\ 18 \ 55 \\ 18 \ 56 \\ 18 \ 57 \end{array}$	19 6 19 8 19 9 19 10 19 11	19 23 19 24 19 26 19 28 19 29	19 31 19 33 19 34 19 36 19 37	19 40 19 41 19 43 19 45 19 45 19 47	19 49 19 51 19 53 19 55 19 57	20 1 20 3 20 5 20 7 20 9	20 14 20 16 20 18 20 21 20 23
26 27 28 29 30	17 44 17 44 17 44 17 45 17 45	$\begin{array}{cccc} 18 & 0 \\ 18 & 0 \\ 18 & 1 \\ 18 & 1 \\ 18 & 2 \end{array}$	18 16 18 17 18 17 18 17 18 18 18 19	18 35 18 36 18 36 18 37 18 38	18 46 18 47 18 48 18 48 18 49	18 58 18 59 19 0 19 1 19 2	19 13 19 14 19 15 19 16 19 17	19 30 19 32 19 33 19 35 19 36	19 39 19 40 19 42 19 43 19 43	19 48 19 50 19 52 19 53 19 55	$\begin{array}{cccc} 19 & 59 \\ 20 & 1 \\ 20 & 2 \\ 20 & 4 \\ 20 & 6 \end{array}$	20 11 20 13 20 15 20 17 20 19	20 25 20 28 20 30 20 32 20 34
Dec. 1 2 3 4 5	17 46 17 46 17 47 17 47 17 47 17 47	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18 19 18 20 18 20 18 21 18 21 18 22	18 39 18 40 18 40 18 41 18 42	18 50 18 51 18 52 18 53 18 53	193194195196197	19 19 19 20 19 21 19 22 19 23	19 37 19 39 19 40 19 41 19 42	19 46 19 48 19 49 19 50 19 52	19 56 19 58 19 59 20 1 20 2	20 8 20 9 20 11 20 12 20 14	$\begin{array}{c} 20 \ 21 \\ 20 \ 22 \\ 20 \ 24 \\ 20 \ 26 \\ 20 \ 27 \end{array}$	20 36 20 38 20 40 20 42 20 42 20 44
6 7 8 9 10	17 48 17 48 17 49 17 49 17 50	18 4 18 5 18 6 18 6 18 7	18 22 18 23 18 24 18 24 18 24 18 25	18 43 18 43 18 44 18 45 18 46	18 54 18 55 18 56 18 57 18 58	19 8 19 9 19 10 19 10 19 11	19 24 19 25 19 26 19 27 19 28	19 44 19 45 19 46 19 47 19 48	19 53 19 54 19 55 19 56 19 58	20 3 20 5 20 6 20 7 20 8	20 15 20 17 20 18 20 19 20 20	20 29 20 30 20 32 20 33 20 35	20 45 20 47 20 49 20 50 20 52
$11 \\ 12 \\ 13 \\ 14 \\ 15$	17 50 17 50 17 51 17 51 17 51 17 52	187188188189189	18 25 18 26 18 26 18 27 18 28	18 46 18 47 18 48 18 48 18 49	18 58 18 59 19 0 19 0 19 1	19 12 19 13 19 14 19 14 19 14 19 15	19 29 19 30 19 30 19 31 19 32	19 49 19 50 19 51 19 52 19 52	19 59 20 0 20 0 20 1 20 2	20 9 20 10 20 11 20 12 20 13	20 22 20 23 20 24 20 25 20 26	20 36 20 37 20 38 20 40 20 40	20 53 20 54 20 56 20 57 20 58
16 17 18 19 20	17 52 17 53 17 53 17 54 17 54	18 10 18 10 18 11 18 11 18 11 18 12	18 28 18 29 18 29 18 30 18 30	18 50 18 50 18 51 18 51 18 51 18 52	192192193193194	19 16 19 16 19 17 19 18 19 18	19 33 19 33 19 34 19 34 19 34 19 35	19 53 19 54 19 55 19 55 19 55 19 56	$\begin{array}{cccc} 20 & 3 \\ 20 & 4 \\ 20 & 5 \\ 20 & 5 \\ 20 & 6 \end{array}$	20 14 20 15 20 16 20 16 20 16 20 17	20 27 20 28 20 28 20 29 20 30	20 42 20 42 20 43 20 44 20 44	$\begin{array}{c} 20 \ 59 \\ 21 \ 0 \\ 21 \ 1 \\ 21 \ 1 \\ 21 \ 2 \\ 21 \ 2 \end{array}$
21 22 23 24 25	$\begin{array}{c} 17 \ 55 \\ 17 \ 55 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 57 \end{array}$	18 12 18 13 18 13 18 14 18 14 18 14	18 31 18 31 18 32 18 32 18 32 18 33	18 52 18 53 18 53 18 54 18 54 18 54	194195195196196	19 19 19 19 19 20 19 20 19 20 19 20	19 36 19 36 19 36 19 37 19 37	19 56 19 57 19 57 19 58 19 58	20 6 20 7 20 7 20 8 20 8	20 18 20 18 20 18 20 19 20 19 20 19	20 30 20 31 20 31 20 31 20 31 20 32	20 45 20 46 20 46 20 46 20 46 20 46	$\begin{array}{cccc} 21 & 3 \\ 21 & 3 \\ 21 & 3 \\ 21 & 4 \\ 21 & 4 \end{array}$
26 27 28 29 30	17 57 17 58 17 58 17 59 17 59	18 15 18 15 18 16 18 16 18 16 18 16	18 33 18 34 18 34 18 34 18 34 18 35	18 54 18 55 18 55 18 55 18 55 18 56	197197197197198	19 21 19 21 19 21 19 22 19 22 19 22	19 38 19 38 19 38 19 38 19 38 19 38	19 58 19 58 19 59 19 59 19 59 19 59	20 8 20 8 20 8 20 8 20 8 20 8	20 19 20 19 20 19 20 19 20 19 20 19 20 19	20 32 20 32 20 32 20 32 20 32 20 32	20 47 20 47 20 47 20 46 20 46	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
66 6 31	18 0	18 17	18 35	18 56	19 8	19 22	19 38	19 59	20 8	20 19	20 32	20 46	21 3

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov. 17 18 19 20 21	h m 5 48 5 49 5 49 5 49 5 49 5 50	h m 5 35 5 35 5 35 5 35 5 35 5 35	h m 5 20 5 20 5 20 5 20 5 20 5 20 5 19	h m 5 3 5 3 5 2 5 2 5 2 5 2	h m 4 54 4 53 4 53 4 53 4 52 4 52	h m 4 43 4 42 4 41 4 41 4 40	h m 4 30 4 29 4 28 4 27 4 26	h m 4 14 4 13 4 12 4 11 4 10	h m 4 7 4 6 4 4 4 3 4 2	h m 3 59 3 57 3 56 3 55 3 53	h m 3 50 3 48 3 47 3 45 3 44	h m 3 39 3 38 3 36 3 36 3 34 3 32	h m 3 27 3 25 3 23 3 21 3 20
22 23 24 25 26	5 50 5 50 5 50 5 50 5 51	5 35 5 35 5 35 5 35 5 35 5 36	5 19 5 19 5 19 5 19 5 19 5 19 5 19	5 2 5 1 5 1 5 1 5 1 5 1 5 1	4 51 4 51 4 50 4 50 4 50 4 50	4 39 4 39 4 38 4 38 4 38 4 37	4 26 4 25 4 24 4 23 4 23 4 23	4 9 4 8 4 7 4 6 4 5	4 1 4 0 3 59 3 58 3 57	3 52 3 51 3 50 3 48 3 47	3 42 3 41 3 39 3 38 3 37	3 31 3 29 3 28 3 26 3 25	3 18 3 16 3 14 3 12 3 11
27 28 29 30 Dec. 1	$5 51 \\ 5 52 \\ 5 52 \\ 5 52 \\ 5 52 \\ 5 53 \\$	5 36 5 36 5 36 5 36 5 36 5 36	5 19 5 19 5 19 5 19 5 19 5 19 5 19	$\begin{array}{cccc} 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \end{array}$	4 49 4 49 4 49 4 49 4 49 4 48	4 37 4 37 4 36 4 36 4 36 4 36	4 22 4 22 4 21 4 21 4 21 4 20	4 4 4 4 4 3 4 2 4 2	3 56 3 55 3 54 3 53 3 53 3 53	3 46 3 45 3 44 3 44 3 43	3 36 3 34 3 34 3 32 3 32	3 23 3 22 3 21 3 20 3 18	3 9 3 8 3 6 3 5 3 3
2 3 4 5 6	5 53 5 53 5 54 5 54 5 55	5 37 5 37 5 37 5 37 5 38 5 38	$5 20 \\ $	$\begin{array}{cccc} 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \end{array}$	4 48 4 48 4 48 4 48 4 48 4 48	4 35 4 35 4 35 4 35 4 35 4 35	4 20 4 20 4 19 4 19 4 19 4 19	4 1 4 0 4 0 4 0 3 59	3 52 3 51 3 51 3 51 3 51 3 50	3 42 3 41 3 41 3 40 3 40 3 40	3 31 3 30 3 29 3 28 3 28 3 28	3 18 3 16 3 16 3 16 3 15 3 14	$ \begin{array}{r} 3 & 2 \\ 3 & 1 \\ 3 & 0 \\ 2 & 59 \\ 2 & 58 \\ \end{array} $
7 8 9 10 11	5 55 5 56 5 56 5 56 5 56 5 57	5 38 5 39 5 39 5 39 5 39 5 40	5 20 5 21 5 21 5 21 5 21 5 22	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4 48 4 48 4 48 4 49 4 49 4 49	4 35 4 35 4 35 4 35 4 35 4 35	4 19 4 18 4 18 4 18 4 18 4 18	3 59 3 59 3 58 3 58 3 58 3 58	3 50 3 49 3 49 3 49 3 49 3 48	3 39 3 39 3 38 3 38 3 38 3 38	3 27 3 27 3 26 3 26 3 26 3 26	3 13 3 13 3 12 3 12 3 12 3 11	2 57 2 56 2 56 2 55 2 55 2 54
12 13 14 15 16	5 57 5 58 5 58 5 59 5 59 5 59	5 40 5 41 5 41 5 41 5 41 5 42	5 22 5 22 5 23 5 23 5 23 5 23	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4 49 4 49 4 50 4 50 4 50 4 50	4 35 4 35 4 35 4 36 4 36	4 18 4 19 4 19 4 19 4 19 4 19	3 58 3 58 3 58 3 58 3 58 3 58 3 58	3 48 3 48 3 48 3 48 3 48 3 49	3 38 3 38 3 38 3 38 3 38 3 38 3 38	3 25 3 25 3 25 3 25 3 25 3 25 3 25	3 11 3 11 3 10 3 10 3 10 3 10	2 54 2 54 2 53 2 53 2 53 2 53
17 18 19 20 21	$\begin{array}{ccc} 6 & 0 \\ 6 & 0 \\ 6 & 1 \\ 6 & 1 \\ 6 & 2 \end{array}$	5 42 5 43 5 43 5 43 5 44 5 44	5 24 5 24 5 25 5 25 5 25 5 26	5 3 5 3 5 4 5 4 5 4 5 4	$\begin{array}{r} 4 50 \\ 4 51 \\ 4 51 \\ 4 51 \\ 4 52 \\ 4 52 \end{array}$	4 36 4 37 4 37 4 37 4 37 4 38	4 20 4 20 4 20 4 20 4 20 4 21	$\begin{array}{c} 3 & 59 \\ 3 & 59 \\ 3 & 59 \\ 4 & 0 \\ 4 & 0 \end{array}$	3 49 3 49 3 49 3 50 3 50 3 50	3 38 3 38 3 38 3 38 3 38 3 39	3 25 3 25 3 26 3 26 3 26 3 26	3 10 3 11 3 11 3 11 3 11 3 12	$ \begin{array}{c} 2 53 \\ 2 53 \\ 2 53 \\ 2 54 \\ 2 54 \\ 2 54 \end{array} $
22 23 24 25 26	$\begin{array}{c} 6 & 2 \\ 6 & 3 \\ 6 & 3 \\ 6 & 4 \\ 6 & 4 \end{array}$	5 45 5 45 5 46 5 46 5 46 5 47	5 26 5 27 5 27 5 28 5 28 5 28	55555555557	4 53 4 53 4 54 4 54 4 55	4 38 4 39 4 40 4 40 4 41	4 22 4 22 4 23 4 23 4 23 4 24	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3 51 3 51 3 52 3 52 3 52 3 53	3 40 3 40 3 41 3 42 3 42	3 27 3 27 3 28 3 29 3 30	3 12 3 13 3 13 3 13 3 14 3 15	2 54 2 55 2 56 2 56 2 56 2 57
27 28 29 30 31	$\begin{array}{cccc} 6 & 5 \\ 6 & 5 \\ 6 & 6 \\ 6 & 6 \\ 6 & 7 \\ \end{array}$	5 47 5 48 5 48 5 49 5 50	5 29 5 30 5 30 5 31 5 31	5 8 5 8 5 9 5 10 5 10	4 55 4 56 4 57 4 57 4 58	4 41 4 42 4 43 4 43 4 43	4 24 4 25 4 26 4 27 4 28	4 4 4 5 4 6 4 6 4 7	3 54 3 55 3 56 3 56 3 57 3 58	3 43 3 44 3 45 3 46 3 47	3 30 3 31 3 32 3 33 3 34	3 16 3 17 3 18 3 19 3 20	2 58 2 59 3 0 3 2 3 3
32	6 7	5 50	5 32	5 11	4 59	4 45	4 28	4 8	3 59	3 48	3 36	3 21	3 4

SUNRISE AND SUNSET FOR SOUTHERN LATITUDES, 1917.

In the case of a southern latitude the time of sunrise or sunset is taken from Table I, with the corresponding northern latitude, not for the given date but for a date about six months earlier or later, which is to be found in the following table. The time taken from Table I, whether of sunrise or sunset, must be corrected by the quantity given in Table II on the same line with the given date.

Example.—May 10, 1917, civil date, in latitude -38°, required the time of sunrise and sunset. The astronomical date is May 9 for sunrise and May 10 for sunset; Table II gives November 11 and 12 as the corresponding dates, northern latitude, while the correction is +12^m in each case.

a mark to the second of the second se	THE ST.	Sunrise.		SI	unset.
1 6 100 E 100 & 10 A 100 A 100 A	-12e #	d h m	1.4.20	d	h m
Table I, Lat. +38°	Nov.	11 18 37	Nov.	12	4 51
Table II	May	9 + 12	May	10	+ 12
Local astronomical mean time	May	9 18 49	May	10	5 3
Civil time	May	10 6 49 A. M.	May	10	5 3 P.M

Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.
Jan. 0 1 2	July 2 3 4	m 0 0	Feb. 5 6 7	Aug. 9 10 11	m + 9. 9	Mar. 13 14 15	Sept.15 16 17	m +14 15 15	Apr. 18 19 20	Oct. 21 22 23	m +15 15 14
34	56	0 +1	8 9	12 13	9 10	16 17	18 19	$\begin{array}{c} 15\\15\end{array}$	21 22	24 25	14 14
6 8 5 6 8 6 8 8 7	7 8 9	$^{+1}_{1}_{2}$	$\begin{array}{c}10\\11\\12\end{array}$	$\begin{array}{c}14\\15\\16\end{array}$	+10 10 10	18 19 20	20 21 22	$^{+15}_{15}_{15}$	23 24 25	26 27 28	$^{+14}_{14}_{14}$
89	10 11	2 2	13 14	17 18	10 11	21 22	23 24	15 15	26 27	29 30	14 14
$ \begin{array}{c} 10 \\ 11 \\ 12 \\ 13 \end{array} $	12 13 14 15 1	+2 3 3 3	15 16 17 18	19 20 21 23	$+11 \\ 11 \\ 11 \\ 12$	$ \begin{array}{r} 23 \\ 24 \\ 25 \\ 26 \end{array} $	25 26 27 28	$^{+15}_{15}_{15}_{15}$	28 29 30 May 1	31 Nov. 1 2 3	+14 14 14 13
14 15	16	3+4	19 20	24 25	12 + 12	27 28-	29 Oct. 1	15 +15	2	4	13 +13
16 17 18 19	19 20 21 22	4445	21 22 23 24	26 27 28 29	$12 \\ 12 \\ 12 \\ 12 \\ 13$	29 30 31 Apr. 1	2 3 4 5	$15 \\ 16 \\ 16 \\ 16 \\ 16$	4 5 6 7	6 7 8 9	13 13 13 13
20 21 22 23	23 24 25 26	+5 5 5 6	25 26 27 28	30 31 Sept, 1 2	$+13 \\ 13 \\ 13 \\ 13 \\ 13$	2 3 4 5	6 7 8 9	$+16 \\ 15 \\ 15 \\ 15 \\ 15$	8 9 10	10 11 12 13	$+12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\$
24	27	6	Mar. 1	3	13 +13	67	10	15 +15	12	14	12
26 27 28 29	29 30 31 Aug. 1	6 7 7 7	3 4 5 6	5 6 7 8	13 14 14 14 14	8 9 10 11	10 11 12 13 14	15 15 15 15	10 14 15 16 17	16 16 17 18	11 11 11 11 11
30 31 Feb. 1	345	+7 8 8	7 8 9	9 10 11	+14 14 14	12 13 14	15 16 17	+15 15 15	18 19 20	19 20 21	+11 11 10 10
2 3 4	6 7 8	8 8 +9	10 11 12	12 13 14	14 14 +14	15 16 17	18 19 20	$15 \\ 15 \\ +15$	21 22 23	22 23 24	$10 \\ 10 \\ +10$

8 · 电12:18 · 山影18 · 山影18 · 山图

SUNRISÉ AND SUNSET FOR SOUTHERN LATITUDES, 1917.

Giv Dat	en :e.	Cor spon Da North Latit	re- ling te, nern ude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc-
May	24 25 26 27	Nov	. 25 26 27 28	m +10 9 9 9	July 19 20 21 22	Jan. 16 17 18 19	- 4 - 4 - 4 - 4 - 5	Sept.13 14 15 16	Mar. 11 12 13 14	m -14 14 14 15	Nov. 8 9 10 11	May 6 7 8 9	m -13 13 12 12
June	28 29 30 31 1 2	Dec	29 30 1 2 3 4	9 + 8 8 8 8 7	23 24 25 26 27 28	20 21 22 23 24 25	5 - 5 6 6 6	17 18 19 20 21 22	15 16 17 18 19 20	15 -15 15 15 15 15	12 13 14 15 16 17	10 11 12 13 15	$ \begin{array}{c c} 12 \\ -12 \\ 12 \\ 11 \\ 11 \\ 11 \\ 11 \end{array} $
100007 100007	- 34567	のない	45678	+ 7 7 7 7 7	29 30 31 Aug. 1 2	26 27 28 29 30	- 6 7 7 7 7	23 24 25 26 27	21 22 23 24 25	-15 15 15 15 15	18 19 20 21 22	17 18 19 20 21	$ \begin{array}{c c} -11 \\ -11 \\ 11 \\ 11 \\ 10 \\ 10 \end{array} $
6 15 7 8 15 16 14 10 14	8 9 10 11 12	日本ののない	9 10 11 12 13	$+ \begin{array}{c} 6 \\ 6 \\ 6 \\ 6 \\ 5 \end{array}$	3 4 5 6 7	30 31 Feb. 1 2 3	- 7 8 8 8 8	28 29 30 Oct. 1 2	26 27 28 28 28 29	-15 15 15 15 15 15	23 24 25 26 27	22 23 24 25 26	$ \begin{array}{c c} -10 \\ 10 \\ 10 \\ 9 \\ 9 \\ 9 \end{array} $
11 35 13 0 14 29 16 3	$13 \\ 14 \\ 15 \\ 16 \\ 17$	祖 新 新 新 新	14 15 16 17 18	+ 5 5 4 4 4 4	8 9 10 11 12	4 5 6 7 8	- 9 9 9 9	3 4 5 6 7	30 31 Apr. 1 2 3	-16 16 16 16 15	28 29 30 Dec. 1 2	27 28 29 30 31	- 9 9 8 8 8
18 56 20 54 20 54	18 19 20 21 22	10.000 B	19 20 20 21 22	+ 4 4 3 3	13 14 15 16 17	9 10 11 12 13	-10 10 10 10 10	8 9 10 11 12	4 5 7 8 9	-15 15 15 15 15	3 4 5 6 7	June 1 2 4 5 6	- 8 7 7 7 7
20 44 20 50 20 50 21 4	23 24 25 26 27		23 24 25 26 27	$+ 3 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 1 \\ 1$	18 19 20 21 22	14 15 16 17 18	-ll 11 11 11 11	13 14 15 16 17	10 11 12 13 14	-15 15 15 15 15	8 9 10 11 12	7 8 9 10 11	$\begin{vmatrix} -7 \\ 6 \\ 6 \\ 6 \\ 6 \\ -6 \\ -6 \\ -6 \\ -6 $
July	28 29 30 1 2	Dec Jan.	28 29 30 31 0	+1 1 1 +1 0 0	23 24 25 26 27	18 19 20 21 22	-12 12 12 12 12 12 12 12 12	18 19 20 21 22	15 16 17 18 19	-15 15 15 15 15	13 14 15 16 17 19	$12 \\ 13 \\ 14 \\ 15 \\ 16 \\ 17$	- 5 5 4 4
	54567 8		12345 6		28 29 30 31 Sept. 1	23 24 25 26 27 28	-12 13 13 13 13 -13	23 24 25 26 27 28	20 21 22 23 24 25	-14 14 14 14 14 14 -14	18 19 20 21 22 23	17 18 19 21 22 23	- 4 4 3 3 - 3
	9 10 11 12 13	1000 AN	7 8 9 10 11		3 4 5 6 7	Mar. 1 2 3 4 5	-13 13 13 13 14 -14	23 29 30 31 Nov. 1 2	26 27 28 29 30	$ \begin{array}{c} -14 \\ 14 \\ 14 \\ 14 \\ -14 \end{array} $	23 24 25 26 27 28	23 24 25 26 27 28	- 1
	14 15 16 17 18	記しは	12 13 14 14 14	3 3 3 3 3 - 4	8 9 10 11 12	6 7 8 9 10	14 14 14 14 14 -14	3 4 5 6 7	May 1 2 3 4 5	13 13 13 13 -13	29 30 31 32	29 30 July 1 2	$\begin{vmatrix} 1 \\ 1 \\ -1 \\ 0 \end{vmatrix}$

如此的有1些有14 日 并和1和999 m 而 時以 在以 5 日 時以 第55 m

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 8.

For other longitudes and for southern latitudes see page 42.

7	Tat	CAC	PACKSE!	No Care	122 0	1201	Sarah Ba		- MP	Care Lan	100.000	Pine 1	11332	1.2.2
Date.	Liebe.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Jan.	0 1 2 3 4	h m 0 36 1 24 2 14 3 6	h m 0 26 1 10 1 57 2 47	h m 0 15 0 56 1 39 2 26	h m 0 2 0 39 1 18 2 3	h m 23 55 0 29 1 6 1 49	h m 23 47 0 18 0 52 1 33	h m 23 38 0 4 0 36 1 14	h m 23 26 23 48 0 16 0 50	h m 23 21 23 41 0 6 0 39	h m 23 15 23 33 23 56 0 26	h m 23 9 23 24 23 44 0 12	h m 23 2 23 14 23 30 23 54 	h m 22 54 23 2 23 14 23 34
11- 11 01-0 01-0	56789	3 57 4 49 5 39 6 28 7 13	3 37 4 29 5 21 6 11 7 0	$\begin{array}{r} 3 \ 16 \\ 4 \ 8 \\ 5 \ 1 \\ 5 \ 54 \\ 6 \ 46 \end{array}$	251 343 438 534 629	$\begin{array}{r} 2 & 36 \\ 3 & 29 \\ 4 & 24 \\ 5 & 22 \\ 6 & 20 \end{array}$	$ \begin{array}{r} 2 19 \\ 3 12 \\ 4 9 \\ 5 8 \\ 6 9 \end{array} $	$\begin{array}{c} 1 \ 59 \\ 2 \ 52 \\ 3 \ 50 \\ 4 \ 52 \\ 5 \ 56 \end{array}$	$ \begin{array}{r} 1 & 34 \\ 2 & 26 \\ 3 & 27 \\ 4 & 33 \\ 5 & 40 \\ \end{array} $	$ \begin{array}{c} 1 & 21 \\ 2 & 14 \\ 3 & 16 \\ 4 & 23 \\ 5 & 33 \end{array} $	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 0 \ 50 \\ 1 \ 44 \\ 2 \ 48 \\ 4 \ 0 \\ 5 \ 15 \end{array}$	$\begin{array}{c} 0 & 31 \\ 1 & 24 \\ 2 & 31 \\ 3 & 47 \\ 5 & 5 \end{array}$	$\begin{array}{c} 0 & 7 \\ 1 & 0 \\ 2 & 10 \\ 3 & 30 \\ 4 & 52 \end{array}$
-10 10 10 9 - 9	10 11 12 13 14	7 56 8 38 9 18 9 59 10 40	7 46 8 32 9 16 10 1 10 46	7 36 8 25 9 14 10 2 10 52	7 24 8 17 9 10 10 4 10 58	$\begin{array}{r} 7 \ 17 \\ 8 \ 13 \\ 9 \ 9 \\ 10 \ 5 \\ 11 \ 2 \end{array}$	7 9 8 8 9 7 10 6 11 6	$\begin{array}{r} 6 59 \\ 8 2 \\ 9 5 \\ 10 7 \\ 11 12 \end{array}$	6 48 7 55 9 2 10 9 11 18	6 42 7 52 9 1 10 10 11 20	6 37 7 48 8 59 10 10 11 24	6 30 7 44 8 58 10 11 11 27	6 23 7 40 8 56 10 12 11 31	$\begin{array}{r} 6 & 15 \\ 7 & 35 \\ 8 & 54 \\ 10 & 14 \\ 11 & 35 \end{array}$
0000000	15 16 17 18 19	$\begin{array}{c} 11 \ 24 \\ 12 \ 11 \\ 13 \ 2 \\ 13 \ 58 \\ 14 \ 59 \end{array}$	11 33 12 24 13 19 14 17 15 19	11 43 12 38 13 36 14 38 15 41	$\begin{array}{c} 11 \ 55 \\ 12 \ 54 \\ 13 \ 57 \\ 15 \ 2 \\ 16 \ 6 \end{array}$	$\begin{array}{rrrr} 12 & 1 \\ 13 & 3 \\ 14 & 8 \\ 15 & 15 \\ 16 & 21 \end{array}$	$\begin{array}{rrrr} 12 & 9 \\ 13 & 14 \\ 14 & 22 \\ 15 & 31 \\ 16 & 38 \end{array}$	$12 18 \\ 13 27 \\ 14 39 \\ 15 51 \\ 16 59$	12 28 13 42 14 59 16 15 17 26	12 33 13 50 15 8 16 27 17 38	12 39 13 58 15 19 16 40 17 53	$\begin{array}{r} 12 \ 45 \\ 14 \ 7 \\ 15 \ 32 \\ 16 \ 56 \\ 18 \ 10 \end{array}$	12 52 14 17 15 46 17 14 18 30	13 0 14 29 16 3 17 36 18 56
1-1-1-2	20 21 22 23 24	16 2 17 6 18 8 19 6 20 0	$ \begin{array}{r} 16 22 \\ 17 24 \\ 18 22 \\ 19 16 \\ 20 5 \end{array} $	16 43 17 43 18 37 19 26 20 10	17 8 18 5 18 54 19 38 20 17	17 23 18 18 19 4 19 45 20 20	17 40 18 32 19 16 19 53 20 24	18 0 18 50 19 30 20 2 20 29	18 25 19 11 19 46 20 12 20 34	18 37 19 21 19 53 20 18 20 37	18 51 19 33 20 2 20 23 20 39	19 7 19 46 20 11 20 29 20 42	19 26 20 0 20 22 20 36 20 46	19 50 20 18 20 34 20 44 20 50
1 100	25 26 27 28 29	20 52 21 42 22 31 23 20	20 52 21 37 22 22 23 7 23 54	20 52 21 32 22 12 22 54 23 38	$\begin{array}{c} 20 \ 52 \\ 21 \ 27 \\ 22 \ 2 \\ 22 \ 38 \\ 23 \ 18 \end{array}$	20 53 21 24 21 56 22 30 23 6	20 53 21 21 21 49 22 19 22 54	20 53 21 17 21 41 22 8 22 38	20 54 21 12 21 32 21 53 22 19	20 54 21 10 21 27 21 47 22 11	20 54 21 8 21 22 21 40 22 1	$\begin{array}{c} 20 \ 54 \\ 21 \ 5 \\ 21 \ 17 \\ 21 \ 31 \\ 21 \ 50 \end{array}$	20 54 21 2 21 11 21 22 21 37	$\begin{array}{c} 20 \ 54 \\ 20 \ 59 \\ 21 \ 4 \\ 21 \ 12 \\ 21 \ 22 \end{array}$
Feb.	30 31 1 2 3	0 11 1 2 1 54 2 45 3 36	0 44 1 34 2 25 3 17	$ \begin{array}{c} 0 & 24 \\ 1 & 12 \\ 2 & 4 \\ 2 & 56 \end{array} $	0 1 0 48 1 39 2 32	23 48 0 34 1 24 2 19	$23 \ 32 \\ 0 \ 17 \\ 1 \ 7 \\ 2 \ 3$	23 14 23 57 0 47 1 43	22 51 23 32 0 21 1 19	22 41 23 20 0 9 1 8	22 29 23 6 23 55 0 54	22 15 22 50 23 38 0 39	21 58 22 31 23 18 0 21	$21 \ 39 \\ 22 \ 8 \\ 22 \ 54 \\ 23 \ 58 \\ \dots \dots$
1	4 5 6 7 8	4 24 5 11 5 55 6 37 7 18	4 7 4 56 5 44 6 30 7 14	3 49 4 41 5 32 6 21 7 10	$\begin{array}{c} 3 \ 28 \\ 4 \ 23 \\ 5 \ 18 \\ 6 \ 12 \\ 7 \ 6 \end{array}$	3 15 4 13 5 10 6 7 3	$ \begin{array}{r} 3 & 1 \\ 4 & 1 \\ 5 & 1 \\ 6 & 1 \\ 7 & 0 \end{array} $	$2 44 \\ 3 47 \\ 4 51 \\ 5 54 \\ 6 57$	$\begin{array}{r} 2 \ 23 \\ 3 \ 30 \\ 4 \ 38 \\ 5 \ 46 \\ 6 \ 53 \end{array}$	$\begin{array}{c}2 \ 13 \\3 \ 22 \\4 \ 32 \\5 \ 42 \\6 \ 51\end{array}$	$ \begin{array}{r} 2 & 2 \\ 3 & 13 \\ 4 & 25 \\ 5 & 37 \\ 6 & 48 \end{array} $	$1 49 \\3 3 \\4 18 \\5 32 \\6 46$	$ \begin{array}{r} 1 & 34 \\ 2 & 51 \\ 4 & 9 \\ 5 & 27 \\ 6 & 44 \end{array} $	$ \begin{array}{r} 1 \ 16 \\ 2 \ 37 \\ 4 \ 0 \\ 5 \ 21 \\ 6 \ 41 \\ \end{array} $
S MALA	9 10 11 12 13	7 58 8 39 9 22 10 7 10 55	7 59 8 44 9 30 10 19 11 10	7 59 8 48 9 38 10 31 11 27	7 59 8 53 9 48 10 45 11 45	7 59 8 56 9 54 10 54 11 56	7 59 8 59 10 0 11 3 12 9	$\begin{array}{r} 7 59 \\ 9 3 \\ 10 8 \\ 11 15 \\ 12 24 \end{array}$	7 59 9 7 10 17 11 28 12 42	8 0 9 10 10 21 11 35 12 51	$\begin{array}{r} 8 & 0 \\ 9 & 12 \\ 10 & 26 \\ 11 & 42 \\ 13 & 1 \end{array}$		8 0 9 17 10 37 11 59 13 24	8 0 9 21 10 43 12 9 13 40
	14 15 16 17	11 48 12 44 13 44 14 46	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 12 \ 25 \\ 13 \ 26 \\ 14 \ 26 \\ 15 \ 25 \end{array}$	12 47 13 50 14 51 15 48	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	13 15 14 21 15 23 16 18	13 34 14 42 15 44 16 37	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{rrr} 14 & 7 \\ 15 & 20 \\ 16 & 22 \\ 17 & 12 \end{array}$	14 19 15 34 16 36 17 24	14 34 15 50 16 53 17 39	14 50 16 10 17 13 17 56	15 10 16 35 17 38 18 17

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1917.

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To obtain standard time, see directions on page 8.

For other longitudes and for southern latitudes see page 42.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Jan. 0 1 2 3 4	h m 12 11 12 59 13 48 14 39 15 31	h m 12 19 13 11 14 4 14 57 15 51	h m 12 28 13 25 14 21 15 17 16 12	h m 12 39 13 40 14 40 15 39 16 36	h m 12 44 13 48 14 51 15 53 16 51	h m 12 51 13 58 15 4 16 8 17 7	h m 12 59 14 10 15 20 16 26 17 28	h m 13 8 14 24 15 39 16 49 17 53	h m 13 13 14 31 15 48 17 0 18 5	h m 13 18 14 39 15 58 17 12 18 19	h m 13 23 14 47 16 9 17 27 18 35	h m 13 29 14 57 16 22 17 44 18 55	h m 13 36 15 8 16 38 18 4 19 20
5 6 7 8 9	16 23 17 14 18 3 18 50 19 35	16 43 17 33 18 21 19 5 19 46	17 4 17 54 18 39 19 21 19 58	17 29 18 18 19 0 19 38 20 12	17 44 18 32 19 13 19 49 20 21	18 1 18 48 19 27 20 1 20 30	18 22 19 7 19 44 20 15 20 40	$18\ 47\\19\ 31\\20\ 5\\20\ 32\\20\ 53$	19 0 19 42 20 15 20 40 20 59	19 14 19 56 20 26 20 49 21 6	19 30 20 11 20 39 20 59 21 13	19 50 20 28 20 53 21 10 21 21	20 15 20 50 21 10 21 23 21 30
10 11 12 13 14	20 17 20 58 21 38 22 19 23 1	$\begin{array}{c} 20 \ 25 \\ 21 \ 2 \\ 21 \ 39 \\ 22 \ 16 \\ 22 \ 54 \end{array}$	20 34 21 7 21 39 22 12 22 46	20 43 21 12 21 40 22 8 22 38	20 49 21 15 21 40 22 6 22 32	20 55 21 18 21 40 22 3 22 27	21 2 21 22 21 41 22 0 22 20	21 11 21 27 21 41 21 56 22 12	21 15 21 29 21 42 21 55 22 9	$\begin{array}{c} 21 \ 20 \\ 21 \ 31 \\ 21 \ 42 \\ 21 \ 53 \\ 22 \ 5 \end{array}$	21 24 21 34 21 42 21 51 22 0	21 30 21 36 21 42 21 49 21 56	21 36 21 40 21 43 21 46 21 50
15 16 17 18 19	23 46 0 35 1 28 2 27	23 35 0 20 1.11 2 7	$23 23 \\ 0 5 \\ 0 52 \\ 1 46$	23 10 23 47 0 30 1 22	23 2 23 36 0 17 1 7	$22 53 \\ 23 24 \\ \dots \\ 0 3 \\ 0 50$	22 43 23 10 23 45 0 30	22 31 22 54 23 24 6	22 25 22 46 23 14 23 53	22 19 22 37 23 2 23 40 	22 12 22 27 22 50 23 24 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 21 \ 55 \\ 22 \ 3 \\ 22 \ 17 \\ 22 \ 42 \\ 23 \ 31 \end{array}$
20 21 22 23 24	3 29 4 33 5 36 6 36 7 32	3 9 4 14 5 19 6 23 7 24	$\begin{array}{c}2 \ 47\\3 \ 53\\5 \ 2\\6 \ 10\\7 \ 16\end{array}$	2 22 3 29 4 42 5 55 7 7	$ \begin{array}{r} 2 & 6 \\ 3 & 15 \\ 4 & 30 \\ 5 & 46 \\ 7 & 2 \end{array} $	$ \begin{array}{r} 1 49 \\ 2 59 \\ 4 16 \\ 5 36 \\ 6 55 \\ \end{array} $	$ \begin{array}{r} 1 28 \\ 2 40 \\ 4 0 \\ 5 24 \\ 6 48 \end{array} $	$ \begin{array}{r} 1 & 2 \\ 2 & 15 \\ 3 & 40 \\ 5 & 10 \\ 6 & 40 \end{array} $	0 49 2 4 3 30 5 3 6 35	0 35 1 50 3 20 4 55 6 31	0 18 1 34 3 7 4 47 6 26	1 16 2 53 4 37 6 21	0 53 2 36 4 26 6 14
25 26 27 28 29	-8 25 9 15 10 5 10 54 11 44	8 22 9 18 10 12 11 5 11 59	8 19 9 20 10 19 11 17 12 15	8 16 9 22 10 27 11 30 12 33	8 14 9 24 10 32 11 38 12 43	8 12 9 26 10 37 11 47 12 55	8 9 9 28 10 44 11 57 13 9	8 6 9 30 10 51 12 10 13 27	8 5 9 31 10 54 12 16 13 35	8 3 9 32 10 58 12 23 13 44	8 2 9 34 11 3 12 30 13 55	8 0 9 35 11 8 12 38 14 7	7 58 9 36 11 13 12 48 14 21
30 31 Feb. 1 2 3	$\begin{array}{c} 12 \ 35 \\ 13 \ 27 \\ 14 \ 19 \\ 15 \ 10 \\ 16 \ 0 \end{array}$	12 53 13 46 14 39 15 30 16 18	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 13 \ 33 \\ 14 \ 31 \\ 15 \ 26 \\ 16 \ 15 \\ 17 \ 0 \end{array}$	13 46 14 46 15 40 16 30 17 13	14 0 15 2 15 57 16 46 17 28	14 18 15 22 16 18 17 6 17 45	14 40 15 46 16 44 17 30 18 7	14 50 15 58 16 56 17 42 18 18	15 2 16 12 17 10 17 56 18 30	15 15 16 28 17 27 18 12 18 43	15 31 16 46 17 47 18 30 18 59	15 50 17 10 18 12 18 53 19 17
4 5 6 7 8	16 47 17 32 18 16 18 57 19 38	17 3 17 45 18 25 19 3 19 40	17 20 17 59 18 35 19 9 19 42	17 39 18 14 18 46 19 16 19 44	17 50 18 23 18 52 19 19 19 45	18 3 18 33 19 0 19 24 19 46	18 18 18 45 19 8 19 29 19 48	18 36 18 59 19 18 19 35 19 50	18 45 19 6 19 23 19 37 19 51	18 54 19 13 19 28 19 40 19 52	19 5 19 21 19 33 19 44 19 52	19 18 19 31 19 40 19 47 19 54	19 32 19 41 19 47 19 51 19 55
9 10 11 12 13	20 18 21 0 21 43 22 30 23 20	20 16 20 54 21 34 22 17 23 4	20 14 20 48 21 23 22 2 22 2 22 46	20 12 20 40 21 12 21 46 22 26	$\begin{array}{c} 20 \ 10 \\ 20 \ 36 \\ 21 \ 5 \\ 21 \ 37 \\ 22 \ 14 \end{array}$	$\begin{array}{ccc} 20 & 9 \\ 20 & 32 \\ 20 & 57 \\ 21 & 26 \\ 22 & 0 \end{array}$	20 7 20 26 20 48 21 13 21 44	20 5 20 20 20 38 20 58 21 25	$\begin{array}{cccc} 20 & 4 \\ 20 & 17 \\ 20 & 32 \\ 20 & 51 \\ 21 & 15 \end{array}$	$\begin{array}{cccc} 20 & 2 \\ 20 & 14 \\ 20 & 27 \\ 20 & 43 \\ 21 & 5 \end{array}$	20 1 20 10 20 21 20 34 20 53	20 0 20 6 20 14 20 25 20 40	$19 58 \\ 20 2 \\ 20 7 \\ 20 14 \\ 20 24$
14 15 16 17	0 14 1 13 2 14	23 56 0 52 1 54	23 35 0 31 1 32	23 12 0 6 1 8	22 58 23 51 0 53	22 42 23 34 0 36	22 23 23 14 0 16	22 0 22 48 23 50	21 49 22 35 23 38	21 36 22 21 23 24	$\begin{array}{c} 21 \ 21 \\ 22 \ 4 \\ 23 \ 7 \\ \dots \end{array}$	21 4 21 44 22 47	20 43 21 19 22 23 23 54

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

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To obtain standard time, see directions on page 8.

For other longitudes and for southern latitudes see page 42.

Let. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Feb. 16 17 18 19 20	h m 13 44 14 46 15 47 16 46 17 42	h m 14 4 15 5 16 3 16 58 17 50	h m 14 26 15 25 16 20 17 11 17 58	h m 14 51 15 48 16 40 17 26 18 7	h m 15 6 16 2 16 52 17 35 18 13	h m 15 23 16 18 17 5 17 45 18 19	h m 15 44 16 37 17 21 17 56 18 26	h m 16 9 17 0 17 40 18 10 18 34	h m 16 22 17 12 17 48 18 16 18 38	h m 16 36 17 24 17 58 18 23 18 42	h m 16 53 17 39 18 10 18 31 18 47	h m 17 13 17 56 18 22 18 40 18 52	h m 17 38 18 17 18 38 18 50 18 58
21 22 23 24 25	18 36 19 28 20 19 21 10 22 2	18 39 19 26 20 12 20 59 21 47	$\begin{array}{c} 18 \ 42 \\ 19 \ 24 \\ 20 \ 5 \\ 20 \ 48 \\ 21 \ 32 \end{array}$	18 45 19 22 19 57 20 34 21 14	18 47 19 20 19 53 20 27 21 4	18 50 19 19 19 48 20 18 20 52	18 52 19 17 19 42 20 8 20 38	18 55 19 15 19 35 19 56 20 21	18 57 19 14 19 31 19 50 20 14	18 58 19 13 19 28 19 44 20 5	19 0 19 12 19 24 19 38 19 55	19 2 19 11 19 20 19 30 19 44	19 4 19 9 19 15 19 21 19 32
26 27 28 Mar. 1 2	22 55 23 48 0 40 1 31	22 37 23 28 0 20 1 12	$22 18 \\ 23 8 \\ 23 59 \\ \dots \\ 0 51$	21 57 22 44 23 34 0 27	21 44 22 30 23 19 0 13	$\begin{array}{c} 21 \ 30 \\ 22 \ 13 \\ 23 \ 2 \\ 23 \ 57 \\ \ldots \end{array}$	$\begin{array}{c} 21 \ 13 \\ 21 \ 54 \\ 22 \ 42 \\ 23 \ 37 \\ \ldots \end{array}$	$\begin{array}{c} 20 \ 52 \\ 21 \ 30 \\ 22 \ 17 \\ 23 \ 12 \\ \ldots \end{array}$	$\begin{array}{c} 20 \ 42 \\ 21 \ 18 \\ 22 \ 4 \\ 23 \ 0 \\ \dots \end{array}$	$\begin{array}{c} 20 \ 31 \\ 21 \ 5 \\ 21 \ 50 \\ 22 \ 47 \\ 23 \ 52 \end{array}$	20 18 20 50 21 34 22 31 23 38	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19 46 20 10 20 50 21 49 23 3
3 4 5 6 7	221 38 352 435 517	$ \begin{array}{r} 2 & 3 \\ 2 & 52 \\ 3 & 40 \\ 4 & 27 \\ 5 & 12 \end{array} $	$\begin{array}{r}1 & 44 \\ 2 & 36 \\ 3 & 27 \\ 4 & 17 \\ 5 & 6\end{array}$	$\begin{array}{c}1&22\\2&17\\3&12\\4&6\\5&0\end{array}$	$ \begin{array}{r} 1 & 9 \\ 2 & 6 \\ 3 & 4 \\ 4 & 0 \\ 4 & 57 \end{array} $	$\begin{array}{c} 0 \ 54 \\ 1 \ 54 \\ 2 \ 54 \\ 3 \ 53 \\ 4 \ 53 \end{array}$	0 36 1 39 2 42 3 45 4 48	0 14 1 20 2 28 3 35 4 42	$\begin{array}{c} 0 & 4 \\ 1 & 12 \\ 2 & 21 \\ 3 & 31 \\ 4 & 40 \end{array}$	$ \begin{array}{r} 1 & 2 \\ 2 & 14 \\ 3 & 25 \\ 4 & 37 \end{array} $	$ \begin{array}{c} 0 51 \\ 2 5 \\ 3 20 \\ 4 34 \end{array} $	0 38 1 56 3 13 4 30	$\begin{array}{c} & 0 & 23 \\ & 1 & 45 \\ & 3 & 6 \\ & 4 & 26 \end{array}$
8 9 10 11 12	55863972186853	556 642 728 816 97	5 55 6 45 7 35 8 27 9 22	5 54 6 48 7 43 8 40 9 39	5 53 6 50 7 48 8 48 9 49	$552 \\ 652 \\ 753 \\ 856 \\ 101$	551654759961014	5 50 6 58 8 7 9 18 10 31	5 49 6 59 8 10 9 24 10 39	5 48 7 0 8 14 9 30 10 48	5 48 7 2 8 18 9 37 10 58	5 47 7 4 8 23 9 45 11 9	5 46 7 7 8 29 9 54 11 23
13 14 15 16 17	9 44 10 38 11 36 12 35 13 34	10 1 10 57 11 56 12 54 13 51	10 19 11 18 12 17 13 15 14 9	10 40 11 41 12 42 13 39 14 31	$\begin{array}{c} 10 \ 52 \\ 11 \ 56 \\ 12 \ 56 \\ 13 \ 53 \\ 14 \ 43 \end{array}$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	11 24 12 31 13 34 14 29 15 14	11 45 12 56 13 59 14 53 15 35	$ \begin{array}{r} 11 55 \\ 13 8 \\ 14 12 \\ 15 5 \\ 15 45 \end{array} $	$\begin{array}{rrrr} 12 & 6 \\ 13 & 21 \\ 14 & 26 \\ 15 & 18 \\ 15 & 56 \end{array}$	$\begin{array}{c} 12 \ 19 \\ 13 \ 37 \\ 14 \ 43 \\ 15 \ 33 \\ 16 \ 9 \end{array}$	$\begin{array}{c} 12 & 34 \\ 13 & 55 \\ 15 & 2 \\ 15 & 52 \\ 16 & 23 \end{array}$	$\begin{array}{c} 12 \ 52 \\ 14 \ 18 \\ 15 \ 27 \\ 16 \ 14 \\ 16 \ 40 \end{array}$
18 19 20 21 22	$\begin{array}{c} 14 \ 31 \\ 15 \ 27 \\ 16 \ 20 \\ 17 \ 12 \\ 18 \ 4 \end{array}$	14 45 15 37 16 26 17 13 18 0	15 0 15 47 16 31 17 14 17 55	15 17 15 59 16 38 17 14 17 50	15 27 16 6 16 41 17 15 17 48	15 39 16 14 16 46 17 15 17 44	15 52 16 23 16 51 17 16 17 41	16 8 16 34 16 56 17 16 17 36	16 15 16 39 16 59 17 17 17 34	16 24 16 45 17 2 17 17 17 32	16 33 16 51 17 5 17 18 17 30	16 44 16 58 17 9 17 18 17 27	$\begin{array}{rrrr} 16 \ 56 \\ 17 \ 5 \\ 17 \ 12 \\ 17 \ 18 \\ 17 \ 24 \end{array}$
23 24 25 26 27	18 56 19 48 20 42 21 36 22 31	18 47 19 36 20 26 21 18 22 11	18 38 19 22 20 9 20 58 21 50	18 27 19 7 19 49 20 35 21 26	18 21 18 58 19 38 20 22 21 11	18 14 18 47 19 24 20 7 20 55	18 6 18 35 19 9 19 49 20 35	17 57 18 21 18 50 19 26 20 10	17 53 18 15 18 41 19 15 19 58	17 48 18 7 18 32 19 3 19 45	17 43 17 59 18 20 18 49 19 29	17 37 17 50 18 8 18 33 19 10	17 31 17 39 17 53 18 14 18 48
28 29 30 31 Apr. 1	23 24 0 15 1 3 1 48	$23 \ 4 \\ 23 \ 56 \\ \cdot \cdot \cdot \\ 0 \ 47 \\ 1 \ 35$	22 43 23 37 0 29 1 21	22 19 23 14 0 10 1 5	$\begin{array}{cccc} 22 & 5 \\ 23 & 1 \\ 23 & 58 \\ \cdots \\ 0 & 55 \end{array}$	21 48 22 45 23 45 0 45	21 28 22 27 23 29 0 32	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 20 52 \\ 21 53 \\ 23 0 \\ \\ 0 9 \end{array}$	20 38 21 41 22 49 0 1	20 22 21 26 22 38 23 52	$\begin{array}{cccc} 20 & 4 \\ 21 & 9 \\ 22 & 24 \\ 23 & 41 \\ \dots \\ \end{array}$	19 40 20 49 22 8 23 29
23	2 32 3 14	$\begin{bmatrix} 2 & 22 \\ 3 & 7 \end{bmatrix}$	$ \begin{array}{c c} 2 & 11 \\ 3 & 1 \end{array} $	$\begin{array}{c c} 1 & 59 \\ 2 & 53 \end{array}$	$\begin{array}{c c}1&52\\2&48\end{array}$	1 44 2 43	1 35 2 38	1 23 2 30	1 18 2 27	$\begin{array}{c}1&12\\2&24\end{array}$	$\left \begin{array}{c}1&6\\2&20\end{array}\right $	0 58 2 15	0 50 2 10

1872年,一次和二月,均二月,和二月,半二月,即任道"即能增"年期道,将是"月"和任何,将后任"有任意"中任

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									7					
Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Feb.	16 17 18 19 20	h m 1 13 2 14 3 15 4 15 5 13	h m 0 52 1 54 2 57 4 1 5 3	h m 0 31 1 32 2 38 3 45 4 52	h m 0 6 1 8 2 16 3 27 4 39	h m 0 53 2 3 3 17 4 32	h m 0 36 1 48 3 5 4 24	h m 0 16 1 30 2 50 4 14	h m 23 50 1 7 2 33 4 2	h m 23 38 0 56 2 24 3 56	h m 23 24 0 44 2 15 3 50	h m 23 7 0 30 2 4 3 43	h m 22 47 0 14 1 52 3 35	h m 22 23 23 54 1 38 3 27
6 12 7 36 9 6 10 35 12 8	21 22 23 24 25	6 8 7 0 7 52 8 43 9 35	6 2 7 0 7 57 8 52 9 48	557708192102	5 50 6 59 8 7 9 13 10 18	5 46 6 59 8 10 9 19 10 27	5 42 6 58 8 13 9 26 10 38	5 37 6 58 8 18 9 35 10 50	5 31 6 57 8 22 9 45 11 6	5 28 6 57 8 24 9 50 11 13	5 24 6 57 8 27 9 55 11 21	5 21 6 56 8 30 10 1 11 30	5 17 6 56 8 33 10 7 11 41	$513 \\ 656 \\ 836 \\ 1015 \\ 1152$
Nar.	26 27 28 1 2	10 27 11 20 12 13 13 5 13 56	10 44 11 39 12 33 13 25 14 14	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 11 \ 21 \\ 12 \ 22 \\ 13 \ 19 \\ 14 \ 11 \\ 14 \ 57 \end{array}$	$\begin{array}{c} 11 \ 33 \\ 12 \ 36 \\ 13 \ 34 \\ 14 \ 25 \\ 15 \ 11 \end{array}$	$11 \ 47 \\ 12 \ 52 \\ 13 \ 50 \\ 14 \ 42 \\ 15 \ 26$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 12 \ 23 \\ 13 \ 34 \\ 14 \ 36 \\ 15 \ 27 \\ 16 \ 8 \end{array}$	$\begin{array}{c} 12 \ 32 \\ 13 \ 45 \\ 14 \ 48 \\ 15 \ 39 \\ 16 \ 18 \end{array}$	$\begin{array}{r} 12 \ 43 \\ 13 \ 58 \\ 15 \ 2 \\ 15 \ 53 \\ 16 \ 31 \end{array}$	$\begin{array}{c} 12 \ 56 \\ 14 \ 13 \\ 15 \ 19 \\ 16 \ 9 \\ 16 \ 45 \end{array}$	$\begin{array}{c} 13 \ 10 \\ 14 \ 31 \\ 15 \ 38 \\ 16 \ 28 \\ 17 \ 2 \end{array}$	13 26 14 52 16 2 16 51 17 22
15 20 15 27 15 33 15 38 15 47	3 4 5 6 7	14 44 15 30 16 14 16 56 17 37	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	15 18 15 58 16 35 17 10 17 43	15 38 16 15 16 48 17 18 17 47	15 50 16 24 16 55 17 23 17 49	$\begin{array}{cccc} 16 & 4 \\ 16 & 36 \\ 17 & 3 \\ 17 & 28 \\ 17 & 52 \end{array}$	16 20 16 48 17 13 17 34 17 54	$\begin{array}{r} 16 \ 39 \\ 17 \ 4 \\ 17 \ 24 \\ 17 \ 42 \\ 17 \ 58 \end{array}$	16 48 17 11 17 30 17 45 17 59	$\begin{array}{c} 16 \ 58 \\ 17 \ 19 \\ 17 \ 35 \\ 17 \ 49 \\ 18 \ 0 \end{array}$	17 10 17 28 17 42 17 53 18 2	$\begin{array}{c} 17 \ 23 \\ 17 \ 38 \\ 17 \ 49 \\ 17 \ 58 \\ 18 \ 4 \end{array}$	17 39 17 50 17 57 18 3 18 7
15 58 16.16 15 45 17 90 18 39	8 9 10 11 12	18 18 18 59 19 42 20 28 21 17	$\begin{array}{c} 18 \ 17 \\ 18 \ 55 \\ 19 \ 34 \\ 20 \ 16 \\ 21 \ 1 \end{array}$	$\begin{array}{c} 18 \ 16 \\ 18 \ 50 \\ 19 \ 25 \\ 20 \ 3 \\ 20 \ 45 \end{array}$	18 15 18 44 19 15 19 48 20 26	18 15 18 41 19 9 19 40 20 15	$\begin{array}{c} 18 \ 14 \\ 18 \ 37 \\ 19 \ 2 \\ 19 \ 30 \\ 20 \ 2 \end{array}$	18 13 18 33 18 54 19 19 19 47	18 12 18 28 18 45 19 5 19 30	18 12 18 26 18 41 18 59 19 21	18 12 18 23 18 36 18 52 19 12	18 11 18 20 18 31 18 44 19 1	$18\ 11\\18\ 18\\18\ 25\\18\ 35\\18\ 49$	18 10 18 14 18 19 18 25 18 35
	13 14 15 16 17		$21 51 \\ 22 46 \\ 23 44 \\ \dots \\ 0 44$	$\begin{array}{c} 21 \ 32 \\ 22 \ 24 \\ 23 \ 22 \\ \\ \hline 0 \ 24 \end{array}$	$\begin{array}{c} 21 \ 10 \\ 22 \ 0 \\ 22 \ 58 \\ \hline 0 \ 1 \end{array}$	$\begin{array}{c} 20 \ 57 \\ 21 \ 46 \\ 22 \ 43 \\ 23 \ 47 \\ \dots \end{array}$	20 42 21 29 22 26 23 32 	$\begin{array}{c} 20 \ 24 \\ 21 \ 10 \\ 22 \ 6 \\ 23 \ 13 \\ \dots \end{array}$	20 2 20 45 21 40 22 49 	19 51 20 32 21 28 22 38 23 59	19 39 20 19 21 14 22 25 23 48	$\begin{array}{c} 19 \ 26 \\ 20 \ 3 \\ 20 \ 57 \\ 22 \ 10 \\ 23 \ 36 \end{array}$	19 10 19 44 20 37 21 52 23 23	18 52 19 21 20 12 21 30 23 6
	18 19 20 21 22	$ \begin{array}{r} 2 & 1 \\ 2 & 58 \\ 3 & 52 \\ 4 & 45 \\ 5 & 37 \\ \end{array} $	1 45 2 46 3 45 4 42 5 39	1 28 2 33 3 36 4 39 5 41	$ \begin{array}{r} 1 & 8 \\ 2 & 18 \\ 3 & 27 \\ 4 & 35 \\ 5 & 43 \end{array} $	0 57 2 9 3 21 4 33 5 44	0 44 1 59 3 15 4 30 5 45	$\begin{array}{c} 0 \ 28 \\ 1 \ 47 \\ 3 \ 8 \\ 4 \ 28 \\ 5 \ 47 \end{array}$	0 8 1 32 2 58 4 24 5 49	$\begin{array}{c} 1 \ 26 \\ 2 \ 54 \\ 4 \ 23 \\ 5 \ 50 \end{array}$	1 18 2 50 4 21 5 51	1 10 2 44 4 19 5 52	1 0 2 39 4 17 5 53	0 49 2 32 4 14 5 55
8 1 8 k 11 k 12 k	23 24 25 26 27	$\begin{array}{c} 6 & 28 \\ 7 & 20 \\ 8 & 14 \\ 9 & 8 \\ 10 & 3 \end{array}$	$\begin{array}{c} 6 & 35 \\ 7 & 32 \\ 8 & 29 \\ 9 & 26 \\ 10 & 22 \end{array}$	6 42 7 43 8 44 9 45 10 43	$\begin{array}{c} 6 50 \\ 7 57 \\ 9 2 \\ 10 6 \\ 11 7 \end{array}$	6 54 8 4 9 13 10 19 11 21	7 0 8 13 9 25 10 34 11 37	7 6 8 24 9 40 10 51 11 57	7 13 8 36 9 57 11 13 12 21	$\begin{array}{r} 7 \ 16 \\ 8 \ 42 \\ 10 \ 5 \\ 11 \ 24 \\ 12 \ 33 \end{array}$	7 20 8 49 10 15 11 36 12 46	$\begin{array}{r} 7 \ 25 \\ 8 \ 56 \\ 10 \ 25 \\ 11 \ 49 \\ 13 \ 2 \end{array}$	$\begin{array}{r} 7 \ 29 \\ 9 \ 4 \\ 10 \ 37 \\ 12 \ 5 \\ 13 \ 20 \end{array}$	7 34 9 14 10 51 12 24 13 43
Apr.	28 29 30 31 1	$\begin{array}{c} 10 \ 56 \\ 11 \ 49 \\ 12 \ 38 \\ 13 \ 25 \\ 14 \ 10 \end{array}$	$\begin{array}{c} 11 \ 16 \\ 12 \ 8 \\ 12 \ 55 \\ 13 \ 40 \\ 14 \ 22 \end{array}$	$\begin{array}{c} 11 \ 38 \\ 12 \ 28 \\ 13 \ 14 \\ 13 \ 56 \\ 14 \ 34 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} 12 & 16 \\ 13 & 5 \\ 13 & 48 \\ 14 & 24 \\ 14 & 56 \end{array}$	$\begin{array}{c} 12 \ 33 \\ 13 \ 21 \\ 14 \ 2 \\ 14 \ 36 \\ 15 \ 5 \end{array}$	$\begin{array}{c} 12 \ 53 \\ 13 \ 40 \\ 14 \ 18 \\ 14 \ 50 \\ 15 \ 16 \end{array}$	$\begin{array}{r} 13 \ 18 \\ 14 \ 4 \\ 14 \ 39 \\ 15 \ 6 \\ 15 \ 29 \end{array}$	$\begin{array}{c} 13 \ 30 \\ 14 \ 15 \\ 14 \ 49 \\ 15 \ 14 \\ 15 \ 34 \end{array}$	$\begin{array}{c} 13 \ 44 \\ 14 \ 28 \\ 15 \ 0 \\ 15 \ 23 \\ 15 \ 41 \end{array}$	$\begin{array}{rrr} 14 & 0 \\ 14 & 42 \\ 15 & 12 \\ 15 & 33 \\ 15 & 48 \end{array}$	$\begin{array}{r} 14 \ 19 \\ 15 \ 0 \\ 15 \ 26 \\ 15 \ 44 \\ 15 \ 56 \end{array}$	$\begin{array}{r} 14 \ 42 \\ 15 \ 21 \\ 15 \ 43 \\ 15 \ 57 \\ 16 \ 6 \end{array}$
13 6	23	14 53 15 34	15 1 15 38	15 9 15 43	15 19 15 48	15 25 15 51	15 31 15 55	15 38 15 59	15 47 16 4	$\begin{array}{c}15 51\\16 6\end{array}$	15 55 16 8	16 0 16 10	16 6 16 13	16 12 16 16

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 8.

For other longitudes and for southern latitudes see page 42.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Apr.	1 2 3 4 5	h m 1 48 2 32 3 14 3 55 4 36	h m 1 35 2 22 3 7 3 52 4 37	h m 1 21 2 11 3 1 3 50 4 39	h m 1 5 1 59 2 53 3 46 4 40	h m 0 55 1 52 2 48 3 45 4 41	h m 0 45 1 44 2 43 3 43 4 42	h m 0 32 1 35 2 38 3 40 4 44	h m 0 16 1 23 2 30 3 38 4 45	h m 0 9 1 18 2 27 3 36 4 46	h m 0 1 1 12 2 24 3 35 4 47	h m 1 6 2 20 3 33 4 48	h m 0 58 2 15 3 31 4 49	h m 0 50 2 10 3 30 4 50
5 15 6 55 8 35 10 15 11 52	6 7 8 9 10.	5 18 6 3 6 50 7 40 8 34	$5 24 \\ 6 12 \\ 7 2 \\ 7 56 \\ 8 52$	5 29 6 22 7 16 8 13 9 12	5 36 6 33 7 32 8 33 9 35	5 39 6 39 7 41 8 44 9 48	5 44 6 46 7 51 8 58 10 4	5 48 6 55 8 4 9 14 10 23	554768199331046	5 57 7 10 8 26 9 43 10 57	6 0 7 16 8 34 9 53 11 10	$\begin{array}{r} 6 & 3 \\ 7 & 22 \\ 8 & 43 \\ 10 & 5 \\ 11 & 25 \end{array}$	$\begin{array}{r} 6 & 7 \\ 7 & 29 \\ 8 & 53 \\ 10 & 19 \\ 11 & 42 \end{array}$	6 12 7 36 9 5 10 35 12 3
13 26 14 61 16 9 16 9 17 61	11 12 13 14 15	9 31 10 29 11 28 12 24 13 19	9 50 10 49 11 45 12 39 13 30	$\begin{array}{c} 10 \ 12 \\ 11 \ 10 \\ 12 \ 4 \\ 12 \ 55 \\ 13 \ 42 \end{array}$	10 36 11 34 12 26 13 14 13 56	$\begin{array}{c} 10 \ 50 \\ 11 \ 48 \\ 12 \ 40 \\ 13 \ 24 \\ 14 \ 4 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 11 \ 27 \\ 12 \ 24 \\ 13 \ 12 \\ 13 \ 51 \\ 14 \ 24 \end{array}$	11 52 12 49 13 34 14 9 14 36	$\begin{array}{rrrr} 12 & 4 \\ 13 & 1 \\ 13 & 44 \\ 14 & 17 \\ 14 & 42 \end{array}$	$\begin{array}{r} 12 \ 18 \\ 13 \ 14 \\ 13 \ 56 \\ 14 \ 26 \\ 14 \ 48 \end{array}$	$\begin{array}{r} 12 \ 34 \\ 13 \ 30 \\ 14 \ 9 \\ 14 \ 36 \\ 14 \ 56 \end{array}$	$\begin{array}{c} 12 \ 54 \\ 13 \ 48 \\ 14 \ 24 \\ 14 \ 48 \\ 15 \ 4 \end{array}$	$\begin{array}{r} 13 \ 18 \\ 14 \ 10 \\ 14 \ 42 \\ 15 \ 1 \\ 15 \ 12 \end{array}$
17 30 30 30 30 30 30 30 30 30 30 30 30 30	16 17 18 19 20	$\begin{array}{r} 14 \ 11 \\ 15 \ 2 \\ 15 \ 52 \\ 16 \ 43 \\ 17 \ 34 \end{array}$	14 18 15 5 15 50 16 36 17 24	$\begin{array}{r} 14 \ 26 \\ 15 \ 7 \\ 15 \ 48 \\ 16 \ 29 \\ 17 \ 12 \end{array}$	14 34 15 10 15 46 16 21 16 59	$\begin{array}{r} 14 \ 39 \\ 15 \ 12 \\ 15 \ 44 \\ 16 \ 17 \\ 16 \ 52 \end{array}$	$\begin{array}{r} 14 \ 45 \\ 15 \ 14 \\ 15 \ 43 \\ 16 \ 12 \\ 16 \ 43 \end{array}$	$\begin{array}{r} 14 \ 51 \\ 15 \ 17 \\ 15 \ 41 \\ 16 \ 6 \\ 16 \ 33 \end{array}$	14 59 15 19 15 39 15 59 16 21	$\begin{array}{rrrr} 15 & 2 \\ 15 & 20 \\ 15 & 38 \\ 15 & 55 \\ 16 & 16 \end{array}$	$\begin{array}{rrrr} 15 & 6 \\ 15 & 22 \\ 15 & 37 \\ 15 & 52 \\ 16 & 10 \end{array}$	$\begin{array}{c} 15 \ 10 \\ 15 \ 23 \\ 15 \ 35 \\ 15 \ 48 \\ 16 \ 3 \end{array}$	15 15 15 15 25 15 34 15 44 15 55	15 20 15 27 15 33 15 39 15 47
18 10 18 18 18 18 18 20 18 20 18 20	21 22 23 24 25	$\begin{array}{c} 18\ 28\\ 19\ 22\\ 20\ 18\\ 21\ 12\\ 22\ 5 \end{array}$	18 13 19 5 19 59 20 53 21 46	17 58 18 47 19 38 20 32 21 26	17 40 18 25 19 15 20 8 21 3	17 30 18 13 19 1 19 53 20 49	17 18 17 58 18 45 19 37 20 34	17 4 17 42 18 26 19 17 20 15	16 48 17 21 18 2 18 53 19 51	16 40 17 11 17 51 18 41 19 40	16 32 17 0 17 38 18 27 19 27	16 22 16 48 17 23 18 11 19 12	$\begin{array}{r} 16 \ 11 \\ 16 \ 33 \\ 17 \ 6 \\ 17 \ 53 \\ 18 \ 55 \end{array}$	15 58 16 16 16 45 17 30 18 33
	26 27 28 29 30	22 55 23 42 0 27 1 9	22 38 23 28 0 16 1 2	$22 20 \\ 23 13 \\ \\ 0 4 \\ 0 53$	21 59 22 55 23 50 0 44	21 47 22 45 23 42 0 39	21 33 22 34 23 33 0 33	21 16 22 20 23 23 0 25	20 56 22 3 23 10 	20 46 21 55 23 4 0 13	20 35 21 46 22 57 0 8	$\begin{array}{c} 20 & 22 \\ 21 & 36 \\ 22 & 50 \\ & & \\ 0 & 4 \end{array}$	20 8 21 24 22 42 23 58	19 50 21 11 22 32 23 52
May	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	$ \begin{array}{r} 1 50 \\ 2 31 \\ 3 13 \\ 3 56 \\ 4 43 \end{array} $	$ \begin{array}{r} 1 \ 46 \\ 2 \ 31 \\ 3 \ 17 \\ 4 \ 4 \\ 4 \ 54 \\ \end{array} $	$ \begin{array}{r} 1 42 \\ 2 31 \\ 3 21 \\ 4 12 \\ 5 6 \end{array} $	$ \begin{array}{r} 1 & 37 \\ 2 & 31 \\ 3 & 25 \\ 4 & 22 \\ 5 & 20 \\ \end{array} $	$1 \ 34 \\ 2 \ 31 \\ 3 \ 28 \\ 4 \ 27 \\ 5 \ 28$	$1 \ 32 \\ 2 \ 31 \\ 3 \ 31 \\ 4 \ 33 \\ 5 \ 37 \\$	$ \begin{array}{r} 1 28 \\ 2 30 \\ 3 34 \\ 4 40 \\ 5 49 \end{array} $	$ \begin{array}{r} 1 24 \\ 2 30 \\ 3 38 \\ 4 49 \\ 6 2 \end{array} $	$ \begin{array}{r} 1 22 \\ 2 30 \\ 3 41 \\ 4 53 \\ 6 8 \end{array} $	1 19 2 30 3 43 4 57 6 15	$1 17 \\ 2 30 \\ 3 45 \\ 5 2 \\ 6 23$	$1 14 \\ 2 30 \\ 3 48 \\ 5 8 \\ 6 32$	1 11 2 30 3 51 5 14 6 41
7 3 9 19 12 8 13 8 14 14 14 14 14 14 14 14 14 14 14 14 14	6 7 8 9 10	5 32 6 26 7 23 8 23 9 22	5 47 6 44 7 43 8 42 9 40	$\begin{array}{ccc} 6 & 3 \\ 7 & 3 \\ 8 & 3 \\ 9 & 3 \\ 10 & 0 \end{array}$	6 21 7 24 8 27 9 28 10 23	6 32 7 37 8 41 9 42 10 36	6 44 7 52 8 58 9 58 10 52	6 59 8 10 9 17 10 18 11 10	7 17 8 32 9 42 10 43 11 32	7 25 8 42 9 54 10 55 11 43	$\begin{array}{r} 7 \ 35 \\ 8 \ 54 \\ 10 \ 7 \\ 11 \ 9 \\ 11 \ 55 \end{array}$	7 46 9 8 10 23 11 24 12 9	7 58 9 24 10 42 11 43 12 25	$\begin{array}{r} 8 \ 12 \\ 9 \ 43 \\ 11 \ 4 \\ 12 \ 6 \\ 12 \ 44 \end{array}$
	11 12 13 14 15	$\begin{array}{c} 10\ 20\\ 11\ 15\\ 12\ 8\\ 12\ 58\\ 13\ 47 \end{array}$	10 36 11 28 12 16 13 2 13 46	$\begin{array}{c} 10 \ 52 \\ 11 \ 41 \\ 12 \ 25 \\ 13 \ 6 \\ 13 \ 46 \end{array}$	$11 12 \\ 11 56 \\ 12 35 \\ 13 11 \\ 13 45$	$\begin{array}{c} 11 \ 23 \\ 12 \ 4 \\ 12 \ 40 \\ 13 \ 13 \\ 13 \ 45 \end{array}$	11 36 12 14 12 47 13 16 13 44	$\begin{array}{c} 11 \ 52 \\ 12 \ 26 \\ 12 \ 55 \\ 13 \ 20 \\ 13 \ 44 \end{array}$	$\begin{array}{r} 12 \ 10 \\ 12 \ 39 \\ 13 \ 4 \\ 13 \ 24 \\ 13 \ 43 \end{array}$	12 19 12 46 13 8 13 26 13 43	$\begin{array}{c} 12 \ 28 \\ 12 \ 53 \\ 13 \ 12 \\ 13 \ 28 \\ 13 \ 43 \end{array}$	12 39 13 1 13 17 13 30 13 42	$\begin{array}{c} 12 \ 52 \\ 13 \ 10 \\ 13 \ 23 \\ 13 \ 33 \\ 13 \ 42 \end{array}$	$\begin{array}{rrrr} 13 & 6 \\ 13 & 20 \\ 13 & 29 \\ 13 & 36 \\ 13 & 42 \end{array}$
16 18 16 16	16 17	14 36 15 26	14 31 15 17	$14\ 26\ 15\ 7$	14 20 14 56	14 16 14 49	14 12 14 42	14 8 14 34	$\begin{array}{c}14&2\\14&24\end{array}$	14 0 14 19	13 58 14 14	$\begin{array}{c} 13 54 \\ 14 9 \end{array}$	$\begin{array}{c}13 \ 51\\14 \ 2\end{array}$	13 48 13 55
LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day. . To obtain standard time, see directions on page 8.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Apr.	$1 \\ 2 \\ 3 \\ 4 \\ 5$	h m 14 10 14 53 15 34 16 15 16 56	h m 14 22 15 1 15 38 16 16 16 53	h m 14 34 15 9 15 43 16 16 16 50	h m 14 48 15 19 15 48 16 17 16 46	h m 14 56 15 25 15 51 16 17 16 44	h m 15 5 15 31 15 55 16 18 16 41	h m 15 16 15 38 15 59 16 18 16 38	h m 15 29 15 47 16 4 16 19 16 35	h m 15 34 15 51 16 6 16 19 16 33	h m 15 41 15 55 16 8 16 20 16 32	h m 15 48 16 0 16 10 16 20 16 29	h m 15 56 16 6 16 13 16 20 16 27	h m 16 6 16 12 16 16 16 21 16 25
16 18 17 30 18 80 18 80 20 19	6 7 8 9 10	17 40 18 25 19 13 20 6 21 1	17 32 18 14 18 59 19 48 20 42	17 25 18 3 18 44 19 30 20 21	17 16 17 49 18 26 19 9 19 58	17 11 17 42 18 16 18 56 19 44	17 6 17 33 18 5 18 42 19 28	16 59 17 23 17 51 18 26 19 9	16 52 17 11 17 35 18 5 18 45	16 48 17 6 17 27 17 55 18 33	16 44 16 59 17 18 17 44 18 20	16 40 16 52 17 9 17 32 18 5	16 35 16 45 16 58 17 17 17 48	16 30 16 36 16 46 17 0 17 26
×1 53 0 10 1 29 2 50	11 12 13 14 15	21 59 22 57 23 55 0 51	21 39 22 38 23 38 0 37	21 18 22 18 23 20 0 23	$\begin{array}{c} 20 \ 53 \\ 21 \ 54 \\ 23 \ 0 \\ \\ \\ 0 \ 6 \end{array}$	20 39 21 41 22 48 23 57	$\begin{array}{c} 20 \ 22 \\ 21 \ 24 \\ 22 \ 34 \\ 23 \ 46 \\ \dots \end{array}$	20 2 21 5 22 17 23 33	19 36 20 41 21 56 23 16	19 24 20 29 21 46 23 9	19 10 20 16 21 35 23 1	18 54 20 1 21 22 22 51	18 34 19 43 21 8 22 40	18 10 19 20 20 50 22 28
	16 17 18 19 20	$ \begin{array}{r} 1 \ 44 \\ 2'36 \\ 3 \ 26 \\ 4 \ 16 \\ 5 \ 7 \\ \end{array} $	1 35 2 31 3 26 4 21 5 16	$ \begin{array}{r} 1 25 \\ 2 25 \\ 3 25 \\ 4 25 \\ 5 26 \\ \end{array} $	1 13 2 20 3 25 4 31 5 36	$ \begin{array}{r} 1 & 7 \\ 2 & 16 \\ 3 & 25 \\ 4 & 34 \\ 5 & 43 \end{array} $	0 59 2 12 3 25 4 37 5 50	$\begin{array}{c} 0 \ 50 \\ 2 \ 7 \\ 3 \ 25 \\ 4 \ 42 \\ 5 \ 58 \end{array}$	0 39 2 2 3 24 4 46 6 8	0 34 1 59 3 24 4 48 6 13	0 29 1 56 3 24 4 51 6 18	0 22 1 53 3 24 4 54 6 24	0 15 1 50 3 23 4 57 6 30	$\begin{array}{c} 0 & 7 \\ 1 & 46 \\ 3 & 23 \\ 5 & 0 \\ 6 & 38 \end{array}$
10 43 11 11 11 27 14 88 14 46	21 22 23 24 25	6 0 6 54 7 49 8 44 9 38	6 13 7 10 8 8 9 4 9 57	6 26 7 28 8 28 9 25 10 18	6 42 7 48 8 50 9 49 10 42	$ \begin{array}{r} 6 52 \\ 7 59 \\ 9 4 \\ 10 3 \\ 10 56 \end{array} $	7 2 8 13 9 19 10 20 11 12	7 14 8 29 9 38 10 40 11 31	7 30 8 48 10 1 11 4 11 56	7 37 8 58 10 12 11 16 12 7	7 45 9 8 10 25 11 30 12 20	7 54 9 21 10 40 11 46 12 36	8 4 9 34 10 57 12 4 12 53	8 15 9 51 11 18 12 28 13 15
	26 27 28 29 30	10 30 11 18 12 4 12 48 13 29	10 48 11 34 12 17 12 57 13 35	11 7 11 51 12 30 13 7 13 41	11 29 12 10 12 46 13 18 13 48	$\begin{array}{c} 11 \ 42 \\ 12 \ 21 \\ 12 \ 55 \\ 13 \ 25 \\ 13 \ 52 \end{array}$	11 56 12 33 13 5 13 32 13 57	12 14 12 48 13 16 13 41 14 2	$\begin{array}{rrrrr} 12 & 36 \\ 13 & 6 \\ 13 & 31 \\ 13 & 51 \\ 14 & 8 \end{array}$	12 46 13 15 13 37 13 55 14 11	12 57 13 24 13 44 14 1 14 14	13 10 13 35 13 53 14 6 14 17	13 26 13 47 14 2 14 13 14 21	13 44 14 1 14 12 14 20 14 25
Мау	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	$\begin{array}{r} 14 \ 10 \\ 14 \ 52 \\ 15 \ 34 \\ 16 \ 18 \\ 17 \ 6 \end{array}$	14 12 14 50 15 28 16 9 16 53	14 15 14 48 15 22 15 59 16 39	14 17 14 46 15 16 15 48 16 24	14 18 14 44 15 12 15 41 16 14	$\begin{array}{r} 14 \ 20 \\ 14 \ 43 \\ 15 \ 7 \\ 15 \ 34 \\ 16 \ 4 \end{array}$	$\begin{array}{r} 14 \ 22 \\ 14 \ 42 \\ 15 \ 2 \\ 15 \ 25 \\ 15 \ 52 \end{array}$	14 24 14 40 14 56 15 14 15 37	14 25 14 39 14 53 15 10 15 30	$\begin{array}{r} 14 \ 26 \\ 14 \ 38 \\ 14 \ 50 \\ 15 \ 4 \\ 15 \ 22 \end{array}$	14 27 14 37 14 47 14 59 15 14	$\begin{array}{r} 14\ 28\\ 14\ 36\\ 14\ 43\\ 14\ 52\\ 15\ 4\end{array}$	14 30 14 34 14 39 14 45 14 54
	6 7 8 9 10	17 58 18 53 19 52 20 51 21 50	17 42 18 35 19 32 20 32 21 33	17 24 18 15 19 11 20 11 21 14	$\begin{array}{rrrr} 17 & 5 \\ 17 & 52 \\ 18 & 47 \\ 19 & 48 \\ 20 & 53 \end{array}$	16 53 17 39 18 32 19 33 20 40	16 40 17 23 18 16 19 17 20 26	$\begin{array}{cccc} 16 & 24 \\ 17 & 5 \\ 17 & 56 \\ 18 & 58 \\ 20 & 8 \end{array}$	16 5 16 42 17 31 18 33 19 46	15 56 16 31 17 19 18 22 19 36	15 46 16 19 17 6 18 8 19 24	15 35 16 6 16 50 17 52 19 11	$\begin{array}{r} 15 \ 22 \\ 15 \ 49 \\ 16 \ 31 \\ 17 \ 34 \\ 18 \ 55 \end{array}$	15 6 15 29 16 8 17 11 18 37
10.00 10.00 10.00 10.00	11 12 13 14 15	$22 \ 47 \\ 23 \ 41 \\ 0 \ 32 \\ 1 \ 22$	$22 \ 32 \\ 23 \ 30 \\ \vdots \\ 0 \ 26 \\ 1 \ 20 \ 20 \\ 1 \ 20 \$	22 17 23 19 0 19 1 18	22 0 23 6 0 12 1 16	$21 49 \\ 22 59 \\ \\ 0 7 \\ 1 15$	$21 \ 37 \\ 22 \ 50 \\ \vdots \\ 0 \ 2 \\ 1 \ 13 \\ 13$	$21 23 \\ 22 40 \\ 23 56 \\ \dots \\ 1 12$	$\begin{array}{c} 21 & 6 \\ 22 & 28 \\ 23 & 49 \\ & \ddots \\ 1 & 10 \end{array}$	$\begin{array}{c} 20 \ 58 \\ 22 \ 22 \\ 23 \ 46 \\ \hline 1 \ 9 \end{array}$	$20 49 \\ 22 16 \\ 23 42 \\ \dots \\ 1 8$	20 38 22 9 23 38 1 7	$\begin{array}{c} 20 \ 27 \\ 22 \ 1 \\ 23 \ 34 \\ \dots \\ 1 \ 6 \end{array}$	$20 13 \\ 21 52 \\ 23 29 \\ \\ 1 4$
615 885	16 17	$\begin{array}{c}2&10\\3&0\end{array}$	$213 \\ 37$	2 16 3 15	2 20 3 24	2 22 3 29	2 24 3 34	2 26 3 41	2 30 3 49	2 31 3 53	2 33 3 57	2 35 4 2	2 36 4 7	2 39 4 13

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

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Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
May	17 18 19 20 21	h m 15 26 16 17 17 11 18 5 19 0	h m 15 17 16 4 16 54 17 47 18 41	h m 15 7 15 50 16 37 17 27 18 20	h m 14 56 15 34 16 17 17 4 17 56	h m 14 49 15 25 16 6 16 51 17 42	h m 14 42 15 15 15 52 16 36 17 26	h m 14 34 15 2 15 37 16 18 17 6	h m 14 24 14 48 15 18 15 55 16 42	h m 14 19 14 41 15 9 15 44 16 30	h m 14 14 14 34 14 59 15 32 16 17	h m 14 9 14 25 14 48 15 18 16 2	h m 14 2 14 15 14 35 15 2 15 44	h m 13 55 14 5 14 20 14 43 15 21
16 30 16 38 16 38 17 46 17 26	22 23 24 25 26	$\begin{array}{c} 19 \ 54 \\ 20 \ 46 \\ 21 \ 35 \\ 22 \ 21 \\ 23 \ 4 \end{array}$	$\begin{array}{c} 19 \ 35 \\ 20 \ 28 \\ -21 \ 20 \\ 22 \ 8 \\ 22 \ 55 \end{array}$	$\begin{array}{c} 19 \ 15 \\ 20 \ 10 \\ 21 \ 3 \\ 21 \ 55 \\ 22 \ 46 \end{array}$	$\begin{array}{r} 18\ 51\\ 19\ 48\\ 20\ 44\\ 21\ 40\\ 22\ 35 \end{array}$	$18\ 37\\19\ 35\\20\ 34\\21\ 32\\22\ 28$	$\begin{array}{c} 18 \ 21 \\ 19 \ 20 \\ 20 \ 21 \\ 21 \ 22 \\ 22 \ 21 \end{array}$	18 2 19 3 20 6 21 10 22 13	$\begin{array}{c} 17 \ 38 \\ 18 \ 41 \\ 19 \ 47 \\ 20 \ 55 \\ 22 \ 3 \end{array}$	$\begin{array}{c} 17 \ 26 \\ 18 \ 30 \\ 19 \ 39 \\ 20 \ 49 \\ 21 \ 58 \end{array}$	$\begin{array}{r} 17 \ 13 \\ 18 \ 19 \\ 19 \ 29 \\ 20 \ 41 \\ 21 \ 53 \end{array}$	$\begin{array}{rrrr} 16\ 58\\ 18\ 5\\ 19\ 18\\ 20\ 33\\ 21\ 47 \end{array}$	$16 \ 40 \\ 17 \ 49 \\ 19 \ 5 \\ 20 \ 23 \\ 21 \ 41$	16 18 17 30 18 50 20 13 21 33
.38.10 (19.20 20.50 22.29	27 28 29 30 31	$23 \ 46 \\ \cdot \cdot \cdot \\ 0 \ 26 \\ 1 \ 7 \\ 1 \ 49$	23 40 0 25 1 9 1 55	$23 \ 34 \\ \cdot \cdot \cdot \\ 0 \ 23 \\ 1 \ 12 \\ 2 \ 2 $	23 28 0 21 1 14 2.9	23 24 0 20 1 16 2 13	23 20 0 18 1 18 2 18	$23 15 \\ 0 17 \\ 1 20 \\ 2 24$	23 9 0 15 1 22 2 30	$\begin{array}{ccc} 23 & 6 \\ & \ddots & \ddots \\ & 0 & 15 \\ & 1 & 23 \\ & 2 & 34 \end{array}$	$\begin{array}{cccc} 23 & 3 \\ & 0 & 14 \\ & 1 & 24 \\ & 2 & 37 \end{array}$	23 0 0 13 1 26 2 41	22 56 0 12 1 27 2 45	$22 52 \\ \cdot \cdot \cdot \\ 0 10 \\ 1 29 \\ 2 50 \\$
June	12345	$\begin{array}{c} 2 & 34 \\ 3 & 22 \\ 4 & 14 \\ 5 & 10 \\ 6 & 10 \end{array}$	$\begin{array}{r} 2 \ 44 \\ 3 \ 35 \\ 4 \ 30 \\ 5 \ 29 \\ 6 \ 29 \end{array}$	$2 54 \\ 3 50 \\ 4 48 \\ 5 49 \\ 6 51$	$ \begin{array}{r} 3 & 6 \\ 4 & 6 \\ 5 & 8 \\ 6 & 12 \\ 7 & 15 \end{array} $	$\begin{array}{c} 3 \ 13 \\ 4 \ 16 \\ 5 \ 20 \\ 6 \ 26 \\ 7 \ 29 \end{array}$	$\begin{array}{c} 3 \ 21 \\ 4 \ 26 \\ 5 \ 34 \\ 6 \ 42 \\ 7 \ 46 \end{array}$	$\begin{array}{c} 3 \ 30 \\ 4 \ 40 \\ 5 \ 50 \\ 7 \ 1 \\ 8 \ 6 \end{array}$	3 42 4 55 6 11 7 24 8 31	$\begin{array}{c} 3 & 47 \\ 5 & 3 \\ 6 & 21 \\ 7 & 36 \\ 8 & 43 \end{array}$	353 53 511 631 749 857	3 59 5 21 6 44 8 4 9 13	4 6 5 31 6 58 8 22 9 32	$\begin{array}{c c} 4 & 15 \\ 5 & 44 \\ 7 & 15 \\ 8 & 43 \\ 9 & 55 \end{array}$
835 961 1138 1228 1328 1515	6 7 8 9 10	8 12 9 9 10 4 10 55	7 30 8 28 9 23 10 13 11 0	$7 50 \\ 8 46 \\ 9 37 \\ 10 23 \\ 11 6$	$\begin{array}{r} 8 \ 14 \\ 9 \ 7 \\ .9 \ 54 \\ 10 \ 35 \\ 11 \ 12 \end{array}$	8 28 9 19 10 3 10 41 11 16	8 44 9 33 10 14 10 49 11 20	9 3 9 49 10 27 10 58 11 25	9 26 10 9 10 42 11 8 11 30	9 37 10 18 10 49 11 13 11 32	9 50 10 29 10 57 11 18 11 35	10 5 10 41 11 6 11 24 11 38	$\begin{array}{c} 10 \ 22 \\ 10 \ 55 \\ 11 \ 16 \\ 11 \ 30 \\ 11 \ 42 \end{array}$	$ \begin{array}{r} 10 \ 43 \\ 11 \ 11 \\ 11 \ 27 \\ 11 \ 38 \\ 11 \ 46 \\ \end{array} $
13 44 14 1 14 22 14 20 14 25	11 12 13 14 15	$\begin{array}{c} 11 \ 45 \\ 12 \ 34 \\ 13 \ 22 \\ 14 \ 12 \\ 15 \ 4 \end{array}$	$\begin{array}{c} 11 \ 46 \\ 12 \ 30 \\ 13 \ 14 \\ 14 \ 1 \\ 14 \ 49 \end{array}$	11 46 12 26 13 6 13 48 14 33	$\begin{array}{c} 11 \ 47 \\ 12 \ 21 \\ 12 \ 56 \\ 13 \ 33 \\ 14 \ 14 \end{array}$	$\begin{array}{c} 11 \ 48 \\ 12 \ 19 \\ 12 \ 51 \\ 13 \ 25 \\ 14 \ 3 \end{array}$	$\begin{array}{c} 11 \ 48 \\ 12 \ 16 \\ 12 \ 44 \\ 13 \ 16 \\ 13 \ 51 \end{array}$	$\begin{array}{c} 11 \ 49 \\ 12 \ 13 \\ 12 \ 37 \\ 13 \ 4 \\ 13 \ 36 \end{array}$	$\begin{array}{c} 11 \ 50 \\ 12 \ 8 \\ 12 \ 29 \\ 12 \ 51 \\ 13 \ 18 \end{array}$	$\begin{array}{cccc} 11 & 50 \\ 12 & 7 \\ 12 & 25 \\ 12 & 45 \\ 13 & 10 \end{array}$	$\begin{array}{cccc} 11 & 50 \\ 12 & 5 \\ 12 & 20 \\ 12 & 38 \\ 13 & 1 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} 11 & 51 \\ 12 & 0 \\ 12 & 10 \\ 12 & 22 \\ 12 & 39 \end{array}$	$\begin{array}{c} 11 \ 52 \\ 11 \ 58 \\ 12 \ 4 \\ 12 \ 13 \\ 12 \ 26 \end{array}$
14.20 14.24 14.29 14.45 14.45	16 17 18 19 20	15 57 16 52 17 46 18 38 19 28	15 40 16 32 17 26 18 20 19 12	$\begin{array}{c} 15 \ 21 \\ 16 \ 12 \\ 17 \ 6 \\ 18 \ 0 \\ 18 \ 54 \end{array}$	14 59 15 48 16 42 17 38 18 34	$\begin{array}{c} 14 \ 46 \\ 15 \ 34 \\ 16 \ 28 \\ 17 \ 24 \\ 18 \ 23 \end{array}$	14 31 15 18 16 11 17 9 18 9	$\begin{array}{c} 14 \ 14 \\ 14 \ 59 \\ 15 \ 52 \\ 16 \ 51 \\ 17 \ 53 \end{array}$	$\begin{array}{c} 13 \ 52 \\ 14 \ 35 \\ 15 \ 27 \\ 16 \ 28 \\ 17 \ 33 \end{array}$	$\begin{array}{c} 13 \ 42 \\ 14 \ 23 \\ 15 \ 15 \\ 16 \ 17 \\ 17 \ 24 \end{array}$	$13 \ 31 \\ 14 \ 10 \\ 15 \ 2 \\ 16 \ 4 \\ 17 \ 13$	$\begin{array}{c} 13 \ 18 \\ 13 \ 55 \\ 14 \ 46 \\ 15 \ 50 \\ 17 \ 1 \end{array}$	$\begin{array}{rrrr} 13 & 3 \\ 13 & 38 \\ 14 & 28 \\ 15 & 33 \\ 16 & 47 \end{array}$	$\begin{array}{c} 12 \ 45 \\ 13 \ 16 \\ 14 \ 5 \\ 15 \ 13 \\ 16 \ 31 \end{array}$
15 6 15 29 16 8 17 11 18 37	21 22 23 24 25	$\begin{array}{c} 20 \ 15 \\ 21 \ 0 \\ 21 \ 42 \\ 22 \ 22 \\ 23 \ 3 \end{array}$	$\begin{array}{cccc} 20 & 2 \\ 20 & 49 \\ 21 & 35 \\ 22 & 19 \\ 23 & 3 \end{array}$	19 47 20 38 21 28 22 16 23 4	$\begin{array}{c} 19 \ 31 \\ 20 \ 26 \\ 21 \ 20 \\ 22 \ 12 \\ 23 \ 5 \end{array}$	19 21 20 18 21 15 22 10 23 5	$\begin{array}{c} 19 \ 10 \\ 20 \ 10 \\ 21 \ 10 \\ 22 \ 8 \\ 23 \ 6 \end{array}$	$\begin{array}{cccc} 18 & 57 \\ 20 & 1 \\ 21 & 3 \\ 22 & 5 \\ 23 & 7 \end{array}$	$\begin{array}{c} 18 \ 41 \\ 19 \ 49 \\ 20 \ 56 \\ 22 \ 2 \\ 23 \ 8 \end{array}$	183419432052220238	$\begin{array}{c} 18\ 25\\ 19\ 37\\ 20\ 48\\ 21\ 58\\ 23\ 8\end{array}$	$\begin{array}{c} 18 \ 16 \\ 19 \ 31 \\ 20 \ 44 \\ 21 \ 56 \\ 23 \ 9 \end{array}$	$\begin{array}{rrrr} 18 & 5 \\ 19 & 23 \\ 20 & 39 \\ 21 & 54 \\ 23 & 9 \end{array}$	$17 53 \\ 19 14 \\ 20 34 \\ 21 52 \\ 23 10$
20 18 21 52 28 29 1 4	26 27 28 29 30	$23 \ 44 \\ 0 \ 26 \\ 1 \ 12 \\ 2 \ 1$	$23 \ 48 \\ 0 \ 34 \\ 1 \ 23 \\ 2 \ 16$	$23 53 \\ 0 43 \\ 1 36 \\ 2 32$	23 58 0 53 1 50 2 51	$\begin{array}{c} & & & & \\ & & & & \\ & & & & \\ & & & & $	$\begin{array}{c} & & & & & \\ & & & 0 & 5 \\ & & 1 & 6 \\ & & 2 & 9 \\ & & 3 & 14 \end{array}$	$\begin{array}{c} & & & & \\ & & & 0 & 9 \\ & & 1 & 14 \\ & & 2 & 20 \\ & & 3 & 29 \end{array}$	0 14 1 23 2 34 3 48	0 16 1 27 2 41 3 56	$\begin{array}{c} & & & & \\ & & & 0 & 19 \\ & & 1 & 32 \\ & & 2 & 48 \\ & & 4 & 6 \end{array}$	$\begin{array}{c} & \ddots & \ddots \\ & 0 & 22 \\ & 1 & 38 \\ & 2 & 56 \\ & 4 & 17 \end{array}$	$\begin{array}{c} & & & & \\ & 0 & 25 \\ & 1 & 44 \\ & 3 & 5 \\ & 4 & 30 \end{array}$	$\begin{array}{c} \cdot & \cdot & \cdot \\ 0 & 29 \\ 1 & 50 \\ 3 & 16 \\ 4 & 45 \end{array}$
July	1 2	2 55 3 53	3 13 4 12	3 32 4 33	3 54 4 57	4 7 5 11	4 22 5 28	4 39 5 47	5 2 6 12	5 12 6 24	5 25 6 38	5 39 6 54	5 55 7 12	6 15 7 36

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 8. molecular to any backward backward backward backward backward

For other longitudes and for southern latitudes see page 42.

Dato.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
May	17 18 19 20 21	h m 3 0 3 50 4 43 5 37 6 32	h m 3 7 4 2 4 58 5 54 6 51	h m 3 15 4 14 5 14 6 14 7 12	h m 3 24 4 28 5 32 6 35 7 36	h m 3 29 4 36 5 43 6 48 7 50	h m 3 34 4 45 5 55 7 3 8 6	h m 3 41 4 56 6 9 7 20 8 25	h m 3 49 5 9 6 27 7 42 8 49	h m 3 53 5 15 6 36 7 53 9 1	h m 3 57 5 22 6 45 8 4 9 14	h m 4 2 5 29 6 56 8 18 9 30	h m 4 7 5 38 7 8 8 34 9 48	h m 4 13 5 48 7 22 8 53 10 10
10 8 255 10 9 9 9 10 9 9 9 10 9 9 9 10 9 9 9 10 9 9 10 9 10 9 10 9 10 9 10 9 10 10 10 10 10 10 10 10 10 10 10 10 10	22 23 24 25 26	7 27 8 20 9 10 9 58 10 42	7 46 8 38 9 27 10 12 10 53	8 7 8 58 9 44 10 26 11 4	8 31 9 21 10 4 10 43 11 17	8 45 9 34 10 16 10 52 11 24	9 2 9 50 10 30 11 4 11 33	9 21 10 8 10 46 11 17 11 42	9 46 10 30 11 5 11 32 11 54	9 57 10 41 11 14 11 40 11 59	10 10 10 53 11 24 11 48 12 5	10 26 11 7 11 36 11 57 12 12	10 44 11 24 11 49 12 7 12 19	11 6 11 43 12 5 12 19 12 27
10 22 10 22 10 20 11 17 11 17	27 28 29 30 31	11 24 12 6 12 46 13 27 14 10	11 32 12 9 12 46 13 23 14 3	11 39 12 13 12 46 13 19 13 54	11 48 12 17 12 45 13 14 13 45	11 52 12 19 12 45 13 11 13 39	11 58 12 22 12 45 13 8 13 33	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	12 12 12 28 12 44 13 0 13 18	12 16 12 30 12 44 12 58 13 14	12 20 12 32 12 44 12 56 13 9	12 24 12 34 12 44 12 54 13 4	12 28 12 36 12 44 12 51 12 59	12 34 12 39 12 43 12 48 12 53
June	12345	14 56 15 46 16 40 17 38 18 39	$14 45 \\15 32 \\16 23 \\17 19 \\18 20$	14 33 15 16 16 4 16 58 17 59	14 19 14 57 15 42 16 35 17 34	14 11 14 47 15 30 16 20 17 20	$ \begin{array}{r} 14 & 2 \\ 14 & 34 \\ 15 & 15 \\ 16 & 4 \\ 17 & 4 \end{array} $	$\begin{array}{c} 13 \ 51 \\ 14 \ 20 \\ 14 \ 58 \\ 15 \ 45 \\ 16 \ 44 \end{array}$	13 38 14 3 14 36 15 21 16 19	$\begin{array}{c} 13 & 32 \\ 13 & 55 \\ 14 & 26 \\ 15 & 9 \\ 16 & 7 \end{array}$	$13 25 \\13 46 \\14 15 \\14 56 \\15 53$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	13 10 13 24 13 47 14 22 15 18	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$
	6 7 8 9 10	19 40 20 39 21 36 22 29 23 19	19 22 20 24 21 24 22 21 23 16	19 2 20 7 21 11 22 13 23 13	18 40 19 48 20 57 22 4 23 10	18 27 19 37 20 49 21 59 23 8	18 11 19 24 20 39 21 53 23 5	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	17 30 18 50 20 14 21 37 22 59	17 19 18 42 20 8 21 34 22 57	$ \begin{array}{r} 17 & 7 \\ 18 & 31 \\ 20 & 1 \\ 21 & 29 \\ 22 & 56 \end{array} $	16 52 18 20 19 52 21 24 22 54	16 36 18 7 19 43 21 19 22 52	16 15 17 52 19 33 21 13 22 49
	11 12 13 14 15	0 8 0 57 1 46 2 37	0 10 1 3 1 56 2 51	0 12 1 9 2 7 3 6	0 13 1 16 2 20 3 23	0 15 1 21 2 27 3 32	0 16 1 26 2 35 3 44	0 17 1 31 2 44 3 57	0 19 1 38 2 56 4 14	0 20 1 41 3 2 4 21	0 21 1 44 3 8 4 30	0 22 1 48 3 14 4 40	0 23 1 52 3 22 4 51	0 24 1 57 3 31 5 4
	16 17 18 19 20	3 30 4 24 5 18 6 11 7 3	3 46 4 42 5 37 6 30 7 20	4 4 5 2 5 58 6 51 7 39	4 25 5 26 6 22 7 14 8 0	4 37 5 39 6 36 7 28 8 12	4 51 5 55 6 53 7 44 8 27	5 8 6 14 7 12 8 3 8 43	5 28 6 37 7 37 8 26 9 4	5 38 6 48 7 49 8 37 9 14	5 49 7 1 8 2 8 50 9 25	6 2 7 16 8 18 9 5 9 38	6 16 7 34 8 36 9 22 9 52	6 34 7 55 8 59 9 43 10 9
	21 22 23 24 25	7 51 8 37 9 20 10 2 10 42	8 6 8 49 9 29 10 6 10 43	8 22 9 2 9 38 10 12 10 44	8 40 9 16 9 48 10 17 10 46	8 51 9 24 9 54 10 21 10 47	9 3 9 34 10 0 10 25 10 48	9 17 9 44 10 8 10 29 10 48	9 34 9 58 10 17 10 34 10 50	9 42 10 4 10 21 10 36 10 50	9 51 10 10 10 26 10 39 10 51	$ \begin{array}{c} 10 & 1 \\ 10 & 18 \\ 10 & 31 \\ 10 & 42 \\ 10 & 52 \end{array} $	10 12 10 26 10 36 10 45 10 52	10 26 10 36 10 43 10 49 10 53
	26 27 28 29 30	$\begin{array}{c} 11 \ 22 \\ 12 \ 4 \\ 12 \ 48 \\ 13 \ 35 \\ 14 \ 26 \end{array}$	11 20 11 58 12 38 13 22 14 10	$11 17 \\ 11 51 \\ 12 27 \\ 13 7 \\ 13 52$	$11 14 \\ 11 43 \\ 12 15 \\ 12 51 \\ 13 32$	11 12 11 39 12 8 12 41 13 20	11 10 11 34 12 0 12 30 13 7	11 8 11 28 11 51 12 18 12 51	$ \begin{array}{c} 11 & 5 \\ 11 & 22 \\ 11 & 40 \\ 12 & 2 \\ 12 & 31 \end{array} $	11 4 11 19 11 35 11 55 12 22	11 2 11 15 11 29 11 47 12 12	11 1 11 11 11 23 11 38 12 0	10 59 11 7 11 16 11 28 11 47	10 57 11 2 11 9 11 17 11 31
July	1 2 .	15 22 16 21	$\begin{vmatrix} 15 & 3 \\ 16 & 2 \end{vmatrix}$	14 43 15 41	14 20 15 16	14 7 15 2	13 51 14 45	13 32 14 26	13 9 14 0	12 58 13 48	12 46 13 35	12 31 13 19	12 15 13 0	11 54 12 36

70331°-1917-3

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

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To obtain standard time, see directions on page 8.

For other longitudes and for southern latitudes see page 42.

Date.	Let.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
July	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	h m 2 55 3 53 4 54 5 56 6 56	h m 3 13 4 12 5 13 6 14 7 11	h m 3 32 4 33 5 34 6 33 7 27	h m 3 54 4 57 5 58 6 55 7 46	h m 4 7 5 11 6 12 7 8 7 56	h m 4 22 5 28 6 29 7 23 8 9	h m 4 39 5 47 6 48 7 41 8 23	h m 5 2 6 12 7 13 8 2 8 41	h m 5 12 6 24 7 25 8 13 8 48	h m 5 25 6 38 7 39 8 25 8 58	h m 5 39 6 54 7 54 8 38 9 8	h m 5 55 7 12 8 13 8 54 9 19	h m 6 15 7 36 8 35 9 12 9 33
	6 7 8 9 10	7 54 8 48 9 40 10 30 11 20	8 5 8 55 9 42 10 28 11 13	8 17 9 2 9 45 10 26 11 6	8 31 9 11 9 48 10 23 10 58	8 39 9 15 9 49 10 21 10 53	8 47 9 21 9 51 10 19 10 48	8 58 9 27 9 53 10 17 10 42	9 10 9 34 9 55 10 15 10 35	9 16 9 38 9 56 10 14 10 31	9 22. 9 41 9 57 10 12 10 28	9 29 9 46 9 58 10 11 10 24	9 37 9 50 10 0 10 10 10 19	9 46 9 55 10 2 10 8 10 14
12.39 12.39 12.43 12.43 12.43 12.63	11 12 13 14 15	$\begin{array}{c} 12 \ 10 \\ 13 \ 1 \\ 13 \ 53 \\ 14 \ 47 \\ 15 \ 40 \end{array}$	11 59 12 47 13 36 14 28 15 20	11_48 12_31 13_18 14_8 15_0	11 35 12 14 12 57 13 44 14 36	$\begin{array}{cccc} 11 & 27 \\ 12 & 4 \\ 12 & 45 \\ 13 & 31 \\ 14 & 22 \end{array}$	$\begin{array}{c} 11 \ 18 \\ 11 \ 52 \\ 12 \ 31 \\ 13 \ 15 \\ 14 \ 5 \end{array}$	11 8 11 39 12 14 12 56 13 46	$\begin{array}{c} 10 \ 57 \\ 11 \ 22 \\ 11 \ 51 \\ 12 \ 33 \\ 13 \ 21 \end{array}$	$\begin{array}{c} 10 \ 51 \\ 11 \ 14 \\ 11 \ 44 \\ 12 \ 22 \\ 13 \ 9 \end{array}$	$ \begin{array}{r} 10 \ 45 \\ 11 \ 6 \\ 11 \ 33 \\ 12 \ 9 \\ 12 \ 56 \end{array} $	10 38 10 56 11 21 11 54 12 41	10 31 10 46 11 7 11 38 12 22	10 22 10 33 10 50 11 17 11 59
13 0 1897 1829 1829 1445	16 17 18 19 20	16 33 17 23 18 11 18 56 19 39	16 14 17 6 17 56 18 45 19 31	15 54 16 48 17 41 18 32 19 22	15 30 16 27 17 23 18 18 19 13	15 17 16 14 17 13 18 10 19 7	15 1 16 0 17 1 18 1 19 1	14 42 15 43 16 47 17 50 18 53	14 18 15 22 16 29 17 37 18 44	14 7 15 12 16 21 17 30 18 40	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	13 39 14 48 16 1 17 16 18 30	$\begin{array}{c} 13 \ 22 \\ 14 \ 33 \\ 15 \ 50 \\ 17 \ 7 \\ 18 \ 25 \end{array}$	13 0 14 15 15 36 16 57 18 18
16 15 17 53 17 53 19 38 20 15 20 49	21 22 23 24 25	$\begin{array}{c} 20 \ 20 \\ 21 \ 0 \\ 21 \ 41 \\ 22 \ 22 \\ 23 \ 5 \end{array}$	20 16 21 0 21 44 22 29 23 16	20 11 20 59 21 47 22 37 23 27	$\begin{array}{cccc} 20 & 6 \\ 20 & 58 \\ 21 & 51 \\ 22 & 45 \\ 23 & 40 \end{array}$	20 3 20 58 21 53 22 50 23 47	19 59 20 57 21 55 22 55 23 55	19 55 20 56 21 58 23 2	$ \begin{array}{r} 19 50 \\ 20 56 \\ 22 2 \\ 23 9 \\ \dots \\ \end{array} $	$ \begin{array}{r} 19 48 \\ 20 55 \\ 22 3 \\ 23 13 \\ \dots \\ \dots \\ \end{array} $	$ \begin{array}{r} 19 \ 46 \\ 20 \ 55 \\ 22 \ 5 \\ 23 \ 17 \\ \dots \end{array} $	19 43 20 55 22 7 23 21	19 40 20 54 22 9 23 26	19 36 20 54 22 12 23 32
024 122 8 27 6 81 7	26 27 28 29 30	$23 52 \\ \cdot \cdot \cdot \\ 0 42 \\ 1 37 \\ 2 35$	$ \begin{array}{c} 0 & 6 \\ 0 & 59 \\ 1 & 55 \\ 2 & 55 \end{array} $	0 20 1 17 2 16 3 16	0 37 1 37 2 39 3 40	0 47 1 49 2 52 3 54	0 58 2 3 3 8 4 11	0 5 1 12 2 20 3 27 4 31	$\begin{array}{c} 0 \ 17 \\ 1 \ 28 \\ 2 \ 40 \\ 3 \ 51 \\ 4 \ 56 \end{array}$	$\begin{array}{c} 0 & 23 \\ 1 & 36 \\ 2 & 50 \\ 4 & 2 \\ 5 & 8 \end{array}$	$\begin{array}{c} 0 & 29 \\ 1 & 45 \\ 3 & 1 \\ 4 & 15 \\ 5 & 22 \end{array}$	0 36 1 55 3 14 4 30 5 38	0 44 2 6 3 28 4 48 5 57	0 53 2 18 3 46 5 10 6 20
Aug.	31 1 2 3 4	3 36 4 37 5 37 6 34 7 29	3 55 4 54 5 50 6 43 7 33	$\begin{array}{r} 4 \ 15 \\ 5 \ 12 \\ 6 \ 4 \\ 6 \ 53 \\ 7 \ 38 \end{array}$	4 38 5 32 6 20 7 4 7 43	4 52 5 44 6 30 7 10 7 46	5 8 5 58 6 40 7 17 7 50	5 27 6 14 6 53 7 26 7 53	5 50 6 34 7 8 7 35 7 58	$\begin{array}{c} 6 & 2 \\ 6 & 43 \\ 7 & 15 \\ 7 & 40 \\ 8 & 0 \end{array}$	$\begin{array}{c} 6 & 14 \\ 6 & 54 \\ 7 & 23 \\ 7 & 45 \\ 8 & 3 \end{array}$	6 29 7 6 7 32 7 50 8 5	6 46 7 19 7 41 7 56 8 8	7 7 7 35 7 52 8 3 8 11
10 24 10 36 10 48 10 49	56789	8 22 9 13 10 4 10 56 11 49	8 21 9 8 9 55 10 43 11 33	8 21 9 3 9 45 10 29 11 16	8 20 8 57 9 34 10 13 10 56	8 20 8 53 9 27 10 4 10 44	8 20 8 49 9 20 9 54 10 31	8 20 8 45 9 12 9 41 10 15	8 19 8 39 9 1 9 26 9 56	8 19 8 37 8 57 9 19 9 47	8 19 8 34 8 52 9 12 9 37	8 18 8 32 8 46 9 3 9 26	8 18 8 28 8 39 8 54 9 11	8 18 8 25 8 32 8 43 8 43 8 58
10 57 11 8 83 9 14 17 11 81	10 11 12 13 14	12 43 13 37 14 29 15 20 16 8	$12 25 \\13 17 \\14 10 \\15 2 \\15 53$	$ \begin{array}{r} 12 & 5 \\ 12 & 57 \\ 13 & 50 \\ 14 & 43 \\ 15 & 36 \end{array} $	11 42 12 33 13 26 14 22 15 18	$ \begin{array}{c} 11 & 29 \\ 12 & 19 \\ 13 & 12 \\ 14 & 9 \\ 15 & 6 \end{array} $	$11 14 \\ 12 2 \\ 12 56 \\ 13 54 \\ 14 54$	10 56 11 43 12 37 13 36 14 39	10 33 11 19 12 13 13 14 14 20	$ \begin{array}{c} 10 & 22 \\ 11 & 7 \\ 12 & 2 \\ 13 & 4 \\ 14 & 11 \end{array} $	10 10 10 54 11 48 12 52 14 1	9 56 10 38 11 33 12 38 13 50	9 40 10 20 11 15 12 22 13 37	9 21 9 57 10 53 12 3 13 22
11 54	15 16	16 54 17 38	16 42 17 28	16 28 17 19	16 13 17 7	$ \begin{array}{c} 16 & 4 \\ 17 & 1 \end{array} $	15 54 16 54	15 42 16 45	15 27 16 34	15 20 16 30	15 13 16 24	15 4 16 18	14 54 16 11	14 43 16 3

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LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 8.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
July 1 2 3 4 5	h m 15 22 16 21 17 23 18 25 19 24	h m 15 3 16 2 17 4 18 8 19 10	h m 14 43 15 41 16 44 17 50 18 56	h m 14 20 15 16 16 20 17 29 18 40	h m 14 7 15 2 16 6 17 17 18 30	h m 13 51 14 45 15 50 17 3 18 19	h m 13 32 14 26 15 31 16 46 18 6	h m 13 9 14 0 15 7 16 25 17 50	h m 12 58 13 48 14 55 16 15 17 42	h m 12 46 13 35 14 42 16 4 17 34	h m 12 31 13 19 14 26 15 51 17 24	h m 12 15 13 0 14 8 15 36 17 13	h m 11 54 12 36 13 46 15 18 17 1
6 7 8 9 10	$\begin{array}{c} 20 \ 20 \\ 21 \ 13 \\ 22 \ 4 \\ 22 \ 54 \\ 23 \ 44 \end{array}$	$\begin{array}{c} 20 \ 11 \\ 21 \ 9 \\ 22 \ 4 \\ 22 \ 59 \\ 23 \ 53 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19 50 20 58 22 4 23 9	19 44 20 55 22 4 23 12	19 36 20 51 22 4 23 16	19 27 20 47 22 5 23 21	19 17 20 42 22 5 23 26 	19 12 20 39 22 5 23 28	19 6 20 36 22 5 23 31	19 0 20 34 22 5 23 34	18 53 20 30 22 5 23 37	18 46 20 27 22 4 23 40
11 12 13 14 15	0 34 1 26 2 19 3 13	0 47 1 42 2 37 3 32	0 2 1 2 1 59 2 57 3 53	0 13 1 16 2 19 3 20 4 17	0 19 1 25 2 30 3 33 4 31	0 26 1 36 2 44 3 48 4 48	$\begin{array}{r} 0 \ 35 \\ 1 \ 48 \\ 2 \ 59 \\ 4 \ 6 \\ 5 \ 7 \end{array}$	0 45 2 3 3 18 4 29 5 32	0 50 2 10 3 28 4 40 5 43	0 55 2 18 3 38 4 52 5 57	$ \begin{array}{r} 1 & 1 \\ 2 & 27 \\ 3 & 50 \\ 5 & 7 \\ 6 & 12 \end{array} $	1 8 2 37 4 3 5 24 6 31	1 15 2 48 4 19 5 44 6 54
16 17 18 19 20	4 6 4 58 5 47 6 34 7 17	$\begin{array}{r} 4 \ 25 \\ 5 \ 16 \\ 6 \ 3 \\ 6 \ 46 \\ 7 \ 27 \end{array}$	4 46 5 35 6 20 7 0 7 37	5 10 5 57 6 39 7 16 7 49	$5 24 \\ 6 10 \\ 6 50 \\ 7 25 \\ 7 56$	5 40 6 25 7 3 7 36 8 4	5 59 6 43 7 18 7 48 8 12	6 23 7 4 7 37 8 2 8 23	6 35 7 15 7 45 8 9 8 28	6 48 7 27 7 55 8 16 8 33	7 3 7 40 8 6 8 25 8 39	7 21 7 56 8 19 8 34 8 46	7 43 8 14 8 33 8 45 8 53
21 22 23 24 25	7 59 8 40 9 20 10 1 10 43	8 5 8 42 9 19 9 56 10 34	8 12 8 45 9 18 9 51 10 25	8 20 8 48 9 16 9 45 10 15	8 24 8 50 9 16 9 41 10 9	8 28 8 52 9 14 9 37 10 2	8 34 8 54 9 14 9 33 9 54	8 41 8 57 9 12 9 28 9 45	8 44 8 58 9 12 9 25 9 41	8 47 8 59 9 11 9 23 9 36	8 50 9 1 9 10 9 20 9 31	8 55 9 2 9 10 9 16 9 25	8 59 9 4 9 9 9 13 9 19
26 27 28 29 30	$\begin{array}{c} 11 \ 27 \\ 12 \ 16 \\ 13 \ 8 \\ 14 \ 4 \\ 15 \ 4 \end{array}$	11 16 12 0 12 50 13 45 14 44	$ \begin{array}{r} 11 & 3 \\ 11 & 44 \\ 12 & 31 \\ 13 & 24 \\ 14 & 24 \end{array} $	10 48 11 26 12 9 13 0 13 59	10 40 11 15 11 56 12 46 13 45	10 30 11 2 11 42 12 30 13 28	10 19 10 48 11 24 12 11 13 9	10 5 10 30 11 3 11 46 12 44	9 59 10 22 10 53 11 34 12 32	9 52 10 13 10 41 11 21 12 18	9 44 10 2 10 28 11 6 12 2	9 36 9 51 10 13 10 47 11 43	9 26 9 37 9 55 10 25 11 20
Aug. 31 2 3 4	16 5 17 6 18 4 19 0 19 54	15 47 16 50 17 53 18 54 19 52	15 27 16 34 17 41 18 46 19 50	15 5 16 15 17 27 18 38 19 47	14 52 16 4 17 19 18 33 19 46	14 36 15 51 17 10 18 28 19 44	14 18 15 36 16 58 18 21 19 42	13 55 15 18 16 45 18 13 19 40	13 44 15 9 16 39 18 10 19 39	13 32 14 59 16 32 18 6 19 38	13 18 14 48 16 24 18 1 19 36	13 1 14 35 16 15 17 56 19 35	12 41 14 21 16 6 17 51 19 34
5 6 7 8 9	20 46 21 37 22 29 23 22 	20 49 21 45 22 41 23 37	20 52 21 53 22 53 23 53	20 55 22 2 23 7 0 12	$\begin{array}{c} 20 \ 57 \\ 22 \ 7 \\ 23 \ 14 \\ 0 \ 22 \end{array}$	20 59 22 12 23 24 0 34	21 2 22 19 23 35 0 49	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 21 & 6 \\ 22 & 32 \\ 23 & 55 \\ & \ddots & \ddots \\ 1 & 16 \end{array}$	$21 & 8 \\ 22 & 36 \\ \cdots \\ 0 & 2 \\ 1 & 25$	21 10 22 40 0 10 1 36	$21 11 \\ 22 46 \\ 0 18 \\ 1 48$	21 13 22 52 0 28 2 3
10 11 12 13 14	$\begin{array}{c} 0 \ 15 \\ 1 \ 9 \\ 2 \ 2 \\ 2 \ 54 \\ 3 \ 44 \end{array}$	$\begin{array}{c} 0 & 33 \\ 1 & 28 \\ 2 & 22 \\ 3 & 13 \\ 4 & 1 \end{array}$	0 52 1 48 2 42 3 32 4 18	$ \begin{array}{c} 1 & 13 \\ 2 & 12 \\ 3 & 6 \\ 3 & 55 \\ 4 & 38 \end{array} $	$ \begin{array}{r} 1 26 \\ 2 26 \\ 3 21 \\ 4 9 \\ 4 50 \end{array} $	$ \begin{array}{c} 1 \ 41 \\ 2 \ 42 \\ 3 \ 37 \\ 4 \ 24 \\ 5 \ 4 \end{array} $	$ \begin{array}{r} 1 58 \\ 3 1 \\ 3 56 \\ 4 42 \\ 5 20 \end{array} $	$\begin{array}{c} 2 & 20 \\ 3 & 26 \\ 4 & 21 \\ 5 & 5 \\ 5 & 40 \end{array}$	$\begin{array}{r} 2 & 31 \\ 3 & 37 \\ 4 & 33 \\ 5 & 16 \\ 5 & 49 \end{array}$	2 42 3 50 4 46 5 28 5 59	$\begin{array}{c} 2 56 \\ 4 6 \\ 5 1 \\ 5 42 \\ 6 11 \end{array}$	$\begin{array}{r} 3 \ 12 \\ 4 \ 24 \\ 5 \ 19 \\ 5 \ 58 \\ 6 \ 24 \end{array}$	3 30 4 46 5 42 6 18 6 40
15 16	4 31 5 16	4 45 5 27	5 0 5 38	5 17 5 51	5 27 5 59	5 38 6 7	5 51 6 17	6 7 6 29	6 14 6 35	6 22 6 41	6 32 6 48	6 42 6 55	6 54 7 4

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

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To obtain standard time, see directions on page 8. The second standard time, see directions on page 8. The second standard time is a second standard time.

Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60,°
Aug. 16 17 18 19 20	h m 17 38 18 19 19 0 19 40 20 21	h m 17 28 18 14 18 58 19 42 20 26	h m 17 19 18 8 18 56 19 44 20 32	h m 17 7 18 1 18 53 19 46 20 39	h m 17 1 17 57 18 52 19 47 20 42	h m 16 54 17 52 18 50 19 48 20 47	h m 16 45 17 47 18 49 19 51 20 52	h m 16 34 17 41 18 46 19 52 20 58	h m 16 30 17 38 18 46 19 53 21 1	h m 16 24 17 34 18 44 19 54 21 4	h m 16 18 17 31 18 43 19 55 21 8	h m 16 11 17 27 18 42 19 56 21 12	h m 16 3 17 23 18 40 19 58 21 16
21 22 23 24 25	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 21 \ 12 \\ 22 \ 0 \\ 22 \ 51 \\ 23 \ 45 \\ \ldots \end{array}$	$\begin{array}{c} 21 & 22 \\ 22 & 14 \\ 23 & 8 \\ & & \\ 0 & 4 \end{array}$	21 33 22 29 23 27 0 26	21 39 22 38 23 38 0 39	21 47 22 48 23 51 0 54	$\begin{array}{c} 21 \ 55 \\ 23 \ 0 \\ & & \\ 0 \ 6 \\ 1 \ 12 \end{array}$	$\begin{array}{cccc} 22 & 6 \\ 23 & 15 \\ & \ddots & \ddots \\ 0 & 25 \\ 1 & 35 \end{array}$	$\begin{array}{c} 22 \ 11 \\ 23 \ 22 \\ 0 \ 34 \\ 1 \ 45 \end{array}$	22 1623 290 441 57	22 22 23 38 0 56 2 12	$22 29 \\ 23 48 \\ \cdot \cdot \cdot \\ 1 9 \\ 2 28$	$22 36 \\ 23 59 \\ \\ 1 24 \\ 2 48$
26 27 28 29 30	0 22 1 20 2 19 3 18 4 16	$\begin{array}{c} 0 \ 41 \\ 1 \ 39 \\ 2 \ 37 \\ 3 \ 33 \\ 4 \ 27 \end{array}$	$ \begin{array}{r} 1 & 2 \\ 2 & 0 \\ 2 & 56 \\ 3 & 50 \\ 4 & 39 \end{array} $	$ \begin{array}{r} 1 26 \\ 2 23 \\ 3 18 \\ 4 8 \\ 4 53 \\ \end{array} $	$ \begin{array}{r} 1 40 \\ 2 38 \\ 3 31 \\ 4 19 \\ 5 1 \end{array} $	$ \begin{array}{c} 1 56 \\ 2 54 \\ 3 46 \\ 4 31 \\ 5 10 \end{array} $	$\begin{array}{r} 2 \ 16 \\ 3 \ 13 \\ 4 \ 3 \\ 4 \ 3 \\ 4 \ 46 \\ 5 \ 20 \end{array}$	$\begin{array}{r} 2 \ 40 \\ 3 \ 37 \\ 4 \ 25 \\ 5 \ 3 \\ 5 \ 33 \\ 5 \ 33 \end{array}$	252 349 435 511 539	$\begin{array}{r} 3 & 5 \\ 4 & 2 \\ 4 & 47 \\ 5 & 20 \\ 5 & 45 \end{array}$	$\begin{array}{r} 3 \ 21 \\ 4 \ 18 \\ 5 \ 0 \\ 5 \ 30 \\ 5 \ 52 \end{array}$	$ \begin{array}{r} 3 40 \\ 4 36 \\ 5 16 \\ 5 42 \\ 6 0 \\ \end{array} $	$\begin{array}{rrrr} 4 & 2 \\ 4 & 58 \\ 5 & 34 \\ 5 & 56 \\ 6 & 9 \end{array}$
31 Sept. 1 2 3 4	$512 \\ 6 6 \\ 7 0 \\ 7 53 \\ 8 46$	5 19 6 8 6 57 7 46 8 35	5 26 6 11 6 54 7 38 8 23	5 34 6 13 6 51 7 29 8 9	$539 \\ 615 \\ 649 \\ 724 \\ 81$	5 45 6 16 6 47 7 18 7 52	5 51 6 18 6 45 7 12 7 41	55862164274728	$\begin{array}{c} 6 & 2 \\ 6 & 22 \\ 6 & 41 \\ 7 & 0 \\ 7 & 22 \end{array}$	$\begin{array}{r} 6 & 5 \\ 6 & 23 \\ 6 & 39 \\ 6 & 57 \\ 7 & 16 \end{array}$	6 9 6 24 6 38 6 52 7 9	$\begin{array}{c} 6 \ 14 \\ 6 \ 25 \\ 6 \ 36 \\ 6 \ 48 \\ 7 \ 1 \end{array}$	6 19 6 27 6 34 6 42 6 52
5 6 7 8 9	9 41 10 36 11 31 12 25 13 17	$\begin{array}{r} 9 \ 26 \\ 10 \ 18 \\ 11 \ 12 \\ 12 \ 6 \\ 12 \ 58 \end{array}$	9 10 10 0 10 52 11 45 12 39	8 52 9 38 10 28 11 21 12 17	$\begin{array}{r} 8 \ 41 \\ 9 \ 25 \\ 10 \ 14 \\ 11 \ 7 \\ 12 \ 4 \end{array}$	8 29 9 11 9 58 10 51 11 48	8 158 549 4010 3211 30	7 57 8 33 9 16 10 8 11 8	7 49 8 23 9 5 9 56 10 57	7 40 8 12 8 52 9 43 10 45	7 30 7 59 8 37 9 28 10 31	7 18 7 44 8 20 9 10 10 14	7 5 7 26 7 59 8 48 9 55
10 11 12 13 14	$\begin{array}{rrrr} 14 & 6 \\ 14 & 52 \\ 15 & 36 \\ 16 & 18 \\ 16 & 59 \end{array}$	$\begin{array}{c} 13 \ 50 \\ 14 \ 39 \\ 15 \ 26 \\ 16 \ 12 \\ 16 \ 56 \end{array}$	$\begin{array}{r} 13 \ 32 \\ 14 \ 24 \\ 15 \ 15 \\ 16 \ 4 \\ 16 \ 53 \end{array}$	$\begin{array}{r} 13 \ 12 \\ 14 \ 8 \\ 15 \ 3 \\ 15 \ 56 \\ 16 \ 49 \end{array}$	$\begin{array}{rrrr} 13 & 1 \\ 13 & 58 \\ 14 & 55 \\ 15 & 51 \\ 16 & 47 \end{array}$	12 48 13 48 14 47 15 46 16 44	$\begin{array}{c} 12 \ 32 \\ 13 \ 34 \\ 14 \ 38 \\ 15 \ 39 \\ 16 \ 41 \end{array}$	$\begin{array}{c} 12 \ 12 \\ 13 \ 19 \\ 14 \ 26 \\ 15 \ 32 \\ 16 \ 38 \end{array}$	$\begin{array}{rrrr} 12 & 3 \\ 13 & 11 \\ 14 & 20 \\ 15 & 28 \\ 16 & 36 \end{array}$	$\begin{array}{c} 11 \ 52 \\ 13 \ 3 \\ 14 \ 14 \\ 15 \ 25 \\ 16 \ 34 \end{array}$	$\begin{array}{c} 11 \ 41 \\ 12 \ 54 \\ 14 \ 7 \\ 15 \ 20 \\ 16 \ 32 \end{array}$	$\begin{array}{c} 11 \ 27 \\ 12 \ 43 \\ 14 \ 0 \\ 15 \ 15 \\ 16 \ 30 \end{array}$	$11 11 \\ 12 30 \\ 13 51 \\ 15 10 \\ 16 28$
15 16 17 18 19	$\begin{array}{c} 17 \ 40 \\ 18 \ 20 \\ 19 \ 2 \\ 19 \ 46 \\ 20 \ 33 \end{array}$	$\begin{array}{c} 17 \ 40 \\ 18 \ 25 \\ 19 \ 10 \\ 19 \ 58 \\ 20 \ 47 \end{array}$	$\begin{array}{c} 17 \ 41 \\ 18 \ 29 \\ 19 \ 19 \\ 20 \ 10 \\ 21 \ 3 \end{array}$	$\begin{array}{c} 17 \ 41 \\ 18 \ 34 \\ 19 \ 28 \\ 20 \ 24 \\ 21 \ 21 \end{array}$	17 42 18 37 19 34 20 32 21 31	17 42 18 41 19 40 20 41 21 43	$17 \ 43 \\ 18 \ 45 \\ 19 \ 48 \\ 20 \ 52 \\ 21 \ 57$	$\begin{array}{r} 17 \ 43 \\ 18 \ 49 \\ 19 \ 57 \\ 21 \ 5 \\ 22 \ 15 \end{array}$	$17 \ 44 \\ 18 \ 52 \\ 20 \ 1 \\ 21 \ 11 \\ 22 \ 23$	$\begin{array}{c} 17 \ 44 \\ 18 \ 54 \\ 20 \ 5 \\ 21 \ 18 \\ 22 \ 32 \end{array}$	$\begin{array}{c} 17 \ 44 \\ 18 \ 57 \\ 20 \ 10 \\ 21 \ 26 \\ 22 \ 43 \end{array}$	$\begin{array}{r} 17 \ 45 \\ 19 \ 0 \\ 20 \ 16 \\ 21 \ 35 \\ 22 \ 54 \end{array}$	$\begin{array}{c} 17 \ 45 \\ 19 \ 3 \\ 20 \ 23 \\ 21 \ 44 \\ 23 \ 8 \end{array}$
20 21 22 23 24	$21 23 \\ 22 16 \\ 23 11 \\ 0 8$	21 40 22 34 23 30 0 26	21 58 22 54 23 51 0 46	22 19 23 18 0 14 1 9	$22 \ 32 \\ 23 \ 31 \\ \vdots \\ 0 \ 29 \\ 1 \ 22 \\ $	22 46 23 47 0 45 1 37	$\begin{array}{cccc} 23 & 3 \\ & & 0 & 6 \\ 1 & 4 \\ 1 & 55 \end{array}$	$23 24 \\ \begin{array}{r} \cdot \cdot \cdot \\ 0 30 \\ 1 28 \\ 2 18 \end{array}$	$23 \ 34 \\ 0 \ 41 \\ 1 \ 40 \\ 2 \ 29$	$23 \ 45 \\ 0 \ 54 \\ 1 \ 53 \\ 2 \ 41$	$23\ 58\\ 1\ 9\\ 2\ 9\\ 2\ 55$	0 14 1 26 2 27 3 11	0 32 1 48 2 49 3 31
25 26 27 28 29	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} 1 & 21 \\ 2 & 14 \\ 3 & 5 \\ 3 & 55 \\ 4 & 43 \end{array} $	$ \begin{array}{r} 1 39 \\ 2 28 \\ 3 15 \\ 4 0 \\ 4 43 \end{array} $	$ \begin{array}{r} 1 58 \\ 2 44 \\ 3 26 \\ 4 5 \\ 4 43 \\ \end{array} $	$\begin{array}{r} 2 \ 10 \\ 2 \ 53 \\ 3 \ 32 \\ 4 \ 8 \\ 4 \ 43 \end{array}$	$\begin{array}{r} 2 \ 24 \\ 3 \ 4 \\ 3 \ 39 \\ 4 \ 12 \\ 4 \ 43 \end{array}$	$\begin{array}{r} 2 & 39 \\ 3 & 16 \\ 3 & 48 \\ 4 & 15 \\ 4 & 42 \end{array}$	258 330 357 420 442	$ \begin{array}{r} 3 & 7 \\ 3 & 37 \\ 4 & 2 \\ 4 & 23 \\ 4 & 42 \end{array} $	$ \begin{array}{r} 3 17 \\ 3 45 \\ 4 7 \\ 4 25 \\ 4 42 \end{array} $	$\begin{array}{r} 3 & 29 \\ 3 & 53 \\ 4 & 12 \\ 4 & 28 \\ 4 & 42 \end{array}$	3 42 4 3 4 18 4 31 4 42	357 4.14 425 434 442
0ct. 1	5 37 6 31	5 32 6 22	5 27 6 12	5 21 6 0	5 17 5 54	5 14 5 46	5 9 5 38	5 4 5 28	$5 \ 2$ $5 \ 23$	4 59 5 18	4 56 5 13	$\begin{array}{c}453\\5&6\end{array}$	4 50 4 59

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1917.

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To obtain standard time, see directions on page 8. For other longitudes and for southern latitudes see page 42.

Date.	Lat.	_0° a	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°.	+60°
Aug.	16 17 18 19 20	h m 5 16 5 58 6 39 7 19 8 0	h m 5 27 6 6 6 43 7 20 7 56	h m 5 38 6 13 6 47 7 20 7 52	h m 5 51 6 22 6 52 7 20 7 48	h m 5 59 6 27 6 54 7 20 7 46	h m 6 7 6 33 6 57 7 20 7 43	h m 6 17 6 40 7 0 7 20 7 40	h m 6 29 6 48 7 5 7 20 7 36	h m 6 35 6 52 7 6 7 20 7 34	h m 6 41 6 55 7 8 7 20 7 32	h m 6 48 7 0 7 10 7 20 7 30	h m 6 55 7 5 7 13 7 20 7 28	h m 7 4 7 10 7 16 7 21 7 25
74 838 1017 1137	21 22 23 24 25	8 41 9 24 10 10 11 0 11 53	8 34 9 14 9 56 10 43 11 34	8 26 9 2 9 42 10 26 11 14	8 18 8 49 9 25 10 5 10 51	8 13 8 42 9 15 9 53 10 38	8 7 8 33 9 3 9 39 10 22	8 0 8 23 8 50 9 23 10 4	7 52 8 11 8 34 9 3 9 41	7 49 8 6 8 27 8 54 9 30	7 45 8 0 8 18 8 43 9 17	7 41 7 53 8 9 8 31 9 3	7 35 7 46 7 59 8 18 8 46	7 30 7 37 7 47 8 2 8 26
14 14 15 31 16 45 18 8	26 27 28 29 30	12 49 13 48 14 47 15 46 16 43	12 30 13 29 14 30 15 32 16 34	12 9 13 9 14 13 15 18 16 24	$11 45 \\ 12 46 \\ 13 52 \\ 15 1 \\ 16 12$	$\begin{array}{c} 11 \ 31 \\ 12 \ 32 \\ 13 \ 40 \\ 14 \ 52 \\ 16 \ 6 \end{array}$	11 14 12 16 13 26 14 41 15 58	$ \begin{array}{r} 10 55 \\ 11 57 \\ 13 9 \\ 14 28 \\ 15 50 \end{array} $	10 30 11 33 12 48 14 11 15 39	10 18 11 22 12 38 14 4 15 34	10 5 11 8 12 27 13 55 15 28	9 49 10 53 12 15 13 46 15 22	9 30 10 35 12 0 13 35 15 15	9 8 10 14 11 42 13 22 15 7
Sept.	31 2 3 4	17 38 18 32 19 25 20 18 21 12	17 33 18 32 19 30 20 28 21 26	17 28 18 32 19 35 20 38 21 40	17 23 18 32 19 42 20 50 21 57	$\begin{array}{c} 17 \ 20 \\ 18 \ 33 \\ 19 \ 45 \\ 20 \ 56 \\ 22 \ 6 \end{array}$	17 16 18 33 19 49 21 4 22 17	17 12 18 33 19 54 21 13 22 31	17 6 18 33 19 59 21 24 22 46	17 4 18 34 20 2 21 29 22 54	$ \begin{array}{r} 17 & 1 \\ 18 & 34 \\ 20 & 5 \\ 21 & 35 \\ 23 & 2 \end{array} $	16 58 18 34 20 8 21 41 23 12	16 55 18 34 20 12 21 48 23 23	16 51 18 34 20 16 21 56 23 35
1 28 I 58 I 58 I 59 I 59 I 59	56789	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	22 24 23 21 0 16 1 9	22 42 23 40 0 37 1 29	$23 2 \\ \\ 0 4 \\ 1 1 \\ 1 52 $	23 14 0 17 1 15 2 6	23 28 0 33 1 31 2 21	23 44 0 51 1 50 2 40	$ \begin{array}{c} 0 & 4 \\ 1 & 15 \\ 2 & 15 \\ 3 & 3 \end{array} $	0 14 1 26 2 26 3 14	0 25 1 38 2 40 3 26	0 37 1 53 2 55 3 41	0 52 2 10 3 13 3 58	1 9 2 31 3 35 4 18
	10 11 12 13 14	1 41 2 29 3 14 3 57 4 39	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2 16 2 59 3 38 4 14 4 49	2 37 3 17 3 53 4 25 4 55	$2 50 \\ 3 28 \\ 4 1 \\ 4 31 \\ 4 58$	3 4 3 40 4 10 4 38 5 2	$\begin{array}{c} 3 & 20 \\ 3 & 54 \\ 4 & 21 \\ 4 & 45 \\ 5 & 6 \end{array}$	$ \begin{array}{c c} 3 & 41 \\ 4 & 11 \\ 4 & 34 \\ 4 & 54 \\ 5 & 12 \end{array} $	3 50 4 19 4 40 4 59 5 14	4 1 4 28 4 47 5 3 5 17	4 14 4 37 4 55 5 8 5 20	4 28 4 49 5 3 5 14 5 23	4 45 5 2 5 12 5 20 5 26
	15 16 17 18 19	5 19 6 0 6 41 7 24 8 9	5 20 5 57 6 35 7 14 7 56	$5 22 \\ 5 55 \\ 6 28 \\ 7 4 \\ 7 42$	5 23 5 52 6 21 6 52 7 26	5 24 5 50 6 17 6 46 7 17	5 25 5 48 6 12 6 38 7 7	$526 \\ 546 \\ 67 \\ 629 \\ 655$	$5 28 \\ 5 44 \\ 6 0 \\ 6 19 \\ 6 40$	$ \begin{array}{c c} 5 & 28 \\ 5 & 42 \\ 5 & 58 \\ 6 & 14 \\ 6 & 34 \end{array} $	$5 29 \\ 5 41 \\ 5 54 \\ 6 9 \\ 6 26$	$5 \ 30 \\ 5 \ 40 \\ 5 \ 50 \\ 6 \ 3 \\ 6 \ 18 $	$5 \ 31 \\ 5 \ 38 \\ 5 \ 46 \\ 5 \ 56 \\ 6 \ 8$	5 32 5 37 5 42 5 49 5 58
9 20 10 40 11 58 13 15 14 22	20 21 22 23 24	8 57 9 48 10 42 11 38 12 35	8 41 9 30 10 23 11 19 12 18	8 24 9 11 10 2 10 59 11 59	8 5 8 49 9 39 10 35 11 37	7 54 8 36 9 25 10 21 11 24	7 41 8 21 9 9 10 6 11 10	7 26 8 4 8 50 9 46 10 52	7 7 7 42 8 26 9 22 10 30	6 59 7 31 8 15 9 11 10 20	6 49 7 20 8 2 8 58 10 8	6 38 7 6 7 47 8 42 9 54	6 26 6 51 7 29 8 24 9 39	6 11 6 32 7 7 8 2 9 19
15 50 17 11 18 24 19 50 19 50	25 26 27 28 29	13 32 14 28 15 22 16 15 17 8	13 17 14 16 15 15 16 13 17 11	$ \begin{array}{r} 13 & 1 \\ 14 & 4 \\ 15 & 8 \\ 16 & 11 \\ 17 & 14 \end{array} $	12 43 13 51 14 59 16 8 17 17	$12 \ 32 \\ 13 \ 43 \\ 14 \ 54 \\ 16 \ 6 \\ 17 \ 18$	$12 20 \\13 34 \\14 49 \\16 4 \\17 20$	$ \begin{array}{r} 12 & 5 \\ 13 & 23 \\ 14 & 42 \\ 16 & 2 \\ 17 & 23 \end{array} $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	11 39 13 3 14 31 15 58 17 27	11 29 12 57 14 27 15 57 17 28	11 18 12 49 14 22 15 56 17 30	$ \begin{array}{c} 11 & 6 \\ 12 & 40 \\ 14 & 17 \\ 15 & 54 \\ 17 & 32 \end{array} $	10 52 12 31 14 11 15 52 17 34
Oct.	30 1	18 2 18 57	18 9 19, 8	18 17 19 20	18 26 19 35	18 31 19 43	18 36 19 52	$ \begin{array}{c} 18 \\ 20 \\ 3 \end{array} $	18 51 20 16	18 55 20 23	18 59 20 30	19 4 20 38	19 9 20 46	19 15 20 56

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

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Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Oct.	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	h m 6 31 7 26 8 22 9 19 10 16	h m 6 22 7 13 8 6 9 1 9 56	h m 6 12 6 59 7 49 8 42 9 36	h m 6 0 6 43 7 29 8 19 9 13	h m 5 54 6 33 7 17 8 6 8 59	h m 5 46 6 23 7 4 7 50 8 43	h m 5 38 6 10 6 48 7 32 8 24	h m 5 28 5 55 6 29 7 10 8 0	h m 5 23 5 48 6 20 6 59 7 49	h m 5 18 5 41 6 10 6 47 7 36	h m 5 13 5 32 5 58 6 33 7 21	h m 5 6 5 23 5 45 6 17 7 4	h m 4 59 5 12 5 30 5 58 6 42
17 28 7 7 7 28 8 7 7 7 28 8 8 7 7 7 28	6 7 8 9 10	11 9 12 1 12 49 13 34 14 16	10 51 11 44 12 34 13 22 14 8	10 31 11 26 12 19 13 10 14 0	$\begin{array}{cccc} 10 & 8 \\ 11 & 5 \\ 12 & 2 \\ 12 & 56 \\ 13 & 50 \end{array}$	9 55 10 53 11 51 12 49 13 45	9 40 10 40 11 40 12 40 13 38	9 22 10 23 11 26 12 29 13 31	$\begin{array}{r} 8 \ 59 \\ 10 \ 2 \\ 11 \ 9 \\ 12 \ 16 \\ 13 \ 22 \end{array}$	8 48 9 53 11 1 12 10 13 18	8 35 9 42 10 52 12 3 13 14	8 21 9 29 10 42 11 55 13 9	8 4 9 15 10 30 11 47 13 3	7 44 8 58 10 17 11 37 12 56
0 B 10 H 10 H 15 M 15 M	11 12 13 14 15	14 58 15 38 16 19 17 1 17 44	$14 53 \\ 15 37 \\ 16 22 \\ 17 7 \\ 17 55$	14 48 15 37 16 25 17 14 18 6	14 43 15 36 16 28 17 22 18 18	14 40 15 35 16 31 17 27 18 25	14 37 15 35 16 33 17 32 18 33	14 33 15 34 16 36 17 39 18 43	14 28 15 33 16 39 17 46 18 55	14 26 15 33 16 41 17 50 19 0	14 23 15 33 16 42 17 54 19 6	14 21 15 32 16 44 17 58 19 13	14 17 15 32 16 46 18 2 19 21	14 14 15 32 16 49 18 8 19 29
	16 17 18 19 20	18 30 19 20 20 12 21 7 22 3	18 43 19 36 20 30 21 26 22 21	18 58 19 54 20 50 21 46 22 41	19 15 20 14 21 12 22 10 23 4	19 25 20 25 21 26 22 24 23 18	19 36 20 39 21 41 22 40 23 33	19 49 20 55 21 59 22 59 23 52	$\begin{array}{cccc} 20 & 5 \\ 21 & 14 \\ 22 & 22 \\ 23 & 23 \\ \dots \end{array}$	20 12 21 24 22 32 23 34	20 21 21 34 22 45 23 47	20 30 21 46 22 59 0 2	$20 \ 41 \\ 22 \ 0 \\ 23 \ 16 \\ \dots \\ 0 \ 20$	20 54 22 17 23 36 0 42
1 1 2 2 38 5 4 1	21 22 23 24 25	22 59 23 54 0 48 1 40	23 16 0 8 0 58 1 46	$23 34 \\ 0 23 \\ 1 9 \\ 1 53$	$23 54 \\ 0 40 \\ 1 22 \\ 2 0$	$\begin{array}{c} & & & & \\ & & & & \\ & & & & \\ & & & & $	0 20 1 1 1 37 2 10	0 36 1 15 1 47 2 15	0 14 0 57 1 31 1 58 2 22	$\begin{array}{c} 0 \ 25 \\ 1 \ 6 \\ 1 \ 38 \\ 2 \ 4 \\ 2 \ 25 \end{array}$	0 38 1 17 1 46 2 10 2 28	0 52 1 29 1 56 2 16 2 32	$ \begin{array}{r} 1 & 9 \\ 1 & 43 \\ 2 & 6 \\ 2 & 23 \\ 2 & 37 \end{array} $	1 28 1 59 2 19 2 31 2 41
1111111111111111111111111111111111111	26 27 28 29 30	$231 \\ 322 \\ 415 \\ 59 \\ 65$	$\begin{array}{r} 2 \ 33 \\ 3 \ 20 \\ 4 \ 8 \\ 4 \ 58 \\ 5 \ 50 \end{array}$	235 317 40 446 535	2 37 3 14 3 52 4 32 5 17	$\begin{array}{c} 2 \ 38 \\ 3 \ 12 \\ 3 \ 47 \\ 4 \ 24 \\ 5 \ 6 \end{array}$	2 40 3 10 3 41 4 15 4 54	242 37 335 45 440	2 44 3 4 3 27 3 53 4 23	2 44 3 4 3 24 3 47 4 15	$\begin{array}{r} 2 & 46 \\ 3 & 2 \\ 3 & 20 \\ 3 & 41 \\ 4 & 6 \end{array}$	2 46 3 1 3 16 3 34 3 57	2 48 2 59 3 11 3 26 3 45	249 257 36 317 332
Nov.	31 1 2 3 4	7 3 8 1 8 57 9 51 10 41	6 46 7 42 8 38 9 33 10 26	6 27 7 22 8 18 9 15 10 10	6 6 6 59 7 55 8 53 9 51	5 53 6 45 7 42 8 41 9 40	5 39 6 30 7 26 8 26 9 28	5 22 6 11 7 8 8 9 9 13	5 1 5 48 6 44 7 48 8 55	4 51 5 37 6 33 7 38 8 46	4 40 5 24 6 20 7 26 8 37	$\begin{array}{r} 4 \ 28 \\ 5 \ 10 \\ 6 \ 6 \\ 7 \ 13 \\ 8 \ 26 \end{array}$	4 13 4 53 5 49 6 58 8 13	3 56 4 33 5 27 6 39 7 59
6 32 6 32 9 5 7 9 10	56789	11 28 12 12 12 54 13 35 14 15	11 16 12 3 12 48 13 33 14 17	11 2 11 53 12 42 13 30 14 18	10 48 11 42 12 36 13 28 14 21	10 39 11 36 12 32 13 27 14 22	10 29 11 29 12 27 13 25 14 23	10 17 11 20 12 22 13 24 14 24	10 3 11 10 12 16 13 21 14 26	9 56 11 5 12 13 13 20 14 27	9 48 11 0 12 10 13 19 14 28	9 40 10 54 12 6 13 18 14 29	9 30 10 48 12 2 13 17 14 30	9 20 10 40 11 58 13 15 14 32
10 52 13 31 14 11 15 53 17 56	10 11 12 13 14	14 56 15 40 16 25 17 14 18 6	15 2 15 48 16 37 17 29 18 24	15 7 15 58 16 51 17 46 18 42	15 14 16 9 17 6 18 4 19 4	15 18 16 15 17 14 18 15 19 17	15 22 16 22 17 24 18 28 19 32	15 27 16 31 17 36 18 43 19 49	15 33 16 41 17 51 19 2 20 11	15 36 16 46 17 58 19 10 20 21	15 39 16 51 18 5 19 20 20 33	15 42 16 57 18 13 19 31 20 47	15 46 17 4 18 23 19 44 21 2	15 50 17 11 18 34 19 59 21 21
in er	15 16	19 1 19 58	19 20 20 16	19 40 20 36	20 3 21 0	20 17 21 13	20 32 21 29	20 52 21 48	21 15 22 11	21 26 22 22	21 39 22 35	21 54 22 49	$\begin{array}{c} 22 \ 12 \\ 23 \ 6 \end{array}$	22 33 23 27

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1917.

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Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Oct.	$1 \\ 2 \\ 3 \\ 4 \\ 5$	h m 18 57 19 53 20 50 21 46 22 42	h m 19 8 20 8 21 7 22 5 23 1	h m 19 20 20 24 21 26 22 26 23 21	h m 19 35 20 43 21 48 22 49 23 44	h m 19 43 20 54 22 1 23 3 23 58	h m 19 52 21 6 22 16 23 19 	h m 20 - 3 21 21 22 33 23 38	h m 20 16 21 39 22 55 0 1	h m 20 23 21 47 23 5 0 13	h m 20 30 21 57 23 17 0 26	h m 20 38 22 8 23 31 0 41	h m 20 46 22 20 23 46 0 58	h m 20 56 22 35 0 5 1 20
	6 7 8 9 10	23 34 0 24 1 11 1 55	$23 52 \\ 0 40 \\ 1 24 \\ 2 4$	0 11 0 56 1 37 2 14	0 33 1 15 1 52 2 26	 0 45 1 26 2 1 2 32	0 14 1 0 1 39 2 12 2 40	$\begin{array}{c} 0 & 32 \\ 1 & 17 \\ 1 & 54 \\ 2 & 23 \\ 2 & 49 \end{array}$	0 56 1 38 2 12 2 38 2 59	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1 20 2 0 2 29 2 52 3 9	1 34 2 13 2 40 3 0 3 15	$ \begin{array}{r} 1 51 \\ 2 28 \\ 2 52 \\ 3 9 \\ 3 22 \end{array} $	2 12 2 46 3 6 3 20 3 29
1112100 4 5 2 1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11 12 13 14 15	2 37 3 17 3 58 4 39 5 22	2 43 3 20 3 57 4 34 5 13	$\begin{array}{r} 2 & 49 \\ 3 & 22 \\ 3 & 56 \\ 4 & 29 \\ 5 & 4 \end{array}$	$\begin{array}{r} 2 56 \\ 3 26 \\ 3 54 \\ 4 23 \\ 4 54 \end{array}$	$\begin{array}{r} 3 & 1 \\ 3 & 27 \\ 3 & 53 \\ 4 & 20 \\ 4 & 49 \end{array}$	$\begin{array}{r} 3 & 5 \\ 3 & 29 \\ 3 & 52 \\ 4 & 16 \\ 4 & 42 \end{array}$	$\begin{array}{c} 3 \ 11 \\ 3 \ 32 \\ 3 \ 51 \\ 4 \ 12 \\ 4 \ 34 \end{array}$	$\begin{array}{r} 3 \ 17 \\ 3 \ 34 \\ 3 \ 50 \\ 4 \ 7 \\ 4 \ 25 \end{array}$	$\begin{array}{r} 3 & 20 \\ 3 & 35 \\ 3 & 49 \\ 4 & 5 \\ 4 & 21 \end{array}$	3 24 3 37 3 49 4 2 4 16	3 27 3 38 3 48 3 59 4 11	$\begin{array}{r} 3 \ 31 \\ 3 \ 40 \\ 3 \ 48 \\ 3 \ 56 \\ 4 \ 6 \end{array}$	3 36 3 42 3 47 3 53 3 59
8 18 8 18 9 36 10 56	16 17 18 19 20	6 6 6 54 7 45 8 38 9 34	5 55 6 39 7 28 8 20 9 15	5 42 6 24 7 9 8 0 8 54	5 28 6 6 6 48 7 37 8 31	5 20 5 55 6 36 7 23 8 17	5 10 5 43 6 22 7 8 8 1	4 59 5 29 6 5 6 49 7 42	4 46 5 12 5 44 6 26 7 18	4 40 5 4 5 34 6 15 7 7	$\begin{array}{r} 4 \ 33 \\ 4 \ 55 \\ 5 \ 23 \\ 6 \ 2 \\ 6 \ 54 \end{array}$	4 26 4 45 5 11 5 48 6 39	4 17 4 34 4 56 5 31 6 21	4 8 4 20 4 39 5 10 5 59
12 1 13 21 14 41 14 11 15 11	21 22 23 24 25	10 30 11 26 12 20 13 12 14 4	10 12 11 10 12 7 13 4 14 0	9 53 10 53 11 54 12 55 13 55	9 31 10 34 11 39 12 44 13 50	9 18 10 22 11 30 12 38 13 47	9 3 10 9 11 20 12 32 13 44	8 44 9 54 11 8 12 23 13 40	8 22 9 35 10 53 12 14 13 36	8 11 9 26 10 46 12 9 13 33	7 59 9 15 10 38 12 4 13 31	7 45 9 4 10 30 11 58 13 28	7 29 8 51 10 20 11 52 13 25	79 835 109 1145 1322
18 11 12 12 12 12 12 12 12 12 12 12 12 12	26 27 28 29 30	14 55 15 47 16 39 17 36 18 33	14 56 15 52 16 50 17 49 18 49	14 56 15 57 17 0 18 3 19 7	14 57 16 4 17 11 18 20 19 27	14 57 16 7 17 18 18 29 19 39	14 57 16 11 17 25 18 40 19 52	14 57 16 16 17 34 18 53 20 8	14 58 16 21 17 45 19 8 20 28	14 58 16 24 17 50 19 16 20 38	14 58 16 27 17 55 19 24 20 48	14 58 16 30 18 2 19 33 21 1	14 58 16 33 18 8 19 44 21 15	14 59 16 37 18 16 19 56 21 31
Nov.	$\begin{array}{c}31\\1\\2\\3\\4\end{array}$	19 31 20 28 21 24 22 18 23 6	19 49 20 47 21 42 22 32 23 18	20 9 21 7 22 1 22 49 23 33	20 31 21 30 22 23 23 9 23 49	20 44 21 44 22 36 23 21 23 59	21 0 22 0 22 51 23 34	21 18 22 19 23 9 23 50	21 41 22 42 23 31 0 9	21 52 22 54 23 42 0 18	22 4 23 6 23 54 0 28	22 18 23 21 0 7 0 40	22 35 23 38 0 23 0 53	22 55 0 0 0 42 1 8
	56789	23 50 0 33 1 14 1 54	0 0 0 40 1 18 1 54	0 12 0 47 1 22 1 55	0 25 0 56 1 26 1 55	0 32 1 2 1 29 1 55	0 10 0 40 1 7 1 32 1 55	0 23 0 50 1 14 1 35 1 55	0 39 1 2 1 22 1 39 1 55	0 46 1 7 1 25 1 41 1 56	0 54 1 13 1 29 1 43 1 56	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} 1 13 \\ 1 27 \\ 1 38 \\ 1 48 \\ 1 56 \end{array} $	$ \begin{array}{c c} 1 & 25 \\ 1 & 36 \\ 1 & 44 \\ 1 & 50 \\ 1 & 56 \\ \end{array} $
	10 11 12 13 14	$ \begin{array}{c} 2 & 35 \\ 3 & 17 \\ 4 & 1 \\ 4 & 48 \\ 5 & 39 \end{array} $	$ \begin{array}{c} 2 & 32 \\ 3 & 10 \\ 3 & 51 \\ 4 & 35 \\ 5 & 22 \end{array} $	2 28 3 3 3 40 4 20 5 5	2 24 2 54 3 27 4 3 4 45	2 21 2 49 3 20 3 54 4 33	2 19 2 44 3 11 3 42 4 19	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2 12 2 30 2 50 3 14 3 44	2 10 2 26 2 44 3 6 3 35	2 8 2 22 2 38 2 58 3 25	2 6 2 18 2 32 2 49 3 13	2 4 2 13 2 24 2 39 3 0	2 1 2 8 2 16 2 27 2 44
	15 16	6 32 7 28	6 14 7 9	5 55 6 49	5 32 6 26	5 19 6 12	5 4 5 56	4 46 5 37	4 24 5 14	4 13 5 2	4 1 4 49	3 47 4 34	3 31 4 17	3 12 3 55

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 8. For other longitudes and for southern latitudes see page 42.

5	1	1	1	1	-	1	1	1	1	1	1	1	1	
Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov.	16 17 18 19 20	h m 19 58 20 55 21 50 22 44 23 36	h m 20 16 21 12 22 5 22 55 23 43	h m 20 36 21 30 22 21 23 8 23 51	$\begin{array}{c} h & m \\ 21 & 0 \\ 21 & 52 \\ 22 & 39 \\ 23 & 21 \\ \dots \dots \end{array}$	h m 21 13 22 4 22 49 23 29 	h m 21 29 22 19 23 2 23 38 	h m 21 48 22 36 23 16 23 49	h m 22 11 22 56 23 33 0 2	h m 22 22 23 6 23 40 8	h m 22 35 23 18 23 50 0 14	h m 22 49 23 30 0 0 0 21	h m 23 6 23 45 0 11 0 29	h m 23 27 0 2 0 24 0 38
2 12 2 46 3 46 3 20 3 29	21 22 23 24 25	$ \begin{array}{c} & 0 & 26 \\ & 1 & 16 \\ & 2 & 6 \\ & 2 & 58 \end{array} $	0 29 1 14 2 0 2 48	0 33 1 13 1 55 2 38	$\begin{array}{c} 0 & 0 \\ 0 & 36 \\ 1 & 12 \\ 1 & 48 \\ 2 & 26 \end{array}$	$ \begin{array}{ccc} 0 & 5 \\ 0 & 39 \\ 1 & 11 \\ 1 & 44 \\ 2 & 19 \end{array} $	0 11 0 41 1 10 1 40 2 12	0 18 0 44 1 9 1 35 2 3	$\begin{array}{c} 0 \ 26 \\ 0 \ 48 \\ 1 \ 8 \\ 1 \ 29 \\ 1 \ 53 \end{array}$	0 30 0 49 1 8 1 27 1 48	$ \begin{array}{r} 0 & 34 \\ 0 & 51 \\ 1 & 7 \\ 1 & 24 \\ 1 & 43 \end{array} $	0 38 0 53 1 6 1 21 1 37	0 44 0 55 1 6 1 17 1 30	$\begin{array}{c} 0 & 49 \\ 0 & 58 \\ 1 & 5 \\ 1 & 13 \\ 1 & 23 \end{array}$
3 36 3 42 3 47 3 53 8 58 8 59	26 27 28 29 30	3 51 4 47 5 45 6 42 7 38	$\begin{array}{c} 3 \ 38 \\ 4 \ 31 \\ 5 \ 26 \\ 6 \ 23 \\ 7 \ 20 \end{array}$	$\begin{array}{c} 3 \ 24 \\ 4 \ 14 \\ 5 \ 7 \\ 6 \ 3 \\ 7 \ 0 \end{array}$	$ \begin{array}{r} 3 & 8 \\ 3 & 54 \\ 4 & 45 \\ 5 & 40 \\ 6 & 38 \\ \end{array} $	$\begin{array}{c} 2 \ 58 \\ 3 \ 42 \\ 4 \ 32 \\ 5 \ 26 \\ 6 \ 25 \end{array}$	$\begin{array}{r} 2 \ 47 \\ 3 \ 29 \\ 4 \ 16 \\ 5 \ 11 \\ 6 \ 10 \end{array}$	$ \begin{array}{r} 2 35 \\ 3 13 \\ 3 59 \\ 4 52 \\ 5 52 \end{array} $	$\begin{array}{c} 2 & 20 \\ 2 & 54 \\ 3 & 36 \\ 4 & 29 \\ 5 & 30 \end{array}$	$\begin{array}{r} 2 \ 13 \\ 2 \ 45 \\ 3 \ 26 \\ 4 \ 18 \\ 5 \ 19 \end{array}$	$ \begin{array}{r} 2 & 5 \\ 2 & 35 \\ 3 & 14 \\ 4 & 5 \\ 5 & 7 \\ \end{array} $	$ \begin{array}{r} 1 56 \\ 2 23 \\ 3 0 \\ 3 50 \\ 4 53 \end{array} $	1 47 2 10 2 45 3 33 4 37	$ \begin{array}{r} 1 & 36 \\ 1 & 55 \\ 2 & 26 \\ 3 & 12 \\ 4 & 17 \\ \end{array} $
Dec.	1 2 3 4 5	8 30 9 20 10 6 10 48 11 30	8 14 9 6 9 55 10 42 11 26	7 57 8 52 9 44 10 34 11 23	7 37 8 35 9 31 10 26 11 19	7 26 8 26 9 24 10 21 11 16	7 12 8 14 9 16 10 15 11 14	$ \begin{array}{r} 6 56 \\ 8 1 \\ 9 6 \\ 10 9 \\ 11 11 \end{array} $	$\begin{array}{r} 6 & 36 \\ 7 & 46 \\ 8 & 54 \\ 10 & 1 \\ 11 & 7 \end{array}$	$\begin{array}{r} 6 \ 27 \\ 7 \ 39 \\ 8 \ 49 \\ 9 \ 58 \\ 11 \ 5 \end{array}$	6 17 7 30 8 42 9 54 11 3	6 5 7 20 8 36 9 49 11 1	5 51 7 10 8 28 9 44 10 59	5 35 6 57 8 19 9 39 10 56
7 9 8 35 10 9 11 45 19 22	6 7 8 9 10	$\begin{array}{c} 12 \ 10 \\ 12 \ 51 \\ 13 \ 33 \\ 14 \ 17 \\ 15 \ 4 \end{array}$	$\begin{array}{c} 12 \ 11 \\ 12 \ 55 \\ 13 \ 40 \\ 14 \ 28 \\ 15 \ 18 \end{array}$	$\begin{array}{c} 12 \ 11 \\ 12 \ 59 \\ 13 \ 48 \\ 14 \ 40 \\ 15 \ 33 \end{array}$	$\begin{array}{cccccccc} 12 & 11 \\ 13 & 4 \\ 13 & 57 \\ 14 & 53 \\ 15 & 51 \end{array}$	$\begin{array}{c} 12 \ 11 \\ 13 \ 7 \\ 14 \ 2 \\ 15 \ 1 \\ 16 \ 1 \end{array}$	$\begin{array}{r} 12 \ 12 \\ 13 \ 10 \\ 14 \ 9 \\ 15 \ 10 \\ 16 \ 12 \end{array}$	$\begin{array}{c} 12 \ 12 \\ 13 \ 13 \\ 14 \ 16 \\ 15 \ 20 \\ 16 \ 26 \end{array}$	$12\ 12\\13\ 17\\14\ 24\\15\ 33\\16\ 43$	$\begin{array}{c} 12 \ 12 \\ 13 \ 20 \\ 14 \ 28 \\ 15 \ 39 \\ 16 \ 51 \end{array}$	$\begin{array}{c} 12 \ 12 \\ 13 \ 22 \\ 14 \ 32 \\ 15 \ 45 \\ 17 \ 0 \end{array}$	$12 13 \\ 13 24 \\ 14 37 \\ 15 53 \\ 17 10$	$\begin{array}{c} 12 \ 13 \\ 13 \ 27 \\ 14 \ 43 \\ 16 \ 1 \\ 17 \ 21 \end{array}$	$\begin{array}{c} 12 \ 13 \\ 13 \ 30 \\ 14 \ 49 \\ 16 \ 10 \\ 17 \ 34 \end{array}$
14 59 18 37 18 38 19 56 19 59 19 59	11 12 13 14 15	15 55 16 50 17 47 18 45 19 43	$\begin{array}{c} 16 \ 12 \\ 17 \ 8 \\ 18 \ 6 \\ 19 \ 3 \\ 19 \ 59 \end{array}$	16 30 17 28 18 26 19 22 20 15	16 50 17 50 18 49 19 44 20 35	$\begin{array}{cccc} 17 & 2 \\ 18 & 4 \\ 19 & 3 \\ 19 & 57 \\ 20 & 46 \end{array}$	$\begin{array}{c} 17 \ 16 \\ 18 \ 19 \\ 19 \ 19 \\ 20 \ 12 \\ 20 \ 59 \end{array}$	17 33 18 38 19 38 20 30 21 14	$\begin{array}{c} 17 \ 53 \\ 19 \ 1 \\ 20 \ 1 \\ 20 \ 52 \\ 21 \ 33 \end{array}$	$\begin{array}{cccc} 18 & 3 \\ 19 & 12 \\ 20 & 13 \\ 21 & 2 \\ 21 & 41 \end{array}$	$\begin{array}{c} 18 \ 14 \\ 19 \ 25 \\ 20 \ 26 \\ 21 \ 14 \\ 21 \ 51 \end{array}$	18 26 19 39 20 40 21 28 22 2	18 41 19 56 20 58 21 43 22 15	$\begin{array}{c} 18 \ 58 \\ 20 \ 17 \\ 21 \ 19 \\ 22 \ 2 \\ 22 \ 29 \end{array}$
122 55 前前 1 - 5 8	16 17 18 19 20	20 39 21 32 22 23 23 13	$\begin{array}{c} 20 \ 51 \\ 21 \ 41 \\ 22 \ 28 \\ 23 \ 13 \\ 23 \ 59 \end{array}$	$\begin{array}{ccc} 21 & 5 \\ 21 & 50 \\ 22 & 33 \\ 23 & 14 \\ 23 & 54 \end{array}$	$\begin{array}{c} 21 \ 20 \\ 22 \ 1 \\ 22 \ 38 \\ 23 \ 14 \\ 23 \ 49 \end{array}$	$\begin{array}{ccc} 21 & 29 \\ 22 & 7 \\ 22 & 41 \\ 23 & 14 \\ 23 & 46 \end{array}$	21 39 22 14 22 45 23 14 23 43	$\begin{array}{c} 21 \ 51 \\ 22 \ 22 \\ 22 \ 49 \\ 23 \ 14 \\ 23 \ 39 \end{array}$	$\begin{array}{cccc} 22 & 5 \\ 22 & 31 \\ 22 & 54 \\ 23 & 14 \\ 23 & 35 \end{array}$	$\begin{array}{c} 22 \ 11 \\ 22 \ 35 \\ 22 \ 56 \\ 23 \ 14 \\ 23 \ 33 \end{array}$	$\begin{array}{c} 22 \ 18 \\ 22 \ 40 \\ 22 \ 58 \\ 23 \ 14 \\ 23 \ 31 \end{array}$	$\begin{array}{c} 22 & 27 \\ 22 & 46 \\ 23 & 1 \\ 23 & 15 \\ 23 & 28 \end{array}$	$\begin{array}{c} 22 & 36 \\ 22 & 52 \\ 23 & 4 \\ 23 & 15 \\ 23 & 26 \end{array}$	$\begin{array}{c} 22 \ 46 \\ 22 \ 58 \\ 23 \ 7 \\ 23 \ 15 \\ 23 \ 23 \end{array}$
1.26	21 22 23 24 25	0 3 0 53 1 45 2 38 3 34	$\begin{array}{c} . & . & . \\ 0 & 45 \\ 1 & 32 \\ 2 & 23 \\ 3 & 16 \end{array}$	$\begin{array}{c} . & . & . \\ 0 & 36 \\ 1 & 20 \\ 2 & 7 \\ 2 & 57 \end{array}$	$\begin{array}{c} & & & & \\ & 0 & 26 \\ & 1 & 5 \\ & 1 & 48 \\ & 2 & 36 \end{array}$	0 20 0 56 1 37 2 23	$\begin{array}{c} & 0 & 13 \\ & 0 & 47 \\ & 1 & 25 \\ & 2 & 9 \end{array}$	$\begin{array}{c} & & & & \\ & 0 & 6 \\ & 0 & 35 \\ & 1 & 10 \\ & 1 & 52 \end{array}$	23 57 0 22 0 52 1 30	$23 53 \\ \\ 0 16 \\ 0 44 \\ 1 20$	$23 \ 48 \\ 0 \ 9 \\ 0 \ 35 \\ 1 \ 9$	$23 \ 43 \\ \\ 0 \ 1 \\ 0 \ 24 \\ 0 \ 56$	$\begin{array}{c} 23 & 38 \\ 23 & 52 \\ \hline 0 & 13 \\ 0 & 41 \end{array}$	$23 32 \\ 23 43 \\ 23 59 \\ 0 24$
2 2 2 2 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4	26 27 28 29 30	4 30 5 26 6 19 7 10 7 58	$\begin{array}{r} 4 \ 11 \\ 5 \ 7 \\ 6 \ 2 \\ 6 \ 56 \\ 7 \ 46 \end{array}$	$\begin{array}{r} 3 51 \\ 4 48 \\ 5 44 \\ 6 40 \\ 7 34 \end{array}$	$\begin{array}{r} 3 \ 28 \\ 4 \ 25 \\ 5 \ 23 \\ 6 \ 22 \\ 7 \ 19 \end{array}$	$\begin{array}{r} 3 \ 15 \\ 4 \ 11 \\ 5 \ 11 \\ 6 \ 11 \\ 7 \ 11 \end{array}$	$\begin{array}{c} 2 & 59 \\ 3 & 56 \\ 4 & 57 \\ 5 & 59 \\ 7 & 2 \end{array}$	$\begin{array}{r} 2 \ 41 \\ 3 \ 37 \\ 4 \ 40 \\ 5 \ 45 \\ 6 \ 50 \end{array}$	$\begin{array}{c} 2 \ 18 \\ 3 \ 14 \\ 4 \ 19 \\ 5 \ 27 \\ 6 \ 37 \end{array}$	$ \begin{array}{r} 2 & 7 \\ 3 & 3 \\ 4 & 9 \\ 5 & 19 \\ 6 & 30 \end{array} $	$\begin{array}{c} 1 & 54 \\ 2 & 51 \\ 3 & 57 \\ 5 & 10 \\ 6 & 23 \end{array}$	$\begin{array}{c}1 & 40 \\ 2 & 36 \\ 3 & 45 \\ 4 & 59 \\ 6 & 15\end{array}$	$\begin{array}{r}1 & 23 \\ 2 & 20 \\ 3 & 30 \\ 4 & 47 \\ 6 & 6\end{array}$	$ \begin{array}{r} 1 & 2 \\ 1 & 59 \\ 3 & 12 \\ 4 & 33 \\ 5 & 56 \\ \end{array} $
3 12	31 32	8 43 9 25	8 34 9 20	8 25 9 15	8 15 9 9	8 9 9 6	8 2 9 2	7 54 8 57	7 45 8 52	7 40 8 50	7 36 8 47	7 30 8 44	7 24 8 40	7 17 8 36

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TIGI TABLE III. BELLOOM

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1917.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours, if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 8.

and the state of t		Concernant Arrive			and the second s						and the second se	and the second se	
Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov. 16 17 18 19 20	h m 7 28 8 26 9 22 10 16 11 9	h m 7 9 8 7 9 5 10 3 10 59	h m 6 49 7 47 8 48 9 48 10 49	h m 6 26 7 25 8 28 9 32 10 37	h m 6 12 7 12 8 16 9 23 10 30	h m 5 56 6 56 8 2 9 12 10 23	h m 5 37 6 38 7 46 8 59 10 14	h m 5 14 6 15 7 26 8 43 10 2	h m 5 2 6 4 7 16 8 36 9 57	h m 4 49 5 52 7 6 8 27 9 51	h m 4 34 5 37 6 54 8 18 9 45	h m 4 17 5 20 6 40 8 7 9 38	h m 3 55 5 0 6 23 7 55 9 30
21 22 23 24 25	$\begin{array}{rrrr} 12 & 0 \\ 12 & 50 \\ 13 & 39 \\ 14 & 30 \\ 15 & 23 \end{array}$	$11 54 \\ 12 48 \\ 13 42 \\ 14 38 \\ 15 35$	11 48 12 47 13 46 14 46 15 47	$\begin{array}{c} 11 \ 42 \\ 12 \ 46 \\ 13 \ 50 \\ 14 \ 55 \\ 16 \ 1 \end{array}$	$\begin{array}{c} 11 \ 38 \\ 12 \ 45 \\ 13 \ 53 \\ 15 \ 1 \\ 16 \ 10 \end{array}$	$11 \ 33 \\ 12 \ 44 \\ 13 \ 55 \\ 15 \ 7 \\ 16 \ 19$	11 28 12 43 13 58 15 14 16 30	$\begin{array}{c} 11 \ 22 \\ 12 \ 42 \\ 14 \ 2 \\ 15 \ 23 \\ 16 \ 43 \end{array}$	11 19 12 41 14 3 15 27 16 50	$\begin{array}{c} 11 \ 16 \\ 12 \ 40 \\ 14 \ 6 \\ 15 \ 31 \\ 16 \ 57 \end{array}$	$\begin{array}{c} 11 \ 12 \\ 12 \ 40 \\ 14 \ 7 \\ 15 \ 36 \\ 17 \ 5 \end{array}$	11 8 12 39 14 10 15 41 17 14	11 4 12 38 14 12 15 48 17 24
26 27 28 29 30	$\begin{array}{c} 16 \ 18 \\ 17 \ 15 \\ 18 \ 12 \\ 19 \ 9 \\ 20 \ 4 \end{array}$	16 33 17 32 18 31 19 28 20 21	16 49 17 51 18 51 19 48 20 39	17 8 18 13 19 14 20 10 21 0	17 18 18 25 19 28 20 24 21 12	17 31 18 40 19 44 20 39 21 26	$\begin{array}{c} 17 \ 46 \\ 18 \ 57 \\ 20 \ 2 \\ 20 \ 58 \\ 21 \ 43 \end{array}$	18 4 19 19 20 26 21 21 22 4	18 12 19 29 20 37 21 32 22 13	18 22 19 41 20 50 21 44 22 24	18 33 19 54 21 4 21 58 22 37	18 45 20 10 21 21 22 15 22 51	19 0 20 29 21 43 22 35 23 8
Dec. 1 2 3 4 5	$\begin{array}{c} 20 \ 55 \\ 21 \ 42 \\ 22 \ 27 \\ 23 \ 9 \\ 23 \ 50 \end{array}$	$\begin{array}{c} 21 \ 10 \\ 21 \ 54 \\ 22 \ 35 \\ 23 \ 14 \\ 23 \ 51 \end{array}$	$\begin{array}{cccc} 21 & 25 \\ 22 & 7 \\ 22 & 44 \\ 23 & 19 \\ 23 & 53 \end{array}$	$\begin{array}{c} 21 \ 43 \\ 22 \ 21 \\ 22 \ 55 \\ 23 \ 26 \\ 23 \ 55 \end{array}$	$\begin{array}{c} 21 \ 54 \\ 22 \ 30 \\ 23 \ 1 \\ 23 \ 29 \\ 23 \ 56 \end{array}$	22 6 22 39 23 8 23 33 23 57	22 20 22 50 23 15 23 38 23 58	22 37 23 3 23 25 23 43 	22 45 23 10 23 29 23 46 	22 54 23 16 23 34 23 48 	23 4 23 24 23 39 23 52 	$\begin{array}{c} 23 \ 15 \\ 23 \ 32 \\ 23 \ 45 \\ 23 \ 55 \\ \dots \end{array}$	23 28 23 42 23 51 23 59
6 7 8 9 10	0 30 1 11 1 54 2 39	$\begin{array}{c} & 0 & 28 \\ 1 & 6 \\ 1 & 45 \\ 2 & 27 \end{array}$	$\begin{array}{c} & 0 & 26 \\ & 1 & 0 \\ & 1 & 35 \\ & 2 & 14 \end{array}$	0 23 0 53 1 24 1 59	0 22 0 49 1 18 1 50	0 20 0 44 1 11 1 40	0 18 0 39 1 2 1 28	0 0 0 16 0 33 0 52 1 14	0 1 0 15 0 31 0 48 1 8	0 2 0 14 0 28 0 42 1 1	0 2 0 13 0 24 0 37 0 52	0 4 0 11 0 20 0 31 0 44	0 5 0 10 0 16 0 24 0 33
11 12 13 14 15	3 28 4 21 5 17 6 15 7 13	$ \begin{array}{r} 3 13 \\ 4 3 \\ 4 58 \\ 5 56 \\ 6 56 \\ \end{array} $	257 345 438 536 637	2 38 3 23 4 15 5 13 6 16	$\begin{array}{r} 2 \ 27 \\ 3 \ 10 \\ 4 \ 1 \\ 4 \ 59 \\ 6 \ 4 \end{array}$	$\begin{array}{r} 2 \ 14 \\ 2 \ 56 \\ 3 \ 45 \\ 4 \ 44 \\ 5 \ 50 \end{array}$	$\begin{array}{c} 2 & 0 \\ 2 & 39 \\ 3 & 27 \\ 4 & 25 \\ 5 & 32 \end{array}$	1 42 2 17 3 3 4 1 5 11	$\begin{array}{r}1 \ 33 \\ 2 \ 7 \\ 2 \ 52 \\ 3 \ 50 \\ 5 \ 1\end{array}$	$1 24 \\ 1 56 \\ 2 39 \\ 3 37 \\ 4 50$	$ \begin{array}{r} 1 13 \\ 1 43 \\ 2 25 \\ 3 22 \\ 4 37 \end{array} $	$ \begin{array}{r} 1 & 2 \\ 1 & 28 \\ 2 & 7 \\ 3 & 5 \\ 4 & 21 \end{array} $	0 48 1 10 1 47 2 44 4 3
16 17 18 19 20	8 10 9 4 9 57 10 47 11 37	7 55 8 54 9 50 10°45 11 39	7 40 8 42 9 43 10 42 11 41	7 22 8 29 9 35 10 39 11 44	7 12 8 21 9 30 10 38 11 45	7 0 8 12 9 24 10 36 11 46	6 46 8 2 9 18 10 34 11 48	6 29 7 49 9 10 10 31 11 51	6 20 7 43 9 7 10 30 11 52	6 11 7 37 9 3 10 28 11 53	6 1 7 30 8 59 10 27 11 54	5 49 7 21 8 54 10 25 11 55	5 35 7 12 8 48 10 23 11 57
21 22 23 24 25	$\begin{array}{c} 12 \ 26 \\ 13 \ 17 \\ 14 \ 10 \\ 15 \ 5 \\ 16 \ 1 \end{array}$	$\begin{array}{c} 12 \ 33 \\ 13 \ 28 \\ 14 \ 24 \\ 15 \ 22 \\ 16 \ 19 \end{array}$	12 40 13 39 14 39 15 40 16 39	$\begin{array}{c} 12 \ 47 \\ 13 \ 52 \\ 14 \ 56 \\ 16 \ 0 \\ 17 \ 2 \end{array}$	$\begin{array}{c} 12 \ 52 \\ 13 \ 59 \\ 15 \ 6 \\ 16 \ 12 \\ 17 \ 15 \end{array}$	$\begin{array}{rrrr} 12 \ 57 \\ 14 \ 7 \\ 15 \ 17 \\ 16 \ 26 \\ 17 \ 30 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 13 \ 10 \\ 14 \ 29 \\ 15 \ 48 \\ 17 \ 3 \\ 18 \ 12 \end{array}$	$\begin{array}{r} 13 \ 13 \\ 14 \ 35 \\ 15 \ 55 \\ 17 \ 13 \\ 18 \ 23 \end{array}$	$\begin{array}{c} 13 \ 17 \\ 14 \ 41 \\ 16 \ 4 \\ 17 \ 24 \\ 18 \ 35 \end{array}$	13 21 14 48 16 14 17 36 18 50	$\begin{array}{rrrr} 13 \ 25 \\ 14 \ 56 \\ 16 \ 25 \\ 17 \ 51 \\ 19 \ 6 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
26 27 28 29 30	16 57 17 52 18 45 19 34 20 20	$17 16 \\ 18 10 \\ 19 1 \\ 19 47 \\ 20 30$	$\begin{array}{c} 17 \ 36 \\ 18 \ 29 \\ 19 \ 18 \\ 20 \ 1 \\ 20 \ 41 \end{array}$	17 59 18 51 19 37 20 17 20 53	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 18 \ 29 \\ 19 \ 19 \\ 20 \ 2 \\ 20 \ 37 \\ 21 \ 8 \end{array}$	18 47 19 37 20 17 20 50 21 17	19 10 19 58 20 36 21 4 21 28	$\begin{array}{c} 19 \ 22 \\ 20 \ 9 \\ 20 \ 44 \\ 21 \ 12 \\ 21 \ 33 \end{array}$	19 34 20 20 20 54 21 19 21 39	19 49 20 34 21 5 21 28 21 45	20 6 20 49 21 18 21 38 21 52	$\begin{array}{cccc} 20 & 27 \\ 21 & 7 \\ 21 & 33 \\ 21 & 48 \\ 21 & 59 \end{array}$
31 32	21 4 21 45	21 10 21 48	$21\ 17\ 21\ 51$	21 25 21 55	$21 \ 30 \\ 21 \ 57$	21 35 21 59	$\begin{array}{c} 21 \ 40 \\ 22 \ 2 \end{array}$	$\begin{array}{c} 21 \ 48 \\ 22 \ 5 \end{array}$	$\begin{array}{c} 21 \ 51 \\ 22 \ 7 \end{array}$	$\begin{array}{c} 21 54 \\ 22 8 \end{array}$	21 58 22 10	$\begin{array}{ccc} 22 & 3 \\ 22 & 12 \end{array}$	22 ·8 22 14

FOR NORTHERN STATIONS NOT ON THE MERIDIAN OF GREENWICH, AND FOR SOUTHERN STATIONS.

For northern stations not on the meridian of Greenwich.—For longitudes twelve hours or less west from Greenwich, obtain the data for the given latitude from Table III for the given date and for the date following; for longitudes twelve hours or less east from Greenwich, obtain the data for the given latitude from Table III for the given date and for the date preceding. Subtract the time on the earlier date from the time on the later and multiply the difference by the twentyfourth part of the longitude in hours and decimals of an hour, positive if west, negative if east. Apply the product as a correction to the time on the given date.

For southern stations.—The instant of moonrise or moonset for any station south of the equator is that of moonset or moonrise, respectively, at a place of the same latitude north of the equator whose longitude is twelve hours different from that of the southern station.

If the southern station be twelve hours or less west from Greenwich and the phenomenon at that station occurs between noon and midnight, the local astronomical day will be the same at the southern and northern stations. If, however, the phenomenon at the southern station occurs between midnight and noon, the local astronomical day at the northern station will be one day later than at the southern.

If the southern station be twelve hours or less east from Greenwich and the phenomenon at that station occurs between noon and midnight, the local astronomical day at the northern station will be one less than at the southern station. If, however, the phenomenon occurs between midnight and noon, the local astronomical day will be the same at the two stations.

Having thus determined the true astronomical day at the northern station, compute by the rule for northern latitudes. For the desired local time of moonrise at the southern station change the time of moonset at the northern station twelve hours. For the desired local time of moonset at the southern station change the time of moonrise at the northern station twelve hours.

Example.—December 10, 1917, civil date, find the time of moonrise and moonset in longitude 4^h 43^m west from Greenwich and in latitude 33° 30' south.

The longitude of the northern station is 7^{h} .3 east from Greenwich and its latitude is $33^{\circ}.5$ N. Upon inspection of Table III it is seen that the astronomical day at the southern station is December 9 for moonrise and December 10 for moonset, the former phenomenon occurring between midnight and noon, the latter between noon and midnight. For the northern station, in accordance with the precepts given above, both phenomena are to be computed for December 10.

61.6	At northern station-				1. W. U. D. T.	1 12 11 1 121	
124	HU HOI MOIN STOLEN	2 10	11	Mo	onrise.	Moo	nset.
88.0	(449.02) ast 0.0 [17] as 0.0 [46] [17] [42] [10]	8216		d	h m	d a	h m
	Table III, Lat. +33°.5 .			Dec. 9	14 59	Dec. 9	1 20
	Table III, Lat. +33°.5 .	10.23	SE.	10	15 58	10	1 53
	Difference	18 27		R. A. L.	59	1988 Pr - 51	33
8.1	Product of Diff. by $-\frac{7.3}{24}$.	28 49	0	1 1 1 9	-18		-10
	Local astronomical mean time	30.02		2 30 5	15 40		1 43
	At southern station—	8 84			100 A 191 A	- ゼッーゼ	
	144 2 140 2 15 2 10 1 10 10	81.6		Мо	onset.	Mooi	nrise.
	Local astronomical mean time	196 085	-00	01 222 123	3 40	1	.3 43
	Civil time			Dec. 10	3 40 P.M.	Dec. 10	1 43 A.M.

12 262 02 132 02 02 02 03 138 20 436 21



LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunrise in southern latitudes see page 60.

			1	r	1	1	1	1	1		1		1	
Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Jan.	0 1 2 3 4	h m 18 0 18 0 18 1 18 1 18 1 18 1	h m 18 17 18 17 18 18 18 18 18 18 18 18	h m 18 35 18 35 18 36 18 36 18 36	h m 18 56 18 56 18 56 18 57 18 57	h m 19 8 19 8 19 8 19 8 19 9 19 9	h m 19 22 19 22 19 22 19 22 19 22 19 22	h m 19 38 19 39 19 39 19 39 19 39 19 38	h m 19 59 19 59 19 59 19 59 19 59 19 58	h m 20 8 20 8 20 8 20 8 20 8 20 8	h m 20 19 20 19 20 19 20 19 20 19 20 18	h m 20 32 20 32 20 31 20 31 20 31 20 30	h m 20 46 20 46 20 45 20 45 20 45 20 44	h m 21 3 21 3 21 2 21 2 21 1 21 1
	5 6 7 8 9	182182183183184	18 19 18 19 18 19 18 20 18 20 18 20	18 36 18 37 18 37 18 37 18 37 18 37	18 57 18 57 18 57 18 57 18 57 18 57	19 9 19 9 19 9 19 9 19 9 19 9	19 22 19 22 19 22 19 22 19 22 19 22 19 22	19 38 19 38 19 38 19 38 19 38 19 38	19 58 19 58 19 58 19 58 19 57 19 56	$\begin{array}{cccc} 20 & 7 \\ 20 & 7 \\ 20 & 7 \\ 20 & 6 \\ 20 & 6 \end{array}$	20-18 20-18 20-17 20-16 20-16	20 30 20 29 20 29 20 29 20 28 20 27	$\begin{array}{c} 20 \ 44 \\ 20 \ 43 \\ 20 \ 42 \\ 20 \ 41 \\ 20 \ 40 \end{array}$	$\begin{array}{c} 21 & 0 \\ 20 & 59 \\ 20 & 58 \\ 20 & 57 \\ 20 & 56 \end{array}$
	10 11 12 13 14	$\begin{array}{cccccccc} 18 & 4 \\ 18 & 4 \\ 18 & 5 \\ 18 & 5 \\ 18 & 6 \end{array}$	18 20 18 20 18 21 18 21 18 21 18 21	18 38 18 38 18 38 18 38 18 38 18 38	$18 57 \\$	19.9 19.8 19.8 19.8 19.8 19.8	19 22 19 22 19 21 19 21 19 21 19 21	19 37 19 37 19 36 19 36 19 36 19 36	19 56 19 56 19 55 19 54 19 54	$\begin{array}{cccc} 20 & 5 \\ 20 & 4 \\ 20 & 4 \\ 20 & 3 \\ 20 & 2 \end{array}$	$\begin{array}{c} 20 \ 15 \\ 20 \ 14 \\ 20 \ 14 \\ 20 \ 13 \\ 20 \ 12 \end{array}$	$\begin{array}{c} 20 \ 26 \\ 20 \ 26 \\ 20 \ 25 \\ 20 \ 24 \\ 20 \ 23 \end{array}$	$\begin{array}{c} 20 \ 40 \\ 20 \ 38 \\ 20 \ 37 \\ 20 \ 36 \\ 20 \ 35 \end{array}$	20 55 20 53 20 52 20 51 20 49
de an	15 16 17 18 19	$\begin{array}{cccccccc} 18 & 6 \\ 18 & 6 \\ 18 & 7 \\ 18 & 7 \\ 18 & 7 \\ 18 & 7 \end{array}$	$\begin{array}{c} 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \end{array}$	18 38 18 38 18 38 18 38 18 38 18 38	$\begin{array}{c} 18 \ 57 \\ 18 \ 57 \\ 18 \ 56 \\ 18 \ 56 \\ 18 \ 56 \\ 18 \ 56 \end{array}$	198198197197196	19 20 19 20 19 19 19 19 19 19 19 18	19 35 19 34 19 34 19 33 19 32	19 53 19 52 19 51 19 50 19 49	$\begin{array}{cccc} 20 & 1 \\ 20 & 0 \\ 20 & 0 \\ 19 & 58 \\ 19 & 58 \end{array}$	$\begin{array}{c} 20 \ 11 \\ 20 \ 10 \\ 20 \ 9 \\ 20 \ 7 \\ 20 \ 6 \end{array}$	20 22 20 20 20 19 20 18 20 16	$\begin{array}{c} 20 \ 34 \\ 20 \ 32 \\ 20 \ 31 \\ 20 \ 29 \\ 20 \ 28 \end{array}$	20 48 20 46 20 45 20 43 20 41
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	25 26 27 28 29	18 9 18 9 18 9 18 10 18 10 18 10	$\begin{array}{r} 18 \ 23 \\ 18 \ 23 \\ 18 \ 23 \\ 18 \ 23 \\ 18 \ 23 \\ 18 \ 23 \end{array}$	18 37 18 37 18 37 18 37 18 37 18 36	$\begin{array}{r} 18 \ 54 \\ 18 \ 54 \\ 18 \ 53 \\ 18 \ 53 \\ 18 \ 53 \\ 18 \ 52 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19 14 19 14 19 13 19 12 19 11	19 27 19 26 19 25 19 24 19 23	19 43 19 42 19 40 19 39 19 38	19 50 19 49 19 48 19 46 19 45	19 58 19 57 19 55 19 54 19 52	$\begin{array}{cccc} 20 & 7 \\ 20 & 6 \\ 20 & 4 \\ 20 & 2 \\ 20 & 0 \end{array}$	20 18 20 16 20 14 20 12 20 10	$\begin{array}{c} 20 \ 30 \\ 20 \ 27 \\ 20 \ 25 \\ 20 \ 23 \\ 20 \ 21 \end{array}$
Feb.	30 31 1 2 3	18 10 18 10 18 10 18 10 18 10 18 10	$\begin{array}{c} 18 \ 23 \\ 18 \ 23 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \end{array}$	18 36 18 36 18 36 18 35 18 35 18 35	$\begin{array}{c} 18 \ 52 \\ 18 \ 51 \\ 18 \ 50 \\ 18 \ 50 \\ 18 \ 49 \end{array}$	$\begin{array}{rrrr} 19 & 0 \\ 19 & 0 \\ 18 & 59 \\ 18 & 58 \\ 18 & 57 \end{array}$	19 10 19 10 19 9 19 8 19 7	19 22 19 21 19 20 19 19 19 19 19 18	19 36 19 35 19 34 19 32 19 31	19 43 19 42 19 40 19 38 19 37	19 50 19 49 19 47 19 45 19 44	19 59 19 57 19 55 19 53 19 53 19 51	$\begin{array}{cccc} 20 & 8 \\ 20 & 6 \\ 20 & 4 \\ 20 & 2 \\ 20 & 0 \end{array}$	20 18 20 16 20 14 20 11 20 9
	4 5 6 7 8	18 10 18 11 18 11 18 11 18 11 18 11	$\begin{array}{c} 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 22 \\ 18 \ 21 \end{array}$	18 34 18 34 18 34 18 33 18 33	18 49 18 48 18 47 18 46 18 46 18 46	$\begin{array}{c} 18 \ 56 \\ 18 \ 56 \\ 18 \ 55 \\ 18 \ 54 \\ 18 \ 53 \end{array}$	19 6 19 5 19 4 19 2 19 1	19 16 19 15 19 14 19 12 19 11	19 29 19 28 19 26 19 24 19 23	19 35 19 33 19 32 19 30 19 28	19 42 19 40 19 38 19 36 19 34	19 49 19 47 19 45 19 43 19 41	$19 57 \\19 55 \\19 53 \\19 50 \\19 48$	$\begin{array}{cccc} 20 & 7 \\ 20 & 4 \\ 20 & 2 \\ 19 & 59 \\ 19 & 56 \end{array}$
	9 10 11 12 13	18 11 18 11 18 11 18 11 18 11 18 11 18 11	18 21 18 21 18 21 18 21 18 20 18 20	$\begin{array}{c} 18 \ 32 \\ 18 \ 32 \\ 18 \ 31 \\ 18 \ 31 \\ 18 \ 30 \end{array}$	$\begin{array}{r} 18 \ 45 \\ 18 \ 44 \\ 18 \ 43 \\ 18 \ 42 \\ 18 \ 42 \\ 18 \ 42 \end{array}$	$\begin{array}{r} 18 \ 52 \\ 18 \ 51 \\ 18 \ 50 \\ 18 \ 49 \\ 18 \ 48 \end{array}$	19 0 18 59 18 58 18 57 18 57 18 55	19 10 19 8 19 7 19 5 19 4	19 21 19 20 19 18 19 16 19 14	19 26 19 24 19 23 19 21 19 19	19 32 19 30 19 28 19 26 19 24	19 39 19 36 19 34 19 32 19 30	19 46 19 44 19 41 19 39 19 36	19 54 19 51 19 49 19 46 19 43
	14 15	18 11 18 11	18 20 18 20	18 30 18 29	18 41 18 40	18 47 18 46	18 54 18 53	19 2 19 1	19 12 19 11	19 17 19 15	19 22 19 20	19 28 19 25	19 34 19 31	19 41 19 38

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunset in southern latitudes see page 60.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Jan. 1 2 3 4 5	h m 6 7 6 8 6 8 6 8 6 9 6 9	h m 5 50 5 51 5 51 5 52 5 52 5 52	h m 5 32 5 32 5 33 5 33 5 34 5 34	h m 5 11 5 12 5 12 5 12 5 13 5 14	h m 4 59 5 0 5 0 5 1 5 2	h m 4 45 4 46 4 47 4 48 4 48	h m 4 29 4 30 4 30 4 32 4 32	h m 4 8 4 9 4 10 4 12 4 12	h m 3 59 4 0 4 1 4 2 4 3	h m 3 48 3 49 3 50 3 51 3 53	h m 3 36 3 37 3 38 3 39 3 41	h m 3 21 3 22 3 24 3 25 3 27	h m 3 4 3 6 3 7 3 9 3 10
6 7 8 9 10	6 10 6 10 6 10 6 11 6 11	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5 35 5 36 5 36 5 36 5 37 5 38	5 15 5 15 5 16 5 17 5 18	5 3 4 4 5 6	4 49 4 50 4 51 4 52 4 53	4 33 4 34 4 36 4 37 4 38	4 14 4 15 4 16 4 17 4 19	4 4 4 6 4 7 4 8 4 10	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 42 3 44 3 45 3 47 3 48	3 28 3 30 3 32 3 33 3 35	3 12 3 14 3 15 3 18 3 20
11 12 13 14 15	6 12 6 12 6 12 6 13 6 13	5 55 5 56 5 56 5 56 5 57 5 58	5 38 5 39 5 40 5 40 5 40 5 41	5 19 5 19 5 20 5 21 5 22	57 58 59 510 511	4 54 4 55 4 56 4 57 4 59	4 39 4 40 4 41 4 42 4 44	4 20 4 21 4 23 4 24 4 26	4 11 4 12 4 14 4 16 4 17	4 1 4 3 4 4 4 6 4 8	3 50 3 52 3 53 3 55 3 55 3 57	3 37 3 39 3 41 3 43 3 45	3 22 3 24 3 26 3 28 3 30
16 17 18 19 20	$\begin{array}{c} 6 & 13 \\ 6 & 14 \\ 6 & 14 \\ 6 & 14 \\ 6 & 15 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5 42 5 42 5 43 5 43 5 44 5 44	$5 23 \\ 5 24 \\ 5 25 \\ 5 25 \\ 5 25 \\ 5 26$	$5 12 \\ 5 13 \\ 5 14 \\ 5 15 \\ 5 16$	5 0 5 1 5 2 5 3 5 4	4 45 4 46 4 48 4 49 4 50	4 27 4 29 4 30 4 32 4 33	4 19 4 20 4 22 4 24 4 25	4 9 4 11 4 13 4 15 4 15 4 16	$\begin{array}{c} 3 59 \\ 4 1 \\ 4 2 \\ 4 4 \\ 4 6 \end{array}$	3 47 3 49 3 51 3 53 3 55	3 33 3 35 3 37 3 40 3 42
21 22 23 24 25	$\begin{array}{c} 6 & 15 \\ 6 & 15 \\ 6 & 15 \\ 6 & 16 \\ 6 & 16 \\ \end{array}$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	5 45 5 45 5 46 5 47 5 47	5 27 5 28 5 29 5 29 5 29 5 31	5 17 5 18 5 19 5 20 5 21	5 5 5 6 5 8 5 9 5 10	4 52 4 53 4 54 4 56 4 56 4 57	4 35 4 36 4 38 4 40 4 41	4 27 4 29 4 30 4 32 4 34	4 18 4 20 4 22 4 24 4 24 4 26	4 8 4 10 4 12 4 15 4 15 4 17	3 57 4 0 4 2 4 4 4 6	3 44 3 47 3 49 3 52 3 54
26 27 28 29 30	6 16 6 16 6 17 6 17 6 17	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	5 48 5 49 5 49 5 50	5 32 5 32 5 33 5 34 5 35	$5 22 \\ 5 23 \\ 5 24 \\ 5 25 \\ 5 26 $	5 11 5 12 5 14 5 15 5 16	$\begin{array}{c} 4 & 58 \\ 5 & 0 \\ 5 & 1 \\ 5 & 3 \\ 5 & 4 \end{array}$	4 43 4 45 4 46 4 48 4 50	4 36 4 38 4 39 4 41 4 43	4 28 4 30 4 32 4 34 4 36	4 19 4 21 4 23 4 25 4 25 4 27	4 8 4 11 4 13 4 16 4 18	$ \begin{array}{c} 3 57 \\ 3 59 \\ 4 2 \\ 4 4 \\ 4 7 \end{array} $
31 Feb. 1 2 3 4	6 17 6 17 6 17 6 18 6 18 6 18	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$5 51 5 52 5 52 5 52 5 53 5 53 5 53 \\ 5 5 \\ 5 $	5 36 5 37 5 38 5 38 5 38 5 39	5 275 285 295 305 31	5 17 5 18 5 20 5 21 5 22 3 22 $5 22$	5 5 5 7 5 8 5 10 5 11	4 51 4 53 4 55 4 56 4 58	4 45 4 47 4 48 4 50 4 52	4 38 4 40 4 42 4 44 4 46	4 29 4 32 4 34 4 36 4 38	4 20 4 23 4 25 4 25 4 27 4 30	4 10 4 12 4 15 4 18 4 20
5 6 7 8 9	6 18 6 18 6 18 6 18 6 18 6 18	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$5 54 \\ 5 54 \\ 5 55 \\ 5 56 \\ 5 56 \\ 5 56$	5 40 5 41 5 42 5 42 5 42 5 43	$\begin{array}{c} 5 & 32 \\ 5 & 33 \\ 5 & 34 \\ 5 & 35 \\ 5 & 36 \end{array}$	$5 23 \\ 5 24 \\ 5 26 \\ 5 27 \\ 5 28$	$5 12 \\ 5 14 \\ 5 15 \\ 5 17 \\ 5 18$	5 0 5 2 5 3 5 5 5 7	$\begin{array}{r} 4 & 54 \\ 4 & 56 \\ 4 & 58 \\ 5 & 0 \\ 5 & 2 \end{array}$	$\begin{array}{r} 4 & 48 \\ 4 & 50 \\ 4 & 52 \\ 4 & 54 \\ 4 & 56 \end{array}$	4 40 4 42 4 45 4 45 4 47 4 49	4 32 4 34 4 37 4 39 4 42	4 23 4 26 4 28 4 31 4 33
$10 \\ 11 \\ 12 \\ 13 \\ 14$	6 18 6 18 6 18 6 18 6 18 6 18	6 8 6 8 6 8 6 8 6 8	$\begin{array}{cccc} 5 & 56 \\ 5 & 57 \\ 5 & 58 \\ 5 & 58 \\ 5 & 59 \end{array}$	5 44 5 45 5 46 5 46 5 46 5 47	5 37 5 38 5 39 5 40 5 41	5 29 5 30 5 32 5 33 5 34	$5 20 \\ 5 21 \\ 5 23 \\ 5 24 \\ 5 25$	5 8 5 10' 5 12 5 14 5 16	5 3 5 5 5 5 7 5 9 5 11	$\begin{array}{r} 4 58 \\ 5 0 \\ 5 2 \\ 5 4 \\ 5 6 \end{array}$	$\begin{array}{r} 4 & 51 \\ 4 & 53 \\ 4 & 56 \\ 4 & 58 \\ 5 & 0 \end{array}$	4 44 4 46 4 49 4 51 4 54	4 36 4 39 4 41 4 44 4 47
15 16	6 18 6 18	6 9 6 9	5 59 6 0	5 48 5 49	5 42 5 43	5 35 5 36	5 27 5 28	5 17 5 19	5 13 5 14	5 8 5 10	5 2 5 4	4 56 4 58	4 49 4 52

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunrise in southern latitudes see page 60.

Date.	Lat.	0°	-	+1	.0°	+2	20°	+3	80°	+8	35°	+4	ŧ0°	+4	15°	+{	50°	+{	52°	+8	54°	+8	56°	+5	58°	+60°	
Feb.	15 16 17 18 19	h 18 18 18 18 18 18	m 11 11 11 11 11	h 18 18 18 18 18	m 20 19 19 19 19 18	h 18 18 18 18 18	m 29 29 28 27 27	h 18 18 18 18 18	m 40 39 38 37 36	h 18 18 18 18 18	m 46 45 44 43 42	h 18 18 18 18 18	m 53 52 50 49 48	h 19 18 18 18 18	m 59 58 56 55	h 19 19 19 19 19	m 11 9 7 5 3	h 19 19 19 19 19	m 15 13 11 9 7	h 19 19 19 19 19	m 20 18 16 13 11	h 19 19 19 19 19	m 25 23 21 18 16	h 19 19 19 19 19	m 31 29 26 24 21	h m 19 38 19 32 19 32 19 30 19 27	1352)7
8 1 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20 21 22 23 24	18 18 18 18 18 18	10 10 10 10	18 18 18 18 18	18 18 17 17 16	18 18 18 18 18	26 25 25 24 24	18 18 18 18 18	35 34 33 32 31	18 18 18 18 18	40 39 38 37 36	18 18 18 18 18	46 45 44 42 41	18 18 18 18 18	53 51 50 48 46	19 18 18 18 18	1 59 57 55 53	19 19 19 18 18	5 3 1 59 56	19 19 19 19 19	9 7 4 2 0	19 19 19 19 19	14 11 9 6 4	19 19 19 19 19	19 16 13 11 8	19 24 19 21 19 18 19 18 19 16 19 13	11333
Mar.	25 26 27 28 1	18 18 18 18 18 18	10 10 9 9 9	18 18 18 18 18	$16 \\ 16 \\ 15 \\ 15 \\ 14$	18 18 18 18 18	23 22 21 21 21 20	18 18 18 18 18	30 29 28 27 26	18 18 18 18 18	34 33 32 31 29	18 18 18 18 18	39 38 36 35 33	18 18 18 18 18	45 43 41 40 38	18 18 18 18 18	51 49 47 45 43	18 18 18 18 18	54 52 50 48 46	18 18 18 18 18	58 55 53 51 48	19 18 18 18 18	$ \begin{array}{r} 1 \\ 59 \\ 56 \\ 54 \\ 51 \\ \end{array} $	19 19 19 18 18	6 3 0 57 55	19 10 19 7 19 4 19 1 18 58) TELS
10 10 10 10 10 10 10 10 10 10 10 10 10 1	2 3 4 5 6	18 18 18 18 18	99888	18 18 18 18 18	$14\\13\\13\\12\\12\\12$	18 18 18 18 18	19 18 18 17 16	18 18 18 18 18	25 24 23 22 20	18 18 18 18 18	28 27 26 24 23	18 18 18 18 18	32 30 29 27 26	18 18 18 18 18	36 34 33 31 29	18 18 18 18 18	41 39 37 35 33	18 18 18 18 18	43 41 39 37 34	18 18 18 18 18	46 44 41 39 36	18 18 18 18 18	49 46 44 41 39	18 18 18 18 18	52 49 46 44 41	18 53 18 52 18 49 18 49 18 49	52934
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4 4 4 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 13 14 15 16	18 18 18 18 18	66665	18 18 18 18 18	9 8 8 7 6	18 18 18 18 18	11 10 9 8 8	18 18 18 18 18	14 12 11 10 9	18 18 18 18 18	15 13 12 11 9	18 18 18 18 18	16 15 13 12 10	18 18 18 18 18	18 16 14 12 11	18 18 18 18 18	20 18 16 14 12	18 18 18 18 18	21 19 16 14 12	18 18 18 18 18	22 20 17 15 12	18 18 18 18 18	23 20 18 15 13	18 18 18 18 18	24 21 19 16 13	18 20 18 23 18 20 18 17 18 17	33)74
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Apr.	1 2	18 18	000	17 17	57 57	17 17	54 53	17 17	49 48	17 17	47 45	17 17	44 42	17 17	41 39	17 17	37 34	17 17	35 32	17 17	33 30	17 17	30 28	17 17	28 25	17 25 17 22	

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

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For sunset in southern latitudes see page 60.

Date.	Lat.	0°	0	+]	10°	+:	20°	+	30°	+	35°	+	40°	+	45°	+	50°	+	52°	+	54°	+:	56°	+{	58°	+6	0°
Feb.	16 17 18 19 20	h n 6 18 6 18 6 18 6 18 6 18 6 18	n 8 8 8 7 7	h66666	m 9 9 9 9 9	h66666	m 0 0 0 1 1	h55555	m 49 50 50 51 52	h55555	m 43 44 45 46 47	h55555	m 36 37 38 40 41	h55555	m 28 30 31 32 34	h555555	m 19 21 22 24 26	h55555	m 14 16 18 20 22	h55555	m 10 12 14 16 18	h55555	m 4 7 9 11 13	h45555	m 58 1 3 6 8	h44455	'm 52 54 57 0 2
11 11 11 11 11 11 11 11 11 11 11 11 11	21 22 23 24 25	6 17 6 17 6 17 6 17 6 17	7777777	6 6 6 6 6	10 10 10 10 10	6 6 6 6 6	2 2 3 3 3 3	55555	53 54 54 55 56	55555	48 49 50 50 51	55555	42 43 44 45 47	55555	35 37 38 39 41	55555	28 29 31 32 34	55555	24 26 27 29 31	55555	20 22 24 26 28	55555	15 18 20 22 24	55555	10 13 15 17 20	55555	5 8 10 12 15
Mar.	26 27 28 1 2	6 16 6 16 6 16 6 16 6 16	6 6 6 6	66666	10 10 10 10 10	6 6 6 6 6	44455	55555	56 57 58 59 59	55555	52 53 54 55 56	55555	48 49 50 51 52	55555	42 44 45 46 48	55555	36 38 39 41 42	55555	33 35 36 38 40	55555	30 32 34 36 38	55555	26 28 30 32 35	55555	22 24 27 29 31	55555	18 20 23 25 28
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	13 14 15 16 17	6 13 6 13 6 12 6 12 6 12	33222	66666	11 11 11 11 11	6 6 6 6 6	9 9 10 10 10	6 6 6 6 6	6 7 8 8 9	6 6 6 6 6	56789	6 6 6 6 6	45678	6 6 6 6 6	2 4 5 6 8	6 6 6 6 6	0 2 4 5 7	6 6 6 6 6	0 1 3 5 7	56666	59 1 2 4 6	5 6 6 6 6	58 0 2 4 6	55666	57 59 1 3 6	55666	55 58 0 3 5
	18 19 20 21 22	6 12 6 11 6 11 6 11 6 11 6 10	2	66666	11 11 11 11 11	6 6 6 6 6	10 11 11 11 11 12	6 6 6 6 6	10 10 11 12 12	6 6 6 6 6	9 10 11 12 13	6 6 6 6 6	9 10 11 12 13	6 6 6 6 6	9 10 11 13 14	6 6 6 6 6	8 10 12 13 15	6 6 6 6 6	8 10 12 14 15	6 6 6 6	8 10 12 14 16	6 6 6 6 6	8 10 12 14 16	6 6 6 6 6	8 10 12 14 17	66666	8 10 12 15 17
	23 24 25 26 27	6 10 6 10 6 10 6 9 6 9		6 6 6 6 6 6	11 11 11 11 11	6 6 6 6 6	12 12 12 12 12 13	6 6 6 6 6	13 13 14 15 16	6 6 6 6 6	13 14 15 16 17	6 6 6 6 6	14 15 16 17 18	6 6 6 6 6	15 16 18 19 20	6 6 6 6 6	16 18 20 21 23	6 6 6 6 6	17 19 20 22 24	6 6 6 6 6	18 19 21 23 25	6 6 6 6	18 20 22 24 26	6 6 6 6 6	19 21 23 26 28	6 6 6 6	20 22 25 27 29
Apr.	28 29 30 31 1	6 8 6 8 6 8 6 8	3337	6 6 6 6 6	11 11 11 10 10	6 6 6 6 6	13 13 14 14 14	6 6 6 6 6	16 16 17 18 18	6 6 6 6 6	17 18 19 20 20	6 6 6 6 6	19 20 21 22 23	6 6 6 6 6 6	22 23 24 25 26	6 6 6 6 6	24 26 27 29 30	6666 666	25 27 29 30 32	6 6 6 6 6	27 29 31 32 34	6 6 6 6 6	28 30 32 34 36	6 6 6 6 6	30 32 34 37 39	6 6 6 6 6	32 34 37 39 42
	23	6 7	7	6 6	10 10	66	14 15	66	19 19	66	21 22	66	24 25	66	28 29	66	32 34	66	34 36	66	36 38	66	39 41	66	41 43	6 6	44

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day. To obtain the standard time at any station, increase the local time by the number of minutes

the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian. the station is east of the standard meridian. For sunrise in southern latitudes see page 60.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Apr.	$1 \\ 2 \\ 3 \\ 4 \\ 5$	h m 18 0 18 0 18 0 18 0 17 59	h m 17 57 17 57 17 56 17 55 17 55	h m 17 54 17 53 17 52 17 51 17 50	h m 17 49 17 48 17 47 17 46 17 44	h m 17 47 17 45 17 44 17 43 17 41	h m 17 44 17 42 17 41 17 39 17 38	h m 17 41 17 39 17 37 17 35 17 33	h m 17 37 17 34 17 32 17 30 17 28	h m 17 35 17 32 17 30 17 28 17 26	h m 17 33 17 30 17 28 17 25 17 23	h m 17 30 17 28 17 25 17 22 17 20	h m 17 28 17 25 17 22 17 22 17 19 17 17	h m 17 25 17 22 17 19 17 16 17 13
正式改正すり	6 7 8 9 10	$\begin{array}{c} 17 \ 59 \\ 17 \ 59 \\ 17 \ 58 \\ 17 \ 58 \\ 17 \ 58 \\ 17 \ 58 \end{array}$	$17 54 \\ 17 54 \\ 17 53 \\ 17 53 \\ 17 53 \\ 17 52$	17 49 17 48 17 48 17 47 17 46	17 44 17 42 17 41 17 40 17 39	17 40 17 39 17 37 17 36 17 34	17 36 17 34 17 33 17 31 17 30	17 31 17 29 17 28 17 26 17 24	17 26 17 24 17 22 17 20 17 17	17 23 17 21 17 19 17 16 17 14	17 20 17 18 17 16 17 13 17 11	17 17 17 15 17 12 17 10 17 7	$\begin{array}{c} 17 \ 14 \\ 17 \ 11 \\ 17 \ 8 \\ 17 \ 5 \\ 17 \ 3 \end{array}$	17 10 17 7 17 4 17 2 16 58
日にのないと	11 12 13 14 15	17 58 17 57 17 57 17 57 17 57 17 57	$17 52 \\ 17 51 \\ 17 50 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$	17 45 17 44 17 44 17 43 17 42	17 38 17 36 17 35 17 34 17 33	17 33 17 32 17 30 17 29 17 28	17 28 17 27 17 25 17 24 17 22	17 22 17 20 17 19 17 17 17 15	17 15 17 13 17 11 17 11 17 9 17 7	$\begin{array}{c} 17 \ 12 \\ 17 \ 10 \\ 17 \ 7 \\ 17 \ 5 \\ 17 \ 3 \end{array}$	17 8 17 6 17 4 17 1 16 59	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} 17 & 0 \\ 16 & 57 \\ 16 & 54 \\ 16 & 52 \\ 16 & 49 \end{array}$	16 55 16 52 16 49 16 46 16 43
02 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	16 17 18 19 20	17 56 17 56 17 56 17 56 17 56 17 55	17 49 17 49 17 48 17 48 17 48 17 47	17 41 17 40 17 40 17 39 17 38	17 32 17 31 17 30 17 29 17 28	17 27 17 25 17 24 17 23 17 22	17 21 17 19 17 18 17 16 17 15	17 13 17 12 17 10 17 8 17 7	$ \begin{array}{rrrr} 17 & 5 \\ 17 & 3 \\ 17 & 1 \\ 16 & 59 \\ 16 & 57 \\ \end{array} $	$\begin{array}{c} 17 & 1 \\ 16 & 59 \\ 16 & 56 \\ 16 & 54 \\ 16 & 52 \end{array}$	16 57 16 54 16 52 16 50 16 47	$\begin{array}{c} 16 \ 52 \\ 16 \ 49 \\ 16 \ 47 \\ 16 \ 44 \\ 16 \ 42 \end{array}$	16 47 16 44 16 41 16 38 16 36	16 40 16 37 16 34 16 31 16 28
84 85 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	21 22 23 24 25	17 55 17 55 17 55 17 55 17 55 17 54	17 47 17 46 17 46 17 45 17 45	17 37 17 37 17 36 17 35 17 34	17 27 17 26 17 25 17 24 17 23	17 20 17 19 17 18 17 17 17 16	17 13 17 12 17 10 17 9 17 8	$ \begin{array}{r} 17 & 5 \\ 17 & 3 \\ 17 & 2 \\ 17 & 0 \\ 16 & 58 \end{array} $	$ \begin{array}{r} 16 55 \\ 16 53 \\ 16 51 \\ 16 49 \\ 16 47 \end{array} $	16 50 16 48 16 46 16 44 16 42	16 45 16 43 16 40 16 38 16 36	16 39 16 37 16 34 16 32 16 30	$\begin{array}{c} 16 \ 33 \\ 16 \ 30 \\ 16 \ 28 \\ 16 \ 25 \\ 16 \ 22 \end{array}$	16 25 16 22 16 20 16 17 16 14
記録りたら	26 27 28 29 30	17 54 17 54 17 54 17 54 17 54 17 54	17 44 17 44 17 44 17 43 17 43	17 34 17 33 17 33 17 32 17 31	17 22 17 21 17 20 17 19 17 18	17 14 17 13 17 12 17 11 17 11 17 10	$ \begin{array}{rrrr} 17 & 6 \\ 17 & 5 \\ 17 & 4 \\ 17 & 2 \\ 17 & 1 \\ \end{array} $	$\begin{array}{c} 16 \ 57 \\ 16 \ 55 \\ 16 \ 54 \\ 16 \ 52 \\ 16 \ 51 \end{array}$	16 45 16 44 16 42 16 40 16 38	16 40 16 38 16 36 16 34 16 32	16 34 16 32 16 30 16 27 16 25	16 27 16 25 16 22 16 20 16 18	16 20 16 17 16 15 16 12 16 10	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
May	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	17 54 17 53 17 53 17 53 17 53 17 53	17 43 17 42 17 42 17 42 17 42 17 41	17 31 17 30 17 30 17 29 17 28	17 17 17 16 17 15 17 14 17 14	17 9 17 8 17 7 17 6 17 5	$\begin{array}{c} 17 & 0 \\ 16 & 59 \\ 16 & 57 \\ 16 & 56 \\ 16 & 55 \end{array}$	16 49 16 48 16 46 16 45 16 43	16 36 16 34 16 33 16 31 16 29	16 30 16 28 16 26 16 24 16 22	16 23 16 21 16 19 16 17 16 15	$\begin{array}{c} 16 \ 16 \\ 16 \ 13 \\ 16 \ 11 \\ 16 \ 9 \\ 16 \ 7 \end{array}$	$\begin{array}{cccc} 16 & 7 \\ 16 & 5 \\ 16 & 2 \\ 16 & 0 \\ 15 & 58 \end{array}$	$\begin{array}{c} 15 \ 57 \\ 15 \ 55 \\ 15 \ 52 \\ 15 \ 49 \\ 15 \ 47 \end{array}$
にはのなど	6 7 8 9 10	17 53 17 53 17 53 17 53 17 53 17 53	17 41 17 41 17 40 17 40 17 40 17 40	17 28 17 27 17 27 17 26 17 26	17 13 17 12 17 11 17 10 17 10	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 16 \ 54 \\ 16 \ 53 \\ 16 \ 52 \\ 16 \ 51 \\ 16 \ 50 \end{array}$	$\begin{array}{r} 16 \ 42 \\ 16 \ 41 \\ 16 \ 39 \\ 16 \ 38 \\ 16 \ 37 \end{array}$	16 28 16 26 16 24 16 23 16 21	16 21 16 19 16 17 16 16 16 14	$\begin{array}{c} 16 \ 13 \\ 16 \ 11 \\ 16 \ 9 \\ 16 \ 7 \\ 16 \ 6 \end{array}$	$\begin{array}{cccc} 16 & 5 \\ 16 & 3 \\ 16 & 0 \\ 15 & 58 \\ 15 & 56 \end{array}$	$15 55 \\ 15 53 \\ 15 50 \\ 15 48 \\ 15 46$	$15 44 \\ 15 41 \\ 15 39 \\ 15 36 \\ 15 34$
A ST S ST S	$11 \\ 12 \\ 13 \\ 14 \\ 15$	17 53 17 53 17 53 17 53 17 53 17 53	17 40 17 39 17 39 17 39 17 39 17 39	17 25 17 25 17 25 17 24 17 24	$\begin{array}{cccc} 17 & 9 \\ 17 & 8 \\ 17 & 8 \\ 17 & 7 \\ 17 & 6 \end{array}$	$\begin{array}{r} 16 \ 59 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 57 \\ 16 \ 56 \end{array}$	16 48 16 48 16 46 16 46 16 44	16 36 16 34 16 33 16 32 16 31	$\begin{array}{r} 16\ 20\\ 16\ 18\\ 16\ 17\\ 16\ 15\\ 16\ 14 \end{array}$	$\begin{array}{c} 16 \ 12 \\ 16 \ 10 \\ 16 \ 9 \\ 16 \ 7 \\ 16 \ 6 \end{array}$	$\begin{array}{cccc} 16 & 4 \\ 16 & 2 \\ 16 & 0 \\ 15 & 58 \\ 15 & 57 \end{array}$	$15 54 \\ 15 52 \\ 15 51 \\ 15 49 \\ 15 47$	$\begin{array}{c} 15 \ 44 \\ 15 \ 42 \\ 15 \ 39 \\ 15 \ 37 \\ 15 \ 35 \end{array}$	$15 \ 31 \\ 15 \ 29 \\ 15 \ 26 \\ 15 \ 24 \\ 15 \ 22$
	16 17	17 53 17 53	17 39 17 38	17 23 17 23	$ \begin{array}{ccc} 17 & 6 \\ 17 & 5 \end{array} $	16 56 16 55	16 44 16 43	16 30 16 29	$ \begin{array}{c} 16 \\ 12 \\ 16 \\ 11 \end{array} $	$\begin{array}{ccc} 16 & 4 \\ 16 & 3 \end{array}$	$1555 \\ 1554$	15 45 15 43	15 33 15 31	$ \begin{array}{r} 15 20 \\ 15 17 \end{array} $

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunset in southern latitudes see page 60.

Date.	Lat.	0°	20	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Apr.	2 3 4 5 6	h 6 6 6 6	m 7 7 6 6	h m 6 10 6 10 6 10 6 10 6 10 6 10	h m 6 14 6 15 6 15 6 15 6 15 6 15	h m 6 19 6 19 6 20 6 21 6 21	h m 6 21 6 22 6 23 6 24 6 24	h m 6 24 6 25 6 26 6 27 6 28	h m 6 28 6 29 6 30 6 32 6 33	h m 6 32 6 34 6 35 6 35 6 37 6 38	h m 6 34 6 36 6 37 6 39 6 41	h m. 6 36 6 38 6 40 6 42 6 44	h m 6 39 6 41 6 43 6 45 6 45 6 47	h m 6 41 6 43 6 46 6 48 6 50	h m 6 44 6 46 6 49 6 51 6 54
新新新新	7 8 9 10 11	6 6 6 6	65555	6 10 6 10 6 10 6 10 6 10 6 10	6 16 6 16 6 16 6 16 6 16 6 17	6 22 6 22 6 23 6 24 6 24 6 24	6 25 6 26 6 27 6 28 6 28 6 28	$\begin{array}{c} 6 & 29 \\ 6 & 30 \\ 6 & 31 \\ 6 & 32 \\ 6 & 33 \end{array}$	6 34 6 35 6 37 6 38 6 39	6 40 6 41 6 43 6 45 6 46	6 42 6 44 6 46 6 48 6 49	6 46 6 47 6 49 6 51 6 53	6 49. 6 51 6 53 6 55 6 55	$\begin{array}{c} 6 & 52 \\ 6 & 54 \\ 6 & 57 \\ 6 & 59 \\ 7 & 1 \end{array}$	$ \begin{array}{c} 6 56 \\ 6 59 \\ 7 1 \\ 7 4 \\ 7 6 \end{array} $
「「「「「「「」」」」	$12 \\ 13 \\ 14 \\ 15 \\ 16$	6 6 6 6	44443	$\begin{array}{c} 6 & 10 \\ 6 & 10 \\ 6 & 10 \\ 6 & 10 \\ 6 & 10 \end{array}$	6 17 6 17 6 18 6 18 6 18 6 18	$\begin{array}{c} 6 & 25 \\ 6 & 25 \\ 6 & 26 \\ 6 & 27 \\ 6 & 27 \end{array}$	6 29 6 30 6 31 6 32 6 32	6 34 6 35 6 36 6 38 6 38	6 40 6 42 6 43 6 44 6 46	6 48 6 49 6 51 6 52 6 54	$\begin{array}{c} 6 & 51 \\ 6 & 53 \\ 6 & 54 \\ 6 & 56 \\ 6 & 58 \end{array}$	$\begin{array}{c} 6 & 55 \\ 6 & 56 \\ 6 & 58 \\ 7 & 0 \\ 7 & 2 \end{array}$	$ \begin{array}{c} 6 59 \\ 7 1 \\ 7 3 \\ 7 5 \\ 7 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\$	7 3 7 6 7 8 7 10 7 12	7 8 7 11 7 13 7 16 7 18
「大学なかかの	17 18 19 20 21	6 6 6 6 6	33322	$\begin{array}{c} 6 & 10 \\ 6 & 10 \\ 6 & 10 \\ 6 & 11 \\ 6 & 11 \end{array}$	6 19 6 19 6 19 6 20 6 20 6 20	6 28 6 28 6 29 6 30 6 30	$\begin{array}{c} 6 & 33 \\ 6 & 34 \\ 6 & 35 \\ 6 & 36 \\ 6 & 36 \end{array}$	$\begin{array}{c} 6 & 40 \\ 6 & 40 \\ 6 & 42 \\ 6 & 42 \\ 6 & 42 \\ 6 & 44 \end{array}$	$\begin{array}{c} 6 & 47 \\ 6 & 48 \\ 6 & 49 \\ 6 & 50 \\ 6 & 52 \end{array}$	$\begin{array}{c} 6 & 56 \\ 6 & 57 \\ 6 & 59 \\ 7 & 0 \\ 7 & 2 \end{array}$	7 0 7 1 7 3 7 5 7 6	7 4 7 6 7 8 7 10 7 11	7 9 7 11 7 13 7 15 7 17	7 14 7 17 7 19 7 21 7 23	7 21 7 23 7 26 7 28 7 31
	22 23 24 25 26	6 6 6 6	2 2 2 2 2 1	$\begin{array}{c} 6 & 11 \\ 6 & 11 \\ 6 & 11 \\ 6 & 11 \\ 6 & 11 \\ 6 & 11 \end{array}$	6 20 6 20 6 21 6 21 6 21 6 21	$\begin{array}{c} 6 & 31 \\ 6 & 32 \\ 6 & 32 \\ 6 & 33 \\ 6 & 34 \end{array}$	6 37 6 38 6 39 6 40 6 40	6 44 6 46 6 46 6 48 6 49	$\begin{array}{c} 6 & 53 \\ 6 & 54 \\ 6 & 56 \\ 6 & 57 \\ 6 & 58 \end{array}$	7 3 7 5 7 6 7 8 7 10	7 8 7 10 7 11 7 13 7 15	7 13 7 15 7 17 7 17 7 19 7 21	7 19 7 21 7 23 7 25 7 27	7 26 7 28 7 30 7 32 7 35	7 33 7 36 7 38 7 40 7 43
May	27 28 29 30 1	6 6 6 6	1 1 1 1 1	6 11 6 11 6 11 6 11 6 11 6 11	6 22 6 22 6 22 6 23 6 23 6 23	6 34 6 35 6 35 6 36 6 36 6 37	$\begin{array}{c} 6 & 41 \\ 6 & 42 \\ 6 & 43 \\ 6 & 44 \\ 6 & 45 \end{array}$	$\begin{array}{c} 6 & 50 \\ 6 & 51 \\ 6 & 52 \\ 6 & 53 \\ 6 & 54 \end{array}$	$ \begin{array}{c} 6 59 \\ 7 1 \\ 7 2 \\ 7 3 \\ 7 4 \end{array} $	7 11 7 13 7 14 7 16 7 17	7 16 7 18 7 20 7 22 7 23	7 23 7 24 7 26 7 28 7 30	7 29 7 31 7 33 7 35 7 37	7 37 7 39 7 41 7 44 7 46	7 45 7 48 7 50 7 53 7 55
	2 3 4 5 6	6 6 6 6	0 0 0 0 0	$\begin{array}{c} 6 & 12 \\ 6 & 12 \\ 6 & 12 \\ 6 & 12 \\ 6 & 12 \\ 6 & 12 \end{array}$	$\begin{array}{c} 6 & 23 \\ 6 & 24 \\ 6 & 24 \\ 6 & 25 \\ 6 & 25 \end{array}$	6 37 6 38 6 39 6 39 6 39 6 40	6 45 6 46 6 47 6 48 6 49	6 55 6 56 6 57 6 58 6 59	7 6 7 7 7 8 7 9 7 10	7 19 7 20 7 22 7 23 7 23 7 25	7 25 7 26 7 28 7 30 7 32	7 32 7 34 7 36 7 37 7 39	7 39 7 41 7 44 7 45 7 48	7 48 7 50 7 52 7 55 7 55 7 57	7 58 8 0 8 3 8 5 8 8
	7 8 9 10 11	6 6 6 6	0 0 0 0 0	$\begin{array}{c} 6 & 12 \\ 6 & 12 \\ 6 & 12 \\ 6 & 13 \\ 6 & 13 \end{array}$	6 25 6 26 6 26 6 27 6 27	6 41 6 41 6 42 6 43 6 43	$\begin{array}{c} 6 & 50 \\ 6 & 50 \\ 6 & 51 \\ 6 & 52 \\ 6 & 53 \end{array}$	7 0 7 1 7 2 7 3 7 4	7 12 7 13 7 14 7 15 7 16	7 26 7 28 7 29 7 31 7 32	7 33 7 35 7 36 7 38 7 40	7 41 7 43 7 44 7 46 7 48	7 49 7 51 7 53 7 55 7 55 7 57	7 59 8 1 8 3 8 6 8 8	8 10 8 13 8 15 8 18 8 20
	$12 \\ 13 \\ 14 \\ 15 \\ 16$	6 6 6 6	0000000	6 13 6 13 6 13 6 14 6 14	6 27 6 28 6 28 6 28 6 28 6 29	6 44 6 44 6 45 6 46 6 46	$\begin{array}{c} 6 & 54 \\ 6 & 54 \\ 6 & 55 \\ 6 & 56 \\ 6 & 57 \end{array}$	7 4 7 6 7 6 7 8 7 8	7 18 7 19 7 20 7 21 7 22	7 34 7 35 7 37 7 38 7 39	7 41 7 43 7 44 7 46 7 48	7 50 7 51 7 53 7 53 7 55 7 56	7 59 8 1 8 3 8 5 8 7	8 10 8 12 8 14 8 16 8 18	8 22 8 25 8 27 8 30 8 32
	17 18 70	6 6 331°	0	6 14 6 14 1917	6 29 6 30	6 47 6 48	6 57 6 58	7 9 7 10	7 24 7 25	7 41 7 42	7 49 7 51	7 58 8 0	8 8 8 10	8 20 8 22	8 34 8 37

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunrise in southern latitudes see page 60.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
May	17 18 19 20 21	h m 17 53 17 53 17 53 17 53 17 53 17 53	h. m 17 38 17 38 17 38 17 38 17 38 17 38	h m 17 23 17 23 17 22 17 22 17 22 17 22	h m 17 5 17 5 17 4 17 4 17 3	h m 16 55 16 54 16 53 16 53 16 52	h m 16 43 16 42 16 41 16 40 16 40	h m 16 29 16 28 16 26 16 26 16 26 16 25	h m 1611 1610 169 167 166	h m 16 3 16 1 16 0 15 59 15 57	h m 15 54 15 52 15 50 15 49 15 48	h m 15 43 15 42 15 40 15 38 15 36	h m 15 31 15 29 15 27 15 25 15 24	h m 15 17 15 15 15 12 15 12 15 11 15 8
	22 23 24 25 26	$\begin{array}{c} 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \end{array}$	17 38 17 38 17 38 17 38 17 38 17 38	17 22 17 21 17 21 17 21 17 21 17 21 17 21	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 16 \ 52 \\ 16 \ 51 \\ 16 \ 50 \\ 16 \ 50 \\ 16 \ 49 \end{array}$	16 39 16 38 16 37 16 37 16 36	$\begin{array}{c} 16 \ 24 \\ 16 \ 23 \\ 16 \ 22 \\ 16 \ 21 \\ 16 \ 20 \end{array}$	$\begin{array}{cccc} 16 & 5 \\ 16 & 4 \\ 16 & 3 \\ 16 & 2 \\ 16 & 1 \end{array}$	$\begin{array}{c} 15 \ 56 \\ 15 \ 55 \\ 15 \ 54 \\ 15 \ 52 \\ 15 \ 51 \end{array}$	$\begin{array}{c} 15\ 46\\ 15\ 45\\ 15\ 44\\ 15\ 42\\ 15\ 41\end{array}$	$\begin{array}{r} 15 \ 35 \\ 15 \ 33 \\ 15 \ 32 \\ 15 \ 30 \\ 15 \ 29 \end{array}$	$\begin{array}{c} 15 \ 22 \\ 15 \ 20 \\ 15 \ 18 \\ 15 \ 17 \\ 15 \ 15 \end{array}$	$\begin{array}{cccccccc} 15 & 6 \\ 15 & 4 \\ 15 & 2 \\ 15 & 0 \\ 14 & 59 \end{array}$
	27 28 29 30 31	17 53 17 53 17 54 17 54 17 54 17 54	17 38 17 37 17 37 17 37 17 38 17 38	17 20 17 20 17 20 17 20 17 20 17 20	17 0 17 0 17 0 17 0 17 0 16 59	16 49 16 48 16 48 16 48 16 48 16 47	$\begin{array}{r} 16 \ 36 \\ 16 \ 35 \\ 16 \ 34 \\ 16 \ 34 \\ 16 \ 33 \end{array}$	16 20 16 19 16 18 16 17 16 17	$\begin{array}{rrrr} 16 & 0 \\ 15 & 59 \\ 15 & 58 \\ 15 & 57 \\ 15 & 56 \end{array}$	$\begin{array}{r} 15 \ 50 \\ 15 \ 49 \\ 15 \ 48 \\ 15 \ 47 \\ 15 \ 46 \end{array}$	$\begin{array}{r} 15 \ 40 \\ 15 \ 38 \\ 15 \ 38 \\ 15 \ 36 \\ 15 \ 35 \end{array}$	$\begin{array}{c} 15 \ 28 \\ 15 \ 26 \\ 15 \ 25 \\ 15 \ 24 \\ 15 \ 22 \end{array}$	$\begin{array}{c} 15 \ 14 \\ 15 \ 12 \\ 15 \ 10 \\ 15 \ 9 \\ 15 \ 8 \end{array}$	$\begin{array}{r} 14 \ 57 \\ 14 \ 55 \\ 14 \ 53 \\ 14 \ 52 \\ 14 \ 50 \end{array}$
June	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	$17 54 \\ 17 54 \\ 17 54 \\ 17 54 \\ 17 54 \\ 17 55$	17 38 17 38 17 38 17 38 17 38 17 38	17 20 17 20 17 20 17 20 17 20 17 20	16 59 16 59 16 59 16 59 16 58 16 58	$\begin{array}{r} 16\ 47\\ 16\ 47\\ 16\ 46\\ 16\ 46\\ 16\ 46\\ 16\ 46\end{array}$	$\begin{array}{r} 16 \ 33 \\ 16 \ 33 \\ 16 \ 32 \\ 16 \ 32 \\ 16 \ 32 \\ 16 \ 32 \end{array}$	16 16 16 16 16 15 16 15 16 14	$15 56 \\ 15 55 \\ 15 54 \\ 15 54 \\ 15 53 \\ 15 53$	$15 46 \\ 15 45 \\ 15 44 \\ 15 43 \\ 15 4$	$15 34 \\ 15 33 \\ 15 33 \\ 15 32 \\ 15 31$	$\begin{array}{c} 15 \ 22 \\ 15 \ 20 \\ 15 \ 20 \\ 15 \ 19 \\ 15 \ 18 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	14 49 14 47 14 46 14 45 14 44
11111	6 7 8 9 10	$\begin{array}{c} 17 \ 55 \\ 17 \ 55 \\ 17 \ 55 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \end{array}$	17 38 17 38 17 38 17 38 17 38 17 38	17 20 17 20 17 20 17 20 17 20 17 20	$\begin{array}{r} 16\ 58\\ 16\ 58\\ 16\ 58\\ 16\ 58\\ 16\ 58\\ 16\ 58\\ 16\ 58\end{array}$	$\begin{array}{c} 16 \ 46 \\ 16 \ 46 \\ 16 \ 46 \\ 16 \ 45 \\ 16 \ 45 \\ 16 \ 45 \end{array}$	$16 31 \\ 16 31 \\ 16 31 \\ 16 31 \\ 16 31 \\ 16 30$	$16 14 \\ 16 14 \\ 16 13 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$	$\begin{array}{c} 15 \ 52 \\ 15 \ 52 \\ 15 \ 52 \\ 15 \ 51 \\ 15 \ 51 \\ 15 \ 51 \end{array}$	15 42 15 42 15 41 15 41 15 41 15 40	$\begin{array}{c} 15 \ 30 \\ 15 \ 30 \\ 15 \ 29 \\ 15 \ 29 \\ 15 \ 28 \end{array}$	$\begin{array}{r} 15 \ 17 \\ 15 \ 16 \\ 15 \ 16 \\ 15 \ 15 \\ 15 \ 15 \\ 15 \ 14 \end{array}$	$\begin{array}{rrrr} 15 & 1 \\ 15 & 0 \\ 15 & 0 \\ 14 & 59 \\ 14 & 58 \end{array}$	14 42 14 41 14 40 14 39 14 38
	11 12 13 14 15	$\begin{array}{c} 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 57 \end{array}$	17 38 17 39 17 39 17 39 17 39 17 39	17 20 17 20 17 20 17 20 17 20 17 20	$\begin{array}{r} 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \\ 16 \ 58 \end{array}$	$\begin{array}{r} 16 \ 45 \\ 16 \ 45 \\ 16 \ 45 \\ 16 \ 45 \\ 16 \ 45 \\ 16 \ 45 \end{array}$	16 30 16 30 16 30 16 30 16 30	$16 13 \\ 16 13 \\ 16 13 \\ 16 12 \\ 16 12 \\ 16 12 \\ 16 12 \\ 16 12 \\ 16 12 \\ 16 12 \\ 16 12 \\ 16 12 \\ 16 12 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$	$\begin{array}{c} 15 \ 51 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \end{array}$	15 40 15 40 15 40 15 39 15 39	$\begin{array}{c} 15\ 28\\ 15\ 28\\ 15\ 27\\ 15\ 27\\ 15\ 27\\ 15\ 27\end{array}$	$15 14 \\ 15 14 \\ 15 13 \\ 15 13 \\ 15 13 \\ 15 13 \\ 15 13 \\ 15 13 \\ 15 \\ 15$	$\begin{array}{r} 14 \ 58 \\ 14 \ 57 \\ 14 \ 57 \\ 14 \ 56 \\ 14 \ 56 \end{array}$	14 38 14 37 14 37 14 36 14 36
No se de la	16 17 18 19 20	17 57 17 57 17 57 17 57 17 58 17 58	17 39 17 40 17 40 17 40 17 40 17 40	17 20 17 20 17 21 17 21 17 21 17 21	$\begin{array}{c} 16 \ 58 \\ 16 \ 59 \\ 16 \ 59 \\ 16 \ 59 \\ 16 \ 59 \\ 16 \ 59 \end{array}$	$\begin{array}{r} 16 \ 45 \\ 16 \ 45 \\ 16 \ 46 \\ 16 \ 46 \\ 16 \ 46 \\ 16 \ 46 \end{array}$	16 30 16 30 16 30 16 31 16 31	$16 12 \\ 16 12 \\ 16 13 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$	$\begin{array}{c} 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \\ 15 \ 50 \end{array}$	$15 39 \\ 15 3$	$\begin{array}{c} 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \\ 15 \ 27 \end{array}$	$15\ 13\\15\ 12\\15\ 12\\15\ 13\\15\ 13\\15\ 13$	$\begin{array}{r} 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \end{array}$	$\begin{array}{c} 14 \ 35 \\ 14 \ 35 \\ 14 \ 35 \\ 14 \ 35 \\ 14 \ 35 \\ 14 \ 35 \end{array}$
1 2 4 1 1 1 1	21 22 23 24 25	17 58 17 58 17 58 17 59 17 59 17 59	17 40 17 41 17 41 17 41 17 41 17 41	$\begin{array}{c} 17 \ 21 \\ 17 \ 22 \\ 17 \ 22 \\ 17 \ 22 \\ 17 \ 22 \\ 17 \ 22 \end{array}$	$\begin{array}{cccc} 16 & 59 \\ 17 & 0 \\ 17 & 0 \\ 17 & 0 \\ 17 & 0 \\ 17 & 0 \end{array}$	16 46 16 46 16 47 16 47 16 47	$\begin{array}{c} 16 \ 31 \\ 16 \ 31 \\ 16 \ 32 \\ 16 \ 32 \\ 16 \ 32 \\ 16 \ 32 \end{array}$	16 13 16 13 16 14 16 14 16 14 16 14	$\begin{array}{c} 15 \ 50 \\ 15 \ 51 \\ 15 \ 51 \\ 15 \ 51 \\ 15 \ 51 \\ 15 \ 52 \end{array}$	$\begin{array}{c} 15 \ 39 \\ 15 \ 40 \\ 15 \ 40 \\ 15 \ 40 \\ 15 \ 41 \end{array}$	$\begin{array}{c} 15 \ 27 \\ 15 \ 27 \\ 15 \ 28 \\ 15 \ 28 \\ 15 \ 28 \\ 15 \ 28 \end{array}$	$15\ 13\\15\ 13\\15\ 13\\15\ 14\\15\ 14\\15\ 14$	$\begin{array}{r} 14 \ 56 \\ 14 \ 56 \\ 14 \ 56 \\ 14 \ 57 \\ 14 \ 57 \\ 14 \ 57 \end{array}$	$\begin{array}{r} 14 \ 35 \\ 14 \ 36 \\ 14 \ 36 \\ 14 \ 36 \\ 14 \ 37 \end{array}$
	26 27 28 29 30	$\begin{array}{c} 17 \ 59 \\ 17 \ 59 \\ 17 \ 59 \\ 18 \ 0 \\ 18 \ 0 \\ 18 \ 0 \end{array}$	17 42 17 42 17 42 17 42 17 42 17 42	17 23 17 23 17 23 17 23 17 23 17 24	$\begin{array}{cccc} 17 & 0 \\ 17 & 1 \\ 17 & 1 \\ 17 & 1 \\ 17 & 2 \\ 17 & 2 \end{array}$	16 48 16 48 16 48 16 49 16 49	16 33 16 33 16 33 16 34 16 34	$ \begin{array}{r} 16 15 \\ 16 15 \\ 16 15 \\ 16 16 \\ 16 16 \\ 16 16 \\ \end{array} $	$\begin{array}{c} 15 \ 52 \\ 15 \ 52 \\ 15 \ 53 \\ 15 \ 54 \\ 15 \ 54 \end{array}$	$\begin{array}{c} 15 \ 41 \\ 15 \ 42 \\ 15 \ 42 \\ 15 \ 43 \\ 15 \ 43 \\ 15 \ 43 \end{array}$	$\begin{array}{c} 15 \ 29 \\ 15 \ 29 \\ 15 \ 30 \\ 15 \ 31 \\ 15 \ 31 \end{array}$	15 15 15 15 15 15 16 15 17 15 17 15 17	$\begin{array}{r} 14 \ 58 \\ 14 \ 59 \\ 14 \ 59 \\ 15 \ 0 \\ 15 \ 1 \end{array}$	14 38 14 38 14 39 14 40 14 41
July	1 2	18 0 18 0	17 43 17 43	17 24 17 24	$ \begin{array}{c} 17 & 2 \\ 17 & 3 \end{array} $	16 49 16 50	16 35 16 35	16 17 16 18	$1555 \\ 1555$	$15 44 \\ 15 45$	15 32 15 33	15 18 15 19	$\begin{array}{ccc} 15 & 2 \\ 15 & 3 \end{array}$	14 42 14 43

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunset in southern latitudes see page 60.

1	Lat.		0		100		200	1.	300	1.	250		100	1	450	1	500		5.20	4	540	4	560	1	180	+600
Date.	/			T	10	T	20			-				-	10											100
May	18 19 20 21 22	h 6 6 6 6	m 0 0 0 0 0	h 6 6 6 6	m 14 14 15 15 15	h 6 6 6 6	m 30 30 30 31 31	h 6 6 6 6	m 48 48 49 50 50	h 6 7 7 7	m 58 59 0 0 1	h 7 7 7 7	m 10 11 12 13 14	h777777	m 25 26 27 28 29	h 7 7 7 7	m 42 44 45 46 47	h 7 7 7 7	m 51 52 54 55 56	h 8 8 8 8 8	m 0 1 3 5 6	h 8 8 8 8 8 8	m 10 12 14 16 17	h 8 8 8 8 8 8	m 22 24 26 28 30	h m 8 37 8 39 8 41 8 43 8 46
4 M 18 M 18 M 18 M	23 24 25 26 27	6 6 6 6	0 0 0 0 0	6 6 6 6 6	$15 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ 16 \\ $	6 6 6 6 6	32 32 32 33 33	6 6 6 6 6	51 51 52 52 53	777777	2 3 3 4 5	777777	15 16 16 17 18	777777	30 31 32 33 34	777777	49 50 51 52 54	7 7 8 8 8	58 59 0 2 3	888888	8 9 11 12 14	8 8 8 8 8 8 8	19 21 22 24 26	888888	32 34 36 38 40	8 48 8 50 8 52 8 54 8 56
June	28 29 30 31 1	6 6 6 6	1 1 1 1 1 1	6 6 6 6 6	17 17 17 17 17 18	6 6 6 6 6	34 34 35 35 35	6 6 6 6 6	$54 \\ 54 \\ 55 \\ 55 \\ 56 \\ 56 \\ $	77777	567 78	7 7 7 7 7	19 20 20 21 22	777777	35 36 37 38 38	777777	55 56 57 58 59	8 8 8 8 8 8	4 6 7 8 9	8 8 8 8 8 8	15 16 18 19 20	8 8 8 8 8	27 29 30 32 33	88888	42 43 45 46 48	8 58 9 0 9 2 9 4 9 6
	2 3 4 5 6	6 6 6 6	$ \begin{array}{c} 1 \\ 2 \\ 2 \\ 2 \\ 2 \end{array} $	6 6 6 6	18 18 18 19 19	6 6 6 6	36 36 36 37 37	6 6 6 6 6	56 57 58 58 58	777777	8 9 10 10 10	777777	23 23 24 25 25	77777	39 40 41 42 42	8 8 8 8 8 8	0 1 2 3 4	8 8 8 8 8 8	10 11 12 13 14	8 8 8 8 8	21 23 24 25 26	8 8 8 8 8	34 36 37 38 39	88888	49 51 52 54 55	9 8 9 9 9 11 9 12 9 14
	7 8 9 10 11	6 6 6 6	22333	6 6 6 6 6	19 20 20 20 20 20	6 6 6 6 6	38 38 38 39 39	6 6 7 7 7	59 59 0 0 1	77777	11 12 12 13 13	777777	26 27 27 28 28	77777	43 44 45 45 46	8 8 8 8 8 8	56678	8 8 8 8 8 8 8	15 16 17 18 19	8 8 8 8 8 8	27 28 29 30 30	8 8 8 8 8 8	40 42 43 44 44	8 8 8 9 9	56 58 59 0 1	9 15 9 17 9 18 9 19 9 20
	$12 \\ 13 \\ 14 \\ 15 \\ 16$	6 6 6 6	3 3 4 4 4	6 6 6 6 6	20 21 21 21 21 22	6 6 6 6 6	39 40 40 40 40	777777	$ \begin{array}{c} 1 \\ 1 \\ 2 \\ 2 \\ 2 \end{array} $	777777	14 14 15 15 16	777777	29 29 30 30 30	777777	46 47 47 48 48	8 8 8 8 8	9 9 10 10 11	8 8 8 8 8 8	19 20 21 21 21 22	8 8 8 8 8 8	31 32 33 33 34	8 8 8 8 8 8	45 46 47 48 48	9 9 9 9 9	23445	9 22 9 23 9 24 9 24 9 24 9 25
	17 18 19 20 21	6 6 6 6	445555	6 6 6 6 6	22 22 22 22 22 23	6 6 6 6 6	41 41 41 41 42	77777	3 3 3 3 4 4	777777	16 16 16 17 17	777777	$31 \\ \cdot 31 \\ 32 \\ 32 \\ 32 \\ 32$	777777	49 49 50 50 50	8 8 8 8 8 8	$11 \\ 12 \\ 12 \\ 12 \\ 12 \\ 13$	88888	22 23 23 23 23 24	8 8 8 8 8 8 8	34 35 35 36 36	8 8 8 8 8	49 49 50 50 50	9 9 9 9 9	6 6 6 7 7	9 26 9 26 9 27 9 27 9 27 9 28
	22 23 24 25 26	6 6 6 6	5 6 6 6 6	6 6 6 6 6	23 23 23 24 24	6 6 6 6 6	42 42 42 42 42 43	7 7 7 7 7	44455	7 7 7 7 7	17 17 17 18 18	77777	32 32 32 33 33	777777	50 50 50 51 51	8 8 8 8 8 8	13 13 13 13 13 13	8 8 8 8 8	24 24 24 24 24 24	8 8 8 8 8	36 36 36 36 36	8 8 8 8 8 8	50 51 51 51 51 51	9 9 9 9 9	77787	9 28 9 28 9 28 9 28 9 28 9 28 9 28
July	27 28 29 30 1	6 6 6 6	6 7 7 7 7	6 6 6 6 6	24 24 24 24 24 25	6 6 6 6 6	43 43 43 43 43	777777	555555	777777	18 18 18 18 18	777777	33 33 33 33 33	777777	$51 \\ 51 \\ 50 \\ 50 \\ 50 \\ 50 $	8 8 8 8 8 8	13 13 13 13 13	888888	24 24 24 24 23	8 8 8 8 8 8 8	36 36 36 36 35	8 8 8 8 8	50 50 50 50 49	9 9 9 9	7 7 7 6 6	9 28 9 27 9 27 9 26 9 26
ISI ISI	23	6 6	78	6 6	25 25	66	43 43	777	55	77	18 18	77	33 32	77	50 50	8	12 12	88	23 22	8	35 34	8	49 48	99	5 4	9 25 9 24

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunrise in southern latitudes see page 60. And the start of modifiers of permeters

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50%	+52°	+54°	+56°	+58°	+60°
July	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	h m 18 0 18 0 18 0 18 0 18 1	h m 17 43 17 43 17 43 17 43 17 43 17 44	h m 17 24 17 24 17 25 17 25 17 25 17 25	h m 17 2 17 3 17 3 17 3 17 3 17 4	h m 16 49 16 50 16 50 16 51 16 51	h m 16 35 16 35 16 36 16 36 16 37	h m 16 17 16 18 16 18 16 19 16 19	h m 15 55 15 55 15 56 15 57 15 58	h m 15 44 15 45 15 46 15 46 15 47	h m 15 32 15 33 15 34 15 34 15 36	h m 15 18 15 19 15 20 15 21 15 22	h m 15 2 15 3 15 4 15 5 15 6	h m 14 42 14 43 14 44 14 45 14 47
8 48 8 50 8 50 8 54 8 58	6 7 8 9 10	$\begin{array}{cccc} 18 & 1 \\ 18 & 1 \\ 18 & 1 \\ 18 & 1 \\ 18 & 1 \\ 18 & 2 \end{array}$	$17 \ 44 \\ 17 \ 44 \\ 17 \ 44 \\ 17 \ 45 \\ 10 \ 45 \ 45 \\ 10 \ 45 \ 45 \ 45 \ 45 \ 45 \ 45 \ 45 \ 4$	17 26 17 26 17 26 17 27 17 27 17 27	$\begin{array}{cccc} 17 & 4 \\ 17 & 5 \\ 17 & 5 \\ 17 & 6 \\ 17 & 6 \\ 17 & 6 \end{array}$	$\begin{array}{c} 16 \ 52 \\ 16 \ 52 \\ 16 \ 53 \\ 16 \ 54 \\ 16 \ 54 \end{array}$	$\begin{array}{r} 16 \ 37 \\ 16 \ 38 \\ 16 \ 39 \\ 16 \ 39 \\ 16 \ 40 \end{array}$	$\begin{array}{c} 16 \ 20 \\ 16 \ 21 \\ 16 \ 22 \\ 16 \ 22 \\ 16 \ 23 \end{array}$	$\begin{array}{c} 15\ 58\\ 15\ 59\\ 16\ 0\\ 16\ 1\\ 16\ 2 \end{array}$	$\begin{array}{r} 15 \ 48 \\ 15 \ 49 \\ 15 \ 50 \\ 15 \ 51 \\ 15 \ 52 \end{array}$	$\begin{array}{c} 15 \ 36 \\ 15 \ 38 \\ 15 \ 38 \\ 15 \ 40 \\ 15 \ 41 \end{array}$	$\begin{array}{c} 15 \ 23 \\ 15 \ 24 \\ 15 \ 25 \\ 15 \ 26 \\ 15 \ 28 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$14 \ 48 \\ 14 \ 50 \\ 14 \ 51 \\ 14 \ 53 \\ 14 \ 54$
8 58 9 0 9 2 9 0	11 12 13 14 15	$\begin{array}{cccc} 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \end{array}$	$\begin{array}{c} 17 \ 45 \\ 17 \ 45 \\ 17 \ 46 \\ 17 \ 46 \\ 17 \ 46 \\ 17 \ 46 \end{array}$	$17 27 \\ 17 28 \\ 17 28 \\ 17 29 \\ 17 2$	$\begin{array}{cccc} 17 & 7 \\ 17 & 7 \\ 17 & 8 \\ 17 & 8 \\ 17 & 9 \end{array}$	$\begin{array}{c} 16 \ 55 \\ 16 \ 55 \\ 16 \ 56 \\ 16 \ 56 \\ 16 \ 57 \end{array}$	$\begin{array}{c} 16 \ 41 \\ 16 \ 41 \\ 16 \ 42 \\ 16 \ 43 \\ 16 \ 44 \end{array}$	$\begin{array}{c} 16 \ 24 \\ 16 \ 25 \\ 16 \ 26 \\ 16 \ 26 \\ 16 \ 27 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 15 \ 53 \\ 15 \ 54 \\ 15 \ 55 \\ 15 \ 57 \\ 15 \ 58 \end{array}$	$\begin{array}{c} 15 \ 42 \\ 15 \ 43 \\ 15 \ 44 \\ 15 \ 46 \\ 15 \ 47 \end{array}$	$\begin{array}{r} 15 \ 29 \\ 15 \ 30 \\ 15 \ 32 \\ 15 \ 33 \\ 15 \ 35 \end{array}$	$\begin{array}{c} 15 \ 14 \\ 15 \ 16 \\ 15 \ 17 \\ 15 \ 19 \\ 15 \ 20 \end{array}$	$\begin{array}{c} 14 \ 56 \\ 14 \ 58 \\ 15 \ 0 \\ 15 \ 2 \\ 15 \ 4 \end{array}$
0 14 0 17 0 17 0 14	16 17 18 19 20	$\begin{array}{cccc} 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 3 \end{array}$	17 46 17 47 17 47 17 47 17 47 17 47	17 29 17 30 17 30 17 30 17 30 17 31	$\begin{array}{c} 17 \ 10 \\ 17 \ 10 \\ 17 \ 11 \\ 17 \ 11 \\ 17 \ 11 \\ 17 \ 12 \end{array}$	$\begin{array}{c} 16 \ 58 \\ 16 \ 58 \\ 16 \ 59 \\ 17 \ 0 \\ 17 \ 0 \\ 17 \ 0 \end{array}$	$\begin{array}{r} 16 \ 44 \\ 16 \ 45 \\ 16 \ 46 \\ 16 \ 47 \\ 16 \ 48 \end{array}$	$\begin{array}{c} 16 \ 28 \\ 16 \ 29 \\ 16 \ 30 \\ 16 \ 31 \\ 16 \ 32 \end{array}$	$\begin{array}{ccc} 16 & 8 \\ 16 & 10 \\ 16 & 11 \\ 16 & 12 \\ 16 & 13 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 15 \ 48 \\ 15 \ 50 \\ 15 \ 51 \\ 15 \ 53 \\ 15 \ 54 \end{array}$	$\begin{array}{c} 15 \ 36 \\ 15 \ 38 \\ 15 \ 39 \\ 15 \ 41 \\ 15 \ 43 \end{array}$	$\begin{array}{c} 15 \ 22 \\ 15 \ 24 \\ 15 \ 26 \\ 15 \ 28 \\ 15 \ 29 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
9 13 9 17 9 18 9 18 9 18	21 22 23 24 25	$\begin{array}{cccc} 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \end{array}$	17 48 17 48 17 48 17 48 17 48 17 48	17 31 17 32 17 32 17 32 17 32 17 33	$\begin{array}{c} 17 \ 12 \\ 17 \ 13 \\ 17 \ 13 \\ 17 \ 14 \\ 17 \ 15 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 16 \ 48 \\ 16 \ 49 \\ 16 \ 50 \\ 16 \ 51 \\ 16 \ 52 \end{array}$	$\begin{array}{r} 16 \ 33 \\ 16 \ 34 \\ 16 \ 35 \\ 16 \ 36 \\ 16 \ 37 \end{array}$	$\begin{array}{c} 16 \ 14 \\ 16 \ 16 \\ 16 \ 17 \\ 16 \ 18 \\ 16 \ 20 \end{array}$	$\begin{array}{cccc} 16 & 6 \\ 16 & 7 \\ 16 & 8 \\ 16 & 10 \\ 16 & 11 \end{array}$	$\begin{array}{c} 15 \ 56 \\ 15 \ 57 \\ 15 \ 59 \\ 16 \ 0 \\ 16 \ 2 \end{array}$	$\begin{array}{c} 15 \ 44 \\ 15 \ 46 \\ 15 \ 48 \\ 15 \ 49 \\ 15 \ 51 \end{array}$	$\begin{array}{c} 15 & 31 \\ 15 & 33 \\ 15 & 35 \\ 15 & 37 \\ 15 & 39 \end{array}$	$\begin{array}{c} 15 \ 16 \\ 15 \ 18 \\ 15 \ 20 \\ 15 \ 22 \\ 15 \ 24 \end{array}$
25.561355 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	26 27 28 29 30	$\begin{array}{ccccccc} 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \end{array}$	17 48 17 49 17 49 17 49 17 49 17 49	17 33 17 33 17 34 17 34 17 34 17 34	17 15 17 16 17 16 17 17 17 17 17 18	$\begin{array}{cccc} 17 & 5 \\ 17 & 6 \\ 17 & 6 \\ 17 & 7 \\ 17 & 8 \end{array}$	$\begin{array}{r} 16 \ 53 \\ 16 \ 54 \\ 16 \ 54 \\ 16 \ 55 \\ 16 \ 56 \end{array}$	$\begin{array}{c} 16 \ 38 \\ 16 \ 40 \\ 16 \ 41 \\ 16 \ 42 \\ 16 \ 43 \end{array}$	$\begin{array}{c} 16 \ 21 \\ 16 \ 22 \\ 16 \ 24 \\ 16 \ 25 \\ 16 \ 26 \end{array}$	$\begin{array}{c} 16 \ 12 \\ 16 \ 14 \\ 16 \ 16 \\ 16 \ 17 \\ 16 \ 19 \end{array}$	$\begin{array}{cccc} 16 & 3 \\ 16 & 5 \\ 16 & 7 \\ 16 & 8 \\ 16 & 10 \end{array}$	$\begin{array}{c} 15 \ 53 \\ 15 \ 54 \\ 15 \ 56 \\ 15 \ 58 \\ 16 \ 0 \end{array}$	$\begin{array}{c} 15 \ 41 \\ 15 \ 43 \\ 15 \ 45 \\ 15 \ 47 \\ 15 \ 49 \end{array}$	$\begin{array}{c} 15 \ 27 \\ 15 \ 29 \\ 15 \ 31 \\ 15 \ 34 \\ 15 \ 36 \end{array}$
Aug.	$ \begin{array}{c} 31 \\ 1 \\ 2 \\ 3 \\ 4 \end{array} $	$\begin{array}{cccc} 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \\ 18 & 2 \end{array}$	17 49 17 50 17 50 17 50 17 50 17 50	17 35 17 35 17 36 17 36 17 36 17 36	17 18 17 19 17 20 17 20 17 21	17 9 17 9 17 10 17 11 17 11 17 11	$\begin{array}{c} 16 \ 57 \\ 16 \ 58 \\ 16 \ 59 \\ 17 \ 0 \\ 17 \ 1 \end{array}$	$\begin{array}{r} 16 \ 44 \\ 16 \ 45 \\ 16 \ 46 \\ 16 \ 47 \\ 16 \ 49 \end{array}$	$\begin{array}{c} 16 \ 28 \\ 16 \ 29 \\ 16 \ 31 \\ 16 \ 32 \\ 16 \ 33 \end{array}$	$\begin{array}{c} 16 \ 20 \\ 16 \ 22 \\ 16 \ 23 \\ 16 \ 25 \\ 16 \ 26 \end{array}$	$\begin{array}{c} 16 \ 12 \\ 16 \ 13 \\ 16 \ 15 \\ 16 \ 17 \\ 16 \ 18 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 15 \ 51 \\ 15 \ 53 \\ 15 \ 55 \\ 15 \ 57 \\ 15 \ 59 \end{array}$	$\begin{array}{c} 15 \ 38 \\ 15 \ 41 \\ 15 \ 43 \\ 15 \ 45 \\ 15 \ 43 \end{array}$
日本日本に	5 6 7 8 9	$\begin{array}{cccccccc} 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \\ 18 & 2 \end{array}$	17 50 17 50 17 50 17 50 17 50 17 50	17 36 17 37 17 37 17 38 17 38	$\begin{array}{c} 17 \ 21 \\ 17 \ 22 \\ 17 \ 22 \\ 17 \ 23 \\ 17 \ 24 \end{array}$	$\begin{array}{c} 17 \ 12 \\ 17 \ 13 \\ 17 \ 14 \\ 17 \ 14 \\ 17 \ 15 \end{array}$	$\begin{array}{cccc} 17 & 2 \\ 17 & 3 \\ 17 & 4 \\ 17 & 5 \\ 17 & 6 \end{array}$	$\begin{array}{r} 16 \ 50 \\ 16 \ 51 \\ 16 \ 52 \\ 16 \ 53 \\ 16 \ 54 \end{array}$	$\begin{array}{r} 16 \ 35 \\ 16 \ 36 \\ 16 \ 38 \\ 16 \ 39 \\ 16 \ 41 \end{array}$	$\begin{array}{c} 16 \ 28 \\ 16 \ 30 \\ 16 \ 31 \\ 16 \ 33 \\ 16 \ 34 \end{array}$	$\begin{array}{c} 16 \ 20 \\ 16 \ 22 \\ 16 \ 24 \\ 16 \ 25 \\ 16 \ 27 \end{array}$	$16\ 11\\16\ 13\\16\ 15\\16\ 17\\16\ 19$	$\begin{array}{cccc} 16 & 2 \\ 16 & 4 \\ 16 & 6 \\ 16 & 8 \\ 16 & 10 \end{array}$	$\begin{array}{c} 15 \ 50 \\ 15 \ 53 \\ 15 \ 55 \\ 15 \ 58 \\ 16 \ 0 \end{array}$
0 F 0 F 0 F 0 F 0 F 0 F 0 F 0 F 0 F 0 F	$10 \\ 11 \\ 12 \\ 13 \\ 14$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	17 50 17 51 17 51 17 51 17 51 17 51	17 38 17 39 17 39 17 39 17 39 17 40	$\begin{array}{c} 17 \ 24 \\ 17 \ 25 \\ 17 \ 25 \\ 17 \ 26 \\ 17 \ 27 \end{array}$	17 16 17 17 17 18 17 18 17 18 17 19	$\begin{array}{cccc} 17 & 7 \\ 17 & 8 \\ 17 & 8 \\ 17 & 10 \\ 17 & 10 \\ 17 & 10 \end{array}$	$\begin{array}{c} 16 \ 56 \\ 16 \ 57 \\ 16 \ 58 \\ 16 \ 59 \\ 17 \ 0 \end{array}$	$\begin{array}{r} 16 \ 42 \\ 16 \ 44 \\ 16 \ 45 \\ 16 \ 46 \\ 16 \ 48 \end{array}$	$\begin{array}{c} 16 \ 36 \\ 16 \ 38 \\ 16 \ 39 \\ 16 \ 41 \\ 16 \ 42 \end{array}$	$\begin{array}{r} 16 \ 29 \\ 16 \ 31 \\ 16 \ 32 \\ 16 \ 34 \\ 16 \ 36 \end{array}$	$\begin{array}{c} 16 \ 21 \\ 16 \ 23 \\ 16 \ 25 \\ 16 \ 27 \\ 16 \ 29 \end{array}$	$\begin{array}{c} 16 \ 12 \\ 16 \ 15 \\ 16 \ 17 \\ 16 \ 19 \\ 16 \ 21 \end{array}$	$\begin{array}{cccc} 16 & 2 \\ 16 & 5 \\ 16 & 7 \\ 16 & 10 \\ 16 & 12 \end{array}$
10 20	15 16	18 1 18 1	17 51 17 51	17 40 17 40	17 27 17 28	17 20 17 21	$17 11 \\ 17 12$	$ \begin{array}{c} 17 & 2 \\ 17 & 3 \end{array} $	16 50 16 51	16 44 16 46	16 38 16 40	16 31 16 33	16 23 16 25	16 14 16 17

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station record of the standard meridian: the station is east of the standard meridian. For sunset in southern latitudes see page 60.

				and a state of the									
Date.	0°	+10°	+20°	-⊹30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
July 2 3 4 5 6	h m 6 7 6 3 6 8 6 8 6 8	h m 6 25 6 25 6 25 6 25 6 25 6 25	h m 6 43 6 43 6 43 6 43 6 43 6 43	h m 5555577555	h m 7 18 7 18 7 18 7 18 7 18 7 18 7 17	h m 7 33 7 32 7 32 7 32 7 32 7 32	h m 7 50 7 50 7 50 7 50 7 49 7 49	h m 8 12 8 12 8 12 8 12 8 12 8 12 8 11	h m 8 23 8 22 8 22 8 22 8 22 8 21	h m 8 35 8 34 8 34 8 34 8 34 8 32	h m 8 49 8 48 8 48 8 48 8 47 8 46	h m 9 5 9 4 9 4 9 3 9 2	h m 9 25 9 24 9 23 9 22 9 21
7 8 9 10 11	6 8 6 8 6 8 6 9 6 9	6 25 6 25 6 25 6 25 6 25 6 25	$\begin{array}{c} 6 & 43 \\ 6 & 43 \\ 6 & 43 \\ 6 & 43 \\ 6 & 43 \end{array}$	7 5 7 4 7 4 7 4 7 4	7 17 7 17 7 17 7 16 7 16 7 16	7 32 7 31 7 31 7 30 7 30 7 30	7 49 7 48 7 48 7 48 7 47 7 47	8 10 8 10 8 9 8 8 8 8 8 8	8 20 8 20 8 19 8 18 8 18	8 32 8 32 8 31 8 30 8 29	8 46 8 45 8 44 8 43 8 42	9 1 9 0 8 59 8 58 8 58 8 57	9 20 9 19 9 18 9 16 9 15
12 - 13 14 15 16	6 9 6 9 6 9 6 9 6 9 6 9	6 25 6 25 6 25 6 25 6 25 6 25	6 43 6 43 6 43 6 43 6 43 6 42	7 4 7 7 3 7 7 7 7 7 2	7 16 7 15 7 15 7 15 7 15 7 14	7 30 7 29 7 29 7 28 7 28 7 28	7 46 7 46 7 45 7 44 7 44	8 7 8 6 8 5 8 5 8 4	8 17 8 16 8 15 8 14 8 13	8 28 8 27 8 26 8 25 8 24	8 41 8 40 8 39 8 37 8 36	8 56 8 54 8 53 8 52 8 50	$\begin{array}{c} 9 & 14 \\ 9 & 12 \\ 9 & 11 \\ 9 & 9 \\ 9 & 7 \\ 9 & 7 \end{array}$
17 18 19 20 21	6 9 6 10 6 10 6 10 6 10 6 10	6 25 6 25 6 25 6 25 6 25 6 25	$\begin{array}{c} 6 & 42 \\ 6 & 42 \\ 6 & 42 \\ 6 & 42 \\ 6 & 42 \\ 6 & 41 \end{array}$	7 2 7 2 7 1 7 1 7 1 7 0	7 14 7 13 7 13 7 13 7 12 7 12	7 27 7 26 7 26 7 25 7 25 7 24	7 43 7 42 7 41 7 40 7 40 7 40	8 3 8 2 8 1 8 0 7 58	8 12 8 11 8 10 8 9 8 7	8 23 8 22 8 20 8 19 8 18	8 35 8 33 8 32 8 30 8 30 8 29	8 49 8 47 8 45 8 44 8 42	9 5 9 3 9 2 9 0 8 58
22 23 24 25 26	6 10 6 10 6 10 6 10 6 10 6 10	6 25 6 25 6 24 6 24 6 24 6 24	6 41 6 41 6 40 6 40 6 40 6 40	7 0 6 59 6 59 6 58 6 58	7 11 7 10 7 10 7 9 7 8	7 24 7 23 7 22 7 21 7 20	7 39 7 38 7 37 7 36 7 35	$\begin{array}{c} 7 & 57 \\ 7 & 56 \\ 7 & 55 \\ 7 & 54 \\ 7 & 52 \end{array}$	8 6 8 5 8 4 8 2 8 1	8 16 8 15 8 13 8 12 8 10	8 27 8 26 8 24 8 22 8 21	8 40 8 38 8 37 8 35 8 33	8 56 8 54 8 51 8 49 8 47
27 28 29 30 31	6 10 6 10 6 10 6 10 6 10 6 10	6 24 6 24 6 24 6 23 6 23	6 39 6 39 6 39 6 38 6 38 6 38	6 57 6 56 6 56 6 55 6 54	7 8 7 7 7 6 7 5 7 4	7 19 ⁻ 7 18 7 18 7 17 7 16	7 34 7 32 7 31 7 30 7 29	7 51 7 50 7 48 7 47 7 45	7 59 7 58 7 56 7 55 7 53	8 8 8 7 8 5 8 3 8 2	8 19 8 17 8 15 8 13 8 11	8 31 8 29 8 27 8 24 8 22	8 45 8 42 8 40 8 38 8 35
Aug. 1 2 3 4 5	6 10 6 9 6 9 6 9 6 9	6 23 6 22 6 22 6 22 6 22 6 22 6 22	6 37 6 37 6 36 6 36 6 36 6 35	6 54 6 53 6 52 6 52 6 51	7 4 7 3 7 2 7 1 7 0	7 14 7 14 7 12 7 11 7 10	7 28 7 26 7 25 7 24 7 22	7 44 7 42 7 41 7 39 7 38	$\begin{array}{c} 7 & 51 \\ 7 & 50 \\ 7 & 48 \\ 7 & 46 \\ 7 & 45 \end{array}$	8 0 7 58 7 56 7 54 7 52	8 9 8 7 8 5 8 3 8 1	8 20 8 18 8 16 8 14 8 11	8 33 8 30 8 28 8 25 8 23
6 7 8 9 10	6 9 6 9 6 9 6 9 6 9	6 22 6 21 6 21 6 20 6 20 6 20	6 35 6 34 6 34 6 33 6 32	6 50 6 49 6 48 6 47 6 46	6 59 6 58 6 57 6 56 6 55	7 9 7 8 7 7 7 6 7 4	7 21 7 20 7 18 7 17 7 15	7 36 7 34 7 32 7 31 7 29	7 43 7 41 7 39 7 37 7 35	7 50 7 48 7 46 7 44 7 42	7 59 7 57 7 55 7 52 7 50	8 9 8 6 8 4 8 2 7 59	8 20 8 17 8 15 8 12 8 9
11 12 13 14 15	6 8 6 8 6 8 6 8 6 8	6 20 6 19 6 19 6 19 6 18 6 18	6 32 6 31 6 30 6 30 6 29	6 46 6 45 6 44 6 43 6 42	6 54 6 53 6 52 6 50 6 49	7 3 7 2 7 0 6 59 6 58	7 14 7 12 7 11 7 9 7 8	7 27 7 25 7 24 7 22 7 20	7 33 7 32 7 30 7 28 7 26	7 40 7 38 7 36 7 34 7 32	7 48 7 46 7 44 7 41 7 39	7 57 7 54 7 52 7 49 7 47	8 7 8 4 8 1 7 58 7 56
16 17	6 8 6 7	6 18 6 17	6 28 6 28	6 41 6 40	6 48 6 47	6 56 6 55	7 6 7 5	7 18 7 16	7 24 7 22	7 30 7 28	7 37 7 34	7 44 7 42	7 53 7 50

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunrise in southern latitudes see page 60.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Aug. 16 17 18 19 20	h m 18 1 18 1 18 0 18 0 18 0	h m 17 51 17 51 17 51 17 51 17 51 17 51	h m 17 40 17 41 17 41 17 41 17 41 17 41	h m 17 28 17 28 17 29 17 29 17 30 17 30	h m 17 21 17 21 17 22 17 23 17 23 17 24	h m 17 12 17 13 17 14 17 15 17 16	h m 17 3 17 4 17 5 17 6 17 8	h m 16 51 16 52 16 54 16 56 16 57	h m 16 46 16 47 16 49 16 50 16 52	h m 16 40 16 41 16 43 16 45 16 45	h m 16 33 16 35 16 37 16 39 16 41	h m 16 25 16 27 16 30 16 32 16 34	h m 16 17 16 19 16 22 16 24 16 26
$ \begin{array}{r} \cdot 21 \\ 22 \\ 23 \\ 24 \\ 25 \end{array} $	18 0 17 59 17 59 17 59 17 59 17 59 17 58	17 51 17 51 17 51 17 51 17 51 17 51	17 42 17 42 17 42 17 42 17 42 17 43	17 31 17 31 17 32 17 32 17 33	17 24 17 25 17 26 17 27 17 27 17 27	17 17 17 18 17 19 17 20 17 21	17 9 17 10 17 11 17 12 17 14	16 58 17 0 17 1 17 3 17 4	$\begin{array}{c} 16 \ 54 \\ 16 \ 55 \\ 16 \ 57 \\ 16 \ 59 \\ 17 \ 0 \end{array}$	16 48 16 50 16 52 16 54 16 56	16 43 16 44 16 46 16 48 16 50	16 36 16 38 16 40 16 42 16 45	16 29 16 31 16 34 16 36 16 38
26 27 28 29 30	17 58 17 58 17 58 17 58 17 57 17 57	17 51 17 51 17 51 17 51 17 51 17 51 17 51	17 43 17 43 17 43 17 43 17 44 17 44	17 34 17 34 17 35 17 35 17 36	17 28 17 29 17 30 17 30 17 31	17 22 17 23 17 24 17 25 17 26	17 15 17 16 17 17 17 18 17 19	17 6 17 7 17 9 17 10 17 12	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	16 57 16 59 17 1 17 3 17 4	16 52 16 54 16 56 16 58 17 0	16 47 16 49 16 51 16 53 16 55	16 41 16 43 16 45 16 48 16 50
31 Sept. 1 2 3 4	$17 57 \\ 17 56 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 1$	17 51 17 51 17 51 17 51 17 51 17 50	17 44 17 44 17 44 17 45 17 45	17 36 17 37 17 37 17 38 17 38	17 32 17 32 17 33 17 34 17 35	17 27 17 28 17 28 17 29 17 30	17 21 17 22 17 23 17 24 17 25	17 13 17 15 17 16 17 18 17 19	17 10 17 12 17 13 17 15 17 16	17 6 17 8 17 10 17 12 17 13	17 2 17 4 17 6 17 8 17 10	$\begin{array}{cccc} 16 & 58 \\ 17 & 0 \\ 17 & 2 \\ 17 & 4 \\ 17 & 6 \end{array}$	$\begin{array}{c} 16 \ 53 \\ 16 \ 55 \\ 16 \ 57 \\ 17 \ 0 \\ 17 \ 2 \end{array}$
5 6 7 8 9	17 55 17 55 17 55 17 54 17 54	17 50 17 50 17 50 17 50 17 50 17 50	$17 45 \\ 17 45 \\ 17 46 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 1$	17 39 17 40 17 40 17 41 17 41 17 41	17 36 17 36 17 37 17 38 17 38	17 31 17 32 17 33 17 34 17 35	17 27 17 28 17 29 17 30 17 31	17 21 17 22 17 24 17 25 17 27	17 18 17 20 17 22 17 23 17 25	17 15 17 17 17 19 17 21 17 22	17 12 17 14 17 16 17 18 17 20	17 8 17 10 17 13 17 15 17 17	17 4 17 7 17 9 17 12 17 14
$10 \\ 11 \\ 12 \\ 13 \\ 14$	17 54 17 53 17 53 17 53 17 53 17 52	17 50 17 50 17 50 17 50 17 50 17 50	17 46 17 46 17 47 17 47 17 47 17 47	17 42 17 42 17 43 17 43 17 43 17 44	17 39 17 40 17 41 17 41 17 41 17 42	17 36 17 37 17 38 17 39 17 40	17 33 17 34 17 35 17 36 17 37	17 28 17 30 17 31 17 33 17 33 17 34	17 26 17 28 17 30 17 31 17 33	17 24 17 26 17 28 17 30 17 31	17 22 17 24 17 26 17 28 17 30	17 19 17 21 17 23 17 26 17 28	17 16 17 18 17 21 17 23 17 26
15 16 17 18 19	17 52 17 52 17 51 17 51 17 51 17 50	17 50 17 50 17 50 17 50 17 50 17 49	17 47 17 48 17 48 17 48 17 48 17 48	17 44 17 45 17 46 17 46 17 46 17 47	17 43 17 44 17 44 17 45 17 46	17 41 17 42 17 43 17 44 17 45	17 39 17 40 17 41 17 42 17 43	17 36 17 37 17 39 17 40 17 42	17 35 17 36 17 38 17 40 17 41	17 33 17 35 17 37 17 38 17 40	17 32 17 34 17 36 17 38 17 39	17 30 17 32 17 34 17 36 17 38	17 28 17 30 17 33 17 35 17 37
20 21 22 23 24	17 50 17 50 17 49 17 49 17 49 17 49	17 49 17 49 17 49 17 49 17 49 17 49	17 48 17 49 17 49 17 49 17 49 17 49	17 47 17 48 17 48 17 49 17 49	17 46 17 47 17 48 17 49 17 49	17 46 17 46 17 48 17 48 17 48 17 49	17 45 17 46 17 47 17 48 17 49	17 43 17 45 17 46 17 48 17 49	17 43 17 44 17 46 17 48 17 49	17 42 17 44 17 46 17 47 17 49	17 41 17 43 17 45 17 45 17 47 17 49	17 40 17 43 17 45 17 45 17 47 17 49	17 40 17 42 17 44 17 47 17 49
25 26 27 28 29	17 48 17 48 17 48 17 47 17 47	17-49 17-49 17-49 17-49 17-49	17 50 17 50 17 50 17 50 17 50 17 50	17 50 17 50 17 51 17 52 17 52	17 50 17 51 17 52 17 52 17 53	17 50 17 51 17 52 17 53 17 54	17 51 17 52 17 53 17 54 17 56	17 51 17 52 17 54 17 55 17 57	17 51 17 53 17 54 17 56 17 58	17 51 17 53 17 55 17 56 17 58	17 51 17 53 17 55 17 57 17 59	17 51 17 53 17 56 17 58 18 0	17 51 17 54 17 56 17 58 18 1
30 Oct. 1	17 47 17 46	17 49 17 49	17 51 17 51	17 53 17 53	17 54 17 55	17 55 17 56	17 57 17 58	17 58 18 0	17 59 18 1	18 0 18 2	18 1 18 3	18 2 18 4	18 3 18 6

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LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunset in southern latitudes see page 60.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Aug.	17 18 19 20 21	h m 6 7 6 7 6 7 6 7 6 7 6 6	h m 6 17 6 17 6 16 6 16 6 16 6 15	h m 6 28 6 27 6 26 6 26 6 26 6 25	h m 6 40 6 39 6 38 6 37 6 36	h m 6 47 6 46 6 45 6 45 6 44 6 42	h m 6 55 6 54 6 52 6 51 6 50	h m 7 5 7 3 7 1 7 0 6 58	h m 7 16 7 14 7 12 7 10 7 .8	h m 7 22 7 20 7 18 7 15 7 13	h m 7 28 7 25 7 23 7 21 7 18	h m 7 34 7 32 7 29 7 27 7 24	h m 7 42 7 39 7 36 7 34 7 31	h m 7 50 7 47 7 44 7 42 7 39
	22 23 24 25 26	6 6 6 6 6 6 6 5	6 15 6 14 6 14 6 13 6 13	6 24 6 23 6 22 6 22 6 21	6 35 6 34 6 32 6 31 6 30	6 41 6 40 6 38 6 37 6 36	6 48 6 47 6 45 6 44 6 42	$\begin{array}{c} 6 & 56 \\ 6 & 55 \\ 6 & 53 \\ 6 & 51 \\ 6 & 50 \end{array}$	7 6 7 4 7 2 7 0 6 58	7 11 7 9 7 7 7 5 7 2	7 16 7 14 7 12 7 9 7 7	7 22 7 20 7 17 7 15 7 12	7 28 7 26 7 23 7 20 7 18	7 36 7 33 7 30 7 27 7 24
	27 28 29 30 31	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6 12 6 12 6 11 6 10 6 10	6 20 6 19 6 18 6 18 6 18 6 17	6 29 6 28 6 27 6 26 6 25	6 35 6 33 6 32 6 31 6 29	$\begin{array}{c} 6 & 41 \\ 6 & 39 \\ 6 & 38 \\ 6 & 36 \\ 6 & 34 \end{array}$	6 48 6 46 6 44 6 42 6 41	6 56 6 54 6 52 6 50 6 48	$\begin{array}{ccc} 7 & 0 \\ 6 & 58 \\ 6 & 56 \\ 6 & 54 \\ 6 & 52 \end{array}$	7 5 7 2 7 0 6 58 6 55	7 10 7 7 7 5 7 2 6 59	7 15 7 12 7 10 7 7 7 4	7 21 7 18 7 15 7 12 7 9
Sept.	. 1 2 3 4 5	$\begin{array}{cccc} 6 & 3 \\ 6 & 3 \\ 6 & 3 \\ 6 & 2 \\ 6 & 2 \end{array}$	$ \begin{array}{cccc} 6 & 9 \\ 6 & 9 \\ 6 & 8 \\ 6 & 8 \\ 6 & 7 \end{array} $	6 16 6 15 6 14 6 13 6 12	6 23 6 22 6 21 6 20 6 19	6 28 6 26 6 25 6 24 6 22	6 33 6 31 6 30 6 28 6 27	6 39 6 37 6 35 6 33 6 32	6 46 6 44 6 42 6 40 6 37	6 49 6 47 6 45 6 42 6 40	$\begin{array}{c} 6 & 53 \\ 6 & 50 \\ 6 & 48 \\ 6 & 46 \\ 6 & 43 \end{array}$	$\begin{array}{c} 6 & 57 \\ 6 & 54 \\ 6 & 52 \\ 6 & 49 \\ 6 & 46 \end{array}$	$\begin{array}{c} 7 & 1 \\ 6 & 58 \\ 6 & 56 \\ 6 & 53 \\ 6 & 50 \end{array}$	7 6 7 3 7 0 6 57 6 54
18 81 19 80 19 80 10 80 10 10 10 10 10 10 10 10 10 10 10 10 10	6 7 8 9 10	$\begin{array}{ccc} 6 & 2 \\ 6 & 1 \\ 6 & 1 \\ 6 & 1 \\ 6 & 0 \end{array}$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6 12 6 11 6 10 6 9 6 8	$\begin{array}{c} 6 & 17 \\ 6 & 16 \\ 6 & 15 \\ 6 & 14 \\ 6 & 12 \end{array}$	6 21 6 20 6 18 6 17 6 15	6 25 6 23 6 22 6 20 6 18	6 30 6 28 6 26 6 24 6 22	6 35 6 33 6 31 6 29 6 26	6 38 6 36 6 33 6 31 6 28	6 41 6 38 6 36 6 33 6 31	6 44 6 41 6 39 6 36 6 33	6 47 6 45 6 42 6 39 6 36	6 51 6 48 6 45 6 42 6 39
	11 12 13 14 15	$\begin{array}{ccc} 6 & 0 \\ 6 & 0 \\ 5 & 59 \\ 5 & 59 \\ 5 & 59 \\ 5 & 59 \end{array}$	6 4 6 3 6 2 6 2 6 1	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} 6 & 11 \\ 6 & 10 \\ 6 & 9 \\ 6 & 8 \\ 6 & 6 \end{array} $	$\begin{array}{c} 6 & 14 \\ 6 & 12 \\ 6 & 11 \\ 6 & 10 \\ 6 & 8 \end{array}$	6 17 6 15 6 14 6 12 6 10	6 20 6 18 6 16 6 15 6 13	6 24 6 22 6 20 6 18 6 16	6 26 6 24 6 22 6 19 6 17	6 28 6 26 6 23 6 21 6 18	6 31 6 28 6 25 6 23 6 20	6 33 6 30 6 28 6 25 6 22	6 36 6 33 6 30 6 27 6 24
	16 17 18 19 20	5 59 5 58 5 58 5 58 5 57 5 57	$\begin{array}{ccc} 6 & 0 \\ 6 & 0 \\ 5 & 59 \\ 5 & 58 \\ 5 & 58 \\ 5 & 58 \end{array}$	$\begin{array}{ccc} 6 & 2 \\ 6 & 2 \\ 6 & 1 \\ 6 & 0 \\ 5 & 59 \end{array}$	$\begin{array}{cccc} 6 & 5 \\ 6 & 4 \\ 6 & 3 \\ 6 & 1 \\ 6 & 0 \end{array}$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 6 & 9 \\ 6 & 7 \\ 6 & 5 \\ 6 & 4 \\ 6 & 2 \end{array}$	$\begin{array}{c} 6 & 11 \\ 6 & 9 \\ 6 & 7 \\ 6 & 5 \\ 6 & 3 \end{array}$	$\begin{array}{c} 6 & 13 \\ 6 & 11 \\ 6 & 9 \\ 6 & 7 \\ 6 & 4 \end{array}$	$\begin{array}{c} 6 & 15 \\ 6 & 12 \\ 6 & 10 \\ 6 & 8 \\ 6 & 5 \end{array}$	$ \begin{array}{c} 6 & 16 \\ 6 & 13 \\ 6 & 11 \\ 6 & 8 \\ 6 & 6 \end{array} $	$ \begin{array}{c} 6 & 17 \\ 6 & 15 \\ 6 & 12 \\ 6 & 9 \\ 6 & 7 \end{array} $	6 19 6 16 6 13 6 10 6 8	$\begin{array}{c} 6 & 21 \\ 6 & 18 \\ 6 & 15 \\ 6 & 12 \\ 6 & 9 \end{array}$
	21 22 23 24 25	556 56 55 56 555	5557 556 556 555 555	5 58 5 57 5 56 5 55 5 54	$5 59 \\ 5 58 \\ 5 56 \\ 5 55 \\ 5 54$	$\begin{array}{ccc} 6 & 0 \\ 5 & 58 \\ 5 & 57 \\ 5 & 55 \\ 5 & 54 \end{array}$	6 0 5 59 5 57 5 55 5 54	$\begin{array}{ccc} 6 & 1 \\ 5 & 59 \\ 5 & 57 \\ 5 & 56 \\ 5 & 54 \end{array}$	$\begin{array}{ccc} 6 & 2 \\ 6 & 0 \\ 5 & 58 \\ 5 & 56 \\ 5 & 54 \end{array}$	6 3 6 0 5 58 5 56 5 54	$\begin{array}{ccc} 6 & 3 \\ 6 & 1 \\ 5 & 58 \\ 5 & 56 \\ 5 & 53 \end{array}$	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$\begin{array}{cccc} 6 & 5 \\ 6 & 2 \\ 5 & 59 \\ 5 & 56 \\ 5 & 53 \end{array}$	6 6 6 2 5 59 5 56 5 53
	26 27 28 29 30	555 54 554 554 554 554	$5 54 \\ 5 53 \\ 5 53 \\ 5 52 \\ 5 52 \\ 5 52 \\ $	5 53 5 52 5 52 5 52 5 51 5 50	5 53 5 51 5 50 5 49 5 48	5 52 5 51 5 50 5 48 5 47	5 52 5 50 5 49 5 47 5 45	5 52 5 50 5 48 5 46 5 44	5 51 5 49 5 47 5 45 5 42	5 51 5 49 5 46 5 46 5 44 5 42	5 51 5 48 5 46 5 43 5 41	5 51 5 48 5 45 5 43 5 40	5 51 5 48 5 45 5 42 5 39	5 50 5 47 5 44 5 41 5 38
Oct.	$\frac{1}{2}$	5 53 5 53	5 51 5 50	5 49 5 48	5 47 5 45	5 45 5 44	5 44 5 42	5 42 5 40	5 40 5 38	5 40 5 37	5 39 5 36	5 38 5 35	5 36 5 34	5 35 5 32

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, subtract 12 hours, mark the result A. M., and add one to the day.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunrise in southern latitudes see page 60.

Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	·+58°	+60°
Oct. 1 2 3 4 5	h m 17 46 17 46 17 46 17 46 17 46 17 45	h m 17 49 17 49 17 49 17 49 17 49 17 48	h m 17 51 17 51 17 51 17 51 17 52 17 52	h m 17 53 17 54 17 54 17 55 17 56	h m 17 55 17 56 17 56 17 57 17 58	h m 17 56 17 57 17 58 17 59 18 0	h m 17 58 17 59 18 0 18 2 18 3	h m 18 0 18 2 18 3 18 5 18 6	h m 18 1 18 3 18 4 18 6 18 8	h m 18 2 18 4 18 6 18 8 18 9	h m 18 3 18 5 18 7 18 9 18 11	h m 18 4 18 6 18 9 18 11 18 13	h m 18 6 18 8 18 10 18 13 18 15
6 7 8 9 10	17 45 17 44 17 44 17 44 17 44 17 44	17 49 17 48 17 48 17 48 17 48 17 48	$\begin{array}{c} 17 \ 52 \\ 17 \ 52 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 53 \end{array}$	17 56 17 57 17 58 17 58 17 58 17 59	$\begin{array}{cccc} 17 & 59 \\ 18 & 0 \\ 18 & 0 \\ 18 & 1 \\ 18 & 2 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	184186187188189	18 8 18 9 18 11 18 12 18 14	18 9 18 11 18 13 18 14 18 16	18 11 18 13 18 15 18 17 18 17 18 19	18 13 18 15 18 17 18 19 18 21	$18\ 15\\18\ 17\\18\ 20\\18\ 22\\18\ 24$	$18\ 18\\18\ 20\\18\ 22\\18\ 25\\18\ 27$
$11\\12\\13\\14\\15$	$17 44 \\ 17 43 \\ 17 43 \\ 17 43 \\ 17 43 \\ 17 42$	17 48 17 48 17 48 17 48 17 48 17 49	$\begin{array}{c} 17 \ 54 \\ 17 \ 54 \\ 17 \ 54 \\ 17 \ 54 \\ 17 \ 54 \\ 17 \ 55 \end{array}$	$\begin{array}{cccc} 17 & 59 \\ 18 & 0 \\ 18 & 1 \\ 18 & 1 \\ 18 & 2 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18 6 18 7 18 8 18 10 18 10	18 11 18 12 18 13 18 14 18 16	18 16 18 17 18 19 18 20 18 22	$\begin{array}{c} 18 \ 18 \\ 18 \ 20 \\ 18 \ 21 \\ 18 \ 23 \\ 18 \ 25 \end{array}$	$\begin{array}{c} 18 \ 20 \\ 18 \ 22 \\ 18 \ 24 \\ 18 \ 26 \\ 18 \ 28 \end{array}$	$\begin{array}{c} 18\ 23\\ 18\ 25\\ 18\ 27\\ 18\ 29\\ 18\ 31 \end{array}$	18 26 18 28 18 31 18 33 18 33	18 30 18 32 18 35 18 37 18 40
$ \begin{array}{r} 16 \\ 17 \\ 18 \\ 19 \\ 20 \\ \end{array} $	$\begin{array}{c} 17 \ 42 \\ 17 \ 42 \\ 17 \ 42 \\ 17 \ 42 \\ 17 \ 42 \\ 17 \ 42 \end{array}$	17 49 17 49 17 49 17 49 17 49 17 49	$\begin{array}{c} 17 & 55 \\ 17 & 56 \\ 17 & 56 \\ 17 & 56 \\ 17 & 57 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccc} 18 & 7 \\ 18 & 8 \\ 18 & 9 \\ 18 & 9 \\ 18 & 10 \end{array}$	18 12 18 13 18 14 18 15 18 16	18 17 18 18 18 20 18 21 18 22	$\begin{array}{c} 18 \ 24 \\ 18 \ 25 \\ 18 \ 27 \\ 18 \ 28 \\ 18 \ 30 \end{array}$	18 27 18 28 18 30 18 32 18 34	18 30 18 32 18 34 18 36 18 38	18 33 18 36 18 38 18 40 18 42	18 38 18 40 18 42 18 44 18 47	$18\ 42\\18\ 44\\18\ 47\\18\ 50\\18\ 52$
$21 \\ 22 \\ 23 \\ 24 \\ 25$	17 41 17 41 17 41 17 41 17 41 17 41	17 49 17 49 17 49 17 49 17 49 17 50	17 57 17 57 17 58 17 58 17 59	186187187188189	18 11 18 12 18 13 18 14 18 15	18 17 18 18 18 19 18 20 18 21	18 24 18 25 18 26 18 28 18 29	18 32 18 33 18 35 18 37 18 38	18 35 18 37 18 39 18 41 18 42	18 39 18 41 18 43 18 45 18 45 18 47	18 44 18 46 18 48 18 50 18 52	18 49 18 51 18 54 18 56 18 58	$\begin{array}{cccccccc} 18 & 54 \\ 18 & 57 \\ 19 & 0 \\ 19 & 2 \\ 19 & 5 \end{array}$
26 27 28 29 30	17 41 17 41 17 40 17 40 17 40 17 40	$\begin{array}{c} 17 \ 50 \\ 17 \ 50 \\ 17 \ 50 \\ 17 \ 50 \\ 17 \ 50 \\ 17 \ 50 \end{array}$	$\begin{array}{c} 17 \ 59 \\ 17 \ 59 \\ 18 \ 0 \\ 18 \ 0 \\ 18 \ 1 \end{array}$	18 10 18 10 18 11 18 12 18 12	18 16 18 17 18 18 18 18 18 18 18 19	$\begin{array}{c} 18\ 22\\ 18\ 24\\ 18\ 25\\ 18\ 26\\ 18\ 27\end{array}$	18 30 18 32 18 33 18 35 18 36	$\begin{array}{r} 18 \ 40 \\ 18 \ 42 \\ 18 \ 43 \\ 18 \ 45 \\ 18 \ 46 \end{array}$	18 44 18 46 18 48 18 50 18 51	18 49 18 51 18 53 18 55 18 57	$\begin{array}{c} 18 \ 54 \\ 18 \ 57 \\ 18 \ 59 \\ 19 \ 1 \\ 19 \ 3 \end{array}$	$\begin{array}{cccc} 19 & 0 \\ 19 & 3 \\ 19 & 5 \\ 19 & 7 \\ 19 & 10 \end{array}$	19 7 19 10 19 12 19 15 19 15
31 Nov. 1 2 3 4	17 40 17 40 17 40 17 40 17 40 17 40	17 50 17 51 17 51 17 51 17 51 17 51	$\begin{array}{ccccccccc} 18 & 1 \\ 18 & 2 \\ 18 & 2 \\ 18 & 3 \\ 18 & 3 \\ 18 & 3 \end{array}$	18 13 18 14 18 15 18 16 18 16	$18 \ 20 \\ 18 \ 21 \\ 18 \ 22 \\ 18 \ 23 \\ 18 \ 24$	18 28 18 29 18 30 18 32 18 33	18 37 18 39 18 40 18 41 18 43	$18 \ 48 \\ 18 \ 50 \\ 18 \ 52 \\ 18 \ 53 \\ 18 \ 55 \\$	$\begin{array}{c} 18 \ 53 \\ 18 \ 55 \\ 18 \ 57 \\ 18 \ 59 \\ 19 \ 0 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} 19 & 5 \\ 19 & 7 \\ 19 & 9 \\ 19 & 11 \\ 19 & 14 \end{array}$	19 12 19 14 19 17 19 19 19 21	19 20 19 22 19 25 19 28 19 30
5 6 7 8 9	17 40 17 40 17 40 17 40 17 40 17 41	$\begin{array}{c} 17 \ 52 \\ 17 \ 52 \\ 17 \ 52 \\ 17 \ 52 \\ 17 \ 52 \\ 17 \ 53 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18 17 18 18 18 19 18 20 18 20	18 25 18 26 18 27 18 28 18 29	18 34 18 35 18 36 18 37 18 38	18 44 18 46 18 47 18 48 18 50	$\begin{array}{c} 18 \ 56 \\ 18 \ 58 \\ 19 \ 0 \\ 19 \ 2 \\ 19 \ 3 \end{array}$	19 2 19 4 19 6 19 8 19 10	19 9 19 11 19 13 19 14 19 16	19 16 19 18 19 20 19 22 19 24	19 24 19 26 19 28 19 31 19 33	19 33 19 35 19 38 19 40 19 43
10 11 12 13 14	17 41 17 41 17 41 17 41 17 41 17 41	$\begin{array}{c} 17 \ 53 \\ 17 \ 53 \\ 17 \ 54 \\ 17 \ 54 \\ 17 \ 54 \\ 17 \ 54 \end{array}$	186187187188189	18 21 18 22 18 23 18 24 18 25	18 30 18 31 18 32 18 33 18 34	18 40 18 41 18 42 18 43 18 43	$1851 \\1852 \\1854 \\1855 \\1855 \\1857$	19 5 19 6 19 8 19 10 19 11	19 11 19 13 19 15 19 17 19 18	19 18 19 20 19 22 19 24 19 26	19 26 19 28 19 30 19 33 19 35	19 35 19 38 19 40 19 42 19 45	19 46 19 48 19 51 19 53 19 56
15 16	17 41 17 42	17 55 17 55	18 9 18 10	18 25 18 26	18 35 18 36	18 45 18 47	18 58 18 59	19 13 19 15	19 20 19 22	19 28 19 30	19 37 19 39	19 47 19 49	$\begin{array}{c} 19 \ 58 \\ 20 \ 1 \end{array}$

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

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Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Oct. 2 3 4 5 6	h m 5 53 5 52 5 52 5 52 5 52 5 52 5 52	h m 5 50 5 50 5 49 5 49 5 49 5 48	h m 5 48 5 47 5 46 5 45 5 44	h m 5 45 5 44 5 43 5 42 5 41	h m 5 44 5 42 5 41 5 40 5 38	h m 5 42 5 41 5 39 5 37 5 36	h m 5 40 5 38 5 37 5 35 5 33	h m 5 38 5 36 5 34 5 32 5 30	h m 5 37 5 35 5 33 5 30 5 28	h m 5 36 5 34 5 31 5 29 5 26	h m 5 35 5 32 5 30 5 27 5 24	h m 5 34 5 31 5 28 5 25 5 22	h m 5 32 5 29 5 26 5 23 5 20
7 8 9 10 11	$5 51 5 51 5 51 5 51 5 50 5 50 5 50 \\ $	5 48 5 47 5 46 5 46 5 45	5 44 5 43 5 42 5 41 5 40	$\begin{array}{c} 5 & 39 \\ 5 & 38 \\ 5 & 37 \\ 5 & 36 \\ 5 & 35 \end{array}$	$5 \ 37 \\ 5 \ 36 \\ 5 \ 34 \\ 5 \ 33 \\ 5 \ 32$	$\begin{array}{c} 5 & 34 \\ 5 & 33 \\ 5 & 31 \\ 5 & 30 \\ 5 & 28 \end{array}$	$5 \ 31 \\ 5 \ 29 \\ 5 \ 28 \\ 5 \ 26 \\ 5 \ 24$	5 27 5 25 5 23 5 21 5 19	$5 26 \\ 5 24 \\ 5 22 \\ 5 19 \\ 5 17$	$5 24 \\ 5 21 \\ 5 19 \\ 5 17 \\ 5 14$	$5 22 \\ 5 19 \\ 5 17 \\ 5 14 \\ 5 12$	$5 20 \\ 5 17 \\ 5 14 \\ 5 11 \\ 5 9$	5 17 5 14 5 11 5 8 5 5
$12 \\ 13 \\ 14 \\ 15 \\ 16$	$5 50 5 50 5 49 5 49 5 49 5 49 5 49 \\ $	5 455 445 445 435 435 43	$5 40 \\ 5 39 \\ 5 38 \\ 5 37 \\ 5 36$	$5 34 \\ 5 32 \\ 5 31 \\ 5 30 \\ 5 29$	$\begin{array}{c} 5 & 30 \\ 5 & 29 \\ 5 & 28 \\ 5 & 26 \\ 5 & 25 \end{array}$	$5 26 \\ 5 25 \\ 5 23 \\ 5 22 \\ 5 20$	$5 22 \\ 5 20 \\ 5 18 \\ 5 17 \\ 5 15$	5 17 5 15 5 13 5 11 5 9	$5 14 \\ 5 12 \\ 5 10 \\ 5 8 \\ 5 6$	$5 12 \\ 5 10 \\ 5 7 \\ 5 5 \\ 5 2$	59575452459	5 6 5 3 5 0 4 58 4 55	5 2 5 0 4 56 4 54 4 51
. 17 18 19 20 21	5 49 5 49 5 48 5 48 5 48 5 48	$5 42 \\ 5 42 \\ 5 42 \\ 5 42 \\ 5 41 \\ 5 41 \\ 5 41$	5 36 5 35 5 34 5 34 5 33	5 28 5 27 5 26 5 25 5 24	$5 24 \\ 5 23 \\ 5 21 \\ 5 20 \\ 5 19$	$5 19 \\ 5 17 \\ 5 16 \\ 5 14 \\ 5 13$	$5 13 \\ 5 12 \\ 5 10 \\ 5 8 \\ 5 6$	5 75 55 35 14 59	5 4 5 1 4 59 4 57 4 55	$5 0 \\ 4 58 \\ 4 56 \\ 4 53 \\ 4 51$	$\begin{array}{r} 4 & 56 \\ 4 & 54 \\ 4 & 52 \\ 4 & 49 \\ 4 & 47 \end{array}$	$\begin{array}{c cccc} 4 & 52 \\ 4 & 50 \\ 4 & 47 \\ 4 & 44 \\ 4 & 42 \end{array}$	4 48 4 45 4 42 4 39 4 36
22 23 24 25 26	5 48 5 48 5 48 5 48 5 48 5 47	5 40 5 40 5 39 5 39 5 39 5 39	5 32 5 31 5 31 5 31 5 30 5 29	5 23 5 22 5 21 5 20 5 19	$5 18 \\ 5 16 \\ 5 15 \\ 5 14 \\ 5 13$	$ \begin{array}{c} 5 & 12 \\ 5 & 10 \\ 5 & 9 \\ 5 & 8 \\ 5 & 6 \end{array} $	5 55 35 25 04 58	4 57 4 55 4 53 4 51 4 49	4 53 4 51 4 49 4 47 4 45	4 49 4 46 4 44 4 42 4 40	4 44 4 42 4 40 4 37 4 35	4 39 4 36 4 34 4 31 4 29	4 34 4 31 4 28 4 25 4 22
27 28 29 30 31	5 47 5 47 5 47 5 47 5 47 5 47	5 38 5 38 5 38 5 38 5 37 5 37	5 29 5 28 5 28 5 28 5 27 5 27	$5 18 \\ 5 17 \\ 5 16 \\ 5 15 \\ 5 14$	$5 12 \\ 5 11 \\ 5 10 \\ 5 9 \\ 5 8$	5 5 5 5 4 5 2 5 1 5 0	4 57 4 55 4 54 4 52 4 51	4 47 4 45 4 44 4 42 4 40	4 43 4 41 4 39 4 37 4 35	4 38 4 36 4 34 4 32 4 30	4 32 4 30 4 28 4 26 4 23	4 26 4 24 4 22 4 19 4 17	4 20 4 17 4 14 4 12 4 9
Nov. 1 2 3 4 5	5 47 5 47 5 47 5 47 5 47 5 47	5 37 5 37 5 36 5 36 5 36 5 36	5 26 5 26 5 25 5 25 5 25 5 24	$5 14 \\ 5 13 \\ 5 12 \\ 5 12 \\ 5 11 \\ 5 11 \\ 5 11$	576554 53	$\begin{array}{c} 4 & 59 \\ 4 & 58 \\ 4 & 56 \\ 4 & 55 \\ 4 & 54 \end{array}$	4 50 4 48 4 47 4 45 4 44	4 38 4 37 4 35 4 33 4 32	$\begin{array}{c} 4 & 33 \\ 4 & 31 \\ 4 & 30 \\ 4 & 28 \\ 4 & 26 \end{array}$	4 28 4 26 4 24 4 22 4 20	4 21 4 19 4 17 4 15 4 13	$\begin{array}{c} 4 & 14 \\ 4 & 12 \\ 4 & 10 \\ 4 & 7 \\ 4 & 5 \end{array}$	4 6 4 4 4 1 3 58 3 56
6 7 8 9 10	5 47 5 47 5 47 5 47 5 47 5 48	5 36 5 36 5 35 5 35 5 35 5 35	5 24 5 23 5 23 5 23 5 22 5 22 5 22	$5 10 \\ 5 9 \\ 5 8 \\ 5 8 \\ 5 7 \\$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 4 & 53 \\ 4 & 52 \\ 4 & 51 \\ 4 & 50 \\ 4 & 49 \end{array}$	$\begin{array}{c} 4 & 43 \\ 4 & 41 \\ 4 & 40 \\ 4 & 39 \\ 4 & 38 \end{array}$	4 30 4 28 4 27 4 25 4 24	4 24 4 23 4 21 4 19 4 18	4 18 4 16 4 14 4 12 4 11	$ \begin{array}{c} 4 & 11 \\ 4 & 9 \\ 4 & 7 \\ 4 & 5 \\ 4 & 3 \end{array} $	$\begin{array}{cccc} 4 & 3 \\ 4 & 0 \\ 3 & 58 \\ 3 & 56 \\ 3 & 54 \end{array}$	3 53 3 51 3 48 3 46 3 44
11 12 13 14 15	5 48 5 48 5 48 5 48 5 48 5 48	5 35 5 35 5 35 5 35 5 35 5 35	5 22 5 21 5 21 5 21 5 21 5 21 5 20	576555554	$\begin{array}{r} 4 & 58 \\ 4 & 57 \\ 4 & 56 \\ 4 & 56 \\ 4 & 55 \end{array}$	4 48 4 47 4 46 4 45 4 44	4 36 4 35 4 34 4 33 4 32	4 22 4 21 4 20 4 18 4 17	4 16 4 14 4 13 4 11 4 10	$ \begin{array}{r} 4 & 9 \\ 4 & 7 \\ 4 & 6 \\ 4 & 4 \\ 4 & 2 \end{array} $	4 1 3 59 3 57 3 55 3 54	3 52 3 50 3 48 3 47 3 44	3 41 3 39 3 37 3 34 3 32
16 17	5 48 5 48	5 35 5 35	5 20 5 20	5453	4 55 4 54	4 44 43	4 31 4 30	4 16 4 14	4 9 4 7	4 1 3 59	3 52 3 50	3 42 3 40	3 30 3 28

LOCAL ASTRONOMICAL MEAN TIME OF SUNRISE, MERIDIAN OF GREENWICH, 1918.

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For sunrise in southern latitudes see page 60.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov: 16 17 18 19 20	h m 17 42 17 42 17 42 17 42 17 42 17 42	h m 17 55 17 56 17 56 17 56 17 56 17 57	h m 18 10 18 10 18 11 18 12 18 12	h m 18 26 18 27 18 28 18 29 18 30	h m 18 36 18 37 18 38 18 39 18 40	h m 18 47 18 48 18 49 18 50 18 51	h m 18 59 19 1 19 2 19 3 19 4	h m 19 15 19 16 19 18 19 20 19 21	h m 19 22 19 24 19 25 19 27 19 29	h m 19 30 19 32 19 34 19 36 19 37	h m 19 39 19 41 19 43 19 45 19 47	h m 19 49 19 51 19 54 19 56 19 58	h m 20 1 20 3 20 6 20 8 20 11
21 22 23 24 25	17 42 17 43 17 43 17 43 17 43 17 44	17 57 17 58 17 58 17 59 17 59 17 59	18 13 18 13 18 14 18 15 18 15 18 15	18 30 18 31 18 32 18 33 18 34	18 40 18 42 18 42 18 42 18 44 18 44	$\begin{array}{c} 18 & 52 \\ 18 & 53 \\ 18 & 54 \\ 18 & 56 \\ 18 & 56 \\ 18 & 56 \end{array}$	19 6 19 7 19 8 19 10 19 11	19 22 19 24 19 26 19 27 19 29	19 30 19 32 19 34 19 35 19 37	19 39 19 41 19 43 19 44 19 44	19 49 19 51 19 53 19 55 19 56	$\begin{array}{cccc} 20 & 0 \\ 20 & 2 \\ 20 & 4 \\ 20 & 6 \\ 20 & 8 \end{array}$	20 13 20 15 20 18 20 20 20 22
26 27 28 29 30	17 44 17 44 17 44 17 45 17 45	$\begin{array}{cccc} 18 & 0 \\ 18 & 0 \\ 18 & 0 \\ 18 & 1 \\ 18 & 1 \\ 18 & 1 \end{array}$	18 16 18 16 18 17 18 18 18 18 18 18	18 34 18 35 18 36 18 37 18 38	18 45 18 46 18 47 18 48 18 49	18 58 18 59 19 0 19 1 19 2	19 12 19 14 19 15 19 16 19 17	19 30 19 32 19 33 19 34 19 36	19 38 19 40 19 42 19 43 19 44	19 48 19 50 19 51 19 53 19 54	$ \begin{array}{r} 19 58 \\ 20 0 \\ 20 2 \\ 20 4 \\ 20 5 \end{array} $	20 10 20 12 20 14 20 16 20 18	20 25 20 27 20 29 20 31 20 33
Dec. 1 2 3 4 5	17 46 17 46 17 46 17 47 17 47	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18 19 18 20 18 20 18 21 18 21 18 22	18 39 18 39 18 40 18 41 18 42	$\begin{array}{c} 18 \ 50 \\ 18 \ 51 \\ 18 \ 52 \\ 18 \ 52 \\ 18 \ 52 \\ 18 \ 53 \end{array}$	19 3 19 4 19 5 19 6 19 7	19 18 19 19 19 20 19 22 19 23	19 37 19 38 19 40 19 41 19 42	19 46 19 47 19 49 19 50 19 51	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20 7 20 9 20 10 20 12 20 13	$\begin{array}{c} 20 \ 20 \\ 20 \ 22 \\ 20 \ 24 \\ 20 \ 25 \\ 20 \ 27 \end{array}$	20 35 20 37 20 39 20 41 20 43
6 7 8 9 10	17 48 17 48 17 49 17 49 17 49 17 49	18 4 18 5 18 6 18 6 18 6 18 6 18 6	18 22 18 23 18 23 18 23 18 24 18 25	18 42 18 43 18 44 18 45 18 45	18 54 18 55 18 56 18 57 18 57 18 57	19 8 19 9 19 10 19 10 19 11	19 24 19 25 19 26 19 27 19 28	19 43 19 44 19 46 19 47 19 48	19 53 19 54 19 55 19 56 19 57	20 3 20 4 20 6 20 7 20 8	20 15 20 16 20 18 20 19 20 20	20 29 20 30 20 32 20 33 20 34	20 45 20 46 20 48 20 50 20 51
11 12 13 14 15	$\begin{array}{c} 17 \ 50 \\ 17 \ 50 \\ 17 \ 51 \\ 17 \ 51 \\ 17 \ 51 \\ 17 \ 52 \end{array}$	187188188189189	18 25 18 26 18 26 18 27 18 28	18 46 18 47 18 47 18 48 18 49	18 58 18 59 19 0 19 0 19 1	19 12 19 13 19 14 19 14 19 14 19 15	19 28 19 29 19 30 19 31 19 32	19 49 19 50 19 50 19 51 19 52	$\begin{array}{c} 19 \ 58 \\ 19 \ 59 \\ 20 \ 0 \\ 20 \ 1 \\ 20 \ 2 \end{array}$	20 9 20 10 20 11 20 12 20 13	20 21 20 23 20 24 20 25 20 26	20 36 20 37 20 38 20 39 20 40	20 52 20 54 20 55 20 56 20 56 20 57
16 17 18 19 20	$\begin{array}{c} 17 \ 52 \\ 17 \ 53 \\ 17 \ 53 \\ 17 \ 54 \\ 17 \ 54 \\ 17 \ 54 \end{array}$	18 10 18 10 18 11 18 11 18 11 18 12	18 28 18 29 18 29 18 30 18 30 18 30	18 49 18 50 18 50 18 51 18 51 18 52	192192193193194	19 16 19 16 19 17 19 17 19 18	19 32 19 33 19 34 19 34 19 34 19 35	19 53 19 54 19 54 19 55 19 55 19 56	$\begin{array}{cccc} 20 & 3 \\ 20 & 4 \\ 20 & 4 \\ 20 & 5 \\ 20 & 6 \end{array}$	20 14 20 15 20 15 20 16 20 17	20 26 20 27 20 28 20 29 20 30	$\begin{array}{c} 20 \ 41 \\ 20 \ 42 \\ 20 \ 43 \\ 20 \ 44 \\ 20 \ 44 \end{array}$	$\begin{array}{cccc} 20 & 58 \\ 21 & 0 \\ 21 & 0 \\ 21 & 1 \\ 21 & 2 \end{array}$
21 22 23 24 25	$\begin{array}{c} 17 \ 55 \\ 17 \ 55 \\ 17 \ 56 \\ 17 \ 56 \\ 17 \ 57 \end{array}$	18 12 18 13 18 13 18 14 18 14 18 14	18 31 18 31 18 32 18 32 18 32 18 32	$\begin{array}{c} 18 \ 52 \\ 18 \ 52 \\ 18 \ 53 \\ 18 \ 53 \\ 18 \ 54 \end{array}$	194195195196196	19 18 19 19 19 20 19 20 19 20 19 20	19 35 19 36 19 36 19 37 19 37	19 56 19 57 19 57 19 58 19 58	20 6 20 7 20 7 20 8 20 8	20 17 20 18 20 18 20 18 20 19 20 19	20 30 20 30 20 31 20 31 20 32	$\begin{array}{c} 20 \ 45 \\ 20 \ 45 \\ 20 \ 46 \\ 20 \ 46 \\ 20 \ 46 \\ 20 \ 46 \end{array}$	$\begin{array}{cccc} 21 & 2 \\ 21 & 3 \\ 21 & 3 \\ 21 & 4 \\ 21 & 4 \end{array}$
26 27 28 29 30	17 57 17 58 17 58 17 58 17 59 17 59	18 14 18 15 18 15 18 16 18 16 18 16	18 33 18 33 18 34 18 34 18 35	18 54 18 55 18 55 18 55 18 55 18 56	197197197198198	19 21 19 21 19 21 19 21 19 22 19 22	19 38 19 38 19 38 19 38 19 38 19 38	19 58 19 58 19 59 19 59 19 59 19 59	20 8 20 8 20 9 20 9 20 9 20 9	20 19 20 19 20 20 20 20 20 20 20 20	20 32 20 32 20 32 20 32 20 32 20 32	20 47 20 47 20 47 20 47 20 47 20 46	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
31	17 59	18 17	18 35	18 56	19 8	19 22	19 38	19 59	20 8	20 19	20 32	20 46	21 3

LOCAL ASTRONOMICAL MEAN TIME OF SUNSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time.

To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian, or decrease the local time by the number of minutes the station is east of the standard meridian.

For sunset in southern latitudes see page 60.

Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov. 17 18 19 20 21	h m 5 48 5 49 5 49 5 49 5 49 5 49	h m 5 35 5 35 5 35 5 35 5 35 5 35	h m 5 20 5 20 5 20 5 20 5 20 5 20 5 19	h m 5 3 5 3 5 3 5 2 5 2	h m 4 54 4 53 4 53 4 53 4 52 4 52	h m 4 43 4 42 4 42 4 42 4 41 4 40	h m 4 30 4 29 4 28 4 27 4 26	h m 4 14 4 13 4 12 4 11 4 10	h m 4 7 4 6 4 5 4 3 4 2	h m 3 59 3 58 3 56 3 55 3 55 3 54	h m 3 50 3 48 3 47 3 45 3 44	h m 3 40 3 38 3 36 3 36 3 34 3 33	h m 3 28 3 26 3 24 3 22 3 20
22 23 24 25 26	5 50 5 50 5 50 5 50 5 51	$5 35 \\ 5 35 \\ 5 35 \\ 5 35 \\ 5 35 \\ 5 36$	$5 19 \\ 5 19 \\ 5 19 \\ 5 19 \\ 5 19 \\ 5 19 \\ 5 19 \\ 5 19 $	5 2 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5	$\begin{array}{r} 4 & 51 \\ 4 & 51 \\ 4 & 50 \\ 4 & 50 \\ 4 & 50 \\ 4 & 50 \end{array}$	4 40 4 39 4 38 4 38 4 38 4 38	4 26 4 25 4 24 4 24 4 24 4 23	$ \begin{array}{r} 4 & 9 \\ 4 & 8 \\ 4 & 7 \\ 4 & 6 \\ 4 & 5 \end{array} $	$\begin{array}{r} 4 & 1 \\ 4 & 0 \\ 3 & 59 \\ 3 & 58 \\ 3 & 57 \end{array}$	$ \begin{array}{r} 3 52 \\ 3 51 \\ 3 50 \\ 3 49 \\ 3 48 \end{array} $	3 42 3 41 3 40 3 38 3 37	3 31 3 30 3 28 3 26 3 25	$ \begin{array}{r} 3 & 18 \\ 3 & 16 \\ 3 & 14 \\ 3 & 12 \\ 3 & 11 \\ \end{array} $
27 28 29 30 Dec. 1	$\begin{array}{cccc} 5 & 51 \\ 5 & 52 \\ 5 & 52 \\ 5 & 52 \\ 5 & 52 \\ 5 & 53 \end{array}$	$\begin{array}{c} 5 & 36 \\ 5 & 36 \\ 5 & 36 \\ 5 & 36 \\ 5 & 36 \\ 5 & 36 \end{array}$	$5 19 \\ $	$\begin{array}{cccc} 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \end{array}$	4 50 4 49 4 49 4 49 4 49 4 49	4 37 4 37 4 36 4 36 4 36 4 36	4 22 4 22 4 21 4 21 4 21 4 20	$ \begin{array}{r} 4 & 4 \\ 4 & 4 \\ 4 & 3 \\ 4 & 2 \\ 4 & 2 \\ 4 & 2 \end{array} $	$ \begin{array}{r} 3 56 \\ 3 55 \\ 3 54 \\ 3 54 \\ 3 53 \end{array} $	3 47 3 46 3 45 3 45 3 44 3 43	3 36 3 35 3 34 3 33 3 32	3 24 3 22 3 21 3 20 3 19	3 10 3 8 3 6 3 5 3 4
2 3 4 5 6	5 53 53 55 54 55 55	$5 37 5 37 5 37 5 37 5 38 5 38 5 38 \\ $	$\begin{array}{c} 5 & 20 \\ 5 & 20 \\ 5 & 20 \\ 5 & 20 \\ 5 & 20 \\ 5 & 20 \end{array}$	$\begin{array}{cccc} 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \\ 5 & 0 \end{array}$	4 48 4 48 4 48 4 48 4 48 4 48	4 35 4 35 4 35 4 35 4 35 4 35	4 20 4 20 4 19 4 19 4 19 4 19	$\begin{array}{r} 4 & 1 \\ 4 & 1 \\ 4 & 0 \\ 4 & 0 \\ 3 & 59 \end{array}$	$ \begin{array}{r} 3 & 52 \\ 3 & 52 \\ 3 & 51 \\ 3 & 50 \\ 3 & 50 \\ 3 & 50 \\ \end{array} $	3 42 3 41 3 41 3 40 3 40 3 40	3 31 3 30 3 29 3 28 3 28 3 28	3 18 3 17 3 16 3 15 3 14	$ \begin{array}{r} 3 & 2 \\ 3 & 1 \\ 3 & 0 \\ 2 & 59 \\ 2 & 58 \\ \end{array} $
7 8 9 10 11	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 5 & 38 \\ 5 & 38 \\ 5 & 39 \\ 5 & 39 \\ 5 & 39 \\ 5 & 40 \end{array}$	$5 20 \\ 5 21 \\ 5 21 \\ 5 21 \\ 5 21 \\ 5 22 \\$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4 48 4 48 4 48 4 49 4 49 4 49	4 35 4 35 4 35 4 35 4 35 4 35	4 19 4 18 4 18 4 18 4 18 4 18	3 59 3 59 3 58 3 58 3 58 3 58	3 50 3 49 3 49 3 49 3 49 3 49	3 39 3 39 3 38 3 38 3 38 3 38	$\begin{array}{c} 3 & 27 \\ 3 & 27 \\ 3 & 26 \\ 3 & 26 \\ 3 & 26 \\ 3 & 26 \end{array}$	3 14 3 13 3 12 3 12 3 12 3 11	$ \begin{array}{c} 2 & 57 \\ 2 & 56 \\ 2 & 56 \\ 2 & 55 \\ 2 & 54 \end{array} $
12 13 14 15 16	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5 40 5 40 5 41 5 41 5 42 $5 42$	$5 22 \\ 5 22 \\ 5 23 \\ 5 23 \\ 5 23 \\ 5 23 \\ 5 23 \\$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4 49 4 49 4 49 4 50 4 50	4 35 4 35 4 35 4 36 4 36	4 18 4 18 4 19 4 19 4 19 4 19	3 58 3 58 3 58 3 58 3 58 3 58 3 58	3 48 3 48 3 48 3 48 3 48 3 49	3 38 3 38 3 38 3 38 3 38 3 38 3 38	3 25 3 25 3 25 3 25 3 25 3 25	$ \begin{array}{r} 3 & 11 \\ 3 & 11 \\ \cdot 3 & 10 \\ 3 & 10 \\ 3 & 10 \\ 3 & 10 \end{array} $	$ \begin{array}{r} 2 & 54 \\ 2 & 54 \\ 2 & 53 \\ 2 & 53 \\ 2 & 53 \\ 2 & 53 \end{array} $
17 18 19 20 21	$\begin{array}{ccc} 6 & 0 \\ 6 & 0 \\ 6 & 1 \\ 6 & 1 \\ 6 & 2 \end{array}$	5 42 5 43 5 43 5 43 5 44 5 44 5 44	$5 24 \\ 5 24 \\ 5 25 \\ 5 25 \\ 5 25 \\ 5 26$	5 3 5 3 5 3 5 4 5 4	$\begin{array}{r} 4 & 50 \\ 4 & 51 \\ 4 & 51 \\ 4 & 52 \\ 4 & 52 \\ 4 & 52 \end{array}$	4 36 4 36 4 37 4 37 4 38	4 19 4 20 4 20 4 20 4 20 4 21	$\begin{array}{cccc} 3 & 59 \\ 3 & 59 \\ 3 & 59 \\ 4 & 0 \\ 4 & 0 \end{array}$	3 49 3 49 3 49 3 50 3 50 3 50	3 38 3 38 3 38 3 38 3 39 3 39	3 25 3 25 3 26 3 26 3 26 3 26	3 10 3 10 3 11 3 11 3 11 3 12	$ \begin{array}{cccc} 2 & 53 \\ 2 & 53 \\ 2 & 53 \\ 2 & 54 \\ 2 & 54 \\ 2 & 54 \\ \end{array} $
22 23 24 25 26	$\begin{array}{cccc} 6 & 2 \\ 6 & 3 \\ 6 & 3 \\ 6 & 4 \\ 6 & 4 \end{array}$	$5 45 \\ 5 45 \\ 5 46 \\ 5 46 \\ 5 47 \\$	5 26 5 27 5 27 5 28 5 28	555 56 56 57	$\begin{array}{r} 4 & 52 \\ 4 & 53 \\ 4 & 54 \\ 4 & 54 \\ 4 & 55 \end{array}$	4 38 4 39 4 39 4 40 4 40	4 21 4 22 4 22 4 23 4 23 4 24	$\begin{array}{cccc} 4 & 1 \\ 4 & 1 \\ 4 & 2 \\ 4 & 2 \\ 4 & 2 \\ 4 & 3 \end{array}$	3 51 3 51 3 52 3 52 3 52 3 53	3 40 3 40 3 41 3 41 3 41 3 42	3 27 3 27 3 28 3 29 3 29 3 29	$\begin{array}{r} 3 & 12 \\ 3 & 12 \\ 3 & 13 \\ 3 & 14 \\ 3 & 15 \end{array}$	2 54 2 55 2 56 2 56 2 56 2 57
27 28 29 30 31	$\begin{array}{cccc} 6 & 4 \\ 6 & 5 \\ 6 & 6 \\ 6 & 6 \\ 6 & 7 \end{array}$	$5 47 5 48 5 48 5 49 5 49 5 49 5 49 \\ }$	$5 29 \\ 5 29 \\ 5 30 \\ 5 30 \\ 5 30 \\ 5 31$	5 8 5 8 5 9 5 9 5 9 5 10	$\begin{array}{r} 4 & 55 \\ 4 & 56 \\ 4 & 56 \\ 4 & 57 \\ 4 & 58 \end{array}$	4 41 4 42 4 42 4 43 4 43 4 44	4 24 4 25 4 26 4 27 4 27	$ \begin{array}{r} 4 & 4 \\ 4 & 4 \\ 4 & 5 \\ 4 & 6 \\ 4 & 7 \end{array} $	3 54 3 55 3 56 3 56 3 56 3 58	3 43 3 44 3 44 3 45 3 46	3 30 3 31 3 32 3 33 3 34	3 15 3 16 3 17 3 18 3 20	$\begin{array}{cccc} 2 & 58 \\ 2 & 59 \\ 3 & 0 \\ 3 & 1 \\ 3 & 2 \end{array}$
32	6 7	5 50	5 32	5 11	4 59	4 45	4 28	4 8	3 58	3 48	3 35	3 21	3 4

SUNRISE AND SUNSET FOR SOUTHERN LATITUDES, 1918.

In the case of a southern latitude the time of sunrise or sunset is taken from Table IV, with the corresponding northern latitude, not for the given date but for a date about six months earlier or later, which is to be found in the following table. The time taken from Table IV, whether of sunrise or of sunset, must be corrected by the quantity given in Table V on the same line with the given date.

Example.—May 10, 1918, civil date, in latitude -38° , required the time of sunrise and sunset. The astronomical date is May 9 for sunrise and May 10 for sunset; Table V gives November 11 and 12 as the corresponding dates, northern latitude, while the correction is $+12^{m}$ in each case.

一倍 对"后期" 对 后期 派 后期 准 把放 新			Sunrise.	the Martin	Sunset.	
4 134 1 T & 2 59 1 8 50 4 7 49	和影响		d h m		d h m	
Table IV, Lat. +38°	192	Nov.	11 18 37	Nov.	. 12 4 51	
Table V	D. HOLE	May	9 + 12	May	10 + 12	Bl 20
Local astronomical mean time	Mire (May	9 18 49	May	10 5 3	
Civil time		May	10 6 49 A. M	. May	10 5 3	P. M.

Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- spondir Date, Norther Latitud	ng Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.
Jan. 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	July 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 18	$ \begin{array}{r} m \\ m \\ -1 \\ 0 \\ 0 \\ 0 \\ +1 \\ +1 \\ 1 \\ 2 \\ +2 \\ 3 \\ 3 \\ 3 \\ +4 \\ +4 \end{array} $	Feb. 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Aug. 1 1 1 1 1 1 1 1 1 1 1 1 1	$\begin{array}{c} & & & \\ & & & \\ 9 & & 9 \\ 0 & & 9 \\ 9 & & 9 \\ 9 & & 9 \\ 1 & & 9 \\ 2 & & 9 \\ 3 & & 10 \\ 4 & & +10 \\ 5 & & 10 \\ 4 & & +10 \\ 5 & & 10 \\ 6 & & 10 \\ 7 & & 10 \\ 8 & & 11 \\ 9 & & +11 \\ 0 & & 11 \\ 1 & & 11 \\ 3 & & 11 \\ 1 & & 11 \\ 3 & & 11 \\ 1 & & 12 \\ 5 & & +12 \end{array}$	Mar. 13 14 15 16 17 18 19 20 20 21 22 23 24 25 26 27 28	Sept.15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	m + 14 + 14 15 15 15 15 15 15 15 15 15 15 15 15 15	Apr. 18 19 20 21 22 23 24 25 26 27 28 29 30 May 1 2 3	Oct. 21 22 23 24 25 26 27 28 29 30 30 Nov. 1 2 3 3 4 5	$\begin{array}{c} m \\ +15 \\ 15 \\ 14 \\ 14 \\ 14 \\ +14 \\ 14 \\ 14 \\ 14 \\ 1$
16 17 18 19	· 19 20 21 22	4 4 4 5	21 22 23 24	2 2 2 2 2	$\begin{array}{c cccc} 6 & 12 \\ 7 & 12 \\ 8 & 12 \\ 9 & 12 \end{array}$	29 30 31 Apr. 1	Oct. 2 3 4 5	15 16 16 16	4 5 6 7	6 7 8 9	13 13 13 13
20 21 22 23 24	23 24 25 26 27	+5 5 6 6	25 26 27 28 Mar. 1	3 3 Sept.	$egin{array}{cccc} 0 & +13 \ 13 \ 1 & 13 \ 2 & 13 \ 3 & 13 \end{array}$	2 3 4 5 6	6 7 8 9 10	$+16 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ $	8 9 10 11 12	$10 \\ 11 \\ 12 \\ 13 \\ 14$	$+12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\$
25 26 27 28 29	28 29 30 31 Aug. 1	+6 6 7 7 7	2 3 4 5 6	9995898 999589	$\begin{array}{c cccc} 4 & +13 \\ 5 & 13 \\ 6 & 14 \\ 7 & 14 \\ 8 & 14 \end{array}$	7 8 9 10 11	$10 \\ 11 \\ 12 \\ 13 \\ 14$	+15 15 15 15 •15	13 14 15 16 17	$15 \\ 16 \\ 16 \\ 17 \\ 18$	+12 11 11 11 11 11
30 31 Feb. 1 2 3 4	2 4 5 6 7 8	+7 8 8 8 8 8 8 9 +9	7 8 9 10 11 12		$\begin{array}{c cccc} 9 & +14 \\ 0 & 14 \\ 1 & 14 \\ 2 & 14 \\ 3 & 14 \\ 4 & +14 \end{array}$	12 13 14 15 16 17	15 16 17 18 19 20	+15 15 15 15 15 +15	18 19 20 21 22 23	19 20 21 22 23 24	+11 11 10 10 10 +10

SUNRISE AND SUNSET FOR SOUTHERN LATITUDES, 1918.

Giv Dat	en te.	Corre- sponding Date, Northern Latitude	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc-	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.	Given Date.	Corre- sponding Date, Northern Latitude.	Correc- tion.
May	24 25 26 27 28	Nov. 25 26 27 28 28	m + 10 = 9 = 9 = 9 = 9 = 9 = 9 = 9 = 9 = 9 =	July 19 20 21 22 23	Jan. 16 17 18 19 20	- 4 4 5 5	Sept.13 14 15 16 17	Mar. 11 12 13 14 15	m -14 14 14 14 14 15	Nov. 8 9 10 11 12	May 6 7 8 9 10	$ \begin{array}{c} m \\ -13 \\ 13 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \end{array} $
June	29 30 31 1 2	30 Dec. 1	+ 8 8 8 8 8 8	24 25 26 27 28	21 22 23 24 25	- 5 5 6 6 6	18 19 20 21 22	16 17 18 . 19 20	-15 15 15 15 15 15	13 14 15 16 17	11 12 13 15 16	$ \begin{array}{c c} -12 \\ 12 \\ 12 \\ 11 \\ 11 \\ 11 \end{array} $
15 8 16 81 17 32 17 32 19 5	34567		5 + 7 7 7 7 7 7 7 7	29 30 31 Aug. 1 2	26 27 28 29 30	- 6 7 7 7 7	23 24 25 26 27	21 22 23 24 25	-15 15 15 15 15	18 19 20 21 22	17 18 19 20 21	-11 11 11 10 10
20 30 20 52 21 6 21 17	8 9 10 11 12			3 4 5 6 7	30 31 Feb. 1 2 3	- 7 8 8 8 8	28 29 30 Oct. 1 2	26 27 28 29 29	-15 15 15 15 15 15	• 23 24 25 26 27	22 23 24 25 26	$ \begin{array}{c c} -10 \\ 10 \\ 10 \\ 9 \\ 9 \\ 9 \end{array} $
21 33 21 33 21 42 21 52 22 72	$13 \\ 14 \\ 15 \\ 16 \\ 17 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10$			8 9 10 11 12	45678	$ \begin{array}{c c} -9 \\ 9 \\ 9 \\ 9 \\ 9 \\ 9 \\ 9 \\ 9 \\ 10 \\ \end{array} $	3 4 5 6 7	30 31 Apr. 1 2 3	-16 16 16 16 15	28 29 30 Dec. 1 2	27 28 29 30 31	- 9 9 8 8 8 8
	18 19 20 21 22 93	20 20 21 22 22	(+4) $(+4)$	13 14 15 16 17	10 11 12 13	-10 10 10 10 10 10	8 9 10 11 12	4 5 7 8 9	-15 15 15 15 15 15	· 4 5 6 7	June 1 2 4 5 6	- 8 7 7 7 7 7 7
2 14 3 36 4 57 6 15	24 25 26 27 28	24 28 20 21 21 21		19 20 21 22 23	15 16 17 18 18	11 11 11 11 11 11	14 15 16 17 18	10 11 12 13 14 15	$ \begin{array}{r} -10 \\ 15 \\ 15 \\ 15 \\ -15 \\ \end{array} $	9 10 11 12 13	8 9 10 11	6 6 6 6 - 5
July	29 30 1 2 3	29 30 Dec. 31 Jan. (24 25 26 27 28	19 20 21 22 23	$ \begin{array}{c c} 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ -12 \\ -12 \\ \end{array} $	19 20 21 22 23	16 17 18 19 20	15 15 15 15 15 -14	14 15 16 17 18	13 14 15 16 17	5 5 4 4 4 - 4
	4567 8			29 30 31 Sept. 1 2	24 25 26 27 28	$ \begin{array}{c c} 12 \\ 13 \\ 13 \\ 13 \\ -13 \end{array} $	24 25 26 27 28	21 22 23 24 25	$ \begin{array}{c c} 14 \\ 14 \\ 14 \\ 14 \\ -14 \\ -14 \\ \end{array} $	19 20 21 22 23	18 19 21 22 23	4 4 3 3 - 3
	9 10 11 12 13			3 4 5 6 7	Mar. 1 2 3 4 5	$ \begin{array}{c c} 13 \\ 13 \\ 13 \\ 14 \\ -14 \\ -14 \\ \end{array} $	29 30 31 Nov. 1 2	26 27 28 29 30	$ \begin{array}{r} 14 \\ 14 \\ 14 \\ 14 \\ -14 \\ -14 \end{array} $	24 25 26 27 28	24 25 26 27 28	
	14 15 16 17 18	12 13 14 15 15	3 3 4 4 - 4	8 9 10 11 12	6 7 8 9 10	14 14 14 14 14 -14	3 4 5 6 7	May 1 2 3 4 5	$ \begin{array}{c c} 13 \\ 13 \\ 13 \\ 13 \\ -13 \\ -13 \\ \end{array} $	29 30 31 32	29 30 July 1 2	$\begin{vmatrix} 1\\ 1\\ -1\\ 0 \end{vmatrix}$

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 44.

1	-		0.1018-9	1 51-	142	A SEC	12-11-12		NE ALS	1142	11315	1220	C. 19480	1
Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
				-		31	-			0.0	1 D	1.25		
Jan.	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	h m 9 25 10 6 10 46 11 27 12 9	h m 9 20 10 4 10 48 11 33 12 19	h m 9 15 10 3 10 51 11 39 12 29	h m 9 9 10 2 10 54 11 47 12 40	h m 9 6 10 1 10 56 11 51 12 47	h m 9 2 10 0 10 57 11 56 12 55	h m 8 57 9 59 11 0 12 1 13 4	h m 8 52 9 57 11 2 12 8 13 15	h m 8 50 9 57 11 4 12 11 13 20	h m 8 47 9 56 11 5 12 15 13 25	h m 8 44 9 55 11 6 12 18 13 32	h m 8 40 9 55 11 8 12 22 13 39	h m 8 36 9 54 11 10 12 27 13 47
11-11-01-01-01-	6 7 8 9 10	12 54 13 43 14 35 15 30 16 29	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 13 \ 21 \\ 14 \ 15 \\ 15 \ 11 \\ 16 \ 9 \\ 17 \ 7 \end{array}$	13 36 14 34 15 33 16 33 17 30	$\begin{array}{c} 13 \ 45 \\ 14 \ 45 \\ 15 \ 46 \\ 16 \ 46 \\ 17 \ 44 \end{array}$	$\begin{array}{c} 13 \ 56 \\ 14 \ 58 \\ 16 \ 1 \\ 17 \ 1 \\ 17 \ 59 \end{array}$	14 8 15 13 16 18 17 21 18 18	14 23 15 32 16 41 17 45 18 41	14 30 15 41 16 51 17 56 18 52	$\begin{array}{c} 14 \ 38 \\ 15 \ 51 \\ 17 \ 3 \\ 18 \ 9 \\ 19 \ 4 \end{array}$	14 47 16 3 17 17 18 24 19 19	14 57 16 16 17 33 18 42 19 36	15 8 16 31 17 52 19 3 19 56
	11 12 13 14 15	17 28 18 26 19 22 20 16 21 8	17 45 18 40 19 32 20 22 21 10	18 3 18 55 19 44 20 29 21 12	18 24 19 12 19 56 20 36 21 14	18 36 19 22 20 4 20 40 21 15	18 50 19 34 20 12 20 46 21 16	19 6 19 47 20 21 20 51 21 18	$\begin{array}{c} 19 \ 27 \\ 20 \ 3 \\ 20 \ 33 \\ 20 \ 58 \\ 21 \ 20 \end{array}$	19 36 20 11 20 38 21 1 21 21	19 47 20 19 20 44 21 4 21 22	19 59 20 29 20 50 21 8 21 23	20 14 20 39 20 58 21 12 21 24	20 30 20 52 21 6 21 17 21 25
	16 17 18 19 20	21 59 22 50 23 42 0 35	21 57 22 44 23 31 0 20	$21 54 \\ 22 36 \\ 23 19 \\ 0 5$	$\begin{array}{c} 21 \ 50 \\ 22 \ 27 \\ 23 \ 6 \\ 23 \ 48 \\ \dots \end{array}$	$\begin{array}{c} 21 \ 48 \\ 22 \ 22 \\ 22 \ 58 \\ 23 \ 37 \\ \cdots \cdots$	$\begin{array}{c} 21 \ 46 \\ 22 \ 17 \\ 22 \ 49 \\ 23 \ 26 \\ \dots \end{array}$	$\begin{array}{c} 21 \ 44 \\ 22 \ 10 \\ 22 \ 39 \\ 23 \ 12 \\ 23 \ 51 \end{array}$	$\begin{array}{c} 21 \ 41 \\ 22 \ 3 \\ 22 \ 27 \\ 22 \ 56 \\ 23 \ 30 \end{array}$	$\begin{array}{cccc} 21 & 40 \\ 22 & 0 \\ 22 & 22 \\ 22 & 48 \\ 23 & 21 \end{array}$	$\begin{array}{c} 21 \ 38 \\ 21 \ 56 \\ 22 \ 15 \\ 22 \ 39 \\ 23 \ 10 \end{array}$	$\begin{array}{c} 21 \ 37 \\ 21 \ 52 \\ 22 \ 8 \\ 22 \ 30 \\ 22 \ 58 \end{array}$	$\begin{array}{c} 21 \ 35 \\ 21 \ 47 \\ 22 \ 1 \\ 22 \ 19 \\ 22 \ 44 \end{array}$	$\begin{array}{c} 21 \ 33 \\ 21 \ 42 \\ 21 \ 52 \\ 22 \ 7 \\ 22 \ 28 \end{array}$
1	21 22 23 24 25	$\begin{array}{r}1 & 29 \\2 & 24 \\3 & 19 \\4 & 13 \\5 & 4\end{array}$	$ \begin{array}{r} 1 12 \\ 2 6 \\ 3 0 \\ 3 55 \\ 4 48 \end{array} $	0 54 1 46 2 40 3 36 4 31	0 33 1 23 2 17 3 14 4 12	$\begin{array}{c} 0 & 21 \\ 1 & 10 \\ 2 & 4 \\ 3 & 1 \\ 4 & 1 \end{array}$	0 7 0 54 1 48 2 47 3 48	0 36 1 30 2 29 3 32	0 14 1 6 2 7 3 13	$\begin{array}{c} . & . & . \\ 0 & 3 \\ 0 & 55 \\ 1 & 57 \\ 3 & 4 \end{array}$	23 51 0 43 1 45 2 54	23 37 0 28 1 31 2 43	23 20 0 11 1 16 2 30	$23 1 \\ 23 50 \\ \\ 0 57 \\ 2 14$
0.0 0.0 0.0	26 27 28 29 30	$5 52 \\ 6 38 \\ 7 21 \\ 8 2 \\ 8 43$	$5 39 \\ 6 28 \\ 7 15 \\ 8 0 \\ 8 44$	5 25 6 18 7 8 7 57 8 45	5 10 6 6 7 0 7 53 8 46	5 0 559 656 752 846	4 50 5 51 6 51 7 49 8 47	4 37 5 42 6 45 7 47 8 48	4 22 5 30 6 38 7 44 8 49	4 15 5 25 6 35 7 43 8 50	4 7 5 20 6 31 7 41 8 50	3 58 5 13 6 27 7 39 8 51	3 48 5 6 6 22 7 38 8 52	3 36 4 58 6 18 7 36 8 52
Feb.	31 1 2 3 4	9 24 10 5 10 48 11 34 12 23	9 28 10 13 11 0 11 48 12 40	9 33 10 21 11 12 12 4 12 58	9 38 10 31 11 25 12 21 13 18	9 41 10 37 11 34 12 31 13 30	9 45 10 43 11 43 12 43 13 44	9 49 10 51 11 54 12 57 14 1	9 54 11 0 12 7 13 14 14 21	9 57 11 4 12 13 13 22 14 31	9 59 11 9 12 20 13 31 14 42	$\begin{array}{cccc} 10 & 2 \\ 11 & 14 \\ 12 & 27 \\ 13 & 42 \\ 14 & 55 \end{array}$	$\begin{array}{rrrr} 10 & 5 \\ 11 & 20 \\ 12 & 36 \\ 13 & 53 \\ 15 & 10 \end{array}$	$\begin{array}{ccc} 10 & 9 \\ 11 & 26 \\ 12 & 46 \\ 14 & 7 \\ 15 & 27 \end{array}$
	5 6 7 8 9	$\begin{array}{c} 13 \ 16 \\ 14 \ 11 \\ 15 \ 9 \\ 16 \ 7 \\ 17 \ 5 \end{array}$	13 34 14 30 15 27 16 23 17 17	$\begin{array}{c} 13 \ 54 \\ 14 \ 50 \\ 15 \ 46 \\ 16 \ 40 \\ 17 \ 30 \end{array}$	14 16 15 13 16 8 16 59 17 46	14 30 15 27 16 21 17 10 17 54	1445154316361723184	$\begin{array}{cccc} 15 & 3 \\ 16 & 2 \\ 16 & 54 \\ 17 & 38 \\ 18 & 16 \end{array}$	$\begin{array}{c} 15 \ 26 \\ 16 \ 25 \\ 17 \ 15 \\ 17 \ 57 \\ 18 \ 30 \end{array}$	$\begin{array}{c} 15 & 37 \\ 16 & 36 \\ 17 & 26 \\ 18 & 5 \\ 18 & 36 \end{array}$	15 50 16 49 17 37 18 15 18 44	$\begin{array}{rrrr} 16 & 4 \\ 17 & 4 \\ 17 & 51 \\ 18 & 26 \\ 18 & 52 \end{array}$	16 21 17 21 18 6 18 38 19 1	16 41 17 42 18 25 18 53 19 11
1.	10 11 12 13 14	18 1 18 55 19 49 20 42 21 35	18 9 18 59 19 48 20 37 21 26	18 18 19 3 19 47 20 31 21 16	18 28 19 8 19 46 20 25 21 4	18 34 19 11 19 46 20 21 20 58	18 41 19 14 19 46 20 17 20 50	18 49 19 18 19 45 20 12 20 42	18 58 19 22 19 44 20 7 20 31	$\begin{array}{cccc} 19 & 2 \\ 19 & 24 \\ 19 & 44 \\ 20 & 4 \\ 20 & 26 \end{array}$	19 7 19 26 19 44 20 2 20 21	19 12 19 29 19 43 19 59 20 16	19 18 19 31 19 43 19 55 20 9	$\begin{array}{c} 19 \ 24 \\ 19 \ 34 \\ 19 \ 43 \\ 19 \ 52 \\ 20 \ 2 \end{array}$
	15 16 17	22 29 23 24	22 16 23 8	22 2 22 51 23 43	21 46 22 32 23 21	21 37 22 20 23 8	21 26 22 7 22 53	21 14 21 51 22 35	20 59 21 33 22 14	20 52 21 24 22 3	20 44 21 14 21 51	20 36 21 3 21 38	20 26 20 50 21 22	$\begin{array}{c} 20 \ 16 \\ 20 \ 35 \\ 21 \ 4 \end{array}$

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 44.

Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Jan.	0 1 2 3 4	h m 21 4 21 45 22 26 23 6 23 47	h m 21 10 21 48 22 25 23 2 23 40	h m 21 17 21 51 22 24 22 58 23 32	h m 21 25 21 55 22 24 22 53 23 22	h m 21 30 21 57 22 23 22 50 23 17	h m 21 35 21 59 22 23 22 46 23 11	h m 21 40 22 2 22 22 22 22 22 43 23 4	h m 21 48 22 5 22 21 22 38 22 56	h m 21 51 22 7 22 21 22 36 22 52	h m 21 54 22 8 22 21 22 34 22 48	h m 21 58 22 10 22 20 22 32 22 43	h m 22 3 22 12 22 20 22 29 22 38	h m 22 8 22 14 22 20 22 26 22 32
01242	5 6 7 8 9	$\begin{array}{c} & & & & \\ & & & & 0 & 31 \\ & & 1 & 17 \\ & & 1 & 17 \\ & & 2 & 7 \\ & & 3 & 1 \end{array}$	$\begin{array}{c} & \ddots & \ddots \\ & 0 & 20 \\ & 1 & 3 \\ & 1 & 51 \\ & 2 & 42 \end{array}$	0 8 0 48 1 33 2 23	$23 55 \\ 0 31 \\ 1 13 \\ 2 0$	23 47 0 21 1 1 1 47	23 38 0 10 0 47 1 32	23 28 23 56 0 31 1 13	23 16 23 40 0 11 0 51	$23 10 \\ 23 33 \\ \dots \\ 0 2 \\ 0 40$	23 4 23 24 23 51 0 28	22 57 23 15 23 40 0 14	22 49 23 4 23 26 23 57 	22 41 22 52 23 10 23 38
63 75 191 191	10 11 12 13 14	$358 \\ 457 \\ 556 \\ 653 \\ 748$	3 39 4 39 5 40 6 40 7 40	3 19 4 20 5 23 6 27 7 30	256 357 53 612 720	2 42 3 44 4 52 6 3 7 14	2 26 3 29 4 39 5 52 7 7	$\begin{array}{ccc} 2 & 7 \\ 3 & 11 \\ 4 & 24 \\ 5 & 40 \\ 6 & 59 \end{array}$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{r} 1 & 32 \\ 2 & 37 \\ 3 & 54 \\ 5 & 18 \\ 6 & 45 \end{array} $	$ \begin{array}{r} 1 19 \\ 2 25 \\ 3 44 \\ 5 11 \\ 6 40 \\ \end{array} $	$ \begin{array}{r} 1 & 4 \\ 2 & 11 \\ 3 & 32 \\ 5 & 2 \\ 6 & 34 \end{array} $	0 46 1 54 3 19 4 52 6 28	0 25 1 34 3 3 4 41 6 21
1. 44 1. 12 12 13 11 13 11 13 11 14 11 11	15 16 17 18 19	8 41 9 32 10 23 11 14 12 7	8 37 9 33 10 28 11 24 12 20	8 33 9 34 10 34 11 34 12 34	8 28 9 34 10 40 11 45 12 49	8 25 9 35 10 43 11 51 12 59	8 22 9 35 10 47 11 59 13 9	$\begin{array}{r} 8 \ 18 \\ 9 \ 35 \\ 10 \ 52 \\ 12 \ 7 \\ 13 \ 22 \end{array}$	8 13 9 36 10 57 12 18 13 37	8 11 9 36 11 0 12 23 13 44	8 9 9 36 11 3 12 28 13 52	$ \begin{array}{r} 8 & 6 \\ 9 & 37 \\ 11 & 6 \\ 12 & 34 \\ 14 & 1 \end{array} $	8 3 9 37 11 9 12 41 14 11	8 0 9 38 11 13 12 48 14 22
	20 21 22 23 24	$\begin{array}{rrrr} 13 & 0 \\ 13 & 56 \\ 14 & 51 \\ 15 & 45 \\ 16 & 38 \end{array}$	$ \begin{array}{r} 13 16 \\ 14 13 \\ 15 10 \\ 16 4 \\ 16 55 \end{array} $	13 34 14 33 15 30 16 23 17 12	13 53 14 55 15 53 16 46 17 33	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	14 18 15 23 16 22 17 14 17 59	14 33 15 41 16 41 17 32 18 15	14 53 16 3 17 4 17 55 18 35	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	15 12 16 26 17 28 18 18 18 55	15 24 16 39 17 43 18 32 19 7	15 37 16 55 18 0 18 48 19 21	15 53 17 15 18 21 19 7 19 37
	25 26 27 28 29	17 28 18 15 18 59 19 41 20 22	17 42 18 26 19 7 19 46 20 23	17 57 18 38 19 15 19 51 20 24	18 15 18 52 19 25 19 56 20 25	18 25 19 0 19 31 19 59 20 26	18 37 19 9 19 37 20 2 20 26	18 50 19 19 19 44 20 6 20 27	19 6 19 32 19 53 20 11 20 28	19 14 19 38 19 57 20 13 20 29	19 22 19 44 20 1 20 16 20 29	19 32 19 51 20 6 20 18 20 30	19 43 19 59 20 11 20 21 20 30	19 55 20 8 20 18 20 24 20 31
Feb.	30 31 1 2 3	21 3 21 44 22 26 23 10 23 57	21 0 21 38 22 16 22 58 23 42	20 57 21 31 22 6 22 44 23 26	20 54 21 23 21 54 22 28 23 7	20 52 21 19 21 48 22 19 22 56	20 50 21 14 21 40 22 9 22 43	20 48 21 9 21 31 21 57 22 28	20 45 21 2 21 21 21 21 21 43 22 10	20 43 20 59 21 16 21 36 22 2	20 42 20 56 21 11 21 29 21 52	20 40 20 52 21 5 21 20 21 20 21 41	20 38 20 48 20 58 21 11 21 29	20 36 20 43 20 51 21 1 21 15
	45678	0 48 1 42 2 39 3 37	0 31 1 24 2 20 3 20	$ \begin{array}{c} & 0 & 12 \\ & 1 & 4 \\ & 2 & 0 \\ & 3 & 1 \end{array} $	23 50 0 40 1 37 2 40	23 38 0 27 1 24 2 28	23 23 0 11 1 8 2 13	23 6 23 52 0 49 1 56	22 44 23 29 0 26 1 35	22 34 23 18 0 15 1 25	$\begin{array}{c} 22 \ 23 \\ 23 \ 6 \\ 0 \ 2 \\ 1 \ 14 \end{array}$	22 10 22 51 23 48 1 1	21 55 22 34 23 30 0 46	21 37 22 13 23 10 0 28
	9 10 11 12 13	4 35 5 32 6 27 7 21 8 14	4 20 5 21 6 20 7 19 8 17	4 5 5 9 6 14 7 17 8 20	3 47 4 56 6 6 7 15 8 24	3 37 4 49 6 2 7 14 8 26	3 25 4 40 5 56 7 12 8 28	3 11 4 30 5 50 7 11 8 31	2 54 4 17 5 43 7 9 8 34	2 46 4 12 5 40 7 8 8 36	2 36 4 5 5 36 7 7 8 37	2 26 3 58 5 32 7 6 8 39	2 14 3 50 5 28 7 5 8 41	$ \begin{array}{c} 2 & 1 \\ 3 & 41 \\ 5 & 22 \\ 7 & 3 \\ 8 & 43 \end{array} $
	14 15 16	9 7 10 1 10 55	9 14 10 12 11 10	9 22 10 25 11 26	9 32 10 39 11 45	9 37 10 47 11 55	9 43 10 56 12 8	9 50 11 7 12 22	9 58 11 20 12 40	$ \begin{array}{c} 10 & 2 \\ 11 & 27 \\ 12 & 48 \end{array} $	10 6 11 34 12 58	$ \begin{array}{c} 10 \\ 11 \\ 11 \\ 42 \\ 13 \\ 8 \end{array} $	10 16 11 50 13 21	10 23 12 0 13 35

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 44.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Feb. 16 17 18 19 20	h m 23 24 0 20 1 15 2 9	h m 23 8 0 2 0 57 1 51	h m 22 51 23 43 0 37 1 32	h m 22 32 23 21 0 14 1 10	h m 22 20 23 8 0 0 0 56	h m 22 7 22 53 23 45 0 42	h m 21 51 22 35 23 26 0 24	$ \begin{array}{c} h m \\ 21 33 \\ 22 14 \\ 23 4 \\ \dots \\ 0 1 \end{array} $	h m 21 24 22 3 22 52 23 51 	h m 21 14 21 51 22 40 23 39 	h m 21 3 21 38 22 26 23 25 	h m 20 50 21 22 22 9 23 9 	h m 20 35 21 4 21 49 22 49
21 22 23 24 25	$\begin{array}{c} 3 & 1 \\ 3 & 49 \\ 4 & 35 \\ 5 & 19 \\ 6 & 1 \end{array}$	$\begin{array}{c} 2 \ 44 \\ 3 \ 35 \\ 4 \ 24 \\ 5 \ 11 \\ 5 \ 57 \end{array}$	$\begin{array}{c} 2 \ 27 \\ 3 \ 20 \\ 4 \ 13 \\ 5 \ 3 \\ 5 \ 52 \end{array}$	$ \begin{array}{r} 2 & 6 \\ 3 & 3 \\ 3 & 59 \\ 4 & 54 \\ 5 & 47 \end{array} $	$ \begin{array}{r} 1 55 \\ 2 54 \\ 3 52 \\ 4 49 \\ 5 45 \end{array} $	1 41 2 42 3 43 4 43 5 42	$ \begin{array}{r} 1 25 \\ 2 29 \\ 3 33 \\ 4 36 \\ 5 38 \end{array} $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{ccc} 0 & 56 \\ 2 & 5 \\ 3 & 14 \\ 4 & 23 \\ 5 & 31 \end{array}$	0 45 1 56 3 8 4 19 5 29	$\begin{array}{c} 0 \ 33 \\ 1 \ 46 \\ 3 \ 0 \\ 4 \ 14 \\ 5 \ 27 \end{array}$	$\begin{array}{c} 0 \ 19 \\ 1 \ 35 \\ 2 \ 52 \\ 4 \ 9 \\ 5 \ 24 \end{array}$	$\begin{array}{ccc} 0 & 2 \\ 1 & 22 \\ 2 & 43 \\ 4 & 3 \\ 5 & 21 \end{array}$
26 27 28 Mar. 1 2	6 41 7 22 8 3 8 46 9 30	6 41 7 25 8 10 8 56 9 43	6 40 7 28 8 17 9 6 9 57	6 40 7 32 8 25 9 19 10 13	6 40 7 35 8 30 9 26 10 22	6 39 7 37 8 35 9 34 10 33	$\begin{array}{c} 6 & 39 \\ 7 & 40 \\ 8 & 42 \\ 9 & 44 \\ 10 & 46 \end{array}$	6 39 7 44 8 49 9 55 11 1	$\begin{array}{c} 6 \ 38 \\ 7 \ 46 \\ 8 \ 52 \\ 10 \ 0 \\ 11 \ 8 \end{array}$	$\begin{array}{r} 6 \ 38 \\ 7 \ 47 \\ 8 \ 56 \\ 10 \ 6 \\ 11 \ 17 \end{array}$	6 38 7 49 9 1 10 13 11 26	6 38 7 52 9 6 10 20 11 36	6 38 7 54 9 11 10 29 11 48
3 4 5 6 7	$\begin{array}{cccc} 10 & 17 \\ 11 & 7 \\ 12 & 0 \\ 12 & 55 \\ 13 & 51 \end{array}$	$\begin{array}{c} 10 \ 33 \\ 11 \ 25 \\ 12 \ 18 \\ 13 \ 13 \\ 14 \ 8 \end{array}$	$\begin{array}{c} 10 \ 50 \\ 11 \ 44 \\ 12 \ 38 \\ 13 \ 33 \\ 14 \ 25 \end{array}$	$\begin{array}{ccccccccc} 11 & 9 \\ 12 & 5 \\ 13 & 1 \\ 13 & 55 \\ 14 & 46 \end{array}$	$\begin{array}{c} 11 \ 20 \\ 12 \ 18 \\ 13 \ 14 \\ 14 \ 8 \\ 14 \ 58 \end{array}$	$\begin{array}{c} 11 \ 33 \\ 12 \ 33 \\ 13 \ 30 \\ 14 \ 24 \\ 15 \ 12 \end{array}$	$11 49 \\12 50 \\13 48 \\14 42 \\15 28$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 12 \ 17 \\ 13 \ 22 \\ 14 \ 23 \\ 15 \ 15 \\ 15 \ 58 \end{array}$	$\begin{array}{c} 12 \ 27 \\ 13 \ 34 \\ 14 \ 35 \\ 15 \ 27 \\ 16 \ 8 \end{array}$	$\begin{array}{c} 12 \ 38 \\ 13 \ 48 \\ 14 \ 50 \\ 15 \ 41 \\ 16 \ 20 \end{array}$	$\begin{array}{rrrrr} 12 \ 52 \\ 14 \ 4 \\ 15 \ 7 \\ 15 \ 57 \\ 16 \ 34 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
8 9 10 11 12	$14 47 \\ 15 43 \\ 16 38 \\ 17 32 \\ 18 26$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} 15 & 16 \\ 16 & 5 \\ 16 & 51 \\ 17 & 36 \\ 18 & 20 \end{array}$	$15 34 \\ 16 17 \\ 16 58 \\ 17 38 \\ 18 17$	$\begin{array}{c} 15 \ 43 \\ 16 \ 25 \\ 17 \ 3 \\ 17 \ 39 \\ 18 \ 15 \end{array}$	15 55 16 33 17 8 17 40 18 13	16 8 16 43 17 14 17 42 18 10	$\begin{array}{c} 16 \ 24 \\ 16 \ 55 \\ 17 \ 20 \\ 17 \ 44 \\ 18 \ 7 \end{array}$	$\begin{array}{cccc} 16 & 32 \\ 17 & 0 \\ 17 & 24 \\ 17 & 45 \\ 18 & 6 \end{array}$	$\begin{array}{cccc} 16 & 40 \\ 17 & 6 \\ 17 & 27 \\ 17 & 46 \\ 18 & 5 \end{array}$	$\begin{array}{c} 16 \ 50 \\ 17 \ 13 \\ 17 \ 31 \\ 17 \ 47 \\ 18 \ 3 \end{array}$	$\begin{array}{cccc} 17 & 0 \\ 17 & 20 \\ 17 & 35 \\ 17 & 48 \\ 18 & 1 \end{array}$	$17 13 \\ 17 28 \\ 17 40 \\ 17 50 \\ 17 59$
13 14 15 16 17	$\begin{array}{c} 19 \ 21 \\ 20 \ 16 \\ 21 \ 14 \\ 22 \ 11 \\ 23 \ 8 \end{array}$	$\begin{array}{r} 19 \ 13 \\ 20 \ 5 \\ 20 \ 59 \\ 21 \ 54 \\ 22 \ 50 \end{array}$	19 6 19 53 20 43 21 36 22 30	$\begin{array}{c} 18 \ 57 \\ 19 \ 39 \\ 20 \ 25 \\ 21 \ 15 \\ 22 \ 8 \end{array}$	$\begin{array}{c} 18 \ 52 \\ 19 \ 31 \\ 20 \ 14 \\ 21 \ 2 \\ 21 \ 55 \end{array}$	$18\ 46\\19\ 22\\20\ 2\\20\ 48\\21\ 39$	18 40 19 12 19 48 20 32 21 21	18 32 18 59 19 31 20 11 20 59	$\begin{array}{c} 18 \ 28 \\ 18 \ 53 \\ 19 \ 23 \\ 20 \ 1 \\ 20 \ 48 \end{array}$	$\begin{array}{c} 18 \ 24 \\ 18 \ 47 \\ 19 \ 14 \\ 19 \ 50 \\ 20 \ 36 \end{array}$	$\begin{array}{c} 18 \ 20 \\ 18 \ 40 \\ 19 \ 5 \\ 19 \ 38 \\ 20 \ 22 \end{array}$	$\begin{array}{c} 18 \ 15 \\ 18 \ 32 \\ 18 \ 54 \\ 19 \ 24 \\ 20 \ 6 \end{array}$	18 10 18 23 18 40 19 7 19 47
18 19 20 21 22	$\begin{array}{c} 0 & 4 \\ 0 & 57 \\ 1 & 47 \\ 2 & 34 \end{array}$	$23 \ 46 \\ 0 \ 40 \\ 1 \ 32 \\ 2 \ 22$	$\begin{array}{c} 23 \ 26 \\ \hline 0 \ 22 \\ 1 \ 16 \\ 2 \ 9 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	22 51 23 49 0 48 1 46	22 36 23 36 0 36 1 37	22 18 23 19 0 22 1 26	21 55 22 58 $0 51 12$	$\begin{array}{c} 21 \ 45 \\ 22 \ 49 \\ 23 \ 57 \\ & & \\ 1 \ 6 \end{array}$	$21 \ 33 \\ 22 \ 38 \\ 23 \ 48 \\ 0 \ 59$	21 18 22 25 23 37 $0 51$	$\begin{array}{cccc} 21 & 2 \\ 22 & 11 \\ 23 & 25 \\ & \ddots & \ddots \\ 0 & 42 \end{array}$	20 43 21 54 23 12 0 32
23 24 25 26 27	$\begin{array}{c c} 3 & 18 \\ 4 & 0 \\ 4 & 41 \\ 5 & 21 \\ 6 & 2 \end{array}$	$\begin{array}{c} 3 & 9 \\ 3 & 55 \\ 4 & 39 \\ 5 & 23 \\ 6 & 8 \end{array}$	$\begin{array}{r} 3 & 0 \\ 3 & 49 \\ 4 & 37 \\ 5 & 25 \\ 6 & 14 \end{array}$	$\begin{array}{c} 2 \ 50 \\ 3 \ 43 \\ 4 \ 36 \\ 5 \ 28 \\ 6 \ 20 \end{array}$	$ \begin{array}{r} 2 43 \\ 3 39 \\ 4 34 \\ 5 29 \\ 6 24 \end{array} $	$2 \ 37 \\ 3 \ 35 \\ 4 \ 33 \\ 5 \ 31 \\ 6 \ 28$	2 29 3 30 4 32 5 32 6 34	$\begin{array}{c}2 19\\3 25\\4 30\\5 35\\6 40\end{array}$	$\begin{array}{c} 2 & 14 \\ 3 & 22 \\ 4 & 29 \\ 5 & 36 \\ 6 & 43 \end{array}$	$\begin{array}{r} 2 \ 10 \\ 3 \ 19 \\ 4 \ 28 \\ 5 \ 37 \\ 6 \ 46 \end{array}$	$ \begin{array}{r} 2 & 4 \\ 3 & 16 \\ 4 & 28 \\ 5 & 38 \\ 6 & 50 \end{array} $	$ \begin{array}{r} 1 58 \\ 3 13 \\ 4 26 \\ 5 40 \\ 6 53 \end{array} $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
28 29 30 31 Apr. 1	$\begin{array}{c} 6 & 44 \\ 7 & 28 \\ 8 & 15 \\ 9 & 3 \\ 9 & 55 \end{array}$	$\begin{array}{c} 6 \ 53 \\ 7 \ 40 \\ 8 \ 29 \\ 9 \ 20 \\ 10 \ 13 \end{array}$	7 3 7 53 8 45 9 38 10 32	$7 14 \\ 8 8 \\ 9 3 \\ 9 59 \\ 10 54$	7 20 8 17 9 14 10 11 11 8	7 27 8 26 9 26 10 25 11 23	7 36 8 38 9 40 10 42 11 41	$\begin{array}{c} 7 & 46 \\ 8 & 52 \\ 9 & 58 \\ 11 & 3 \\ 12 & 3 \end{array}$	$\begin{array}{r} 7 50 \\ 8 59 \\ 10 7 \\ 11 13 \\ 12 14 \end{array}$	$\begin{array}{r} 7 56 \\ 9 6 \\ 10 16 \\ 11 24 \\ 12 26 \end{array}$	$\begin{array}{r} 8 & 2 \\ 9 & 14 \\ 10 & 27 \\ 11 & 36 \\ 12 & 40 \end{array}$	8 8 9 24 10 39 11 51 12 56	$\begin{array}{r} 8 \ 16 \\ 9 \ 34 \\ 10 \ 53 \\ 12 \ 9 \\ 13 \ 16 \end{array}$
2 3	10 48 11 42	11 6 11 59	11 26 12 18	11 48 12 39	$12 1 \\ 12 51$	$\begin{array}{c}12\ 16\\13\ 5\end{array}$	$12 \ 35 \\ 13 \ 22$	12 57 13 43	13 8 13 53	$\begin{array}{c} 13 \ 20 \\ 14 \ 4 \end{array}$	13 34 14 16	13 51 14 31	14 10 14 48

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1918.

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To obtain standard time, see directions on page 44.

For other longitudes and for southern latitudes see page 78.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Feb. 16 17 18 19 20	h m 10 55 11 51 12 47 13 42 14 34	h m 11 10 12 8 13 5 14 0 14 52	h m 11 26 12 27 13 25 14 20 15 10	h m 11 45 12 48 13 48 14 42 15 31	h m 11 55 13 1 14 1 14 56 15 44	h m 12 8 13 15 14 17 15 11 15 58	h m 12 22 13 32 14 35 15 29 16 14	h m 12 40 13 54 14 58 15 52 16 35	h m 12 48 14 4 15 9 16 3 16 45	h m 12 58 14 15 15 22 16 15 16 56	h m 13 8 14 28 15 36 16 29 17 8	h m 13 21 14 43 15 53 16 46 17 23	h m 13 35 15 2 16 13 17 5 17 40
21 22 23 24 25	15 25 16 12 16 57 17 39 18 21	$\begin{array}{c} 15 \ 40 \\ 16 \ 24 \\ 17 \ 7 \\ 17 \ 45 \\ 18 \ 23 \end{array}$	15 56 16 37 17 16 17 51 18 25	$\begin{array}{c} 16 \ 14 \\ 16 \ 52 \\ 17 \ 26 \\ 17 \ 58 \\ 18 \ 28 \end{array}$	$\begin{array}{c} 16 \ 25 \\ 17 \ 1 \\ 17 \ 33 \\ 18 \ 2 \\ 18 \ 29 \end{array}$	16 37 17 11 17 40 18 7 18 31	16 52 17 22 17 49 18 12 18 33	17 9 17 36 17 58 18 18 18 35	17 17 17 43 18 3 18 21 18 36	17 26 17 50 18 8 18 24 18 37	17 37 17 58 18 14 18 27 18 39	$\begin{array}{rrrr} 17 & 48 \\ 18 & 7 \\ 18 & 20 \\ 18 & 31 \\ 18 & 40 \end{array}$	18 2 18 17 18 27 18 35 18 42
26 27 28 Mar. 1 2	$\begin{array}{r} 19 \ 1 \\ 19 \ 42 \\ 20 \ 24 \\ 21 \ 7 \\ 21 \ 53 \end{array}$	19 0 19 37 20 15 20 56 21 38	18 58 19 32 20 7 20 43 21 23	18 57 19 26 19 57 20 30 21 6	18 56 19 23 19 51 20 21 20 55	18 55 19 19 19 44 20 12 20 44	18 54 19 14 19 37 20 1 20 30	18 52 19 9 19 28 19 49 20 14	$\begin{array}{rrrr} 18 \ 51 \\ 19 \ 7 \\ 19 \ 23 \\ 19 \ 43 \\ 20 \ 6 \end{array}$	18 51 19 4 19 19 19 36 19 57	18 50 19 1 19 14 19 29 19 48	18 49 18 58 19 8 19 20 19 37	18 48 18 55 19 2 19 11 19 24
3 4 5 6 7	$\begin{array}{c} 22 \ 41 \\ 23 \ 32 \\ \hline 0 \ 26 \\ 1 \ 22 \end{array}$	$22 24 \\ 23 14 \\ \dots \\ 0 8 \\ 1 4$	22 7 22 55 23 48 0 45	21 46 22 32 23 25 0 23	21 34 22 20 23 11 0 10	$\begin{array}{c} 21 \ 21 \\ 22 \ 4 \\ 22 \ 56 \\ 23 \ 55 \\ \dots \end{array}$	21 5 21 46 22 37 23 38	20 45 21 24 22 14 23 16 	$\begin{array}{c} 20 \ 36 \\ 21 \ 14 \\ 22 \ 3 \\ 23 \ 5 \\ \dots \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20 13 20 48 21 36 22 39 23 56	20 0 20 32 21 19 22 23 23 43	19 44 20 12 20 58 22 4 23 27
8 9 10 11 12	$\begin{array}{r} 2 \ 18 \\ 3 \ 14 \\ 4 \ 9 \\ 5 \ 3 \\ 5 \ 57 \end{array}$	$ \begin{array}{r} 2 & 2 \\ 3 & 1 \\ 4 & 0 \\ 4 & 59 \\ 5 & 58 \\ 5 & 58 \\ \end{array} $	$ \begin{array}{r} 1 45 \\ 2 48 \\ 3 51 \\ 4 54 \\ 5 58 \\ \end{array} $	$1 26 \\ 2 32 \\ 3 40 \\ 4 49 \\ 5 59$	$ \begin{array}{r} 1 15 \\ 2 23 \\ 3 34 \\ 4 46 \\ 5 59 \\ \end{array} $	1 2 2 13 3 27 4 43 5 59	0 46 2 1 3 19 4 39 6 0	$\begin{array}{c} 0 \ 27 \\ 1 \ 46 \\ 3 \ 9 \\ 4 \ 34 \\ 6 \ 0 \end{array}$	0 18 1 39 3 4 4 32 6 0	0 8 1 31 2 59 4 29 6 1	1 22 2 54 4 27 6 1	1 12 2 47 4 24 6 1	1 1 2 40 4 20 6 1
13 14 15 16 17	6 52 7 47 8 43 9 41 10 39	6 57 7 56 8 57 9 57 10 57	7 2 8 7 9 11 10 15 11 16	7 9 8 18 9 28 10 35 11 38	7 12 8 25 9 37 10 46 11 51	7 16 8 33 9 48 11 0 12 6	7 21 8 41 10 1 11 16 12 24	7 26 8 52 10 16 11 36 12 46	7 29 8 58 10 24 11 45 12 57	7 32 9 3 10 32 11 56 13 9	7 35 9 9 10 42 12 8 13 23	7 39 9 16 10 52 12 22 13 39	7 43 9 24 11 4 12 38 13 58
18 19 20 21 22	11 35 12 30 13 21 14 10 14 55	$\begin{array}{c} 11 \ 54 \\ 12 \ 47 \\ 13 \ 37 \\ 14 \ 23 \\ 15 \ 5 \end{array}$	$\begin{array}{r} 12 \ 14 \\ 13 \ \ 6 \\ 13 \ 54 \\ 14 \ 37 \\ 15 \ 16 \end{array}$	$\begin{array}{c} 12 \ 36 \\ 13 \ 28 \\ 14 \ 13 \\ 14 \ 53 \\ 15 \ 28 \end{array}$	$\begin{array}{c} 12 \ 50 \\ 13 \ 40 \\ 14 \ 24 \\ 15 \ 2 \\ 15 \ 35 \end{array}$	$\begin{array}{rrrr} 13 & 5 \\ 13 & 55 \\ 14 & 37 \\ 15 & 13 \\ 15 & 43 \end{array}$	$\begin{array}{c} 13 \ 23 \\ 14 \ 12 \\ 14 \ 52 \\ 15 \ 25 \\ 15 \ 52 \end{array}$	$\begin{array}{c} 13 \ 46 \\ 14 \ 33 \\ 15 \ 10 \\ 15 \ 40 \\ 16 \ 4 \end{array}$	$\begin{array}{c} 13 \ 56 \\ 14 \ 43 \\ 15 \ 19 \\ 15 \ 46 \\ 16 \ 9 \end{array}$	14 9 14 54 15 28 15 54 16 14	$\begin{array}{r} 14 \ 23 \\ 15 \ 8 \\ 15 \ 39 \\ 16 \ 3 \\ 16 \ 20 \end{array}$	14 39 15 22 15 52 16 12 16 28	14 59 15 40 16 6 16 23 16 35
23 24 25 26 27	$\begin{array}{c} 15 \ 38 \\ 16 \ 20 \\ 17 \ 0 \\ 17 \ 41 \\ 18 \ 23 \end{array}$	15 45 16 23 17 0 17 37 18 16	$\begin{array}{c} 15 \ 52 \\ 16 \ 27 \\ 17 \ 0 \\ 17 \ 33 \\ 18 \ 8 \end{array}$	16 0 16 31 17 0 17 29 17 59	16 5 16 33 17 0 17 26 17 54	16 10 16 35 17 0 17 24 17 49	16 17 16 38 16 59 17 20 17 42	16 24 16 42 16 59 17 16 17 34	16 27 16 44 16 59 17 14 17 31	16 31 16 46 16 59 17 12 17 27	16 35 16 47 16 58 17 10 17 23	16 39 16 50 16 58 17 8 17 18	16 44 16 52 16 53 17 5 17 12
28 29 30 31 Apr. 1	$\begin{array}{rrrr} 19 & 6 \\ 19 & 50 \\ 20 & 38 \\ 21 & 28 \\ 22 & 20 \end{array}$	$\begin{array}{c} 18 \ 55 \\ 19 \ 37 \\ 20 \ 22 \\ 21 \ 11 \\ 22 \ 2 \end{array}$	$\begin{array}{c} 18 \ 44 \\ 19 \ 23 \\ 20 \ 6 \\ 20 \ 52 \\ 21 \ 42 \end{array}$	18 32 19 7 19 46 20 30 21 20	$\begin{array}{r} 18 \ 24 \\ 18 \ 57 \\ 19 \ 35 \\ 20 \ 18 \\ 21 \ 6 \end{array}$	18 16 18 47 19 22 20 3 20 51	$\begin{array}{rrrrr} 18 & 6 \\ 18 & 34 \\ 19 & 7 \\ 19 & 46 \\ 20 & 33 \end{array}$	17 55 18 19 18 48 19 25 20 10	17 50 18 12 18 40 19 14 19 59	17 44 18 4 18 30 19 3 19 47	17 37 17 55 18 19 18 50 19 33	17 30 17 45 18 6 18 35 19 16	17 22 17 34 17 51 18 17 18 56
23	23 14	22 56 23 52	22 37 23 34	22 15 23 14	$\begin{bmatrix} 22 & 2 \\ 23 & 2 \end{bmatrix}$	21 47 22 48	21 29 22 32	21 7 22 12	20 56 22 2	20 44 21 52	20 30 21 40	20 14 21 25	19 54 21 9

70331°—1917—5

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1918.

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Lat. Date.	0°	+16°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Apr. 1 2 3 4 5	h m 9 55 10 48 11 42 12 36 13 30	h m 10 13 11 6 11 59 12 51 13 42	h m 10 32 11 26 12 18 13 7 13 55	h m 10 54 11 48 12 39 13 26 14 10	h m 11 8 12 1 12 51 13 37 14 18	h m 11 23 12 16 13 5 13 49 14 28	h m 11 41 12 35 13 22 14 3 14 39	h m 12 3 12 57 13 43 14 21 14 52	h m 12 14 13 8 13 53 14 29 14 59	h m 12 26 13 20 14 4 14 39 15 6	h m 12 40 13 34 14 16 14 49 15 13	h m 12 56 13 51 14 31 15 1 15 22	h m 13 16 14 10 14 48 15 14 15 32
6 7 8 9 10	$\begin{array}{r} 14\ 23\\ 15\ 16\\ 16\ 9\\ 17\ 3\\ 17\ 58\end{array}$	$\begin{array}{r} 14 \ 32 \\ 15 \ 20 \\ 16 \ 8 \\ 16 \ 58 \\ 17 \ 49 \end{array}$	14 40 15 24 16 8 16 53 17 39	$\begin{array}{r} 14 \ 50 \\ 15 \ 29 \\ 16 \ 8 \\ 16 \ 47 \\ 17 \ 28 \end{array}$	$\begin{array}{c} 14 \ 56 \\ 15 \ 32 \\ 16 \ 7 \\ 16 \ 43 \\ 17 \ 22 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 15 \ 10 \\ 15 \ 39 \\ 16 \ 7 \\ 16 \ 35 \\ 17 \ 6 \end{array}$	$\begin{array}{r} 15 \ 19 \\ 15 \ 43 \\ 16 \ 6 \\ 16 \ 30 \\ 16 \ 56 \end{array}$	$\begin{array}{c} 15 \ 24 \\ 15 \ 45 \\ 16 \ 6 \\ 16 \ 28 \\ 16 \ 52 \end{array}$	$\begin{array}{r} 15\ 28\\ 15\ 48\\ 16\ 6\\ 16\ 25\\ 16\ 46\end{array}$	$\begin{array}{r} 15 \ 33 \\ 15 \ 50 \\ 16 \ 6 \\ 16 \ 22 \\ 16 \ 41 \end{array}$	$\begin{array}{r} 15 \ 39 \\ 15 \ 53 \\ 16 \ 5 \\ 16 \ 19 \\ 16 \ 35 \end{array}$	$\begin{array}{r} 15 \ 45 \\ 15 \ 56 \\ 16 \ 5 \\ 16 \ 16 \\ 16 \ 28 \end{array}$
$11 \\ 12 \\ 13 \\ 14 \\ 15$	18 56 19 55 20 54 21 53 22 49	18 43 19 39 20 36 21 35 22 31	18 29 19 22 20 18 21 15 22 13	18 13 19 2 19 56 20 53 21 52	18 4 18 51 19 43 20 40 21 39	17 53 18 38 19 28 20 25 21 25	17 41 18 22 19 11 20 7 21 8	17 26 18 4 18 50 19 44 20 47	17 20 17 55 18 39 19 34 20 37	17 12 17 45 18 28 19 22 20 26	17 4 17 34 18 15 19 8 20 13	16 54 17 21 18 0 18 52 19 58	16 44 17 7 17 42 18 33 19 40
16 17 18 19 20	23 41 0 30 1 15 1 58	23 26 0 17 1 6 1 52	23 9 0 3 0 55 1 45	22 50 23 48 0 44 1 38	22 40 23 39 0 37 1 33	22 27 23 29 0 30 1 29	22 12 23 17 0 21 1 23	$21 54 \\ 23 2 \\ \cdots \\ 0 10 \\ 1 16$	$21 \ 45 \\ 22 \ 55 \\ \dots \\ 0 \ 5 \\ 1 \ 13$	21 35 22 48 23 59 1 10	21 24 22 39 23 53 1 6	$21 12 \\ 22 29 \\ 23 46 \\ \dots \\ 1 1$	20 57 22 18 23 38 0 57
21 22 23 24 25	$\begin{array}{r} 2 & 39 \\ 3 & 20 \\ 4 & 1 \\ 4 & 42 \\ 5 & 26 \end{array}$	$2 \ 37 \\ 3 \ 21 \\ 4 \ 5 \\ 4 \ 50 \\ 5 \ 37$	2 34 3 22 4 10 4 58 5 49	2 30 3 23 4 15 5 8 6 2	2 29 3 23 4 18 5 14 6 10	2 26 3 24 4 22 5 20 6 19	$\begin{array}{c} 2 & 24 \\ 3 & 25 \\ 4 & 26 \\ 5 & 27 \\ 6 & 30 \end{array}$	$\begin{array}{c} 2 & 21 \\ 3 & 26 \\ 4 & 30 \\ 5 & 36 \\ 6 & 42 \end{array}$	2 20 3 26 4 33 5 40 6 48	2 18 3 27 4 35 5 45 6 55	$\begin{array}{c} 2 \ 17 \\ 3 \ 27 \\ 4 \ 38 \\ 5 \ 50 \\ 7 \ 2 \end{array}$	$215 \\ 328 \\ 441 \\ 555 \\ 711$	$2 13 \\ 3 29 \\ 4 45 \\ 6 2 \\ 7 20$
26 27 28 29 30	6 12 7 0 7 51 8 44 9 38	6 26 7 17 8 9 9 2 9 55	6 41 7 34 8 28 9 22 10 14	6 58 7 54 8 50 9 44 10 36	7 8 8 6 9 3 9 57 10 48	7 19 8 19 9 17 10 12 11 3	7 33 8 35 9 35 10 30 11 20	7 49 8 55 9 57 10 53 11 41	757941071141151	$\begin{array}{r} 8 & 6 \\ 9 & 15 \\ 10 & 19 \\ 11 & 16 \\ 12 & 2 \end{array}$	8 15 9 27 10 33 11 30 12 15	8 27 9 41 10 49 11 46 12 30	8 40 9 57 11 8 12 5 12 48
May 1 2 3 4 5	10 32 11 24 12 16 13 7 13 58	10 47 11 37 12 26 13 13 14 0	11 4 11 51 12 36 13 19 14 1	11 23 12 7 12 47 13 26 14 3	11 34 12 16 12 54 13 29 14 4	$\begin{array}{c} 11 \ 47 \\ 12 \ 27 \\ 13 \ 2 \\ 13 \ 34 \\ 14 \ 5 \end{array}$	$\begin{array}{rrrr} 12 & 2 \\ 12 & 39 \\ 13 & 10 \\ 13 & 39 \\ 14 & 6 \end{array}$	$\begin{array}{c} 12 \ 21 \\ 12 \ 54 \\ 13 \ 21 \\ 13 \ 45 \\ 14 \ 8 \end{array}$	12 30 13 0 13 26 13 48 14 9	12 39 13 8 13 31 13 51 14 9	$\begin{array}{c} 12 \ 50 \\ 13 \ 17 \\ 13 \ 37 \\ 13 \ 55 \\ 14 \ 10 \end{array}$	13 3 13 26 13 44 13 58 14 11	$\begin{array}{c} 13 \ 17 \\ 13 \ 37 \\ 13 \ 51 \\ 14 \ 2 \\ 14 \ 12 \end{array}$
6 7 8 9 10	14 50 15 43 16 38 17 36 18 36	14 46 15 36 16 27 17 22 18 19	14 44 15 28 16 15 17 6 18 1	14 40 15 19 16 2 16 48 17 40	14 38 15 14 15 54 16 38 17 28	14 36 15 8 15 45 16 26 17 14	$14 \ 33 \\ 15 \ 2 \\ 15 \ 34 \\ 16 \ 12 \\ 16 \ 57 \\$	14 30 14 54 15 22 15 55 16 37	14 29 14 51 15 16 15 48 16 28	14 27 14 47 15 10 15 39 16 17	$\begin{array}{r} 14 \ 26 \\ 14 \ 43 \\ 15 \ 3 \\ 15 \ 29 \\ 16 \ 5 \end{array}$	14 24 14 38 14 55 15 18 15 51	$\begin{array}{r} 14 \ 22 \\ 14 \ 32 \\ 14 \ 47 \\ 15 \ 6 \\ 15 \ 34 \end{array}$
11 12 13 14 15	19 36 20 34 21 30 22 22 23 9	19 18 20 17 21 14 22 8 22 58	18 59 19 58 20 57 21 53 22 47	18 36 19 36 20 37 21 36 22 34	18 23 19 23 20 25 21 27 22 27	18 8 19 9 20 12 21 16 22 18	$\begin{array}{c} 17 \ 51 \\ 18 \ 51 \\ 19 \ 56 \\ 21 \ 2 \\ 22 \ 8 \end{array}$	17 29 18 29 19 36 20 46 21 56	17 18 18 19 19 27 20 39 21 50	17 6 18 7 19 17 20 30 21 44	$\begin{array}{r} 16 \ 53 \\ 17 \ 54 \\ 19 \ 5 \\ 20 \ 21 \\ 21 \ 37 \end{array}$	16 37 17 38 18 51 20 10 21 29	16 18 17 20 18 35 19 57 21 20
16 17 18	23 54 0 36	23 47 0 32	23 39 0 28	23 30 0 23	23 25 0 21	23 19 	23 12 0 14	23 4	23 0 	22 56 6	22 51 	22 46 0 1	$22 \ 40 \\ 23 \ 58 \\ \dots$
LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1918.

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Date	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Apr.	1 2 3 4 5	h m 22 20 23 14 0 8 1 2	h m 22 2 22 56 23 52 0 48	h m 21 42 22 37 23 34 0 34	h m 21 20 22 15 23 14 0 16	h m 21 6 22 2 23 2 0 7	h m 20 51 21 47 22 48 23 55 	h m 20 33 21 29 22 32 23 42 	h m 20 10 21 7 22 12 23 25 	h m 19 59 20 56 22 2 23 18 	h m 19 47 20 44 21 52 23 9 	h m 19 33 20 30 21 40 22 59 	h m 19 16 20 14 21 25 22 48 	h m 18 56 19 54 21 9 22 35
	6 7 8 9 10	$ \begin{array}{r} 1 56 \\ 2 48 \\ 3 41 \\ 4 34 \\ 5 29 \end{array} $	1 45 2 42 3 39 4 37 5 36	$ \begin{array}{r} 1 & 34 \\ 2 & 35 \\ 3 & 37 \\ 4 & 40 \\ 5 & 44 \end{array} $	$ \begin{array}{r} 1 21 \\ 2 27 \\ 3 35 \\ 4 43 \\ 5 52 \end{array} $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{r} 1 & 6 \\ 2 & 18 \\ 3 & 32 \\ 4 & 47 \\ 6 & 3 \end{array} $	0 56 2 12 3 30 4 49 6 10	0 43 2 5 3 28 4 52 6 18	$\begin{array}{c} 0 \ 38 \\ 2 \ 1 \\ 3 \ 27 \\ 4 \ 53 \\ 6 \ 22 \end{array}$	$\begin{array}{c} 0 & 32 \\ 1 & 58 \\ 3 & 26 \\ 4 & 55 \\ 6 & 26 \end{array}$	$\begin{array}{c} 0 \ 25 \\ 1 \ 54 \\ 3 \ 25 \\ 4 \ 57 \\ 6 \ 31 \end{array}$	0 17 1 49 3 23 4 58 6 36	0 8 1 44 3 22 5 0 6 42
0.48 1.21 1.21 1.121 1.121 1.121	11 12 13 14 15	6 25 7 24 8 23 9 23 10 20	6 37 7 38 8 40 9 41 10 38	6 49 7 54 8 59 10 0 10 57	7 3 8 13 9 20 10 23 11 19	7 11 8 23 9 32 10 36 11 32	7 20 8 35 9 47 10 51 11 46	7 31 8 50 10 4 11 9 12 4	7 44 9 7 10 25 11 31 12 26	7 50 9 16 10 35 11 42 12 36	7 57 9 25 10 46 11 54 12 47	8 5 9 36 10 59 12 8 13 1	8 13 9 48 11 14 12 24 13 16	8 23 10 2 11 32 12 44 13 34
- 四朝日日日	16 17 18 19 20	$ \begin{array}{r} 11 \ 14 \\ 12 \ 5 \\ 12 \ 52 \\ 13 \ 36 \\ 14 \ 18 \\ \end{array} $	11 31 12 19 13 3 13 44 14 23	11 48 12 34 13 15 13 52 14 27	12 8 12 50 13 28 14 2 14 32	12 20 13 0 13 36 14 7 14 35	12 33 13 12 13 44 14 13 14 39	12 49 13 25 13 55 14 20 14 43	13 8 13 41 14 7 14 28 14 47	13 17 13 48 14 12 14 32 14 50	13 27 13 56 14 18 14 36 14 52	13 38 14 6 14 25 14 41 14 54	13 52 14 16 14 33 14 46 14 57	14 7 14 28 14 42 14 52 15 0
	21 22 23 24 25	14 59 15 40 16 21 17 4 17 4	15 0 15 37 16 15 16 54 17 36	15 1 15 34 16 8 16 44 17 23	15 2 15 31 16 1 16 33 17 8	15 3 15 30 15 57 16 27 16 59	15 3 15 27 15 52 16 19 16 49	15 4 15 25 15 47 16 11 16 37	15 5 15 22 15 40 16 0 16 23	15 6 15 21 15 37 15 55 16 17	$\begin{array}{rrrr} 15 & 6 \\ 15 & 20 \\ 15 & 34 \\ 15 & 50 \\ 16 & 10 \end{array}$	15 6 15 18 15 30 15 45 16 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	15 8 15 14 15 22 15 31 15 42
	26 27 28 29 30	18 35 19 25 20 17 21 10 22 4	18 20 19 8 19 59 20 52 21 47	18 4 18 50 19 40 20 33 21 29	17 46 18 29 19 17 20 11 21 8	17 35 18 17 19 4 19 58 20 56	17 23 18 3 18 49 19 43 20 42	17 9 17 46 18 31 19 25 20 26	16 51 17 26 18 9 19 2 20 5	16 43 17 16 17 59 18 52 19 55	16 34 17 5 17 47 18 40 19 44	16 24 16 53 17 33 18 26 19 31	16 12 16 39 17 17 18 9 19 17	15 59 16 22 16 58 17 50 18 59
Мау	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{array} $	22 57 23 49 0 40 1 31	22 42 23 38 0 33 1 28	22 27 23 26 0 25 1 24	22 9 23 12 0 15 1 19	21 58 23 3 0 10 1 17	$21 \ 46 \\ 22 \ 54 \\ \dots \\ 0 \ 3 \\ 1 \ 14$	21 32 22 43 23 56 1 10	$21 15 \\ 22 30 \\ 23 47 \\ \dots \\ 1 6$	21 6 22 23 23 43 1 4	20 57 22 16 23 39 1 2	20 47 22 8 23 33 1 0	20 35 21 59 23 28 0 57	20 21 21 50 23 21 0 54
	6 7 8 9 10	$ \begin{array}{r} 2 & 22 \\ 3 & 14 \\ 4 & 9 \\ 5 & 5 \\ 6 & 4 \end{array} $	2 23 3 20 4 18 5 19 6 20	2 24 3 25 4 28 5 33 6 38	2 25 3 31 4 40 5 49 6 58	$\begin{array}{c} 2 \ 25 \\ 3 \ 35 \\ 4 \ 46 \\ 5 \ 58 \\ 7 \ 9 \end{array}$	2 26 3 39 4 54 6 9 7 22	2 26 3 44 5 2 6 21 7 38	2 27 3 49 5 13 6 37 7 58	$\begin{array}{c} 2 & 27 \\ 3 & 52 \\ 5 & 18 \\ 6 & 44 \\ 8 & 7 \end{array}$	2 28 3 55 5 24 6 52 8 18	2 28 3 58 5 30 7 1 8 29	2 28 4 2 5 36 7 12 8 43	2 29 4 6 5 44 7.24 8 59
	11 12 13 14 15	7 5 8 4 9 2 9 55 10 45	7 22 8 22 9 19 10 10 10 57	7 42 8 42 9 37 10 26 11 10	8 3 9 4 9 58 10 44 11 25	8 16 9 17 10 10 10 55 11 33	8 31 9 32 10 24 11 7 11 43	8 49 9 50 10 40 11 21 11 54	9 10 10 12 11 1 11 38 12 8	9 21 10 22 11 10 11 46 12 14	9 33 10 34 11 21 11 55 12 21	9 46 10 48 11 33 12 5 12 29	10 2 11 4 11 47 12 17 12 37	10 21 11 22 12 4 12 30 12 47
	16 17 18	$ \begin{array}{r} 11 \ 31 \\ 12 \ 15 \\ 12 \ 56 \end{array} $	11 40 12 20 12 58	$\begin{array}{c} 11 \ 50 \\ 12 \ 26 \\ 13 \ 1 \end{array}$	$\begin{array}{ccc} 12 & 0 \\ 12 & 33 \\ 13 & 3 \end{array}$	$\begin{array}{cccc} 12 & 7 \\ 12 & 37 \\ 13 & 4 \end{array}$	$\begin{array}{c} 12 \ 14 \\ 12 \ 41 \\ 13 \ 6 \end{array}$	12 22 12 46 13 8	$\begin{array}{c} 12 \ 32 \\ 12 \ 52 \\ 13 \ 10 \end{array}$	12 36 12 54 13 11	12 41 12 58 13 12	12 46 13 1 13 13	12 53 13 4 13 15	12 59 13 8 13 16

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Lat. Date.	00	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
May 17 18 19 20 21	h m 0 36 1 17 1 58 2 39	h m 0 32 1 17 2 1 2 46	h m 0 28 1 16 2 4 2 53	h m 0 23 1 16 2 8 3 1	h m 0 21 1 16 2 10 3 6	h m 0 18 1 15 2 13 3 11	h m 0 14 1 15 2 16 3 17	h m 0 10 1 15 2 20 3 24	h m 0 8 1 14 2 21 3 28	h m 0 6 1 14 2 23 3 32	h·m 0 4 1 14 2 25 3 36	h m 0 1 1 14 2 27 3 41	h m 23 58 1 14 2 30 3 46
22 23 24 25 26	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 3 & 32 \\ 4 & 20 \\ 5 & 11 \\ 6 & 3 \\ 6 & 57 \end{array}$	3 43 4 34 5 27 6 22 7 16	355 450 546 643 738	$\begin{array}{r} 4 & 2 \\ 4 & 59 \\ 5 & 57 \\ 6 & 55 \\ 7 & 52 \end{array}$	4 10 5 10 6 10 7 10 8 7	4 19 5 22 6 25 7 27 8 25	$\begin{array}{r} 4 \ 31 \\ 5 \ 37 \\ 6 \ 44 \\ 7 \ 48 \\ 8 \ 47 \end{array}$	$\begin{array}{r} 4 \ 36 \\ 5 \ 44 \\ 6 \ 53 \\ 7 \ 58 \\ 8 \ 58 \end{array}$	4 42 5 52 7 3 8 10 9 10	4 48 6 1 7 14 8 23 9 24	4 56 6 11 7 27 8 38 9 40	5 4 6 23 7 42 8 56 10 0
27 28 29 30 31	7 33 8 28 9 21 10 13 11 4	7 51 8 44 9 35 10 24 11 11	8 10 9 1 9 50 10 35 11 18	8 32 9 21 10 6 10 48 11 26	8 45 9 33 10 16 10 55 11 31	8 59 9 46 10 27 11 4 11 36	9 17 10 2 10 40 11 13 11 42	9 38 10 21 10 56 11 25 11 50	9 49 10 30 11 4 11 31 11 53	10 0 10 41 11 12 11 36 11 57	10 14 10 52 11 21 11 43 12 1	$\begin{array}{c} 10 \ 29 \\ 11 \ 5 \\ 11 \ 31 \\ 11 \ 50 \\ 12 \ 5 \end{array}$	10 48 11 21 11 43 11 59 12 10
June 1 2 3 4 5	$11 54 \\ 12 44 \\ 13 34 \\ 14 27 \\ 15 22$	11 56 12 42 13 29 14 18 15 9	11 59 12 40 13 23 14 7 14 55	$\begin{array}{rrrr} 12 & 3 \\ 12 & 39 \\ 13 & 16 \\ 13 & 55 \\ 14 & 39 \end{array}$	$ \begin{array}{r} 12 & 5 \\ 12 & 38 \\ 13 & 12 \\ 13 & 49 \\ 14 & 30 \end{array} $	$\begin{array}{cccc} 12 & 7 \\ 12 & 37 \\ 13 & 8 \\ 13 & 41 \\ 14 & 19 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	12 12 12 34 12 57 13 22 13 52	12 14 12 34 12 54 13 17 13 45	12 15 12 33 12 51 13 12 13 37	12 17 12 32 12 48 13 6 13 28	12 18 12 31 12 44 12 59 13 19	$\begin{array}{c} 12 \ 20 \\ 12 \ 30 \\ 12 \ 40 \\ 12 \ 52 \\ 13 \ 8 \end{array}$
6 7 8 9 10	16 20 17 19 18 19 19 16 20 10	$ \begin{array}{c} 16 & 4 \\ 17 & 2 \\ 18 & 1 \\ 18 & 59 \\ 19 & 55 \end{array} $	15 47 16 43 17 42 18 41 19 39	15 27 16 21 17 19 18 20 19 21	15 16 16 8 17 6 18 8 19 10	$ \begin{array}{r} 15 & 3 \\ 15 & 54 \\ 16 & 51 \\ 17 & 54 \\ 18 & 58 \end{array} $	14 47 15 36 16 33 17 37 18 44	14 28 15 15 16 11 17 16 18 26	14 20 15 4 16 1 17 6 18 18	14 10 14 53 15 49 16 55 18 8	13 58 14 40 15 35 16 42 17 58	13 46 14 25 15 19 16 28 17 46	$\begin{array}{c} 13 \ 31 \\ 14 \ 7 \\ 15 \ 0 \\ 16 \ 10 \\ 17 \ 32 \end{array}$
$ \begin{array}{c} 11 \\ 12 \\ 13 \\ 14 \\ 15 \\ \end{array} $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	20 48 21 38 22 26 23 11 23 56	20 35 21 29 22 20 23 9 23 58	20 21 21 18 22 13 23 7	20 12 21 12 22 10 23 6	$\begin{array}{cccc} 20 & 3 \\ 21 & 5 \\ 22 & 6 \\ 23 & 5 \\ \dots \dots \end{array}$	19 51 20 57 22 1 23 3	$19 \ 37 \\ 20 \ 47 \\ 21 \ 55 \\ 23 \ 1 \\ \dots$	19 31 20 43 21 52 23 0	19 23 20 37 21 49 22 59	19 15 20 32 21 46 22 58	19 6 20 26 21 42 22 57	18 56 20 18 21 38 22 56
16 17 18 19 20	$ \begin{array}{c} 0.35 \\ 1.17 \\ 2.1 \\ 2.48 \end{array} $	0 40 1 26 2 13 3 2	0 46 1 35 2 25 3 18	$\begin{array}{c} 0 & 0 \\ 0 & 52 \\ 1 & 45 \\ 2 & 40 \\ 3 & 35 \end{array}$	$\begin{array}{c} 0 & 1 \\ 0 & 56 \\ 1 & 51 \\ 2 & 48 \\ 3 & 46 \end{array}$	0 2 1 0 1 58 2 57 3 58	$ \begin{array}{c} 0 & 4 \\ 1 & 5 \\ 2 & 6 \\ 3 & 9 \\ 4 & 12 \end{array} $	0 6 1 11 2 16 3 23 4 30	0 7 1 14 2 21 3 29 4 38	0 8 1 17 2 26 3 36 4 47	0 9 1 20 2 32 3 44 4 57	0 11 1 24 2 38 3 53 5 9	$\begin{array}{c} 0 \ 12 \\ 1 \ 28 \\ 2 \ 45 \\ 4 \ 3 \\ 5 \ 23 \end{array}$
21 22 23 24 25	$\begin{array}{r} 3 & 37 \\ 4 & 30 \\ 5 & 24 \\ 6 & 20 \\ 7 & 15 \end{array}$	$\begin{array}{c} 3 54 \\ 4 48 \\ 5 42 \\ 6 36 \\ 7 30 \end{array}$	$\begin{array}{r} 4 & 12 \\ 5 & 7 \\ 6 & 1 \\ 6 & 55 \\ 7 & 45 \end{array}$	4 32 5 29 6 24 7 16 8 3	4 44 5 42 6 37 7 28 8 14	4 58 5 57 6 52 7 42 8 26	5 15 6 15 7 10 7 58 8 40	5 35 6 37 7 32 8 19 8 57	5 45 6 47 7 43 8 28 9 5	5 56 7 0 7 55 8 39 9 14	6 8 7 14 8 8 8 52 9 24	6 23 7 30 8 24 9 6 9 36	6 40 7 49 8 44 9 22 9 49
26 27 28 29 30	8 9 9 1 9 51 10 41 11 31	8 20 9 9 9 55 10 41 11 27	8 33 9 17 10 0 10 41 11 22	8 47 9 27 10 4 10 41 11 17	8 55 9 32 10 7 10 41 11 14	9 4 9 39 10 10 10 41 11 11	9 15 9 46 10 14 10 40 11 7	9 28 9 55 10 13 10 49 11 2	9 35 9 59 10 20 10 40 11 0	9 41 10 4 10 23 10 40 10 58	9 49 10 8 10 25 10 40 10 55	9 57 10 14 10 28 10 40 10 53	$\begin{array}{ccc} 10 & 7 \\ 10 & 20 \\ 10 & 30 \\ 10 & 40 \\ 10 & 49 \end{array}$
July 1 2	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{vmatrix} 12 & 14 \\ 13 & 4 \end{vmatrix}$	$12 5 \\ 12 51$	11 55 12 36	11 49 12 28	11 43 12 18	$ \begin{array}{c cccccccccccccccccccccccccccccccccc$	11 26 11 54	11 22 11 47	11 17 11 41	$ \begin{array}{c} 11 \\ 11 \\ 11 \\ 33 \end{array} $	$ \begin{array}{c cccccccccccccccccccccccccccccccccc$	11 0 11 15

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Lat. Date.	0¢	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°°
May 17 18 19 20 21	h m 12 15 12 56 13 37 14 18 15 0	h m 12 20 12 58 13 36 14 13 14 52	h m 12 26 13 1 13 34 14 8 14 43	h m 12 33 13 3 13 32 14 2 14 33	h m 12 37 13 4 13 31 13 59 14 28	h m 12 41 13 6 13 30 13 55 14 21	h m 12 46 13 8 13 29 13 50 14 13	h m 12 52 13 10 13 27 13 45 14 4	h m 12 54 13 11 13 26 13 43 14 0	h m 12 58 13 12 13 26 13 40 13 56	h m 13 1 13 13 13 25 13 37 13 51	h m 13 4 13 15 13 24 13 34 13 45	h m 13 8 13 16 13 23 13 31 13 39
22 23 24 25 26	15 44 16 30 17 19 18 11 19 5	15 32 16 16 17 3 17 54 18 47	15 20 16 1 16 46 17 34 18 28	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{r} 14 \ 59 \\ 15 \ 34 \\ 16 \ 14 \\ 17 \ 0 \\ 17 \ 52 \end{array}$	$\begin{array}{c} 14 \ 50 \\ 15 \ 22 \\ 16 \ 0 \\ 16 \ 45 \\ 17 \ 37 \end{array}$	$\begin{array}{r} 14 \ 39 \\ 15 \ 9 \\ 15 \ 45 \\ 16 \ 28 \\ 17 \ 19 \end{array}$	$\begin{array}{r} 14\ 26\\ 14\ 53\\ 15\ 25\\ 16\ 6\\ 16\ 56 \end{array}$	14 20 14 45 15 16 15 56 16 46	14 14 14 36 15 6 15 44 16 34	$\begin{array}{rrrr} 14 & 7 \\ 14 & 27 \\ 14 & 54 \\ 15 & 30 \\ 16 & 20 \end{array}$	$\begin{array}{r} 13 \ 59 \\ 14 \ 16 \\ 14 \ 40 \\ 15 \ 15 \\ 16 \ 3 \end{array}$	$\begin{array}{r} 13 \ 50 \\ 14 \ 4 \\ 14 \ 25 \\ 14 \ 56 \\ 15 \ 44 \end{array}$
27 28 29 30 31	19 59 20 54 21 46 22 38 23 28	19 42 20 38 21 34 22 29 23 23	19 24 20 22 21 21 22 19 23 18	1922032162282312	185019522056222238	$\begin{array}{r} 18 \ 36 \\ 19 \ 39 \\ 20 \ 46 \\ 21 \ 55 \\ 23 \ 4 \end{array}$	$\begin{array}{c} 18 \ 18 \\ 19 \ 24 \\ 20 \ 34 \\ 21 \ 47 \\ 23 \ 0 \end{array}$	$\begin{array}{r} 17 \ 57 \\ 19 \ 6 \\ 20 \ 20 \\ 21 \ 36 \\ 22 \ 54 \end{array}$	$17 47 \\ 18 57 \\ 20 13 \\ 21 32 \\ 22 52 \\$	$17 \ 35 \\ 18 \ 47 \\ 20 \ 6 \\ 21 \ 26 \\ 22 \ 49$	17 22 18 36 19 57 21 21 22 46	17 7 18 23 19 47 21 14 22 42	16 49 18 8 19 36 21 7 22 38
June 1 2 3 4 5	0 17 1 8 1 59 2 53	$\begin{array}{c} & & & & & \\ & & & 0 & 17 \\ & & 1 & 11 \\ & & 2 & 7 \\ & & 3 & 5 \end{array}$	0 16 1 15 2 15 3 17	0 15 1 19 2 25 3 32	0 15 1 22 2 30 3 40	0 14 1 24 2 36 3 49	$\begin{array}{c} & 0 & 13 \\ & 1 & 28 \\ & 2 & 44 \\ & 4 & 0 \end{array}$	0 12 1 32 2 52 4 14	$\begin{array}{c} & 0 & 12 \\ 1 & 33 \\ 2 & 57 \\ 4 & 20 \end{array}$	$\begin{array}{c} & 0 & 12 \\ & 1 & 36 \\ & 3 & 1 \\ & 4 & 27 \end{array}$	0 11 1 38 3 6 4 35	0 10 1 40 3 12 4 44	0 10 1 43 3 18 4 54
6 7 8 9 10	350 448 548 646 742	$\begin{array}{r} 4 & 4 \\ 5 & 5 \\ 6 & 6 \\ 7 & 4 \\ 7 & 58 \end{array}$	4 20 5 24 6 25 7 23 8 15	$\begin{array}{r} 4 & 39 \\ 5 & 45 \\ 6 & 48 \\ 7 & 45 \\ 8 & 35 \end{array}$	$\begin{array}{r} 4 \ 49 \\ 5 \ 57 \\ 7 \ 1 \\ 7 \ 58 \\ 8 \ 46 \end{array}$	5 2 6 11 7 16 8 12 8 59	5 16 6 28 7 34 8 29 9 15	5 34 6 50 7 56 8 51 9 34	$542 \\ 659 \\ 87 \\ 91 \\ 942$	5 52 7 11 8 19 9 12 9 52	$\begin{array}{c} 6 & 3 \\ 7 & 24 \\ 8 & 32 \\ 9 & 25 \\ 10 & 3 \end{array}$	6 15 7 38 8 48 9 40 10 16	6 29 7 56 9 8 9 58 10 31
11 12 13 14 15	$\begin{array}{r} 8 & 35 \\ 9 & 23 \\ 10 & 9 \\ 10 & 52 \\ 11 & 33 \end{array}$	8 48 9 34 10 16 10 55 11 33	9 2 9 44 10 23 10 59 11 33	9 19 9 57 10 31 11 3 11 33	9 28 10 4 10 36 11 5 11 33	9 39 10 13 10 42 11 8 11 33	9 52 10 22 10 48 11 11 11 32	$\begin{array}{cccc} 10 & 7 \\ 10 & 33 \\ 10 & 55 \\ 11 & 15 \\ 11 & 32 \end{array}$	10 14 10 39 10 59 11 16 11 32	10 22 10 44 11 2 11 18 11 32	10 31 10 50 11 7 11 20 11 32	10 40 10 58 11 11 11 22 11 32	$\begin{array}{c} 10 \ 52 \\ 11 \ 6 \\ 11 \ 16 \\ 11 \ 25 \\ 11 \ 32 \end{array}$
16 17 18 19 20	$\begin{array}{c} 12 \ 14 \\ 12 \ 55 \\ 13 \ 38 \\ 14 \ 23 \\ 15 \ 11 \end{array}$	$\begin{array}{c} 12 \ 10 \\ 12 \ 48 \\ 13 \ 28 \\ 14 \ 10 \\ 14 \ 56 \end{array}$	$\begin{array}{rrrr} 12 & 6 \\ 12 & 41 \\ 13 & 17 \\ 13 & 56 \\ 14 & 39 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 11 \ 57 \\ 12 \ 22 \\ 12 \ 50 \\ 13 \ 21 \\ 13 \ 56 \end{array}$	11 54 12 16 12 41 13 8 13 41	11 50 12 8 12 30 12 53 13 23	11 48 12 5 12 24 12 47 13 14	$\begin{array}{cccc} 11 & 46 \\ 12 & 1 \\ 12 & 18 \\ 12 & 39 \\ 13 & 5 \end{array}$	$11 44 \\ 11 57 \\ 12 12 \\ 12 30 \\ 12 54$	$\begin{array}{c} 11 \ 42 \\ 11 \ 52 \\ 12 \ 5 \\ 12 \ 21 \\ 12 \ 42 \end{array}$	11 40 11 47 11 57 12 10 12 27
21 22 23 24 25	$\begin{array}{cccc} 16 & 2 \\ 16 & 56 \\ 17 & 51 \\ 18 & 46 \\ 19 & 41 \end{array}$	$15 45 \\ 16 38 \\ 17 33 \\ 18 30 \\ 19 27$	15 26 16 18 17 14 18 13 19 13	$\begin{array}{rrrr} 15 & 5 \\ 15 & 56 \\ 16 & 52 \\ 17 & 53 \\ 18 & 56 \end{array}$	14 52 15 43 16 39 17 41 18 47	14 38 15 28 16 24 17 28 18 36	$\begin{array}{c} 14 \ 21 \\ 15 \ 10 \\ 16 \ 7 \\ 17 \ 12 \\ 18 \ 22 \end{array}$	$\begin{array}{rrrr} 14 & 0 \\ 14 & 47 \\ 15 & 45 \\ 16 & 52 \\ 18 & 6 \end{array}$	$13 50 \\ 14 36 \\ 15 34 \\ 16 43 \\ 17 59$	$\begin{array}{c} 13 \ 39 \\ 14 \ 24 \\ 15 \ 22 \\ 16 \ 32 \\ 17 \ 50 \end{array}$	13 26 14 10 15 9 16 21 17 41	$13 11 \\ 13 54 \\ 14 53 \\ 16 7 \\ 17 30$	12 54 13 35 14 34 15 51 17 18
26 27 28 29 30	$\begin{array}{r} 20 \ 34 \\ 21 \ 25 \\ 22 \ 15 \\ 23 \ 5 \\ 23 \ 56 \end{array}$	$\begin{array}{c} 20 \ 24 \\ 21 \ 19 \\ 22 \ 13 \\ 23 \ 7 \\ \dots \end{array}$	$\begin{array}{c} 20 \ 13 \\ 21 \ 12 \\ 22 \ 11 \\ 23 \ 10 \\ \end{array}$	$\begin{array}{ccc} 20 & 0 \\ 21 & 5 \\ 22 & 10 \\ 23 & 12 \\ \end{array}$	$19 53 \\ 21 0 \\ 22 7 \\ 23 14 \\ \dots$	$19 45 \\ 20 56 \\ 22 6 \\ 23 16 \\ \dots$	19 3520 5022 423 18	19 24 20 43 22 2 23 20	19 18 20 39 22 0 23 22	19 12 20 36 21 59 23 23	19 6 20 32 21 58 23 24	$18 58 \\ 20 27 \\ 21 56 \\ 23 26 \\ \dots$	18 49 20 22 21 55 23 28
July 1 2	0 48	0 2 0 58	0 9 1 9	0 17 1 22	0 21 1 29	0 27 1 33	0 33 1 43	0 40 1 59	$\begin{array}{c} 0 & 43 \\ 2 & 5 \end{array}$	0 47 2 11	0 51 2 18	0 56 2 26	$\begin{array}{c}1&1\\2&35\end{array}$

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1918.

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For other longitudes and for southern latitudes see page 78.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
July 1 2 3 4 5	h m 12 23 13 16 14 11 15 8 16 7	h m 12 14 13 4 13 56 14 51 15 49	h m 12 5 12 51 13 40 14 33 15 29	h m 11 55 12 36 13 22 14 12 15 7	h m 11 49 12 28 13 11 14 0 14 54	h m 11 43 12 18 12 58 13 45 14 39	h m 11 35 12 7 12 44 13 29 14 21	h m 11 26 11 54 12 27 13 8 13 59	h m 11 22 11 47 12 18 12 58 13 48	h m 11 17 11 41 12 10 12 47 13 36	h m 11 12 11 33 11 59 12 35 13 23	h m 11 7 11 24 11 48 12 20 13 7	h m 11 0 11 15 11 34 12 4 12 48
6 7 8 9 10	$\begin{array}{rrrr} 17 & 4 \\ 17 & 59 \\ 18 & 51 \\ 19 & 39 \\ 20 & 25 \end{array}$	16 46 17 43 18 37 19 29 20 18	16 28 17 26 18 23 19 18 20 10	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	15 53 16 55 17 57 18 58 19 58	15 38 16 42 17 46 18 50 19 52	15 21 16 26 17 33 18 40 19 46	15 0 16 7 17 18 18 29 19 38	14 49 15 58 17 10 18 23 19 35	14 38 15 48 17 2 18 17 19 31	14 24 15 36 16 53 18 10 19 26	$\begin{array}{r} 14 & 9 \\ 15 & 23 \\ 16 & 42 \\ 18 & 3 \\ 19 & 22 \end{array}$	13 50 15 7 16 30 17 54 19 16
11 12 13 14 15	$\begin{array}{cccc} 21 & 8 \\ 21 & 49 \\ 22 & 30 \\ 23 & 12 \\ 23 & 55 \end{array}$	$\begin{array}{cccc} 21 & 4 \\ 21 & 50 \\ 22 & 34 \\ 23 & 19 \\ \dots \end{array}$	$\begin{array}{c} 21 & 1 \\ 21 & 50 \\ 22 & 38 \\ 23 & 27 \\ \dots \end{array}$	20 57 21 50 22 43 23 36 	$\begin{array}{c} 20 \ 55 \\ 21 \ 50 \\ 22 \ 46 \\ 23 \ 41 \\ \dots \end{array}$	$\begin{array}{c} 20 \ 52 \\ 21 \ 51 \\ 22 \ 49 \\ 23 \ 47 \\ \dots \end{array}$	20 49 21 51 22 52 23 54	20 46 21 52 22 56 0 2	20 44 21 52 22 59 0 6	20 42 21 52 23 1 0 10	20 40 21 52 23 3 0 14	$\begin{array}{c} 20 & 38 \\ 21 & 53 \\ 23 & 6 \\ & & \\ & & \\ 0 & 20 \end{array}$	20 36 21 53 23 9 0 26
.16 17 18 19 20	0 40 1 28 2 18 3 12	0 5 0 53 1 43 2 36 3 30	0 16 1 8 2 0 2 54 3 49	0 29 1 24 2 20 3 16 4 11	0 36 1 33 2 31 3 28 4 24	0 45 1 44 2 44 3 43 4 40	$\begin{array}{r} 0 \ 55 \\ 1 \ 57 \\ 2 \ 59 \\ 4 \ 0 \\ 4 \ 58 \end{array}$	$ \begin{array}{r} 1 & 7 \\ 2 & 13 \\ 3 & 18 \\ 4 & 22 \\ 5 & 20 \\ \end{array} $	$ \begin{array}{r} 1 \ 13 \\ 2 \ 21 \\ 3 \ 28 \\ 4 \ 32 \\ 5 \ 31 \\ \end{array} $	$ \begin{array}{r} 1 19 \\ 2 29 \\ 3 38 \\ 4 44 \\ 5 43 \end{array} $	1 26 2 38 3 49 4 57 5 57	1 34 2 49 4 3 5 12 6 13	$ \begin{array}{r} 1 \ 42 \\ 3 \ 1 \\ 4 \ 18 \\ 5 \ 31 \\ 6 \ 33 \\ \end{array} $
21 22 23 24 25	$\begin{array}{rrrr} 4 & 7 \\ 5 & 3 \\ 5 & 58 \\ 6 & 52 \\ 7 & 45 \end{array}$	$\begin{array}{r} 4 & 24 \\ 5 & 19 \\ 6 & 11 \\ 7 & 2 \\ 7 & 50 \end{array}$	$\begin{array}{r} 4 & 43 \\ 5 & 36 \\ 6 & 25 \\ 7 & 12 \\ 7 & 56 \end{array}$	5 5 5 5 5 5 6 41 7 24 8 3	$5\ 18\ 6\ 6\ 51\ 7\ 31\ 8\ 7$	5 32 6 20 7 1 7 38 8 12	5 50 6 35 7 14 7 47 8 17	6 11 6 54 7 28 7 57 8 23	$\begin{array}{c} 6 & 21 \\ 7 & 2 \\ 7 & 35 \\ 8 & 2 \\ 8 & 25 \end{array}$	$\begin{array}{r} 6 \ 33 \\ 7 \ 12 \\ 7 \ 43 \\ 8 \ 8 \\ 8 \ 28 \end{array}$	6 46 7 23 7 52 8 14 8 32	7 1 7 36 8 1 8 20 8 35	7 19 7 51 8 12 8 28 8 40
26 27 28 29 30	$\begin{array}{r} 8 & 37 \\ 9 & 28 \\ 10 & 20 \\ 11 & 12 \\ 12 & 7 \end{array}$	$\begin{array}{r} 8 \ 38 \\ 9 \ 25 \\ 10 \ 13 \\ 11 \ 2 \\ 11 \ 53 \end{array}$	$\begin{array}{r} 8 \ 40 \\ 9 \ 22 \\ 10 \ 5 \\ 10 \ 50 \\ 11 \ 38 \end{array}$	8 41 9 18 9 56 10 37 11 21	^{·8} 42 9 16 9 52 10 29 11 11	8 43 9 14 9 46 10 20 10 59	8 44 9 11 9 40 10 10 10 46	8 46 9 8 9 32 9 58 10 30	8 47 9 7 9 29 9 53 10 22	8 47 9 6 9 25 9 47 10 14	8 48 9 4 9 20 9 40 10 4	8 49 9 2 9 16 9 33 9 54	8 50 9 0 9 11 9 24 9 42
31 Aug. 1 2 3 4	$\begin{array}{rrrr} 13 & 3 \\ 14 & 0 \\ 14 & 57 \\ 15 & 52 \\ 16 & 44 \end{array}$	$\begin{array}{c} 12 \ 47 \\ 13 \ 42 \\ 14 \ 39 \\ 15 \ 35 \\ 16 \ 29 \end{array}$	$\begin{array}{c} 12 \ 29 \\ 13 \ 23 \\ 14 \ 20 \\ 15 \ 17 \\ 16 \ 14 \end{array}$	$\begin{array}{cccccccc} 12 & 9 \\ 13 & 2 \\ 13 & 58 \\ 14 & 57 \\ 15 & 56 \end{array}$	$\begin{array}{c} 11 \ 57 \\ 12 \ 49 \\ 13 \ 45 \\ 14 \ 45 \\ 15 \ 46 \end{array}$	$\begin{array}{c} 11 \ 43 \\ 12 \ 34 \\ 13 \ 30 \\ 14 \ 31 \\ 15 \ 34 \end{array}$	$\begin{array}{c} 11 \ 27 \\ 12 \ 16 \\ 13 \ 12 \\ 14 \ 15 \\ 15 \ 20 \end{array}$	$\begin{array}{cccc} 11 & 8 \\ 11 & 55 \\ 12 & 50 \\ 13 & 55 \\ 15 & 3 \end{array}$	$\begin{array}{c} 10 \ 59 \\ 11 \ 44 \\ 12 \ 40 \\ 13 \ 45 \\ 14 \ 55 \end{array}$	$\begin{array}{c} 10 \ 48 \\ 11 \ 33 \\ 12 \ 28 \\ 13 \ 34 \\ 14 \ 46 \end{array}$	10 36 11 19 12 15 13 22 14 36	$\begin{array}{c} 10 \ 23 \\ 11 \ 4 \\ 11 \ 59 \\ 13 \ 8 \\ 14 \ 24 \end{array}$	$\begin{array}{ccc} 10 & 7 \\ 10 & 45 \\ 11 & 40 \\ 12 & 51 \\ 14 & 11 \end{array}$
5 6 7 8 9	$17 \ 33 \\ 18 \ 19 \\ 19 \ 3 \\ 19 \ 45 \\ 20 \ 27$	17 22 18 11 18 59 19 44 20 29	$\begin{array}{rrrr} 17 & 9 \\ 18 & 2 \\ 18 & 54 \\ 19 & 43 \\ 20 & 32 \end{array}$	16 55 17 52 18 48 19 42 20 34	16 47 17 46 18 44 19 41 20 36	16 38 17 40 18 41 19 40 20 38	16 27 17 32 18 36 19 39 20 40	16 13 17 23 18 31 19 38 20 43	$\begin{array}{ccc} 16 & 7 \\ 17 & 19 \\ 18 & 29 \\ 19 & 37 \\ 20 & 45 \end{array}$	16 0 17 14 18 26 19 36 20 46	$\begin{array}{c} 15 \ 52 \\ 17 \ 8 \\ 18 \ 23 \\ 19 \ 36 \\ 20 \ 47 \end{array}$	$\begin{array}{ccc} 15 & 44 \\ 17 & 3 \\ 18 & 20 \\ 19 & 35 \\ 20 & 49 \end{array}$	$15 34 \\ 16 56 \\ 18 16 \\ 19 34 \\ 20 51$
10 11 12 13 14	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 21 \ 14 \\ 21 \ 59 \\ 22 \ 46 \\ 23 \ 35 \\ \cdots \end{array}$	21 20 22 9 22 59 23 50 	21 27 22 20 23 14 0 8	21 31 22 26 23 22 0 19	21 36 22 34 23 32 0 31	21 41 22 42 23 44 0 45	$21 \ 48 \\ 22 \ 53 \\ 23 \ 58 \\ \dots \\ 1 \ 3$	$21 51 \\ 22 58 \\ \dots \\ 0 5 \\ 1 11$	$21 54 \\ 23 3 \\ \dots \\ 0 12 \\ 1 21$	$21 58 \\ 23 9 \\ \dots \\ 0 20 \\ 1 31$	22 2 23 16 0 30 1 43	22 7 23 23 0 40 1 57
15 16	0 8 1 0	0 25 1 17	0 43 1 36	$ \begin{array}{c} 1 & 3 \\ 1 & 58 \end{array} $	1 15 2 11	1 29 2 26	$\begin{array}{c}146\\244\end{array}$	$ \begin{array}{ccc} 2 & 6 \\ 3 & 6 \end{array} $	2 16 3 16	2 27 3 28	2 39 3 42	$254 \\ 358$	3 11 4 17

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1918.

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Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
July .1 2 3 4 5	h m 0 48 1 42 2 38 3 36	h m 0 2 0 58 1 56 2 55 3 54	h m 0 9 1 9 2 11 3 12 4 13	h m 0 17 1 22 2 28 3 33 4 35	h m 0 21 1 29 2 37 3 44 4 48	h m 0 27 1 38 2 49 3 58 5 3	h m 0 33 1 48 3 2 4 14 5 21	h m 0 40 1 59 3 18 4 34 5 43	h m 0 43 2 5 3 26 4 43 5 53	h m 0 47 2 11 3 34 4 54 6 5	h m 0 51 2 18 3 44 5 6 6 19	h m 0 56 2 26 3 55 5 20 6 34	h m 1 1 2 35 4 8 5 37 6 53
6 7 8 9 10	$\begin{array}{r} 4 \ 34 \\ 5 \ 31 \\ 6 \ 24 \\ 7 \ 15 \\ 8 \ 2 \end{array}$	4 52 5 48 6 39 7 26 8 10	5 11 6 6 6 55 7 39 8 19	5 34 6 26 7 12 7 53 8 29	5 47 6 38 7 23 8 1 8 35	$\begin{array}{c} 6 & 2 \\ 6 & 52 \\ 7 & 35 \\ 8 & 11 \\ 8 & 42 \end{array}$	6 19 7 8 7 48 8 22 8 50	6 41 7 28 8 5 8 35 8 35 8 59	6 52 7 38 8 13 8 41 9 3	7 3 7 48 8 22 8 47 9 8	7 17 8 1 8 32 8 55 9 13	7 33 8 14 8 43 9 3 9 18	7 51 8 31 8 56 9 12 9 25
11 12 13 14 15	8 46 9 28 10 9 10 50 11 33	8 51 9 29 10 7 10 45 11 24	8 56 9 31 10 5 10 39 11 15	9 2 9 33 10 3 10 33 11 4	9 6 9 34 10 1 10 29 10 58	99 935 100 1025 1051	9 14 9 36 9 58 10 20 10 43	9 19 9 38 9 56 10 14 10 33	9 22 9 38 9 54 10 11 10 29	9 24 9 39 9 53 10 8 10 24	9 28 9 40 9 52 10 5 10 19	9 30 9 41 9 51 10 1 10 13	9 34 9 42 9 49 9 57 10 6
16 17 18 19 20	$\begin{array}{c} 12 \ 16 \\ 13 \ 3 \\ 13 \ 52 \\ 14 \ 44 \\ 15 \ 38 \end{array}$	$\begin{array}{rrrr} 12 & 5 \\ 12 & 48 \\ 13 & 35 \\ 14 & 26 \\ 15 & 20 \end{array}$	$\begin{array}{c} 11 \ 52 \\ 12 \ 33 \\ 13 \ 18 \\ 14 \ 7 \\ 15 \ 1 \end{array}$	11 38 12 15 12 57 13 45 14 38	$\begin{array}{c} 11 \ 29 \\ 12 \ 5 \\ 12 \ 45 \\ 13 \ 32 \\ 14 \ 26 \end{array}$	$\begin{array}{c} 11 \ 20 \\ 11 \ 53 \\ 12 \ 32 \\ 13 \ 17 \\ 14 \ 10 \end{array}$	11 9 11 39 12 15 12 59 13 52	10 56 11 22 11 56 12 37 13 30	10 50 11 14 11 46 12 27 13 19	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 10 \ 35 \\ 10 \ 56 \\ 11 \ 24 \\ 12 \ 2 \\ 12 \ 53 \end{array}$	10 27 10 45 11 10 11 46 12 37	10 17 10 32 10 54 11 27 12 18
21 22 23 24 25	16 34 17 30 18 24 19 18 20 10	16 17 17 15 18 13 19 10 20 6	$\begin{array}{c} 15 \ 59 \\ 16 \ 59 \\ 18 \ 0 \\ 19 \ 2 \\ 20 \ 2 \end{array}$	15 38 16 41 17 46 18 52 19 58	15 25 16 30 17 38 18 47 19 56	15 11 16 18 17 28 18 40 19 53	14 54 16 4 17 17 18 33 19 49	14 34 15 46 17 4 18 24 19 45	14 24 15 37 16 57 18 20 19 43	14 12 15 28 16 50 18 16 19 41	14 0 15 17 16 42 18 10 19 39	13 45 15 5 16 34 18 5 19 37	13 27 14 51 16 23 17 58 19 34
26 27 28 29 30	$\begin{array}{c} 21 & 1 \\ 21 & 52 \\ 22 & 44 \\ 23 & 38 \\ \cdots \cdots \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 21 & 4 \\ 22 & 9 \\ 23 & 15 \\ & \ddots & \ddots \\ 0 & 20 \end{array}$	$\begin{array}{c} 21 & 4 \\ 22 & 13 \\ 23 & 21 \\ & & \\ & & \\ & & 0 & 30 \end{array}$	21 5 22 17 23 28 0 40	21 6 22 22 23 37 0 52	$\begin{array}{c} 21 & 6 \\ 22 & 27 \\ 23 & 48 \\ & & \\ 1 & 7 \end{array}$	21 722 3023 52 $1 14$	21 7 22 33 23 58 1 22	21 8 22 36 0 4 1 31	21 8 22 40 0 10 1 41	21 9 22 44 0 18 1 52
Aug. 1 2 3 4	0 34 1 30 2 27 3 23 4 17	0 49 1 48 2 45 3 41 4 33	$ \begin{array}{r} 1 & 6 \\ 2 & 7 \\ 3 & 5 \\ 3 & 59 \\ 4 & 49 \end{array} $	$ \begin{array}{r} 1 25 \\ 2 28 \\ 3 27 \\ 4 20 \\ 5 8 \\ \end{array} $	$ \begin{array}{r} 1 \ 37 \\ 2 \ 41 \\ 3 \ 40 \\ 4 \ 33 \\ 5 \ 19 \\ \end{array} $	$ \begin{array}{r} 1 49 \\ 2 55 \\ 3 55 \\ 4 47 \\ 5 32 \end{array} $	$ \begin{array}{r} 2 & 5 \\ 3 & 12 \\ 4 & 13 \\ 5 & 4 \\ 5 & 47 \\ 5 & 47 \\ \end{array} $	$\begin{array}{r} 2 & 24 \\ 3 & 34 \\ 4 & 35 \\ 5 & 25 \\ 6 & 5 \end{array}$	2 32 3 44 4 45 5 35 6 13	2 43 3 56 4 57 5 46 6 23	2 54 4 9 5 11 5 58 6 33	3 7 4 24 5 27 6 13 6 46	3 22 4 42 5 46 6 30 7 0
5 6 7 8 9	5 8 556 641 724 8 6	$5 21 \\ 6 6 \\ 6 47 \\ 7 27 \\ 8 5$	$5 \ 35 \\ 6 \ 16 \\ 6 \ 54 \\ 7 \ 30 \\ 8 \ 4$	$5 50 \\ 6 28 \\ 7 2 \\ 7 33 \\ 8 4$	5 59 6 35 7 6 7 36 8 3	6 10 6 43 7 11 7 38 8 3	$\begin{array}{c} 6 & 22 \\ 6 & 51 \\ 7 & 17 \\ 7 & 40 \\ 8 & 2 \end{array}$	$\begin{array}{c} 6 & 37 \\ 7 & 2 \\ 7 & 24 \\ 7 & 44 \\ 8 & 2 \end{array}$	6 43 7 7 7 27 7 45 8 1	$\begin{array}{r} 6 \ 51 \\ 7 \ 13 \\ 7 \ 31 \\ 7 \ 46 \\ 8 \ 0 \end{array}$	659 719 734 748 80	7 9 7 26 7 39 7 50 8 0	7 19 7 33 7 43 7 52 8 0
10 11 12 13 14	8 47 9 29 10 12 10 56 11 43	8 43 9 21 10 1 10 43 11 28	8 39 9 13 9 50 10 29 11 11	8 34 9 4 9 37 10 12 10 52	8 31 8 59 9 30 10 3 10 41	8 28 8 53 9 21 9 52 10 28	8 24 8 46 9 12 9 40 10 13	8 20 8 38 9 0 9 25 9 54	8 18 8 35 8 54 9 18 9 46	8 15 8 30 8 48 9 10 9 36	8 13 8 26 8 42 9 1 9 25	8 10 8 21 8 34 8 51 9 13	8 8 8 16 8 26 8 40 8 58
15 16	12 33 13 25	$\begin{array}{c}12 \ 16 \\13 \ 7\end{array}$	11 57 12 48	11 36 12 26	11 24 12 13	11 9 11 58	10 52 11 40	10 32 11 18	10 22 11 8	10 10 10 56	9 58 10 42	9 43 10 26	9 26 10 7

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1918.

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		1	1	1	1	1	1	1	1	1	1			
Date.	Lat.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Aug.	16 17 18 19 20	h m 1 0 1 53 2 48 3 43 4 38	$ \begin{array}{c} h & m \\ 1 & 17 \\ 2 & 11 \\ 3 & 5 \\ 3 & 58 \\ 4 & 50 \end{array} $	h m 1 36 2 30 3 22 4 13 5 2	h m 1 58 2 52 3 43 4 31 5 16	h m 2 11 3 5 3 55 4 41 5 24	h m 2 26 3 20 4 9 4 53 5 33	h m 2 44 3 38 4 25 5 7 5 43	h m 3 6 3 59 4 45 5 24 5 56	h m 3 16 4 10 4 55 5 31 6 2	h m 3 28 4 22 5 5 5 40 6 8	h m 3 42 4 35 5 17 5 50 6 16	h m 3 58 4 51 5 31 6 1 6 24	h m 4 17 5 10 5 48 6 14 6 33
7 10 8 8 8 8 9 10 9 10 9 20 9 20	21 22 23 24 25	$5 \ 32 \\ 6 \ 26 \\ 7 \ 19 \\ 8 \ 12 \\ 9 \ 6$	$5 40 \\ 6 29 \\ 7 18 \\ 8 7 \\ 8 57$	$5 48 \\ 6 33 \\ 7 16 \\ 8 1 \\ 8 47$	5 57 6 37 7 15 7 54 8 35	$\begin{array}{c} 6 & 2 \\ 6 & 39 \\ 7 & 14 \\ 7 & 50 \\ 8 & 29 \end{array}$	$\begin{array}{c} 6 & 8 \\ 6 & 42 \\ 7 & 14 \\ 7 & 46 \\ 8 & 21 \end{array}$	6 15 6 45 7 13 7 42 8 13	$\begin{array}{c} 6 & 23 \\ 6 & 48 \\ 7 & 12 \\ 7 & 36 \\ 8 & 2 \end{array}$	$\begin{array}{c} 6 & 27 \\ 6 & 50 \\ 7 & 11 \\ 7 & 33 \\ 7 & 57 \end{array}$	6 31 6 52 7 11 7 30 7 52	$\begin{array}{c} 6 & 36 \\ 6 & 53 \\ 7 & 10 \\ 7 & 27 \\ 7 & 47 \end{array}$	6 41 6 56 7 10 7 24 7 40	6 47 6 58 7 9 7 20 7 33
18 0 9 42 9 45 10 6 10 6	26 27 28 29 30	$\begin{array}{cccc} 10 & 2 \\ 10 & 59 \\ 11 & 56 \\ 12 & 53 \\ 13 & 48 \end{array}$	9 49 10 43 11 39 12 35 13 31	$\begin{array}{r} 9 \ 35 \\ 10 \ 26 \\ 11 \ 20 \\ 12 \ 16 \\ 13 \ 12 \end{array}$	$\begin{array}{r} 9 \ 19 \\ 10 \ 7 \\ 10 \ 58 \\ 11 \ 54 \\ 12 \ 52 \end{array}$	$9 10 \\ 9 56 \\ 10 46 \\ 11 41 \\ 12 40$	$\begin{array}{r} 8 \ 59 \\ 9 \ 42 \\ 10 \ 32 \\ 11 \ 26 \\ 12 \ 26 \end{array}$	8 47 9 27 10 15 11 9 12 9	8 32 9 9 9 54 10 47 11 48	8 26 9 0 9 44 10 37 11 39	8 18 8 51 9 32 10 25 11 27	8 10 8 40 9 20 10 11 11 15	$\begin{array}{r} 8 & 0 \\ 8 & 27 \\ 9 & 5 \\ 9 & 56 \\ 11 & 0 \end{array}$	7 50 8 13 8 48 9 37 10 43
Sept.	31 1 2 3 4	$\begin{array}{c} 14 \ 40 \\ 15 \ 30 \\ 16 \ 16 \\ 17 \ 1 \\ 17 \ 43 \end{array}$	$\begin{array}{c} 14 \ 25 \\ 15 \ 17 \\ 16 \ 7 \\ 16 \ 55 \\ 17 \ 41 \end{array}$	$\begin{array}{rrrr} 14 & 9 \\ 15 & 4 \\ 15 & 57 \\ 16 & 48 \\ 17 & 38 \end{array}$	$\begin{array}{c} 13 \ 50 \\ 14 \ 49 \\ 15 \ 46 \\ 16 \ 41 \\ 17 \ 35 \end{array}$	$\begin{array}{c} 13 \ 40 \\ 14 \ 40 \\ 15 \ 39 \\ 16 \ 37 \\ 17 \ 33 \end{array}$	$13 27 \\ 14 30 \\ 15 31 \\ 16 32 \\ 17 31$	$\begin{array}{c} 13 \ 13 \\ 14 \ 18 \\ 15 \ 23 \\ 16 \ 27 \\ 17 \ 29 \end{array}$	$\begin{array}{c} 12 \ 55 \\ 14 \ 3 \\ 15 \ 12 \\ 16 \ 20 \\ 17 \ 26 \end{array}$	$\begin{array}{c} 12 \ 46 \\ 13 \ 56 \\ 15 \ 7 \\ 16 \ 17 \\ 17 \ 25 \end{array}$	$\begin{array}{c} 12 \ 37 \\ 13 \ 49 \\ 15 \ 2 \\ 16 \ 13 \\ 17 \ 24 \end{array}$	$\begin{array}{c} 12 \ 26 \\ 13 \ 40 \\ 14 \ 56 \\ 16 \ 10 \\ 17 \ 22 \end{array}$	$\begin{array}{c} 12 \ 14 \\ 13 \ 31 \\ 14 \ 49 \\ 16 \ 5 \\ 17 \ 20 \end{array}$	$\begin{array}{cccc} 12 & 0 \\ 13 & 20 \\ 14 & 41 \\ 16 & 1 \\ 17 & 19 \end{array}$
13 21 14 51 14 51 15 17 15 15 15 15	5 6 7 8 9	$\begin{array}{r} 18 \ 25 \\ 19 \ 6 \\ 19 \ 48 \\ 20 \ 31 \\ 21 \ 16 \end{array}$	18 26 19 10 19 56 20 42 21 29	$\begin{array}{r} 18 \ 27 \\ 19 \ 15 \\ 20 \ 4 \\ 20 \ 53 \\ 21 \ 44 \end{array}$	$\begin{array}{c} 18 \ 28 \\ 19 \ 21 \\ 20 \ 13 \\ 21 \ \ 6 \\ 22 \ \ 0 \end{array}$	18 29 19 24 20 19 21 14 22 10	18 30 19 27 20 25 21 23 22 21	18 30 19 32 20 32 21 34 22 34	$\begin{array}{c} 18 \ 32 \\ 19 \ 37 \\ 20 \ 41 \\ 21 \ 46 \\ 22 \ 50 \end{array}$	$\begin{array}{r} 18 \ 32 \\ 19 \ 39 \\ 20 \ 46 \\ 21 \ 52 \\ 22 \ 58 \end{array}$	$\begin{array}{c} 18 \ 33 \\ 19 \ 42 \\ 20 \ 50 \\ 21 \\ 59 \\ 23 \ 7 \end{array}$	$\begin{array}{r} 18 \ 34 \\ 19 \ 44 \\ 20 \ 55 \\ 22 \ 6 \\ 23 \ 16 \end{array}$	$\begin{array}{c} 18 \ 34 \\ 19 \ 48 \\ 21 \ 1 \\ 22 \ 14 \\ 23 \ 27 \end{array}$	$\begin{array}{c} 18 \ 35 \\ 19 \ 51 \\ 21 \ 7 \\ 22 \ 23 \\ 23 \ 39 \end{array}$
	10 11 12 13 14	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 22 \ 18 \\ 23 \ 9 \\ \dots \\ 0 \ 0 \\ 0 \ 53 \end{array}$	22 35 23 27 0 20 1 11	22 5523 480 411 32	$\begin{array}{cccc} 23 & 6 \\ & \ddots & \ddots \\ 0 & 1 \\ 0 & 54 \\ 1 & 44 \end{array}$	$23 19 \\ 0 15 \\ 1 9 \\ 1 59$	$23 \ 34 \\ 0 \ 32 \\ 1 \ 26 \\ 2 \ 16 \\$	$23\ 54\\\\ 0\ 54\\ 1\ 48\\ 2\ 36$	$\begin{array}{c} & & & & \\ & & & & \\ & & & & \\ & & & & $	$\begin{array}{c} . \ . \ . \ . \ . \ . \ . \ . \ . \ . $	$\begin{array}{c} & & & \\ & 0 & 24 \\ & 1 & 28 \\ & 2 & 24 \\ & 3 & 10 \end{array}$	$\begin{array}{c} & & & & \\ & & & & \\ & & & & \\ & & & & $	$\begin{array}{c} & 0 & 53 \\ & 2 & 1 \\ & 2 & 58 \\ & 3 & 42 \end{array}$
28 44 7 1 1	15 16 17 18 19	$\begin{array}{c}1&29\\2&23\\3&17\\4&10\\5&3\end{array}$	$\begin{array}{r}1 \ 45 \\ 2 \ 36 \\ 3 \ 26 \\ 4 \ 15 \\ 5 \ 5 \end{array}$	$\begin{array}{cccc} 2 & 1 \\ 2 & 50 \\ 3 & 36 \\ 4 & 21 \\ 5 & 6 \end{array}$	$ \begin{array}{r} 2 20 \\ 3 5 \\ 3 48 \\ 4 28 \\ 5 7 \end{array} $	$\begin{array}{c}2 \ 31\\3 \ 14\\3 \ 54\\4 \ 32\\5 \ 8\end{array}$	$\begin{array}{c} 2 & 44 \\ 3 & 25 \\ 4 & 2 \\ 4 & 36 \\ 5 & 9 \end{array}$	$259 \\ 337 \\ 411 \\ 441 \\ 510$	3 17 3 52 4 21 4 47 5 12	$\begin{array}{r} 3 \ 26 \\ 3 \ 58 \\ 4 \ 26 \\ 4 \ 50 \\ 5 \ 12 \end{array}$	$egin{array}{ccc} 3&35\\ 4&6\\ 4&31\\ 4&53\\ 5&13 \end{array}$	$\begin{array}{r} 3 \ 46 \\ 4 \ 14 \\ 4 \ 37 \\ 4 \ 56 \\ 5 \ 14 \end{array}$	$\begin{array}{r} 3 \ 58 \\ 4 \ 24 \\ 4 \ 44 \\ 5 \ 0 \\ 5 \ 14 \end{array}$	$\begin{array}{r} 4 \ 12 \\ 4 \ 35 \\ 4 \ 51 \\ 5 \ 4 \\ 5 \ 15 \end{array}$
「 で で で で 8 「 で 7 で 7 7 7 7 8 一 7 7 7 8 一	20 21 22 23 24	5 576 537 508 489 47	5 54 6 45 7 38 8 34 9 30	5 51 6 37 7 26 8 18 9 13	$5 47 \\ 6 28 \\ 7 12 \\ 8 0 \\ 8 52$	5 456 237 47 508 40	$5 42 \\ 6 17 \\ 6 55 \\ 7 38 \\ 8 26$	$5 \ 39 \\ 6 \ 10 \\ 6 \ 44 \\ 7 \ 24 \\ 8 \ 10$	$5 \ 36 \\ 6 \ 2 \\ 6 \ 32 \\ 7 \ 7 \\ 7 \ 50$	535 58 626 659 741	5 33 5 54 6 20 6 51 7 30	$5 \ 31 \\ 5 \ 50 \\ 6 \ 12 \\ 6 \ 41 \\ 7 \ 18$	$529 \\ 545 \\ 64 \\ 630 \\ 75$	527 540 555 617 649
1. 8 8 8 8 8 1. 8 8 8 8 1. 8 8 8 1. 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	25 26 27 28 29	$\begin{array}{c} 10 \ 46 \\ 11 \ 43 \\ 12 \ 37 \\ 13 \ 27 \\ 14 \ 15 \end{array}$	$\begin{array}{c} 10 \ 28 \\ 11 \ 26 \\ 12 \ 21 \\ 13 \ 14 \\ 14 \ 4 \end{array}$	$\begin{array}{c} 10 \ 10 \\ 11 \ 8 \\ 12 \ 5 \\ 13 \ 0 \\ 13 \ 54 \end{array}$	9 48 10 46 11 46 12 44 13 41	9 35 10 34 11 34 12 35 13 34	$\begin{array}{r} 9 \ 21 \\ 10 \ 20 \\ 11 \ 22 \\ 12 \ 24 \\ 13 \ 26 \end{array}$	9 3 10 3 11 6 12 11 13 16	$\begin{array}{r} 8 & 42 \\ 9 & 42 \\ 10 & 48 \\ 11 & 56 \\ 13 & 4 \end{array}$	8 32 9 32 10 39 11 49 12 59	$\begin{array}{r} 8 & 20 \\ 9 & 21 \\ 10 & 29 \\ 11 & 41 \\ 12 & 53 \end{array}$	8 7 9 8 10 18 11 32 12 46	$\begin{array}{r} 7 52 \\ 8 54 \\ 10 5 \\ 11 21 \\ 12 39 \end{array}$	$\begin{array}{r} 7 \ 34 \\ 8 \ 36 \\ 9 \ 50 \\ 11 \ 10 \\ 12 \ 30 \end{array}$
Oct.	30 1	$\frac{14}{15} \frac{59}{42}$	$\begin{array}{c} 14 \ 52 \\ 15 \ 38 \end{array}$	14 45 15 35	14 36 15 30	14 32 15 28	$14\ 26\ 15\ 25$	$ \begin{array}{c} 14 \ 20 \\ 15 \ 22 \end{array} $	14 12 15 18	14 8 15 16	14 4 15 14	$\frac{14}{15} \frac{0}{12}$	13 55 15 10	$\begin{array}{ccc} 13 & 50 \\ 15 & 7 \end{array}$

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 44.

For other longitudes and for southern latitudes see page 78.

Lat. Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Aug. 16 17 18 19 20	h m 13 25 14 19 15 15 16 10 17 4	h m 13 7 14 2 14 59 15 56 16 54	h m 12 48 13 43 14 42 15 42 16 44	h m 12 26 13 22 14 22 15 26 16 32	h m 12 13 13 9 14 11 15 17 16 26	h m 11 58 12 54 13 58 15 6 16 18	h m 11 40 12 37 13 42 14 53 16 8	h m 11 18 12 15 13 22 14 37 15 57	h m 11 8 12 5 13 13 14 30 15 52	h m 10 56 11 53 13 3 14 22 15 46	h m 10 42 11 40 12 51 14 12 15 40	h m 10 26 11 24 12 38 14 2 15 33	h m 10 7 11 6 12 22 13 50 15 25
21 22 23 24 25	17 58 18 51 19 44 20 38 21 32	$\begin{array}{c} 17 \ 52 \\ 18 \ 50 \\ 19 \ 47 \\ 20 \ 45 \\ 21 \ 44 \end{array}$	17 46 18 48 19 50 20 53 21 56	$\begin{array}{c} 17 \ 40 \\ 18 \ 47 \\ 19 \ 55 \\ 21 \ 2 \\ 22 \ 10 \end{array}$	$\begin{array}{c} 17 \ 36 \\ 18 \ 46 \\ 19 \ 57 \\ 21 \ 8 \\ 22 \ 18 \end{array}$	$\begin{array}{c} 17 \ 31 \\ 18 \ 45 \\ 20 \ 0 \\ 21 \ 14 \\ 22 \ 28 \end{array}$	17 26 18 44 20 2 21 21 22 38	$\begin{array}{c} 17 \ 19 \\ 18 \ 43 \\ 20 \ \ 6 \\ 21 \ 29 \\ 22 \ 52 \end{array}$	$\begin{array}{c} 17 \ 16 \\ 18 \ 42 \\ 20 \ 8 \\ 21 \ 33 \\ 22 \ 58 \end{array}$	$\begin{array}{c} 17 \ 13 \\ 18 \ 42 \\ 20 \ 10 \\ 21 \ 38 \\ 23 \ 5 \end{array}$	$\begin{array}{c} 17 \ 10 \\ 18 \ 41 \\ 20 \ 12 \\ 21 \ 43 \\ 23 \ 13 \end{array}$	17 6 18 40 20 14 21 48 23 21	$\begin{array}{r} 17 \ 1 \\ 18 \ 39 \\ 20 \ 16 \\ 21 \ 54 \\ 23 \ 31 \end{array}$
*26 27 28 29 30	22 29 23 26 0 23 1 19	22 43 23 43 0 41 1 37	$22 59 \\ 0 1 \\ 1 0 \\ 1 56$	$23 17 \\ 0 22 \\ 1 22 \\ 2 17 \\ 17$	$23 28 \\ 0 34 \\ 1 35 \\ 2 30 \\ 2$	$23 \ 40 \\ 0 \ 48 \\ 1 \ 50 \\ 2 \ 44$	$23 54 \\ 1 4 \\ 2 7 \\ 3 1$	0 11 1 25 2 29 3 22	0 20 1 34 2 40 3 32	0 29 1 46 2 51 3 44	$\begin{array}{c} . & . & . \\ 0 & 39 \\ 1 & 58 \\ 3 & 5 \\ 3 & 56 \end{array}$	0 51 2 12 3 20 4 11	$ \begin{array}{c} 1 & 4 \\ 2 & 30 \\ 3 & 39 \\ 4 & 29 \end{array} $
31 Sept. 1 2 3 4	$\begin{array}{r} 2 \ 13 \\ 3 \ 4 \\ 3 \ 52 \\ 4 \ 38 \\ 5 \ 21 \end{array}$	$\begin{array}{r} 2 & 29 \\ 3 & 18 \\ 4 & 3 \\ 4 & 46 \\ 5 & 26 \end{array}$	$2 46 \\ 3 33 \\ 4 15 \\ 4 53 \\ 5 30$	3 6 3 50 4 28 5 3 5 35	$ \begin{array}{r} 3 18 \\ 3 59 \\ 4 36 \\ 5 8 \\ 5 38 \\ \end{array} $	$\begin{array}{r} 3 \ 31 \\ 4 \ 10 \\ 4 \ 44 \\ 5 \ 14 \\ 5 \ 41 \end{array}$	3 46 4 23 4 54 5 21 5 45	$\begin{array}{rrrr} 4 & 5 \\ 4 & 39 \\ 5 & 6 \\ 5 & 29 \\ 5 & 50 \end{array}$	4 14 4 46 5 12 5 33 5 52	4 24 4 54 5 18 5 37 5 54	$\begin{array}{r} 4 & 35 \\ 5 & 4 \\ 5 & 25 \\ 5 & 42 \\ 5 & 56 \end{array}$	4 48 5 14 5 32 5 47 5 59	5 3 5 26 5 41 5 53 6 2
56789	$\begin{array}{c} 6 & 3 \\ 6 & 45 \\ 7 & 26 \\ 8 & 9 \\ 8 & 52 \end{array}$	$\begin{array}{r} 6 & 4 \\ 6 & 42 \\ 7 & 20 \\ 7 & 59 \\ 8 & 40 \end{array}$	$\begin{array}{r} 6 & 5 \\ 6 & 39 \\ 7 & 14 \\ 7 & 49 \\ 8 & 27 \end{array}$	6 6 6 36 7 6 7 38 8 12	$ \begin{array}{r} 6 & 6 \\ 6 & 34 \\ 7 & 2 \\ 7 & 32 \\ 8 & 4 \end{array} $	$\begin{array}{c} 6 & 7 \\ 6 & 32 \\ 6 & 57 \\ 7 & 24 \\ 7 & 54 \end{array}$	$\begin{array}{c} 6 & 7 \\ 6 & 29 \\ 6 & 52 \\ 7 & 16 \\ 7 & 42 \end{array}$	6 8 6 26 6 45 7 6 7 29	$\begin{array}{c} 6 & 8 \\ 6 & 25 \\ 6 & 42 \\ 7 & 1 \\ 7 & 22 \end{array}$	$ \begin{array}{r} 6 & 9 \\ 6 & 24 \\ 6 & 39 \\ 6 & 56 \\ 7 & 15 \end{array} $	$\begin{array}{c} 6 & 9 \\ 6 & 22 \\ 6 & 35 \\ 6 & 50 \\ 7 & 7 \end{array}$	6 10 6 20 6 31 6 43 6 58	6 10 6 18 6 26 6 36 6 48
$10 \\ 11 \\ 12 \\ 13 \\ 14$	9 38 10 26 11 16 12 8 13 1	$\begin{array}{r} 9 \ 24 \\ 10 \ 10 \\ 10 \ 59 \\ 11 \ 51 \\ 12 \ 45 \end{array}$	9 8 9 52 10 40 11 32 12 27	8 50 9 32 10 18 11 10 12 7	8 40 9 20 10 6 10 57 11 55	8 28 9 6 9 51 10 43 11 41	$\begin{array}{r} 8 \ 14 \\ 8 \ 50 \\ 9 \ 34 \\ 10 \ 25 \\ 11 \ 25 \end{array}$	$\begin{array}{r} 7 56 \\ 8 30 \\ 9 12 \\ 10 4 \\ 11 4 \end{array}$	7 49 8 21 9 2 9 53 10 55	7 40 8 11 8 51 9 42 10 44	7 30 7 59 8 37 9 28 10 31	7 19 7 45 8 22 9 13 10 17	$\begin{array}{rrrr} 7 & 5 \\ 7 & 29 \\ 8 & 4 \\ 8 & 54 \\ 10 & 0 \end{array}$
$15 \\ 16 \\ 17 \\ 18 \\ 19$	$\begin{array}{c} 13 \ 55 \\ 14 \ 49 \\ 15 \ 42 \\ 16 \ 35 \\ 17 \ 29 \end{array}$	$13 \ 41 \\ 14 \ 37 \\ 15 \ 34 \\ 16 \ 32 \\ 17 \ 30$	$\begin{array}{c} 13 \ 25 \\ 14 \ 25 \\ 15 \ 26 \\ 16 \ 28 \\ 17 \ 31 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 12 \ 57 \\ 14 \ 3 \\ 15 \ 11 \\ 16 \ 21 \\ 17 \ 33 \end{array}$	$\begin{array}{c} 12 \ 45 \\ 13 \ 54 \\ 15 \ 5 \\ 16 \ 19 \\ 17 \ 33 \end{array}$	$\begin{array}{c} 12 \ 31 \\ 13 \ 43 \\ 14 \ 58 \\ 16 \ 15 \\ 17 \ 34 \end{array}$	$\begin{array}{c} 12 \ 14 \\ 13 \ 29 \\ 14 \ 49 \\ 16 \ 12 \\ 17 \ 35 \end{array}$	$\begin{array}{rrrr} 12 & 6 \\ 13 & 23 \\ 14 & 45 \\ 16 & 9 \\ 17 & 36 \end{array}$	$\begin{array}{c} 11 \ 56 \\ 13 \ 16 \\ 14 \ 40 \\ 16 \ 8 \\ 17 \ 36 \end{array}$	$\begin{array}{c} 11 \ 46 \\ 13 \ 8 \\ 14 \ 35 \\ 16 \ 6 \\ 17 \ 37 \end{array}$	$\begin{array}{cccc} 11 & 34 \\ 13 & 0 \\ 14 & 30 \\ 16 & 3 \\ 17 & 37 \end{array}$	$\begin{array}{c} 11 \ 21 \\ 12 \ 50 \\ 14 \ 23 \\ 16 \ 0 \\ 17 \ 38 \end{array}$
20 21 22 23 24	$\begin{array}{c} 18 \ 23 \\ 19 \ 19 \\ 20 \ 17 \\ 21 \ 16 \\ 22 \ 15 \end{array}$	18 29 19 29 20 31 21 32 22 33	$18 \ 34 \\ 19 \ 39 \\ 20 \ 45 \\ 21 \ 49 \\ 22 \ 52$	$\begin{array}{c} 18 \ 41 \\ 19 \ 51 \\ 21 \ 1 \\ 22 \ 9 \\ 23 \ 13 \end{array}$	$\begin{array}{c} 18 \ 45 \\ 19 \ 58 \\ 21 \ 10 \\ 22 \ 20 \\ 23 \ 26 \end{array}$	$\begin{array}{r} 18 \ 49 \\ 20 \ \ 6 \\ 21 \ 21 \\ 22 \ 33 \\ 23 \ 40 \end{array}$	$\begin{array}{r} 18 \ 54 \\ 20 \ 15 \\ 21 \ 34 \\ 22 \ 49 \\ 23 \ 57 \end{array}$	$\begin{array}{cccc} 19 & 0 \\ 20 & 26 \\ 21 & 50 \\ 23 & 8 \\ \cdots \cdots \end{array}$	19 3 20 31 21 57 23 17 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19 10 20 43 22 14 23 39 	$19 14 \\ 20 50 \\ 22 25 \\ 23 53 \\ \dots$	19 18 20 58 22 37 0 8
25 26 27 28 29	$23 \ 14 \\ 0 \ 9 \\ 1 \ 2 \\ 1 \ 51 \\ 1 \ 51$	$23 \ 31 \\ 0 \ 26 \\ 1 \ 16 \\ 2 \ 2$	$23 50 \\ \\ 0 43 \\ 1 31 \\ 2 15$	0 11 1 3 1 49 2 29	0 24 1 15 1 59 2 37	0 39 1 28 2 10 2 46	0 56 1 44 2 24 2 57	0 18 1 17 2 4 2 41 3 10	0 28 1 27 2 13 2 48 3 16	0 40 1 38 2 23 2 57 3 23	$\begin{array}{c} 0 \ 53 \\ 1 \ 51 \\ 2 \ 34 \\ 3 \ 6 \\ 3 \ 30 \end{array}$	1 8 2 6 2 48 3 17 3 38	1 26 2 24 3 3 3 30 3 48
30 Oct. 1	2 37 3 20	$245 \\ 325$	$\begin{array}{c}2 54\\3 31\end{array}$	3 4 3 37	$3 10 \\ 3 41$	$3 17 \\ 3 45$	$325 \\ 350$	3 34 3 55	3 38 3 58	3 43 4 0	3 48 4 4	$\begin{array}{c}354\\47\end{array}$	4 0 4 11

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

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For other longitudes and for southern latitudes see page 78.

Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Oct. 1 2 3 4 5	h m 15 42 16 24 17 5 17 46 18 29	h m 15 38 16 23 17 8 17 53 18 39	h m 15 35 16 23 17 12 18 0 18 50	h m 15 30 16 23 17 16 18 8 19 1	h m 15 28 16 23 17 18 18 13 19 8	h m 15 25 16 23 17 21 18 18 19 16	h m 15 22 16 23 17 24 18 25 19 26	h m 15 18 16 23 17 28 18 32 19 37	h m 15 16 16 23 17 30 18 36 19 42	h m 15 14 16 23 17 31 18 40 19 48	h m 15 12 16 23 17 34 18 44 19 54	h m 15 10 16 23 17 36 18 49 20 2	h m 15 7 16 23 17 39 18 54 20 10
6 7 8 9 10	19 13 20 0 20 48 21 38 22 29	$\begin{array}{c} 19 \ 26 \\ 20 \ 14 \\ 21 \ 4 \\ 21 \ 55 \\ 22 \ 46 \end{array}$	$\begin{array}{c} 19 \ 39 \\ 20 \ 30 \\ 21 \ 22 \\ 22 \ 14 \\ 23 \ 4 \end{array}$	19 55 20 49 21 42 22 35 23 26	$\begin{array}{cccc} 20 & 4 \\ 21 & 0 \\ 21 & 54 \\ 22 & 48 \\ 23 & 38 \end{array}$	$\begin{array}{c} 20 \ 14 \\ 21 \ 12 \\ 22 \ 8 \\ 23 \ 2 \\ 23 \ 52 \end{array}$	20 26 21 26 22 25 23 19 	20 41 21 45 22 45 23 41 	$\begin{array}{c} 20 \ 48 \\ 21 \ 53 \\ 22 \ 55 \\ 23 \ 51 \\ \cdots \cdots \end{array}$	20 56 22 3 23 5 0 3	21 5 22 13 23 18 0 16	21 15 22 26 23 32 0 31	$21 26 \\ 22 40 \\ 23 49 \\ 0 49$
11 12 13 14 15	$23 21 \\ \begin{array}{c} \cdot \cdot \cdot \\ 0 12 \\ 1 4 \\ 1 56 \end{array}$	23 37 0 26 1 15 2 3	23 54 0 41 1 27 2 11	0 13 0 58 1 40 2 20	$ \begin{array}{c} 0.25 \\ 1 & 8 \\ 1 & 48 \\ 2 & 25 \end{array} $	0 38 1 19 1 56 2 31	0 9 0 54 1 32 2 7 2 37	0 30 1 12 1 48 2 19 2 45	0 40 1 21 1 56 2 24 2 49	0 51 1 31 2 4 2 30 2 53	$ \begin{array}{r} 1 & 4 \\ 1 & 43 \\ 2 & 13 \\ 2 & 38 \\ 2 & 57 \\ \end{array} $	$ \begin{array}{r} 1 19 \\ 1 56 \\ 2 24 \\ 2 45 \\ 3 2 \end{array} $	1 36 2 11 2 36 2 54 3 8
16 17 18 19 20	2 48 3 40 4 34 5 31 6 30	$\begin{array}{r} 2 \ 51 \\ 3 \ 39 \\ 4 \ 29 \\ 5 \ 22 \\ 6 \ 17 \end{array}$	$2 54 \\ 3 38 \\ 4 24 \\ 5 12 \\ 6 3$	2 58 3 37 4 17 5 0 5 47	$ \begin{array}{r} 3 & 1 \\ 3 & 36 \\ 4 & 14 \\ 4 & 54 \\ 5 & 38 \\ \end{array} $	3 4 3 36 4 10 4 46 5 27	$ \begin{array}{r} 3 & 6 \\ 3 & 35 \\ 4 & 5 \\ 4 & 38 \\ 5 & 15 \\ \end{array} $	$\begin{array}{r} 3 \ 10 \\ 3 \ 34 \\ 4 \ 0 \\ 4 \ 28 \\ 5 \ 0 \end{array}$	$3 12 \\ 3 34 \\ 3 57 \\ 4 23 \\ 4 54$	3 14 3 33 3 54 4 18 4 46	3 16 3 33 3 51 4 12 4 38	$ \begin{array}{r} 3 18 \\ 3 32 \\ 3 48 \\ 4 6 \\ 4 29 \end{array} $	3 20 3 31 3 44 3 59 4 18
21 22 23 24 25	7 30 8 32 9 32 10 29 11 22	7 158 159 1410 1311 8	6 58 7 56 8 56 9 56 10 53	6 39 7 35 8 35 9 36 10 36	6 28 7 23 8 22 9 24 10 26	$\begin{array}{c} 6 \ 15 \\ 7 \ 8 \\ 8 \ 8 \\ 9 \ 11 \\ 10 \ 15 \end{array}$	$egin{array}{ccc} 6 & 0 \\ 6 & 52 \\ 7 & 51 \\ 8 & 55 \\ 10 & 2 \end{array}$	5 41 6 31 7 30 8 36 9 45	5 33 6 21 7 20 8 27 9 38	5 236 107 98 169 29	512 558 656 84 919	$5 0 \\ 5 43 \\ 6 41 \\ 7 51 \\ 9 8$	4 45 5 26 6 23 7 35 8 56
26 27 28 29 30	$12 11 \\ 12 57 \\ 13 41 \\ 14 23 \\ 15 4$	$\begin{array}{cccc} 12 & 0 \\ 12 & 49 \\ 13 & 36 \\ 14 & 22 \\ 15 & 6 \end{array}$	$\begin{array}{c} 11 \ 48 \\ 12 \ 41 \\ 13 \ 31 \\ 14 \ 20 \\ 15 \ 9 \end{array}$	$\begin{array}{c} 11 & 35 \\ 12 & 31 \\ 13 & 26 \\ 14 & 19 \\ 15 & 11 \end{array}$	$\begin{array}{c} 11 \ 27 \\ 12 \ 26 \\ 13 \ 23 \\ 14 \ 18 \\ 15 \ 13 \end{array}$	$\begin{array}{c} 11 \ 18 \\ 12 \ 20 \\ 13 \ 19 \\ 14 \ 17 \\ 15 \ 15 \end{array}$	$\begin{array}{cccc} 11 & 8 \\ 12 & 12 \\ 13 & 15 \\ 14 & 16 \\ 15 & 17 \end{array}$	$\begin{array}{c} 10 \ 55 \\ 12 \ 4 \\ 13 \ 10 \\ 14 \ 15 \\ 15 \ 20 \end{array}$	$\begin{array}{c} 10 \ 49 \\ 11 \ 59 \\ 13 \ 8 \\ 14 \ 15 \\ 15 \ 21 \end{array}$	$\begin{array}{c} 10 \ 42 \\ 11 \ 55 \\ 13 \ 5 \\ 14 \ 14 \\ 15 \ 22 \end{array}$	$\begin{array}{c} 10 \ 35 \\ 11 \ 50 \\ 13 \ 2 \\ 14 \ 14 \\ 15 \ 24 \end{array}$	$\begin{array}{c} 10 \ 27 \\ 11 \ 44 \\ 12 \ 59 \\ 14 \ 13 \\ 15 \ 26 \end{array}$	$\begin{array}{c} 10 \ 17 \\ 11 \ 38 \\ 12 \ 56 \\ 14 \ 12 \\ 15 \ 27 \end{array}$
Nov. 1 2 3 4	15 45 16 27 17 11 17 57 18 45	15 51 16 36 17 23 18 11 19 1	$\begin{array}{c} 15 \ 57 \\ 16 \ 46 \\ 17 \ 36 \\ 18 \ 26 \\ 19 \ 18 \end{array}$	16 4 16 56 17 50 18 44 19 38	$\begin{array}{cccc} 16 & 8 \\ 17 & 3 \\ 17 & 58 \\ 18 & 54 \\ 19 & 50 \end{array}$	16 12 17 10 18 8 19 6 20 3	16 18 17 18 18 19 19 20 20 19	16 24 17 28 18 33 19 37 20 38	16 27 17 33 18 39 19 45 20 48	16 30 17 38 18 46 19 54 20 58	16 34 17 44 18 54 20 4 21 10	16 38 17 50 19 3 20 15 21 24	16 42 17 58 19 14 20 29 21 40
5 6 7 8 9	19 34 20 25 21 17 22 8 22 58	$\begin{array}{c} 19 \ 52 \\ 20 \ 42 \\ 21 \ 33 \\ 22 \ 22 \\ 23 \ 10 \end{array}$	$\begin{array}{c} 20 \ 10 \\ 21 \ 1 \\ 21 \ 50 \\ 22 \ 38 \\ 23 \ 23 \end{array}$	$\begin{array}{c} 20 \ 31 \\ 21 \ 22 \\ 22 \ 11 \\ 22 \ 56 \\ 23 \ 37 \end{array}$	$\begin{array}{c} 20 \ 44 \\ 21 \ 35 \\ 22 \ 22 \\ 23 \ 6 \\ 23 \ 46 \end{array}$	20 58 21 49 22 36 23 18 23 55	$\begin{array}{c} 21 \ 15 \\ 22 \ 6 \\ 22 \ 52 \\ 23 \ 32 \\ \cdots \end{array}$	$\begin{array}{c} 21 \ 36 \\ 22 \ 27 \\ 23 \ 11 \\ 23 \ 49 \\ \cdots \end{array}$	21 46 22 38 23 21 23 56 	21 5722 4923 31 $0 5$	$\begin{array}{c} 22 & 10 \\ 23 & 2 \\ 23 & 43 \\ \hline 0 & 15 \end{array}$	$\begin{array}{c} 22 & 25 \\ 23 & 17 \\ 23 & 56 \\ \hline 0 & 26 \end{array}$	22 43 23 34 0 12 0 39
10 11 12 13 14	23 48 0 38 1 28 2 19	$23 57 \\ 0 43 \\ 1 29 \\ 2 16$	0 6 0 48 1 30 2 13	0 17 0 54 1 31 2 9	$ \begin{array}{r} 0 & 24 \\ 0 & 57 \\ 1 & 32 \\ 2 & 7 \end{array} $	$\begin{array}{c} & & & & \\ & & & 0 & 29 \\ & & 1 & 1 \\ & 1 & 32 \\ & 2 & 4 \end{array}$	$\begin{array}{r} 0 & 6 \\ 0 & 37 \\ 1 & 6 \\ 1 & 34 \\ 2 & 1 \end{array}$	0 20 0 47 1 11 1 35 1 58	0 26 0 51 1 13 1 35 1 57	0 33 0 56 1 16 1 36 1 55	0 40 1 1 1 19 1 36 1 53	0 49 1 7 1 22 1 37 1 51	0 58 1 14 1 26 1 38 1 49
15 16	3 13 4 10	3 6 3 58	2 58 3 46	2 49 3 33	2 44 3 25	2 38 3 16	2 32 3 6	2 24 2 53	2 20 2 48	$\begin{array}{c c} 2 & 16 \\ 2 & 42 \end{array}$	2 12 2 35	2 7 2 27	$ \begin{array}{c} 2 & 2 \\ 2 & 18 \end{array} $

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF GREENWICH, 1918.

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To obtain standard time, see directions on page 44.

Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Oct. 1 2 3 4 5	h m 3 20 4 2 4 44 5 25 6 7	h m 3 25 4 4 4 42 5 20 5 59	h m 3 31 4 6 4 40 5 15 5 50	h m 3 37 4 8 4 38 5 9 5 40	h m 3 41 4 10 4 37 5 6 5 35	h m 3 45 4 11 4 36 5 1 5 28	h m 3 50 4 12 4 35 4 57 5 21	h m 3 55 4 14 4 33 4 52 5 12	h m 3 58 4 15 4 32 4 49 5 8	h m 4 0 4 16 4 31 4 46 5 3	h m 4 4 4 17 4 30 4 43 4 58	h m 4 7 4 18 4 29 4 40 4 52	h m 4 11 4 19 4 28 4 36 4 46
6 7 8 9 10	6 50 7 36 8 23 9 12 10 2	6 39 7 22 8 7 8 55 9 45	6 28 7 7 7 50 8 36 9 26	6 14 6 50 7 31 8 16 9 4	6 6 6 41 7 19 8 3 8 52	55763076749837	5 47 6 16 6 51 7 32 8 20	5 34 6 1 6 32 7 11 7 59	$5 28 \\ 5 53 \\ 6 23 \\ 7 2 \\ 7 49$	5 22 5 45 6 14 6 50 7 37	5 15 5 36 6 2 6 38 7 24	5 7 5 25 5 50 6 23 7 8	$\begin{array}{r} 4 58 \\ 5 14 \\ 5 35 \\ 6 6 \\ 6 50 \end{array}$
11 12 13 14 15	10 54 11 46 12 37 13 29 14 20	10 37 11 30 12 25 13 19 14 15	10 19 11 14 12 11 13 9 14 9	9 58 10 56 11 56 12 58 14 2	9 46 10 45 11 47 12 52 13 58	9 32 10 32 11 36 12 44 13 54	9 15 10 17 11 24 12 35 13 49	$\begin{array}{r} 8 55 \\ 9 59 \\ 11 9 \\ 12 24 \\ 13 42 \end{array}$	8 45 9 50 11 2 12 19 13 39	8 34 9 40 10 55 12 14 13 36	8 21 9 30 10 46 12 8 13 33	8 7 9 17 10 36 12 1 13 29	7 50 9 2 10 25 11 53 13 24
16 17 18 19 20	15 12 16 6 17 1 17 58 18 58	15 11 16 9 17 8 18 10 19 13	15 10 16 12 17 16 18 22 19 29	15 8 16 16 17 25 18 36 19 47	15 7 16 18 17 30 18 44 19 57	15 6 16 20 17 36 18 53 20 9	15 5 16 23 17 43 19 4 20 23	15 3 16 26 17 52 19 17 20 41	15 3 16 28 17 55 19 23 20 49	15 2 16 30 18 0 19 30 20 58	15 1 16 32 18 4 19 38 21 9	15 0 16 34 18 10 19 47 21 21	14 59 16 36 18 16 19 56 21 34
21 22 23 24 25	$\begin{array}{ccc} 20 & 0 \\ 21 & 1 \\ 21 & 59 \\ 22 & 55 \\ 23 & 46 \end{array}$	20 16 21 18 22 16 23 10 23 59	20 34 21 37 22 34 23 26 	20 55 21 58 22 55 23 44	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 21 \ 21 \\ 22 \ 25 \\ 23 \ 21 \\ \\ 0 \ 7 \end{array}$	21 37 22 42 23 37 0 21	21 58 23 4 23 57 0 39	22 8 23 14 0 7 0 47	22 18 23 25 0 17 0 56	22 31 23 38 0 30 1 6	22 45 23 53 0 43 1 18	23 2 0 11 1 0 1 31
26 27 28 29 30	0 34 1 19 2 1 2 43	0 43 1 25 2 4 2 42	0 12 0 53 1 31 2 7 2 41	0 27 1 5 1 39 2 10 2 41	0 36 1 11 1 43 2 12 2 40	0 46 1 19 1 48 2 14 2 40	0 58 1 27 1 53 2 17 2 39	$ \begin{array}{c} 1 12 \\ 1 38 \\ 2 0 \\ 2 20 \\ 2 39 \end{array} $	$ \begin{array}{c} 1 \\ 1 \\ 1 \\ 42 \\ 2 \\ 3 \\ 2 \\ 2 \\ 38 \end{array} $	$ \begin{array}{r} 1 25 \\ 1 48 \\ 2 6 \\ 2 23 \\ 2 38 \\ 2 38 \end{array} $	1 33 1 53 2 10 2 24 2 38	1 42 2 0 2 14 2 26 2 37	1 52 2 7 2 19 2 28 2 37
31 Nov. 1 2 3 4	$\begin{array}{c} 3 & 24 \\ 4 & 6 \\ 4 & 49 \\ 5 & 33 \\ 6 & 20 \end{array}$	320 358 438 520 65	$ \begin{array}{r} 3 & 16 \\ 3 & 51 \\ 4 & 28 \\ 5 & 7 \\ 5 & 49 \end{array} $	3 11 3 42 4 15 4 51 5 30	3 8 3 37 4 8 4 42 5 19	$ \begin{array}{r} 3 & 5 \\ 3 & 32 \\ 4 & 0 \\ 4 & 31 \\ 5 & 7 \end{array} $	$ \begin{array}{r} 3 & 2 \\ 3 & 25 \\ 3 & 50 \\ 4 & 19 \\ 4 & 52 \\ \end{array} $	257 317 339 44 435	$\begin{array}{c} 2 \ 55 \\ 3 \ 14 \\ 3 \ 34 \\ 3 \ 57 \\ 4 \ 26 \end{array}$	2 53 3 10 3 28 3 50 4 17	$\begin{array}{c} 2 \ 51 \\ 3 \ 5 \\ 3 \ 21 \\ 3 \ 41 \\ 4 \ 6 \end{array}$	2 48 3 0 3 14 3 32 3 55	$ \begin{array}{c} 2 \ 45 \\ 2 \ 55 \\ 3 \ 6 \\ 3 \ 21 \\ 3 \ 41 \end{array} $
5 6 7 8 9	7 9 7 59 8 50 9 41 10 32	6 52 7 42 8 33 9 26 10 19	$\begin{array}{r} 6 \ 34 \\ 7 \ 23 \\ 8 \ 15 \\ 9 \ 9 \\ 10 \ 4 \end{array}$	6 14 7 2 7 54 8 50 9 48	6 2 6 49 7 42 8 38 9 38	5 48 6 35 7 28 8 26 9 28	$532 \\ 618 \\ 711 \\ 810 \\ 914$	5 12 5 56 6 50 7 51 8 58	5 2 5 46 6 40 7 42 8 51	4 52 5 35 6 29 7 32 8 43	4 40 5 22 6 16 7 21 8 33	4 26 5 7 6 1 7 8 8 23	4 9 4 49 5 44 6 52 8 10
10 11 12 13 14	$11 22 \\12 12 \\13 2 \\13 52 \\14 44$	$\begin{array}{c} 11 \ 12 \\ 12 \ .5 \\ 12 \ 59 \\ 13 \ 53 \\ 14 \ 50 \end{array}$	$\begin{array}{cccc} 11 & 1 \\ 11 & 58 \\ 12 & 55 \\ 13 & 54 \\ 14 & 55 \end{array}$	$\begin{array}{c} 10 \ 48 \\ 11 \ 49 \\ 12 \ 52 \\ 13 \ 56 \\ 15 \ 2 \end{array}$	$\begin{array}{c} 10 \ 40 \\ 11 \ 44 \\ 12 \ 50 \\ 13 \ 56 \\ 15 \ 6 \end{array}$	10 32 11 39 12 47 13 57 15 10	$\begin{array}{c} 10 \ 22 \\ 11 \ 32 \\ 12 \ 44 \\ 13 \ 58 \\ 15 \ 14 \end{array}$	10 10 11 24 12 41 13 59 15 20	$\begin{array}{cccc} 10 & 4 \\ 11 & 20 \\ 12 & 39 \\ 14 & 0 \\ 15 & 23 \end{array}$	9 58 11 17 12 38 14 0 15 26	9 51 11 12 12 36 14 1 15 29	9 43 11 7 12 33 14 2 15 33	9 34 11 1 12 31 14 3 15 37
15 16	15 39 16 37-	15 48 16 50	15 59 17 4	16 10 17 20	16 17 17 29	16 24 17 40	16 33 17 52	16 44 18 8	16 49 18 15	16 54 18 23	17 0 18 32	17 7 18 42	17 15 18 54

LOCAL ASTRONOMICAL MEAN TIME OF MOONRISE, MERIDIAN OF GREENWICH, 1918.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 44.

For other longitudes and for southern latitudes see page 78. The bound bound and a solution of

Date.	at. 0°	+10°	+20°	+30°	+35°	+0°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov. 1 1 1 2	h m 6 4 10 7 5 9 8 6 11 9 7 13 0 8 13	h m 3 58 4 55 5 54 6 55 7 56	h m 3 46 4 39 5 36 6 37 7 38	h m 3 33 4 22 5 16 6 16 7 18	h m 3 25 4 12 5 4 6 3 7 6	h m 3 16 4 0 4 51 5 49 6 52	h m 3 6 3 46 4 34 5 32 6 36	h m 2 53 3 30 4 15 5 10 6 15	h m 2 48 3 22 4 6 5 0 6 6	h m 2 42 3 14 3 55 4 49 5 55	h m 2 35 3 4 3 43 4 36 5 42	h m 2 27 2 53 3 30 4 22 5 28	h m 2 18 2 41 3 14 4 4 5 11
2 2 2 2 2 2 2 2 2	$\begin{array}{c ccccc}1 & 9 & 10 \\2 & 10 & 3 \\3 & 10 & 51 \\4 & 11 & 37 \\5 & 12 & 20\end{array}$	8 55 9 50 10 42 11 31 12 18	8 39 9 37 10 33 11 25 12 15	$\begin{array}{r} 8 \ 21 \\ 9 \ 22 \\ 10 \ 22 \\ 11 \ 18 \\ 12 \ 12 \end{array}$	8 10 9 14 10 15 11 14 12 11	7 58 9 4 10 8 11 10 12 9	$\begin{array}{c} 7 \ 44 \\ 8 \ 52 \\ 9 \ 59 \\ 11 \ 4 \\ 12 \ 7 \end{array}$	$\begin{array}{r} 7 \ 26 \\ 8 \ 38 \\ 9 \ 49 \\ 10 \ 58 \\ 12 \ 5 \end{array}$	$\begin{array}{r} 7 \ 17 \\ 8 \ 31 \\ 9 \ 44 \\ 10 \ 55 \\ 12 \ 3 \end{array}$	$\begin{array}{ccc} 7 & 8 \\ 8 & 24 \\ 9 & 39 \\ 10 & 52 \\ 12 & 2 \end{array}$	$ \begin{array}{r} 6 58 \\ 8 16 \\ 9 33 \\ 10 48 \\ 12 1 \end{array} $	6 46 8 6 9 26 10 44 11 59	$\begin{array}{c} 6 \ 31 \\ 7 \ 56 \\ 9 \ 19 \\ 10 \ 40 \\ 11 \ 58 \end{array}$
2 2 2 2 2 3	$\begin{array}{c ccccc} 6 & 13 & 2 \\ 7 & 13 & 43 \\ 8 & 14 & 25 \\ 9 & 15 & 8 \\ 0 & 15 & 53 \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	13 4 13 52 14 41 15 30 16 21	$\begin{array}{rrrrr} 13 & 5 \\ 13 & 58 \\ 14 & 50 \\ 15 & 43 \\ 16 & 37 \end{array}$	$\begin{array}{rrrr} 13 & 6 \\ 14 & 1 \\ 14 & 56 \\ 15 & 51 \\ 16 & 47 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$13 10 \\ 14 14 \\ 15 18 \\ 16 23 \\ 17 27$	$\begin{array}{c} 13 \ 10 \\ 14 \ 16 \\ 15 \ 22 \\ 16 \ 28 \\ 17 \ 34 \end{array}$	$\begin{array}{c} 13 \ 11 \\ 14 \ 19 \\ 15 \ 27 \\ 16 \ 35 \\ 17 \ 43 \end{array}$	$\begin{array}{c} 13 \ 12 \\ 14 \ 22 \\ 15 \ 32 \\ 16 \ 42 \\ 17 \ 52 \end{array}$	$\begin{array}{c} 13 \ 13 \\ 14 \ 25 \\ 15 \ 38 \\ 16 \ 50 \\ 18 \ 3 \end{array}$	$\begin{array}{c} 13 \ 14 \\ 14 \ 28 \\ 15 \ 44 \\ 17 \ 0 \\ 18 \ 15 \end{array}$
Dec.	$\begin{array}{c ccccc} 1 & 16 & 40 \\ 2 & 17 & 30 \\ 3 & 18 & 21 \\ 4 & 19 & 13 \\ 5 & 20 & 5 \end{array}$	16 56 17 47 18 38 19 30 20 20	$\begin{array}{r} 17 \ 12 \\ 18 \ 5 \\ 18 \ 57 \\ 19 \ 48 \\ 20 \ 36 \end{array}$	$\begin{array}{c} 17 \ 32 \\ 18 \ 26 \\ 19 \ 18 \\ 20 \ 8 \\ 20 \ 55 \end{array}$	$\begin{array}{c} 17 \ 43 \\ 18 \ 38 \\ 19 \ 31 \\ 20 \ 20 \\ 21 \ 6 \end{array}$	$\begin{array}{c} 17 \ 56 \\ 18 \ 52 \\ 19 \ 45 \\ 20 \ 34 \\ 21 \ 18 \end{array}$	$\begin{array}{c} 18 \ 11 \\ 19 \ 9 \\ 20 \ 2 \\ 20 \ 50 \\ 21 \ 33 \end{array}$	$18 \ 30 \\ 19 \ 30 \\ 20 \ 24 \\ 21 \ 11 \\ 21 \ 50$	18 39 19 39 20 34 21 20 21 58	18 49 19 50 20 45 21 31 22 8	$\begin{array}{ccc} 19 & 0 \\ 20 & 3 \\ 20 & 58 \\ 21 & 43 \\ 22 & 18 \end{array}$	19 13 20 18 21 13 21 57 22 30	$\begin{array}{c} 19 \ 28 \\ 20 \ 35 \\ 21 \ 31 \\ 22 \ 14 \\ 22 \ 44 \end{array}$
	3 20 56 7 21 46 3 22 35 9 23 23 0	$\begin{array}{c} 21 & 8 \\ 21 & 55 \\ 22 & 41 \\ 23 & 26 \\ \dots \end{array}$	$\begin{array}{c} 21 \ 22 \\ 22 \ 6 \\ 22 \ 47 \\ 23 \ 28 \\ \dots \end{array}$	$21 \ 38 \\ 22 \ 17 \\ 22 \ 55 \\ 23 \ 31 \\ \dots \dots$	$\begin{array}{c} 21 \ 47 \\ 22 \ 24 \\ 22 \ 59 \\ 23 \ 32 \\ \cdots \end{array}$	$21 57 \\ 22 32 \\ 23 4 \\ 23 34 \\ \dots$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 22 \ 23 \\ 22 \ 51 \\ 23 \ 16 \\ 23 \ 39 \\ \dots \end{array}$	$\begin{array}{c} 22 \ 30 \\ 22 \ 56 \\ 23 \ 19 \\ 23 \ 40 \\ \dots \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 22 \ 46 \\ 23 \ 7 \\ 23 \ 26 \\ 23 \ 42 \\ 23 \ 59 \end{array}$	$\begin{array}{c} 22 \ 55 \\ 23 \ 14 \\ 23 \ 30 \\ 23 \ 44 \\ 23 \ 58 \end{array}$	$\begin{array}{r} 23 & 6 \\ 23 & 22 \\ 23 & 35 \\ 23 & 46 \\ 23 & 56 \end{array}$
11 12 13 14 14	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	0 11 0 57 1 47 2 39 3 36	$\begin{array}{c} 0 & 9 \\ 0 & 52 \\ 1 & 36 \\ 2 & 26 \\ 3 & 19 \end{array}$	$\begin{array}{rrrr} & 0 & 7 \\ & 0 & 44 \\ 1 & 25 \\ 2 & 10 \\ 3 & 0 \end{array}$	$\begin{array}{r} 0 & 6 \\ 0 & 40 \\ 1 & 18 \\ 2 & 0 \\ 2 & 49 \end{array}$	0 4 0 36 1 11 1 50 2 36	$\begin{array}{c} 0 & 3 \\ 0 & 31 \\ 1 & 2 \\ 1 & 38 \\ 2 & 21 \end{array}$	$\begin{array}{c} 0 & 1 \\ 0 & 25 \\ 0 & 52 \\ 1 & 23 \\ 2 & 3 \end{array}$	$\begin{array}{c} 0 & 1 \\ 0 & 22 \\ 0 & 47 \\ 1 & 17 \\ 1 & 54 \end{array}$	$\begin{array}{c} 0 & 0 \\ 0 & 19 \\ 0 & 42 \\ 1 & 9 \\ 1 & 44 \end{array}$	$\begin{array}{c} & 0 & 16 \\ & 0 & 36 \\ & 1 & 1 \\ & 1 & 34 \end{array}$	0 12 0 29 0 51 1 21	$\begin{array}{c} & & & & \\ & & & & \\ & & & 0 & 22 \\ & & 0 & 41 \\ & & 1 & 7 \end{array}$
16 17 18 19 20	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{r} 4 & 35 \\ 5 & 36 \\ 6 & 37 \\ 7 & 35 \\ 8 & 30 \end{array}$	4 17 5 18 6 20 7 21 8 18	$\begin{array}{c} 3 56 \\ 4 57 \\ 6 0 \\ 7 4 \\ 8 6 \end{array}$	$3 43 \\ 4 44 \\ 5 48 \\ 6 54 \\ 7 58$	$\begin{array}{c} 3 & 29 \\ 4 & 30 \\ 5 & 35 \\ 6 & 43 \\ 7 & 50 \end{array}$	$\begin{array}{r} 3 \ 13 \\ 4 \ 13 \\ 5 \ 20 \\ 6 \ 30 \\ 7 \ 39 \end{array}$	$\begin{array}{c} 2 & 52 \\ 3 & 52 \\ 5 & 0 \\ 6 & 14 \\ 7 & 27 \end{array}$	$\begin{array}{c}2 & 42 \\3 & 42 \\4 & 51 \\6 & 6 \\7 & 22\end{array}$	$\begin{array}{c}2 & 31 \\3 & 31 \\4 & 41 \\5 & 58 \\7 & 15\end{array}$	$2 19 \\ 3 18 \\ 4 29 \\ 5 48 \\ 7 8$	$ \begin{array}{r} 2 & 5 \\ 3 & 3 \\ 4 & 16 \\ 5 & 37 \\ 7 & 0 \end{array} $	$ \begin{array}{r} 1 \ 48 \\ 2 \ 46 \\ 4 \ 0 \\ 5 \ 25 \\ 6 \ 51 \\ \end{array} $
21 22 23 24 25	9 29 10 14 10 57 11 39 12 20	9 21 10 10 10 56 11 42 12 27	$\begin{array}{r} 9 & 14 \\ 10 & 6 \\ 10 & 56 \\ 11 & 45 \\ 12 & 34 \end{array}$	$\begin{array}{r} 9 & 5 \\ 10 & 1 \\ 10 & 56 \\ 11 & 49 \\ 12 & 42 \end{array}$	$\begin{array}{r} 9 & 0 \\ 9 & 59 \\ 10 & 56 \\ 11 & 51 \\ 12 & 46 \end{array}$	$\begin{array}{r} 8 54 \\ 9 56 \\ 10 56 \\ 11 54 \\ 12 52 \end{array}$	$\begin{array}{r} 8 & 47 \\ 9 & 52 \\ 10 & 55 \\ 11 & 57 \\ 12 & 58 \end{array}$	$\begin{array}{r} 8 & 39 \\ 9 & 48 \\ 10 & 55 \\ 12 & 1 \\ 13 & 5 \end{array}$	$\begin{array}{r} 8 & 35 \\ 9 & 46 \\ 10 & 55 \\ 12 & 2 \\ 13 & 9 \end{array}$	$\begin{array}{r} 8 \ 31 \\ 9 \ 44 \\ 10 \ 55 \\ 12 \ 4 \\ 13 \ 13 \end{array}$	$\begin{array}{r} 8 \ 26 \\ 9 \ 42 \\ 10 \ 55 \\ 12 \ 6 \\ 13 \ 17 \end{array}$	$\begin{array}{r} 8 \ 21 \\ 9 \ 39 \\ 10 \ 55 \\ 12 \ 8 \\ 13 \ 21 \end{array}$	8 15 9 36 10 55 12 11 13 27
20 27 28 29 30	3 13 3 13 47 3 14 34 15 22 16 13	$13 13 \\ 14 0 \\ 14 48 \\ 15 39 \\ 16 30$	$\begin{array}{c} 13 \ 23 \\ 14 \ 13 \\ 15 \ 4 \\ 15 \ 56 \\ 16 \ 49 \end{array}$	$\begin{array}{c} 13 \ 35 \\ 14 \ 28 \\ 15 \ 22 \\ 16 \ 17 \\ 17 \ 10 \end{array}$	$\begin{array}{c} 13 & 42 \\ 14 & 37 \\ 15 & 33 \\ 16 & 28 \\ 17 & 23 \end{array}$	$\begin{array}{c} 13 \ 50 \\ 14 \ 47 \\ 15 \ 45 \\ 16 \ 42 \\ 17 \ 37 \end{array}$	$\begin{array}{c} 13 \ 59 \\ 14 \ 59 \\ 16 \ 0 \\ 16 \ 58 \\ 17 \ 54 \end{array}$	14 10 15 14 16 18 17 18 18 16	$\begin{array}{c} 14 \ 15 \\ 15 \ 21 \\ 16 \ 26 \\ 17 \ 28 \\ 18 \ 26 \end{array}$	14 21 15 28 16 35 17 39 18 37	14 27 15 37 16 46 17 51 18 50	$\begin{array}{c} 14 \ 34 \\ 15 \ 46 \\ 16 \ 58 \\ 18 \ 5 \\ 19 \ 5 \end{array}$	$14 42 \\15 58 \\17 12 \\18 22 \\19 23$
31 32	17 5 17 58	17 22 18 14	17 41 18 31	18 2 18 50	18 14 19 2	18 28 19 15	18 45 19 30	19 6 19 49	19 16 19 58	19 27 20 8	19 40 20 19	19 54 20 32	20 11 20 46

LOCAL ASTRONOMICAL MEAN TIME OF MOONSET, MERIDIAN OF SREENVICH, 1918.

To obtain civil time, write P. M. after the astronomical time if it is less than twelve hours; if greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the day.

To obtain standard time, see directions on page 44.

								the second second					
Date.	0°	+10°	+20°	+30°	+35°	+40°	+45°	+50°	+52°	+54°	+56°	+58°	+60°
Nov. 16 17 18 19 20	h m 16 37 17 38 18 40 19 42 20 41	h m 16 50 17 54 18 57 19 59 20 57	h m 17 4 18 11 19 16 20 18 21 14	h m 17 20 18 30 19 37 20 39 21 33	h m 17 29 18 41 19 50 20 51 21 44	h m 17 40 18 54 20 4 21 5 21 58	h m 17 52 19 10 20 21 21 22 22 13	h m 18 8 19 29 20 42 21 43 22 32	h m 18 15 19 38 20 52 21 53 22 40	h m 18 23 19 48 21 3 22 4 22 50	h m 18 32 19 59 21 16 22 16 23 1	h m 18 42 20 12 21 31 22 31 23 14	h m 18 54 20 28 21 48 22 48 23 29
21 22 23 24 25	$\begin{array}{c} 21 \ 36 \\ 22 \ 27 \\ 23 \ 14 \\ 23 \ 58 \\ \dots \end{array}$	$21 50 \\ 22 37 \\ 23 21 \\ \dots \\ 0 2$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	22 20 23 2 23 38 0 11	22 30 23 9 23 43 0 14	22 41 23 17 23 49 0 17	22 54 23 27 23 55 0 20	23 9 23 39 0 3 0 24	$23 16 \\ 23 44 \\ \dots \\ 0 7 \\ 0 26$	$23 24 23 50 0 11 \\ 0 28$	23 33 23 57 0 16 0 31	23 43 0 4 0 20 0 33	23 55 0 13 0 26 0 36
26 27 28 29 30	0 40 1 22 2 3 2 46 3 30	0 41 1 19 1 57 2 36 3 18	$\begin{array}{c} 0 \ 41 \\ 1 \ 16 \\ 1 \ 50 \\ 2 \ 27 \\ 3 \ 5 \end{array}$	$\begin{array}{c} 0 \ 42 \\ 1 \ 12 \\ 1 \ 43 \\ 2 \ 15 \\ 2 \ 50 \end{array}$	0 42 1 10 1 39 2 9 2 42	0 43 1 8 1 34 2 2 2 32	0 43 1 6 1 28 1 53 2 21	0 44 1 3 1 22 1 43 2 7	$\begin{array}{c} 0 \ 44 \\ 1 \ 1 \\ 1 \ 19 \\ 1 \ 38 \\ 2 \ 1 \end{array}$	$\begin{array}{c} 0 \ 44 \\ 1 \ 0 \\ 1 \ 15 \\ 1 \ 33 \\ 1 \ 54 \end{array}$	0 45 0 58 1 12 1 27 1 46	0 45 0 56 1 8 1 21 1 37	0 45 0 54 1 3 1 14 1 27
Dec. 1 2 3 4 5	$\begin{array}{r} 4 \ 16 \\ 5 \ 4 \\ 5 \ 55 \\ 6 \ 46 \\ 7 \ 38 \end{array}$	$\begin{array}{r} 4 & 1 \\ 4 & 48 \\ 5 & 37 \\ 6 & 29 \\ 7 & 22 \end{array}$	$ \begin{array}{r} 3 46 \\ 4 31 \\ 5 19 \\ 6 11 \\ 7 5 \end{array} $	3 28 4 11 4 58 5 49 6 45	3 18 3 59 4 45 5 37 6 33	3 6 3 46 4 31 5 23 6 20	$\begin{array}{c} 2 52 \\ 3 30 \\ 4 14 \\ 5 6 \\ 6 4 \end{array}$	$\begin{array}{r} 2 \ 36 \\ 3 \ 10 \\ 3 \ 53 \\ 4 \ 44 \\ 5 \ 44 \end{array}$	$\begin{array}{r} 2 \ 28 \\ 3 \ 1 \\ 3 \ 43 \\ 4 \ 34 \\ 5 \ 35 \end{array}$	$\begin{array}{c} 2 & 19 \\ 2 & 51 \\ 3 & 32 \\ 4 & 23 \\ 5 & 24 \end{array}$	$\begin{array}{r} 2 & 9 \\ 2 & 40 \\ 3 & 19 \\ 4 & 10 \\ 5 & 12 \end{array}$	$ \begin{array}{r} 1 58 \\ 2 26 \\ 3 4 \\ 3 55 \\ 4 59 \\ \end{array} $	$ \begin{array}{r} 1 45 \\ 2 10 \\ 2 46 \\ 3 37 \\ 4 42 \end{array} $
6 7 8 9 10	$\begin{array}{r} 8 \ 30 \\ 9 \ 20 \\ 10 \ 9 \\ 10 \ 58 \\ 11 \ 47 \end{array}$	$\begin{array}{r} 8 \ 15 \\ 9 \ 9 \\ 10 \ 1 \\ 10 \ 54 \\ 11 \ 46 \end{array}$	8 0 8 56 9 53 10 49 11 46	7 43 8 42 9 43 10 44 11 46	7 33 8 34 9 37 10 41 11 45	7 21 8 25 9 31 10 37 11 45	$\begin{array}{rrrr} 7 & 7 \\ 8 & 14 \\ 9 & 23 \\ 10 & 34 \\ 11 & 45 \end{array}$	$\begin{array}{r} 6 50 \\ 8 1 \\ 9 14 \\ 10 29 \\ 11 44 \end{array}$	$\begin{array}{r} 6 \ 42 \\ 7 \ 55 \\ 9 \ 10 \\ 10 \ 26 \\ 11 \ 44 \end{array}$	$\begin{array}{r} 6 \ 34 \\ 7 \ 48 \\ 9 \ 5 \\ 10 \ 24 \\ 11 \ 44 \end{array}$	6 24 7 40 9 0 10 21 11 44	6 12 7 32 8 54 10 18 11 43	5 59 7 22 8 47 10 15 11 43
11 12 13 14 15	$\begin{array}{c} 12 \ 36 \\ 13 \ 28 \\ 14 \ 22 \\ 15 \ 20 \\ 16 \ 20 \end{array}$	12 40 13 36 14 34 15 34 16 37	$\begin{array}{r} 12 \ 44 \\ 13 \ 44 \\ 14 \ 46 \\ 15 \ 50 \\ 16 \ 54 \end{array}$	$\begin{array}{c} 12 \ 48 \\ 13 \ 53 \\ 15 \ 0 \\ 16 \ 8 \\ 17 \ 15 \end{array}$	$\begin{array}{c} 12 \ 51 \\ 13 \ 59 \\ 15 \ 8 \\ 16 \ 18 \\ 17 \ 27 \end{array}$	$\begin{array}{r} 12 \ 54 \\ 14 \ 5 \\ 15 \ 17 \\ 16 \ 30 \\ 17 \ 41 \end{array}$	$\begin{array}{c} 12 \ 57 \\ 14 \ 12 \\ 15 \ 28 \\ 16 \ 44 \\ 17 \ 57 \end{array}$	$\begin{array}{rrrr} 13 & 1 \\ 14 & 21 \\ 15 & 41 \\ 17 & 2 \\ 18 & 17 \end{array}$	$\begin{array}{rrrr} 13 & 3 \\ 14 & 25 \\ 15 & 48 \\ 17 & 10 \\ 18 & 27 \end{array}$	$\begin{array}{rrrr} 13 & 6 \\ 14 & 29 \\ 15 & 54 \\ 17 & 19 \\ 18 & 38 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	13 10 14 40 16 11 17 41 19 4	13 13 14 46 16 21 17 54 19 21
16 17 18 19 -20	$\begin{array}{c} 17 \ 22 \\ 18 \ 22 \\ 19 \ 20 \\ 20 \ 14 \\ 21 \ 4 \end{array}$	17 39 18 39 19 35 20 26 21 13	$\begin{array}{c} 17 \ 58 \\ 18 \ 57 \\ 19 \ 51 \\ 20 \ 39 \\ 21 \ 23 \end{array}$	18 19 19 17 20 9 20 54 21 33	$\begin{array}{c} 18 \ 32 \\ 19 \ 29 \\ 20 \ 20 \\ 21 \ 2 \\ 21 \ 40 \end{array}$	18 46 19 43 20 32 21 12 21 47	$\begin{array}{rrrr} 19 & 4 \\ 19 & 59 \\ 20 & 46 \\ 21 & 23 \\ 21 & 55 \end{array}$	$\begin{array}{c} 19 \ 24 \\ 20 \ 19 \\ 21 \ 3 \\ 21 \ 37 \\ 22 \ 4 \end{array}$	$\begin{array}{c} 19 \ 34 \\ 20 \ 29 \\ 21 \ 11 \\ 21 \ 43 \\ 22 \ 9 \end{array}$	19 46 20 39 21 20 21 50 22 14	19 58 20 51 21 30 21 58 22 19	$\begin{array}{c} 20 \ 13 \\ 21 \ 5 \\ 21 \ 41 \\ 22 \ 7 \\ 22 \ 26 \end{array}$	$\begin{array}{c} 20 \ 31 \\ 21 \ 21 \\ 21 \ 55 \\ 22 \ 16 \\ 22 \ 32 \end{array}$
21 22 23 24 25	$\begin{array}{c} 21 \ 51 \\ 22 \ 35 \\ 23 \ 17 \\ 23 \ 59 \\ \dots \end{array}$	21 56 22 37 23 16 23 54 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 22 \ 12 \\ 22 \ 43 \\ 23 \ 11 \\ 23 \ 40 \\ \dots \end{array}$	$\begin{array}{c} 22 \ 17 \\ 22 \ 44 \\ 23 \ 10 \\ 23 \ 36 \\ \dots \end{array}$	$\begin{array}{c} 22 & 22 \\ 22 & 46 \\ 23 & 9 \\ 23 & 32 \\ 23 & 56 \end{array}$	$\begin{array}{c} 22 \ 28 \\ 22 \ 48 \\ 23 \ 7 \\ 23 \ 26 \\ 23 \ 47 \end{array}$	$\begin{array}{c} 22 \ 30 \\ 22 \ 49 \\ 23 \ 6 \\ 23 \ 24 \\ 23 \ 43 \end{array}$	$\begin{array}{c} 22 & 33 \\ 22 & 50 \\ 23 & 6 \\ 23 & 22 \\ 23 & 38 \end{array}$	$\begin{array}{c} 22 \ 36 \\ 22 \ 51 \\ 23 \ 5 \\ 23 \ 18 \\ 23 \ 33 \end{array}$	$\begin{array}{c} 22 \ 40 \\ 22 \ 52 \\ 23 \ 4 \\ 23 \ 15 \\ 23 \ 28 \end{array}$	$\begin{array}{c} 22 & 44 \\ 22 & 54 \\ 23 & 3 \\ 23 & 12 \\ 23 & 22 \end{array}$
26 27 28 29 30	$\begin{array}{c} 0 \ 41 \\ 1 \ 25 \\ 2 \ 10 \\ 2 \ 57 \\ 3 \ 47 \end{array}$	$\begin{array}{c} 0 \ 33 \\ 1 \ 14 \\ 1 \ 56 \\ 2 \ 42 \\ 3 \ 30 \end{array}$	$\begin{array}{c} 0 \ 25 \\ 1 \ 2 \\ 1 \ 42 \\ 2 \ 25 \\ 3 \ 12 \end{array}$	$\begin{array}{c} 0 \ 15 \\ 0 \ 49 \\ 1 \ 25 \\ 2 \ 6 \\ 2 \ 51 \end{array}$	$\begin{array}{r} 0 & 9 \\ 0 & 41 \\ 1 & 16 \\ 1 & 54 \\ 2 & 39 \end{array}$	$\begin{array}{c} 0 & 3 \\ 0 & 32 \\ 1 & 4 \\ 1 & 42 \\ 2 & 24 \end{array}$	$\begin{array}{c} & 0 & 22 \\ & 0 & 52 \\ & 1 & 27 \\ & 2 & 8 \end{array}$	0 9 0 36 1 8 1 48	0 4 0 29 1 0 1 38	23 58 0 21 0 50 1 27	23 50 0 12 0 39 1 14	$23 \ 43 \\ 0 \ 1 \\ 0 \ 26 \\ 1 \ 0 \\ 0 \\ 1 \\ 0 \\ 0 \\ 1 \\ 0 \\ 0 \\ 1 \\ 0 \\ 0$	$23 \ 34 \\ 23 \ 50 \\ 0 \ 12 \\ 0 \ 43$
31 32	4 38 5 31	4 21 5 14	$\begin{array}{r}4&2\\4&56\end{array}$	$\begin{array}{c}3&41\\4&36\end{array}$	3 28 4 24	3 14 4 10	2 57 3 53	2 36 3 33	2 26 3 23	$2 14 \\ 3 12$	$\begin{array}{ccc} 2 & 1 \\ 3 & 0 \end{array}$	$ \begin{array}{r} 1 46 \\ 2 45 \end{array} $	1 28 2 28

MCONRISE AND MOONSET, 1918.

FOR NORTHEEN STATIONS NOT ON THE MERIDIAN OF GREENWICH AND FOR SOUTHERN STATIONS.

For northern stations not on the meridian of Greenwich.—For longitudes twelve hours or less west from Greenwich, obtain the data for the given latitude from Table VI for the given date and for the date following; for longitudes twelve hours or less east from Greenwich, obtain the data for the given latitude from Table VI for the given date and for the date preceding. Subtract the time on the earlier date from the time on the later and multiply the difference by the twentyfourth part of the longitude in hours and decimals of an hour, positive if west, negative if east. Apply the product as a correction to the time on the given date.

For southern stations.—The instant of moonrise or moonset for any station south of the equator is that of moonset or moonrise, respectively, at a place of the same latitude north of the equator whose longitude is twelve hours different from that of the southern station.

If the southern station be twelve hours or less west from Greenwich, and the phenomenon at that station occurs between noon and midnight, the local astronomical day will be the same at the southern and northern stations. If, however, the phenomenon at the southern station occurs between midnight and noon, the local astronomical day at the northern station will be one day later than at the southern.

If the southern station be twelve hours or less east from Greenwich and the phenomenon at that station occurs between noon and midnight, the local astronomical day at the northern station will be one less than at the southern station. If, however, the phenomenon occurs between midnight and noon, the local astronomical day will be the same at the two stations.

Having thus determined the true astronomical day at the northern station, compute by the rule for northern latitudes. For the desired local time of moonrise at the southern station change the time of moonset at the northern station twelve hours. For the desired local time of moonset at the southern station change the time of moonrise at the northern station twelve hours.

Example.—December 20, 1918, civil date, find the time of moonrise and moonset in longitude 4^h 43^m west from Greenwich and in latitude 33° 30' south.

The longitude of the northern station is 7^{h} .3 east from Greenwich and its latitude is 33° .5 N. Upon inspection of Table VI it is seen that the astronomical day at the southern station is December 20 for moonrise and December 19 for moonset, the former phenomenon occurring between noon and midnight, the latter between midnight and noon. For the northern station, in accordance with the precepts given above, both phenomena are to be computed for December 20.

At northern station-

At

			Moonrise.	Moonset.
			d h m	dhm
Table VI, Lat. +33°.5			Dec. 19 6 57	Dec. 19 21 0
Table VI, Lat. +33°.5 . .	24.21		20 8 0	20 21 38
Difference			63	38
Product of Diff. by $-\frac{7.3}{24}$.			-19	-12
Local astronomical mean time	1.1	•	7 41	21 26
southern station—			1 -0 - 42 - 9 -02 - 16 - 6	1 20 01 02 01 812
		22	Moonset.	Moonrise.
Local astronomical mean time	21.15		19 41	9 26
Civil time	20.00	•	Dec. 20 7 41 A. M.	Dec. 20 9 26 P. M.



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