

The left column gives **Julian Dates** (number of days from 4713 B.C. Jan. 1 noon), useful for finding time spans between events by subtraction. The first 3 digits of the Julian date (245) are omitted.

Hours and minutes, where given, are in Universal Time.

Occasions such as "Moon 1.25° N.N.E. of Venus" are **appulses**: closest apparent approaches. They are slightly different from **conjunctions**, when one passes north of the other as measured in right ascension or in ecliptic longitude. A **quasi-conjunction** is an appulse without a conjunction, and typically happens when a planet is near its stationary moment.

For **meteor showers**: ZHR (zenithal hourly rate) is an estimate of the number to be seen under ideal conditions at the peak time if the radiant were overhead; actual rates may be very different. Peak times (predicted from where the center of the stream seems to cross Earth's orbit) are

uncertain; best to start watching the night before. Meteor are usually most abundant in the morning hours.

Tell me of errors you notice. They're inevitable, but more easily corrected here than in the former printed *Astronomical Calendars!*

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This calendar may be subject to improvement. Come back to it!

Explanation of terms can be found in our glossary book *Albedo to Zodiac*. There is more about each topic in *The Astronomical Companion*. And events in this list can be traced in the large *Zodiac Wavy Chart* for the year. For all these, see  
universalworkshop.com



8485.458	Jan	1	Tue	23	Moon 1.25° N.N.E. of Venus; 47° from the Sun in the morning sky
8485.482				24	Mercury at descending node through the ecliptic plane
8485.529		2	wed	1	Mars crosses equator northward
8485.748				6	Saturn at conjunction with the Sun; 11.044 AU from Earth; latitude 0.53°
8486.5		3	Thu		<b>Quadrantid meteors</b> ; ZHR 110; peak Jan 3 20; 2 days before New
8486.627				3	<b>Earth at perihelion</b> ; 0.9833 AU from the Sun
8486.708				5	Moon 8.4° N.N.E. of Antares; 32° and 33° from the Sun in the morning sky
8486.896				10	Moon 3.1° N.N.E. of Jupiter; 30° from the Sun in the morning sky
8488.271		4	Fri	19	Moon 2.76° N. of Mercury; 15° from the Sun in the morning sky
8488.807		5	SAT	7:22	Latest sunrise, at latitude 40° north
8489.292				19	Moon 0.88° N. of Saturn; 3° from the Sun in the morning sky
8489.300				19	Venus dichotomy (D-shape)
8489.562		6	SUN	1:29	<b>New Moon</b> ; beginning of lunation 1188. Partial eclipse of the Sun

8489.691		5	<b>Venus at westernmost elongation;</b> 46.9° from Sun in morning sky
8490.269		18	Uranus stationary in longitude; resumes direct motion
8490.507	7 Mon	0	Moon at descending node; longitude 296.7°
8490.514		0	Uranus stationary in right ascension; resumes direct motion
8491.125		15	Moon shows minimum libration for the year, 1.22°
8492.680	9 Wed	4	Moon at apogee; distance 63.67 Earth-radii
8494.244	10 Thu	18	Mercury at southernmost declination, -24.15°
8494.542	11 Fri	1	Moon 2.96° S.S.E. of Neptune; 54° from the Sun in the evening sky
8494.725		5	Pluto at conjunction with the Sun; 34.702 AU from Earth; latitude -0.12°
8495.851	12 SAT	8	Mercury at aphelion, 0.4667 AU from the Sun
8496.521	13 SUN	1	Moon 5.0° S.S.E. of Mars; 76° from the Sun in the evening sky
8497.000		12	Mercury 1.72° S. of Saturn; 10° from the Sun in the morning sky; magnitudes -0.6 and 0.5
8497.781	14 Mon	6:45	<b>First Quarter Moon</b>
8498.188		17	Moon 4.8° S.S.E. of Uranus; 95° and 94° from the Sun in the evening sky
8498.708	15 Tue	5	Mars at ascending node through the ecliptic plane
8500.458	16 Wed	23	Venus 7.8° N. of Antares; 47° from the Sun in the morning sky; magnitudes -4.4 and 1.0
8500.604	17 Thu	3	Moon 8.5° S.S.E. of the Pleiades; 124° and 123° from the Sun in the evening sky
8500.641		3	Middle of eclipse season: Sun is at same longitude as Moon's descending node, 296.7°
8500.840		8	Venus at northernmost latitude from the ecliptic plane, 3.4°
8501.271		19	Moon 1.63° N. of Aldebaran; 133° and 132° from the Sun in the evening sky
8502.313	18 Fri	20	Mercury 1.53° S. of Pluto; 7° from the Sun in the morning sky; magnitudes -0.8 and 14.3
8502.561	19 SAT	1	Uranus at east quadrature, 90° from the Sun
8503.596	20 SUN	2	Sun enters Capricornus, at longitude 299.71° on the ecliptic
8503.877		9	Sun enters the astrological sign Aquarius, i.e. its longitude is 300°
8504.271		19	Moon 7.0° S. of Pollux; 174° and 170° from the Sun in the midnight sky
8504.450		23	Moon at ascending node; longitude 116.8°
8504.719	21 Mon	5:16	<b>Full Moon. Total eclipse of the Moon</b>
8505.333		20:00	Moon at perigee; distance 56.03 Earth-radii
8505.333		20:00	Perigee only 14.7 hours after Full Moon
8506.167	22 Tue	16	Venus 2.41° N. of Jupiter; 46° from the Sun in the morning sky; magnitudes -4.3 and -1.8
8506.646	23 Wed	4	Moon 2.46° N.N.E. of Regulus; 153° from the Sun in the morning sky

8510.375	26	SAT	21	Moon 7.3° N.N.E. of Spica; 103° from the Sun in the morning sky	
8511.208	27	SUN	17	Moon shows maximum libration for the year, 10.11°	
8511.383			21:11	<b>Last Quarter Moon</b>	
8513.607	30	wed	3	Mercury at superior conjunction with the Sun; 1.407 AU from Earth; latitude -6.93°	
8513.938			11	Moon 8.4° N.N.E. of Antares; 60° and 61° from the Sun in the morning sky	
8514.563	31	Thu	2	Moon 2.74° N.N.E. of Jupiter; 53° from the Sun in the morning sky	
8515.250			18	Moon 0.19° E.N.E. of Venus; 45° from the Sun in the morning sky	
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8516.111	Feb	1	Fri	15	Mercury at southernmost latitude from the ecliptic plane, -7.0°
8516.5		2	SAT		Ground Hog Day
8516.813				8	Moon 0.65° N.N.E. of Saturn; 28° from the Sun in the morning sky
8517.775		3	SUN	7	Moon at descending node; longitude 296.8°
8519.378		4	Mon	21:04	<b>New Moon</b> ; beginning of lunation 1189
8519.813		5	Tue	8	Moon 0.23° S.E. of Mercury; 5° from the Sun in the evening sky
8519.894				9	Moon at apogee; distance 63.74 Earth-radii; farthest in year
8521.875		7	Thu	9	Moon 2.98° S.S.E. of Neptune; 27° from the Sun in the evening sky
8522.5		8	Fri		Alpha Centaurid meteors; ZHR 6; peak Feb 8 7; 3 days after New
8525.350		10	SUN	20	Moon, Mars, and Uranus within circle of diameter 5.68°; 66° east of the Sun
8525.396				22	Moon 5.7° S.S.E. of Mars; 66° from the Sun in the evening sky
8525.521		11	Mon	1	Moon 4.7° S.S.E. of Uranus; 68° and 67° from the Sun in the evening sky
8526.153				16	The equation of time is at a minimum of -14.24 minutes.
8527.434		12	Tue	22:25	<b>First Quarter Moon</b>
8527.750		13	Wed	6	Mars 0.98° N.N.W. of Uranus; 65° from the Sun in the evening sky; magnitudes 1.0 and 5.8
8527.958				11	Moon 8.4° S.S.E. of the Pleiades; 96° from the Sun in the evening sky
8528.5		14	Thu		St. Valentine's Day
8528.646				4	Moon 1.68° N. of Aldebaran; 105° from the Sun in the evening sky
8531.370		16	SAT	21	Sun enters Aquarius, at longitude 327.89° on the ecliptic
8531.750		17	SUN	6	Moon 7.0° S. of Pollux; 146° and 144° from the Sun in the evening sky
8531.904				10	Moon at ascending node; longitude 116.5°

8533.042	18 Mon	13	Venus 1.08° N. of Saturn; 43° from the Sun in the morning sky; magnitudes -4.1 and 0.7
8533.464		23	Sun enters the astrological sign Pisces, i.e. its longitude is 330°
8533.750	19 Tue	6	Mercury 0.67° N.N.W. of Neptune; 15° from the Sun in the evening sky; magnitudes -1.0 and 8.0
8533.869		8:51	Moon at perigee; distance 55.94 Earth-radii; nearest in year
8533.869		8:51	Perigee only 7.0 hours before Full Moon
8534.104		15	Moon 2.41° N.N.E. of Regulus; 177° and 179° from the Sun in the midnight sky
8534.162		15:53	<b>Full Moon</b>
8535.167	20 Wed	16	Mercury at ascending node through the ecliptic plane
8537.5	23 SAT	0	Venus, Saturn, and Pluto within circle of diameter 5.13°; 44° west of the Sun
8537.750		6	Venus 1.40° N. of Pluto; 42° from the Sun in the morning sky; magnitudes -4.1 and 14.3
8537.750		6	Moon 7.2° N.N.E. of Spica; 130° from the Sun in the morning sky
8537.970		11	Mars and Jupiter at heliocentric opposition; longitudes 71.0° and 251.0°
8539.835	25 Mon	8	Mercury at perihelion, 0.3075 AU from the Sun
8540.978	26 Tue	11:29	<b>Last Quarter Moon</b>
8541.208		17	Moon 8.3° N.N.E. of Antares; 87° and 88° from the Sun in the morning sky
8541.552	27 wed	1	<b>Mercury at easternmost elongation;</b> 18.1° from Sun in evening sky
8542.146		16	Moon 2.31° N.N.E. of Jupiter; 77° from the Sun in the morning sky
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8544.292	Mar	1 Fri	19 Moon 0.40° N.E. of Saturn; 53° from the Sun in the morning sky
8544.642		2 SAT	3 <b>Moon, Saturn, and Pluto within circle of diameter 4.67°;</b> 50° west of the Sun
8544.960			11 Moon at descending node; longitude 296.0°
8545.438			23 Moon 1.23° S.S.E. of Venus; 40° and 41° from the Sun in the morning sky
8546.976	4 Mon	11	Moon at apogee; distance 63.72 Earth-radii
8547.723	5 Tue	5	Mercury stationary in right ascension; starts retrograde motion
8548.259		18	Mercury stationary in longitude; starts retrograde motion
8548.5	6 wed		Ash wednesday
8549.170		16:04	<b>New Moon;</b> beginning of lunation 1190
8549.208		17	Moon 2.99° S.S.E. of Neptune; 4° and 1° from the Sun in the evening sky
8549.546	7 Thu	1	Neptune at conjunction with the sun; 30.930 AU from Earth; latitude -0.99°
8550.046		13	Mercury at northernmost latitude from the ecliptic plane, 7.0°

8550.292		19	Moon 7.9° S.S.E. of Mercury; 13° from the Sun in the evening sky
8552.5	10	SUN	Clocks forward 1 hour (America)
8552.833		8	Moon 4.6° S.S.E. of Uranus; 41° from the Sun in the evening sky
8554.188	11	Mon 17	Moon 5.5° S.S.E. of Mars; 57° and 56° from the Sun in the evening sky
8554.956	12	Tue 11	Sun enters Pisces, at longitude 351.57° on the ecliptic
8555.208		17	Moon 8.2° S.S.E. of the Pleiades; 69° and 68° from the Sun in the evening sky
8555.917	13	wed 10	Moon 1.86° N. of Aldebaran; 77° from the Sun in the evening sky
8556.5	14	Thu	Gamma Normid meteors; ZHR 6; peak Mar 14 21; near First Quarter
8556.561		1	Jupiter at west quadrature, 90° from the Sun
8556.895		9	Venus at descending node through the ecliptic plane
8556.935		10:26	<b>First Quarter Moon</b>
8557.570	15	Fri 2	Mercury at inferior conjunction with the Sun; 0.618 AU from Earth; latitude 5.70°
8559.125	16	SAT 15	Moon 6.8° S. of Pollux; 118° and 117° from the Sun in the evening sky
8559.183		16	Moon at ascending node; longitude 114.9°
8559.5	17	SUN	St. Patrick's Day
8561.563	19	Tue 2	Moon 2.46° N.N.E. of Regulus; 152° from the Sun in the evening sky
8562.316		19:35	Moon at perigee; distance 56.34 Earth-radii
8563.417	20	wed 22:01	Sun enters the astrological sign Aries, i.e. its longitude is 0°
8563.417		22:01	<b>March or spring or vernal equinox</b>
8563.571	21	Thu 1:42	<b>Full Moon</b>
8565.188	22	Fri 17	Moon 7.1° N.N.E. of Spica; 157° and 158° from the Sun in the morning sky
8565.403		22	Spring equinox on Mars
8568.563	26	Tue 2	Moon 8.1° N.N.E. of Antares; 114° and 115° from the Sun in the morning sky
8569.646	27	wed 4	Moon 1.91° N.N.E. of Jupiter; 102° from the Sun in the morning sky
8569.985		12	Mercury stationary in right ascension; resumes direct motion
8570.674	28	Thu 4:10	<b>Last Quarter Moon</b>
8571.079		14	Mercury stationary in longitude; resumes direct motion
8571.729	29	Fri 6	Moon 0.25° E. of Saturn; 78° and 79° from the Sun in the morning sky
8572.047		13	Moon at descending node; longitude 293.7°
8573.451	30	SAT 23	Mercury at descending node through the ecliptic plane
8573.792	31	SUN 7	Mars 3.1° S.S.E. of the Pleiades; 50° from the Sun in the evening sky; magnitudes 1.4 and 2.9

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8574.5	Apr	1	Mon		All Fools' Day
8574.508				0	Moon at apogee; distance 63.59 Earth-radii
8575.771		2	Tue	7	Moon 2.55° S.S.E. of Venus; 35° and 34° from the Sun in the morning sky
8576.354				21	Mercury 0.38° N. of Neptune; 25° and 26° from the Sun in the morning sky; magnitudes 0.8 and 8.0
8576.558		3	Wed	1	<b>Moon, Mercury, and Neptune within circle of diameter 3.39°</b> ; 26° west of the Sun
8576.563				2	Moon 3.1° S.S.E. of Neptune; 26° from the Sun in the morning sky
8576.583				2	Moon 3.4° S.S.E. of Mercury; 26° from the Sun in the morning sky
8578.869		5	Fri	8:51	<b>New Moon</b> ; beginning of lunation 1191
8580.208		6	SAT	17	Moon 4.5° S.S.E. of Uranus; 16° and 15° from the Sun in the evening sky
8582.438		8	Mon	23	Moon 8.0° S.S.E. of the Pleiades; 42° and 41° from the Sun in the evening sky
8582.896		9	Tue	10	Moon 4.6° S.S.E. of Mars; 48° and 47° from the Sun in the evening sky
8583.146				16	Moon 2.09° N. of Aldebaran; 51° from the Sun in the evening sky
8583.372				21	Jupiter at southernmost declination, -22.68°
8583.692		10	Wed	5	Mercury, Venus, and Neptune within circle of diameter 5.15°; 31° west of the Sun
8583.771				7	Venus 0.29° S.S.E. of Neptune; 33° from the Sun in the morning sky; magnitudes -3.9 and 8.0
8583.820				8	Mercury at aphelion, 0.4667 AU from the Sun
8583.864				9	Saturn at west quadrature, 90° from the Sun
8584.178				16	Jupiter stationary in longitude; starts retrograde motion
8584.179				16	Jupiter stationary in right ascension; starts retrograde motion
8585.314		11	Thu	20	<b>Mercury at westernmost elongation</b> ; 27.7° from Sun in morning sky
8586.257		12	Fri	18	Moon at ascending node; longitude 112.0°
8586.295				19:05	<b>First Quarter Moon</b>
8586.396				22	Moon 6.6° S. of Pollux; 91° from the Sun in the evening sky
8587.5		14	SUN		Palm Sunday.
8588.521		15	Mon	1	Mars 6.5° N. of Aldebaran; 45° from the Sun in the evening sky; magnitudes 1.5 and 0.9
8588.917				10	Moon 2.63° N.N.E. of Regulus; 125° from the Sun in the evening sky
8589.400				22	The equation of time is 0.
8590.313		16	Tue	20	Mercury 4.3° E. of Venus; 27° and 31° from the Sun in the morning sky; magnitudes 0.2 and -3.9; quasi-conjunction
8590.419				22:03	Moon at perigee; distance 57.10 Earth-radii
8591.603		18	Thu	2	Venus at aphelion, 0.7282 AU from the Sun
8592.5		19	Fri		Good Friday

8592.625		3		Moon 7.1° N.N.E. of Spica; 173° and 175° from the Sun in the midnight sky
8592.938		11		Sun enters Aries, at longitude 29.09° on the ecliptic
8592.966		11:11		<b>Full Moon</b>
8593.872	20 SAT	9		Sun enters the astrological sign Taurus, i.e. its longitude is 30°
8594.5	21 SUN			Easter
8595.5	22 Mon			Lyrid meteors; ZHR 18; peak Apr 22 18; 3 days after Full
8595.958		11		Moon 7.9° N.N.E. of Antares; 141° and 142° from the Sun in the morning sky
8596.466		23		Uranus at conjunction with the Sun; 20.854 AU from Earth; latitude -0.51°
8596.5	23 Tue			Pi Puppis meteors; ZHR 10; peak Apr 23 23; 3 days before Last Quarter
8597.021		13		Moon 1.66° N.N.E. of Jupiter; 129° from the Sun in the morning sky
8597.698	24 Wed	5		Pluto stationary in longitude; starts retrograde motion
8598.370		21		Pluto stationary in right ascension; starts retrograde motion
8599.125	25 Thu	15		Moon 0.45° S.E. of Saturn; 104° and 105° from the Sun in the morning sky
8599.126		15		Moon at descending node; longitude 290.7°
8600.429	26 Fri	22:18		<b>Last Quarter Moon</b>
8601.5	28 SUN			Clocks forward 1 hour (Europe)
8602.267		18		Moon at apogee; distance 63.43 Earth-radii
8603.499	29 Mon	24		Saturn stationary in longitude; starts retrograde motion
8603.564	30 Tue	2		Saturn stationary in right ascension; starts retrograde motion
8603.958		11		Moon 3.3° S.S.E. of Neptune; 52° from the Sun in the morning sky
8604.080		14		Mercury at southernmost latitude from the ecliptic plane, -7.0°
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8605.708	May 2 Thu	5		Saturn 2.71° w. of Pluto; 111° and 109° from the Sun in the morning sky; magnitudes 0.5 and 14.3; quasi-conjunction
8606.125		15		Moon 3.4° S.S.E. of Venus; 28° and 27° from the Sun in the morning sky
8606.896	3 Fri	10		Moon 2.73° S.S.E. of Mercury; 19° from the Sun in the morning sky
8607.096		14		Mars and Saturn at heliocentric opposition; longitudes 105.2° and 285.2°
8607.625	4 SAT	3		Moon 4.4° S.S.E. of Uranus; 11° and 10° from the Sun in the morning sky
8608.449		22:46		<b>New Moon</b> ; beginning of lunation 1192
8609.5	6 Mon			1st day of Ramadan (1440 A.H.)

8609.5			<b>Eta Aquarid meteors</b> ; ZHR 50; peak May 6 7; 1 day after New
8609.708		5	Moon 7.9° S.S.E. of the Pleiades; 16° and 15° from the Sun in the evening sky
8610.396		22	Moon 2.23° N. of Aldebaran; 24° from the Sun in the evening sky
8611.5	8	wed	Eta Lyrid meteors; ZHR 3; peak May 8 21; 3 days before First Quarter
8611.542		1	Moon 3.2° S.S.E. of Mars; 38° from the Sun in the evening sky
8612.167		16	Mercury 1.26° S.S.E. of Uranus; 14° from the Sun in the morning sky; magnitudes -0.8 and 5.9
8613.286	9	Thu 19	Moon at ascending node; longitude 109.3°
8613.625	10	Fri 3	Moon 6.3° S. of Pollux; 65° and 64° from the Sun in the evening sky
8613.742		6	Venus at southernmost latitude from the ecliptic plane, -3.4°
8615.550	12	SUN 1:12	<b>First Quarter Moon</b>
8616.188		17	Moon 2.88° N.N.E. of Regulus; 98° from the Sun in the evening sky
8617.412	13	Mon 21:54	Moon at perigee; distance 57.86 Earth-radii
8617.876	14	Tue 9	The equation of time is at a maximum of 3.65 minutes.
8618.053		13	Sun enters Taurus, at longitude 53.47° on the ecliptic
8619.979	16	Thu 12	Moon 7.1° N.N.E. of Spica; 148° from the Sun in the evening sky
8620.435		22	Mars at northernmost declination, 24.56°
8622.208	18	SAT 17	Venus 1.08° S.S.E. of Uranus; 23° from the Sun in the morning sky; magnitudes -3.9 and 5.9
8622.382		21:10	<b>Full Moon</b>
8623.136	19	SUN 15	Mercury at ascending node through the ecliptic plane
8623.354		21	Moon 7.8° N.N.E. of Antares; 167° and 168° from the Sun in the morning sky
8624.250	20	Mon 18	Moon 1.71° N.N.E. of Jupiter; 157° from the Sun in the morning sky
8624.833	21	Tue 8	Sun enters the astrological sign Gemini, i.e. its longitude is 60°
8625.038		13	Mercury at superior conjunction with the Sun; 1.322 AU from Earth; latitude 1.42°
8625.104		15	Mercury 3.7° S.S.E. of the Pleiades; 0° and 4° from the Sun in the evening sky; magnitudes -2.3 and 2.9
8626.300	22	wed 19	Moon at descending node; longitude 288.5°
8626.458		23	<b>Moon, Saturn, and Pluto within circle of diameter 2.94°</b> ; 130° west of the Sun
8626.458		23	Moon 0.63° S.E. of Saturn; 131° from the Sun in the morning sky
8627.805	24	Fri 7	Mercury at perihelion, 0.3075 AU from the Sun
8629.229	25	SAT 18	Mercury 6.5° N.N.W. of Aldebaran; 5° and 8° from the Sun in the evening sky; magnitudes -1.8 and 0.9
8630.059	26	SUN 13	Moon at apogee; distance 63.36 Earth-radii



8630.190			16:33	<b>Last Quarter Moon</b>
8631.333	27 Mon	20		Moon 3.5° S.S.E. of Neptune; 78° from the Sun in the morning sky
8635.083	31 Fri	14		Moon 4.5° S.S.E. of Uranus; 35° from the Sun in the morning sky
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8636.375	Jun 1 SAT	21		Moon 3.1° S.S.E. of Venus; 20° from the Sun in the morning sky
8637.042		2 SUN	13	Moon 7.9° S.S.E. of the Pleiades; 12° from the Sun in the morning sky
8637.729		3 Mon	6	Moon 2.27° N. of Aldebaran; 4° and 6° from the Sun in the morning sky
8637.918			10:02	<b>New Moon</b> ; beginning of lunation 1193
8638.015			12	Mercury at northernmost latitude from the ecliptic plane, 7.0°
8639.208		4 Tue	17	Moon 3.7° S. of Mercury; 17° and 16° from the Sun in the evening sky
8640.146		5 Wed	16	Moon 1.60° S. of Mars; 29° from the Sun in the evening sky
8640.372			21	Mercury at northernmost declination, 25.50°
8640.450			23	Moon at ascending node; longitude 107.9°
8640.896		6 Thu	10	Moon 6.2° S. of Pollux; 39° and 38° from the Sun in the evening sky
8641.5		7 Fri		Daytime Arietid meteors; ZHR 30; peak Jun 7 15; 3 days before First Quarter
8642.469			23:16	Moon at perigee; distance 57.78 Earth-radii
8643.396		8 SAT	22	Moon 3.0° N.N.E. of Regulus; 72° from the Sun in the evening sky
8643.5		9 SUN		Whit Sunday
8643.688			5	Venus 5.1° S.S.E. of the Pleiades; 18° and 19° from the Sun in the morning sky; magnitudes -3.9 and 2.9
8644.750		10 Mon	5:59	<b>First Quarter Moon</b>
8645.138			15	<b>Jupiter at opposition</b> ; magnitude -2.6
8647.250		12 Wed	18	Moon 7.3° N.N.E. of Spica; 123° and 122° from the Sun in the evening sky
8647.899		13 Thu	10	The equation of time is 0.
8648.688		14 Fri	4:31	Earliest sunrise, at latitude 40° north
8650.688		16 SUN	5	Moon 7.8° N.N.E. of Antares; 166° and 164° from the Sun in the evening sky
8651.333			20	Moon 1.99° N.N.E. of Jupiter; 173° from the Sun in the midnight sky
8651.479			24	Venus 4.7° N. of Aldebaran; 16° and 17° from the Sun in the morning sky; magnitudes -3.9 and 0.9
8651.854		17 Mon	8:30	<b>Full Moon</b>
8653.271		18 Tue	19	Mercury 0.22° N.N.E. of Mars; 24° from the Sun in the evening sky; magnitudes 0.2 and 1.8
8653.577		19 Wed	2	Moon at descending node; longitude 287.6°
8653.688			5	Moon 0.56° S.E. of Saturn; 159° from the Sun in the morning sky

8654.063		14		Mercury 5.4° S.S.W. of Pollux; 25° and 26° from the Sun in the evening sky; magnitudes 0.3 and 1.2
8655.833	21 Fri	8		Mars 5.5° S. of Pollux; 24° from the Sun in the evening sky; magnitudes 1.8 and 1.2
8655.925		10		Neptune stationary in longitude; starts retrograde motion
8656.164		15:56		Sun enters the astrological sign Cancer, i.e. its longitude is 90°
8656.164		15:56		<b>June or summer solstice</b>
8656.492		24		Neptune stationary in right ascension; starts retrograde motion
8656.616	22 SAT	3		Sun enters Gemini, at longitude 90.43° on the ecliptic
8657.5	23 SUN			June Boötid meteors; ZHR 5; peak Jun 23 0; 2 days before Last Quarter
8657.821		8		Moon at apogee; distance 63.43 Earth-radii
8658.463		23		<b>Mercury at easternmost elongation</b> ; 25.2° from Sun in evening sky
8658.667	24 Mon	4		Moon 3.6° S.S.E. of Neptune; 104° from the Sun in the morning sky
8659.908	25 Tue	9:47		<b>Last Quarter Moon</b>
8661.420	26 Wed	22		Mercury at descending node through the ecliptic plane
8662.563	28 Fri	2		Moon 4.5° S.S.E. of Uranus; 60° from the Sun in the morning sky
8663.315		19:33		Latest sunset, at latitude 40° north
8664.438	29 SAT	23		Moon 7.9° S.S.E. of the Pleiades; 37° and 38° from the Sun in the morning sky
8665.125	30 SUN	15		Moon 2.25° N. of Aldebaran; 29° from the Sun in the morning sky
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8666.438	Jul 1 Mon	23		Moon 1.64° S.S.E. of Venus; 12° from the Sun in the morning sky
8667.303	2 Tue	19:16		<b>New Moon</b> ; beginning of lunation 1194. Total eclipse of the Sun
8667.788	3 wed	7		Moon at ascending node; longitude 107.6°
8668.229		18		Moon 6.1° S. of Pollux; 13° from the Sun in the evening sky
8668.750	4 Thu	6		Moon 0.19° E.N.E. of Mars; 20° and 19° from the Sun in the evening sky
8668.917		10		Moon 3.3° N.N.E. of Mercury; 22° from the Sun in the evening sky
8669.458		23		<b>Earth at aphelion</b> ; 1.0167 AU from the Sun from the Sun
8669.708	5 Fri	4:60		Moon at perigee; distance 57.03 Earth-radii
8670.032		13		Venus at ascending node through the ecliptic plane
8670.458		23		Mercury 3.8° S.S.E. of Mars; 21° and 19° from the Sun in the evening sky; magnitudes 1.7 and 1.8
8670.688	6 SAT	5		Moon 3.1° N.N.E. of Regulus; 46° from the Sun in the evening sky
8671.680	7 SUN	4		Mercury stationary in right ascension; starts retrograde motion

8671.695		5	Venus at northernmost declination, 23.43°
8671.790		7	Mercury at aphelion, 0.4667 AU from the Sun
8672.465		23	Mercury stationary in longitude; starts retrograde motion
8673.955	9 Tue	10:55	<b>First Quarter Moon</b>
8674.207		17	<b>Saturn at opposition</b> ; magnitude 0.1
8674.479		24	Moon 7.3° N.N.E. of Spica; 97° and 96° from the Sun in the evening sky
8674.512	10 wed	0	Middle of eclipse season: Sun is at same longitude as Moon's ascending node, 107.5°
8677.938	13 SAT	11	Moon 7.8° N.N.E. of Antares; 140° and 139° from the Sun in the evening sky
8678.375		21	Moon 2.31° N.N.E. of Jupiter; 145° from the Sun in the evening sky
8678.821	14 SUN	8	<b>Pluto at opposition</b> ; magnitude 14.2
8680.833	16 Tue	8	Moon 0.44° E.S.E. of Saturn; 174° and 173° from the Sun in the midnight sky
8680.880		9	Moon at descending node; longitude 287.7°
8681.402		21:38	<b>Full Moon. Partial eclipse of the Moon</b>
8683.274	18 Thu	19	Mars at northernmost latitude from the ecliptic plane, 1.8°
8685.510	21 SUN	0	Moon at apogee; distance 63.58 Earth-radii
8685.795		7	Sun enters Cancer, at longitude 118.26° on the ecliptic
8685.958		11	Moon 3.6° S.S.E. of Neptune; 130° from the Sun in the morning sky
8686.019		12	Mercury at inferior conjunction with the Sun; 0.582 AU from Earth; latitude -6.58°
8687.208	22 Mon	17	Venus 6.0° S. of Pollux; 6° and 9° from the Sun in the morning sky; magnitudes -3.9 and 1.2
8687.620	23 Tue	3	Sun enters the astrological sign Leo, i.e. its longitude is 120°
8689.555	25 Thu	1:19	<b>Last Quarter Moon</b>
8689.604		3	Mercury 5.6° S.S.W. of Venus; 7° and 6° from the Sun in the morning sky; magnitudes 4.1 and -3.9
8689.958		11	Moon 4.5° S.S.E. of Uranus; 85° and 86° from the Sun in the morning sky
8690.994	26 Fri	12	The equation of time is at a minimum of -6.55 minutes.
8691.833	27 SAT	8	Moon 7.9° S.S.E. of the Pleiades; 63° and 64° from the Sun in the morning sky
8692.049		13	Mercury at southernmost latitude from the ecliptic plane, -7.0°
8692.5	28 SUN		Piscid Austrinid meteors; ZHR 5; peak Jul 28 9; 4 days before New
8692.521		1	Moon 2.25° N. of Aldebaran; 55° from the Sun in the morning sky
8694.465	29 Mon	23	Uranus at west quadrature, 90° from the Sun
8694.5	30 Tue		<b>Southern Delta Aquarid meteors</b> ; ZHR 25; peak Jul 30 11; 2 days before New

8694.5				Alpha Capricornid meteors; ZHR 5; peak Jul 30 11; 2 days before New
8695.211			17	Moon at ascending node; longitude 107.6°
8695.646	31	Wed	4	Moon 4.5° N. of Mercury; 14° from the Sun in the morning sky
8695.646			4	Moon 6.1° S. of Pollux; 14° and 16° from the Sun in the morning sky
8696.281			19	Mercury stationary in right ascension; resumes direct motion
8696.396			22	Moon 0.71° N.E. of Venus; 4° from the Sun in the morning sky
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8696.633	Aug	1	Thu	3:12 <b>New Moon</b> ; beginning of lunation 1195
8696.662				4 Mercury stationary in longitude; resumes direct motion
8697.375			21	Moon 1.65° N.N.E. of Mars; 11° and 10° from the Sun in the evening sky
8697.801		2	Fri	7:13 Moon at perigee; distance 56.35 Earth-radii
8698.063			14	Moon 3.1° N.N.E. of Regulus; 20° from the Sun in the evening sky
8701.729		6	Tue	6 Moon 7.3° N.N.E. of Spica; 71° and 70° from the Sun in the evening sky
8703.230		7	Wed	17:32 <b>First Quarter Moon</b>
8703.5		8	Thu	0 Mercury 9.2° S. of Pollux; 19° and 23° from the Sun in the morning sky; magnitudes 0.4 and 1.2
8703.883			9	Venus at perihelion, 0.7185 AU from the Sun
8705.167		9	Fri	16 Moon 7.8° N.N.E. of Antares; 114° and 113° from the Sun in the evening sky
8705.458			23	<b>Mercury at westernmost elongation</b> ; 19.0° from Sun in morning sky
8705.521		10	SAT	1 Moon 2.46° N.N.E. of Jupiter; 118° and 117° from the Sun in the evening sky
8706.623		11	SUN	3 Sun enters Leo, at longitude 138.18° on the ecliptic
8707.049			13	Jupiter stationary in longitude; resumes direct motion
8707.166			16	Jupiter stationary in right ascension; resumes direct motion
8707.465			23	Uranus stationary in longitude; starts retrograde motion
8707.596		12	Mon	2 Uranus stationary in right ascension; starts retrograde motion
8707.938			11	Moon 0.31° E. of Saturn; 146° from the Sun in the evening sky
8708.115			15	Moon at descending node; longitude 287.4°
8708.125			15	Jupiter 6.9° N.E. of Antares; 115° and 110° from the Sun in the evening sky; magnitudes -2.3 and 1.0; quasi-conjunction
8708.5		13	Tue	Perseid meteors; ZHR 110; peak Aug 13 0; 3 days before Full

8709.729	14 wed	6	Venus at superior conjunction with the Sun; 1.731 AU from Earth; latitude $3.06^\circ$
8710.985	15 Thu	12	Venus brightest; magnitude $-3.92^\circ$
8711.021		12:30	<b>Full Moon</b>
8711.105		15	Mercury at ascending node through the ecliptic plane
8712.971	17 SAT	11	Moon at apogee; distance 63.69 Earth-radii
8713.188		17	Moon $3.5^\circ$ S.S.E. of Neptune; $156^\circ$ and $157^\circ$ from the Sun in the morning sky
8713.458		23	Mars $0.66^\circ$ N.N.E. of Regulus; $5^\circ$ from the Sun in the evening sky; magnitudes 1.8 and 1.4
8713.5	18 SUN		Kappa Cygnid meteors; ZHR 3; peak Aug 18 5; 3 days after Full
8715.774	20 Tue	7	Mercury at perihelion, 0.3075 AU from the Sun
8716.750	21 wed	6	Venus $0.90^\circ$ N.N.E. of Regulus; $2^\circ$ from the Sun in the evening sky; magnitudes $-3.9$ and $1.4$
8717.271		19	Moon $4.4^\circ$ S.S.E. of Uranus; $111^\circ$ and $112^\circ$ from the Sun in the morning sky
8718.920	23 Fri	10	Sun enters the astrological sign Virgo, i.e. its longitude is $150^\circ$
8719.123		14:58	<b>Last Quarter Moon</b>
8719.167		16	Moon $7.8^\circ$ S.S.E. of the Pleiades; $89^\circ$ and $90^\circ$ from the Sun in the morning sky
8719.875	24 SAT	9	Moon $2.37^\circ$ N. of Aldebaran; $81^\circ$ from the Sun in the morning sky
8720.229		18	Venus $0.29^\circ$ N.N.E. of Mars; $3^\circ$ from the Sun in the evening sky; magnitudes $-3.9$ and $1.8$
8721.553	26 Mon	1	Mars at aphelion, 1.6661 AU from the Sun
8722.577	27 Tue	2	Moon at ascending node; longitude $106.7^\circ$
8723.083		14	Moon $6.1^\circ$ S. of Pollux; $40^\circ$ and $41^\circ$ from the Sun in the morning sky
8724.750	29 Thu	6	Mercury $1.28^\circ$ N.N.E. of Regulus; $6^\circ$ from the Sun in the morning sky; magnitudes $-1.6$ and $1.4$
8725.5	30 Fri	0	Moon $3.1^\circ$ N.N.E. of Regulus; $7^\circ$ from the Sun in the morning sky
8725.539		1	Venus at northernmost latitude from the ecliptic plane, $3.4^\circ$
8725.604		3	Moon $1.86^\circ$ N.N.E. of Mercury; $6^\circ$ and $5^\circ$ from the Sun in the morning sky
8725.943		10:37	<b>New Moon</b> ; beginning of lunation 1196
8725.985		12	Mercury at northernmost latitude from the ecliptic plane, $7.0^\circ$
8726.021		13	Moon $2.91^\circ$ N.N.E. of Mars; $4^\circ$ and $1^\circ$ from the Sun in the evening sky
8726.165		15:58	Moon at perigee; distance 56.00 Earth-radii
8726.165		15:58	Perigee only 5.3 hours after New Moon
8726.271		19	Moon $2.79^\circ$ N.N.E. of Venus; $6^\circ$ and $5^\circ$ from the Sun in the evening sky
8727.5	Sep 1 SUN		1st day of Muslim year (1441 A.H.)

8727.5			Aurigid meteors; ZHR 5; peak Sep 1 8; 2 days after New
8728.335		20	The equation of time is 0.
8728.962	2 Mon	11	Mars at conjunction with the Sun; 2.675 AU from Earth; latitude 1.74°
8729.083		14	Moon 7.1° N.N.E. of Spica; 45° and 44° from the Sun in the evening sky
8730.188	3 Tue	17	Mercury 0.64° N.N.E. of Mars; 2° and 1° from the Sun in the evening sky; magnitudes -1.8 and 1.7
8730.560	4 wed	1	Mercury at superior conjunction with the Sun; 1.369 AU from Earth; latitude 6.47°
8732.438	5 Thu	23	Moon 7.6° N.N.E. of Antares; 88° and 87° from the Sun in the evening sky
8732.632	6 Fri	3:11	<b>First Quarter Moon</b>
8732.833		8	Moon 2.27° N.N.E. of Jupiter; 92° from the Sun in the evening sky
8735.083	8 SUN	14	Moon 0.15° E.S.E. of Saturn; 118° from the Sun in the evening sky
8735.142		15	Jupiter at east quadrature, 90° from the Sun
8735.235		18	Moon at descending node; longitude 286.0°
8735.5	9 Mon		September Epsilon Perseid meteors; ZHR 10; peak Sep 9 16; 4 days after First Quarter
8736.800	10 Tue	7	<b>Neptune at opposition</b> ; magnitude 7.8
8740.057	13 Fri	13	Moon at apogee; distance 63.71 Earth-radii
8740.063		14	Mercury 0.29° S.S.W. of Venus; 8° from the Sun in the evening sky; magnitudes -0.9 and -3.9
8740.375		21	Moon 3.4° S.S.E. of Neptune; 174° and 176° from the Sun in the midnight sky
8740.690	14 SAT	4:34	<b>Full Moon</b>
8743.846	17 Tue	8	Sun enters Virgo, at longitude 174.16° on the ecliptic
8744.479		24	Moon 4.2° S.S.E. of Uranus; 138° and 139° from the Sun in the morning sky
8744.691	18 wed	5	Saturn stationary in right ascension; resumes direct motion
8744.799		7	Saturn stationary in longitude; resumes direct motion
8746.438	19 Thu	23	Moon 7.6° S.S.E. of the Pleiades; 116° and 117° from the Sun in the morning sky
8746.477		23	Mars and Neptune at heliocentric opposition; longitudes 167.4° and 347.4°
8747.146	20 Fri	16	Moon 2.59° N. of Aldebaran; 108° from the Sun in the morning sky
8748.613	22 SUN	2:42	<b>Last Quarter Moon</b>
8749.389		21	Mercury at descending node through the ecliptic plane
8749.771	23 Mon	7	Moon at ascending node; longitude 104.4°
8749.827		7:51	<b>September of fall or autumn equinox</b>
8749.827		7:51	Sun enters the astrological sign Libra, i.e. its longitude is 180°
8750.458		23	Moon 5.9° S. of Pollux; 67° and 68° from the Sun in the morning sky

8752.938	26	Thu	11	Moon 3.1° N.N.E. of Regulus; 33° from the Sun in the morning sky
8754.355	27	Fri	21	Saturn at southernmost declination, -22.52°
8754.604	28	SAT	2:29	Perigee only 16.0 hours before New Moon
8754.604			2:29	Moon at perigee; distance 56.10 Earth-radii
8754.688			5	Moon 3.8° N.N.E. of Mars; 10° and 9° from the Sun in the morning sky
8755.269			18:27	<b>New Moon</b> ; beginning of lunation 1197
8755.5	29	SUN		Rosh Hashanah, 1st say of Hebrew year 5780 A.M.
8755.708			5	Mercury 1.29° N.N.E. of Spica; 18° from the Sun in the evening sky; magnitudes -0.3 and 1.0
8756.167			16	Moon 4.0° N.N.E. of Venus; 14° and 13° from the Sun in the evening sky
8756.521	30	Mon	1	Moon 7.0° N.N.E. of Spica; 18° and 17° from the Sun in the evening sky
8756.604			3	Moon 5.8° N.N.E. of Mercury; 19° from the Sun in the evening sky
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8758.924	Oct	2	Wed	10 Pluto stationary in right ascension; resumes direct motion
8759.399				22 Pluto stationary in longitude; resumes direct motion
8759.760		3	Thu	6 Mercury at aphelion, 0.4667 AU from the Sun
8759.771				7 Moon 7.3° N.N.E. of Antares; 61° and 60° from the Sun in the evening sky
8760.333				20 Venus 2.88° N.N.E. of Spica; 14° from the Sun in the evening sky; magnitudes -3.9 and 1.0
8760.396				22 Moon 1.87° N.N.E. of Jupiter; 69° and 68° from the Sun in the evening sky
8762.199		5	SAT	16:47 <b>First Quarter Moon</b>
8762.286				19 Moon at descending node; longitude 283.2°
8762.375				21 Moon 0.31° S.E. of Saturn; 92° from the Sun in the evening sky
8762.5		6	SUN	October Camelopardalid meteors; ZHR 5; peak Oct 6 1; near First Quarter
8763.868		7	Mon	9 Summer solstice on Mars
8764.074				14 Mars crosses equator southward
8764.294				19 Saturn at east quadrature, 90° from the Sun
8764.5		8	Tue	<b>Draconid meteors</b> ; ZHR 20; peak Oct 8 24; 3 days after First Quarter
8766.5		10	Thu	Southern Taurid meteors; ZHR 5; peak Oct 10 15; 3 days before Full
8767.276				19 Moon at apogee; distance 63.64 Earth-radii
8767.5		11	Fri	Delta Aurigid meteors; ZHR 2; peak Oct 11 15; 2 days before Full
8767.583				2 Moon 3.4° S.S.E. of Neptune; 149° from the Sun in the evening sky
8770.382		13	SUN	21:10 <b>Full Moon</b>
8771.646		15	Tue	4 Moon 4.1° S.S.E. of Uranus; 165° and 166° from the Sun in the morning sky

8773.667	17 Thu	4	Moon 7.4° S.S.E. of the Pleiades; 143° from the Sun in the morning sky
8774.375		21	Moon 2.81° N. of Aldebaran; 134° from the Sun in the morning sky
8774.5	18 Fri		Epsilon Geminid meteors; ZHR 3; peak Oct 18 17; 3 days before Last Quarter
8775.807	19 SAT	7	Pluto at southernmost declination, -22.39°
8776.661	20 SUN	4	<b>Mercury at easternmost elongation</b> ; 24.6° from Sun in evening sky
8776.812		7	Moon at ascending node; longitude 101.4°
8777.5	21 Mon		<b>Orionid meteors</b> ; ZHR 25; peak Oct 21 17; near Last Quarter
8777.750		6	Moon 5.6° S. of Pollux; 94° from the Sun in the morning sky
8778.028		12:40	<b>Last Quarter Moon</b>
8780.018	23 wed	12	Mercury at southernmost latitude from the ecliptic plane, -7.0°
8780.222		17	Sun enters the astrological sign Scorpius, i.e. its longitude is 210°
8780.313		20	Moon 3.3° N.N.E. of Regulus; 60° from the Sun in the morning sky
8780.5	24 Thu		Leo Minorid meteors; ZHR 2; peak Oct 24 17; 3 days before New
8781.595	25 Fri	2	Venus at descending node through the ecliptic plane
8782.946	26 SAT	10:42	Moon at perigee; distance 56.65 Earth-radii
8783.354		21	Moon 4.2° N.N.E. of Mars; 19° and 18° from the Sun in the morning sky
8783.5	27 SUN		Clocks back 1 hour (Europe)
8783.979		12	Moon 7.0° N.N.E. of Spica; 11° and 10° from the Sun in the morning sky
8784.652	28 Mon	3:39	<b>New Moon</b> ; beginning of lunation 1198
8784.835		8	<b>Uranus at opposition</b> ; magnitude 5.7
8785.964	29 Tue	11	Mercury at southernmost declination, -22.42°
8786.167		16	Moon 3.7° N.N.E. of Venus; 21° and 20° from the Sun in the evening sky
8786.292		19	Moon 6.4° N.N.E. of Mercury; 22° from the Sun in the evening sky
8787.167	30 wed	16	Moon 7.1° N.N.E. of Antares; 34° and 33° from the Sun in the evening sky
8787.708	31 Thu	5	Mercury 2.55° S.S.W. of Venus; 20° and 21° from the Sun in the evening sky; magnitudes 0.5 and -3.9
8788.039		13	Sun enters Libra, at longitude 217.80° on the ecliptic
8788.125		15	Moon 1.30° N.N.E. of Jupiter; 46° and 45° from the Sun in the evening sky
8788.150		16	Mercury stationary in longitude; starts retrograde motion
8788.352		20	Mercury stationary in right ascension; starts retrograde motion

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8789.403	Nov	1	Fri	22	Moon at descending node; longitude 280.3°
8789.833		2	SAT	8	Moon 0.67° S.S.E. of Saturn; 66° from the Sun in the evening sky
8790.5		3	SUN		Clocks back 1 hour (America)
8791.126				15	The equation of time is at a maximum of 16.49 minutes.
8791.932		4	Mon	10:22	<b>First Quarter Moon</b>
8794.833		7	Thu	8	Moon 3.6° S.S.E. of Neptune; 121° from the Sun in the evening sky
8794.867				9	Moon at apogee; distance 63.51 Earth-radii
8797.333		9	SAT	20	Venus 3.9° N. of Antares; 23° from the Sun in the evening sky; magnitudes -3.9 and 1.0
8797.479				24	Mars 2.83° N.N.E. of Spica; 23° and 24° from the Sun in the morning sky; magnitudes 1.8 and 1.0
8798.5		11	Mon		Armistice Day
8798.833				8	Moon 4.1° S.S.E. of Uranus; 165° from the Sun in the evening sky
8799.074				14	Mercury at ascending node through the ecliptic plane
8799.136					<b>Transit of Mercury across the Sun</b>
8799.136				15	Mercury at inferior conjunction with the Sun; 0.676 AU from Earth; latitude 0.05°
8799.5		12	Tue		Northern Taurid meteors; ZHR 5; peak Nov 12 17; near Full
8800.067				13:36	<b>Full Moon</b>
8800.917		13	wed	10	Moon 7.3° S.S.E. of the Pleiades; 170° from the Sun in the morning sky
8801.625		14	Thu	3	Moon 2.94° N. of Aldebaran; 162° and 161° from the Sun in the morning sky
8803.744		16	SAT	6	Mercury at perihelion, 0.3075 AU from the Sun
8803.867				9	Moon at ascending node; longitude 99.1°
8804.5		17	SUN		<b>Leonid meteors</b> ; ZHR 15; peak Nov 17 23; 2 days before Last Quarter
8804.979				12	Moon 5.4° S. of Pollux; 121° from the Sun in the morning sky
8807.383		19	Tue	21:12	<b>Last Quarter Moon</b>
8807.583		20	wed	2	Moon 3.6° N.N.E. of Regulus; 87° and 88° from the Sun in the morning sky
8808.101				14	Mercury stationary in right ascension; resumes direct motion
8808.296				19	Mercury stationary in longitude; resumes direct motion
8808.5		21	Thu		Alpha Monocerotid meteors; ZHR 5; peak Nov 21 23; 5 days before New
8810.124		22	Fri	15	Sun enters the astrological sign Sagittarius, i.e. its longitude is 240°
8810.821		23	SAT	7:42	Moon at perigee; distance 57.50 Earth-radii
8811.253				18	Sun enters Scorpius, at longitude 241.14° on the ecliptic
8811.354				21	Moon 7.1° N.N.E. of Spica; 37° from the Sun in the morning sky

8812.021	24	SUN	13	Moon 4.0° N.N.E. of Mars; 28° from the Sun in the morning sky
8812.042			13	Venus 1.41° S. of Jupiter; 26° from the Sun in the evening sky; magnitudes -3.9 and -1.8
8812.542	25	Mon	1	Mercury 9.5° E. of Mars; 20° and 29° from the Sun in the morning sky; magnitudes -0.3 and 1.7; quasi-conjunction
8812.688			5	Moon 1.81° N.N.E. of Mercury; 19° and 20° from the Sun in the morning sky
8813.954	26	Tue	11	Mercury at northernmost latitude from the ecliptic plane, 7.0°
8814.130			15:07	<b>New Moon</b> ; beginning of lunation 1199
8814.604	27	Wed	3	Moon 7.1° N.N.E. of Antares; 7° from the Sun in the evening sky
8814.914			10	Neptune stationary in longitude; resumes direct motion
8815.238			18	Neptune stationary in right ascension; resumes direct motion
8815.5	28	Thu		November Orionid meteors; ZHR 3; peak Nov 28 0; 1 day after New
8815.930			10	<b>Mercury at westernmost elongation</b> ; 20.1° from Sun in morning sky
8815.979			12	Moon 0.78° N.N.E. of Jupiter; 24° and 23° from the Sun in the evening sky
8816.198			17	Venus at southernmost declination, -24.79°
8816.269			18	Venus at aphelion, 0.7282 AU from the Sun
8816.313			20	Moon 1.87° N. of Venus; 28° and 27° from the Sun in the evening sky
8816.676	29	Fri	4	Moon at descending node; longitude 278.6°
8817.396			22	Moon 0.95° S.S.E. of Saturn; 41° from the Sun in the evening sky
8817.642	30	SAT	3	<b>Moon, Saturn, and Pluto within circle of diameter 3.60°</b> ; 42° east of the Sun
8818.067			14	Sun enters Ophiuchus, at longitude 248.04° on the ecliptic
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8819.5	Dec	2	Mon	Phoenicid meteors; ZHR 5; peak Dec 2 12; 2 days before First Quarter
8821.790		4	wed	6:58 <b>First Quarter Moon</b>
8822.146			16	Moon 3.8° S.S.E. of Neptune; 94° from the Sun in the evening sky
8822.675	5	Thu	4	Moon at apogee; distance 63.41 Earth-radii
8824.5	7	SAT		Puppis-Velid meteors; ZHR 10; peak Dec 7 0; 3 days after First Quarter
8824.570			2	Jupiter at southernmost declination, -23.30°
8826.104	8	SUN	15	Moon 4.3° S.S.E. of Uranus; 137° from the Sun in the evening sky
8826.191			16:35	Earliest sunset, at latitude 40° north
8826.5	9	Mon		Monocerotid meteors; ZHR 3; peak Dec 9 10; 3 days before Full

8828.271	10 Tue	19	Moon 7.3° S.S.E. of the Pleiades; 162° and 161° from the Sun in the evening sky
8828.917	11 Wed	10	Venus 1.80° S. of Saturn; 30° from the Sun in the evening sky; magnitudes -4.0 and 0.6
8828.958		11	Moon 2.95° N. of Aldebaran; 170° and 169° from the Sun in the evening sky
8829.5	12 Thu		Sigma Hydrid meteors; ZHR 3; peak Dec 12 8; near Full
8829.718		5:14	<b>Full Moon</b>
8830.292		19	<b>Venus, Saturn, and Pluto within circle of diameter 2.68°; 30° east of the Sun</b>
8831.094	13 Fri	14	Moon at ascending node; longitude 98.4°
8831.146		16	Venus 1.13° S. of Pluto; 31° and 30° from the Sun in the evening sky; magnitudes -4.0 and 14.4
8831.375		21	Moonnor southernmost declination in ye 23.233.23°
8831.5	14 SAT		Geminid meteors; ZHR 120; peak Dec 14 12; 2 days after Full
8832.229		18	Moon 5.3° S. of Pollux; 148° and 149° from the Sun in the morning sky
8833.5	16 Mon		Coma Berenicid meteors; ZHR 3; peak Dec 16 7; 3 days before Last Quarter
8833.792		7	Mercury 5.0° N.N.E. of Antares; 14° and 15° from the Sun in the morning sky; magnitudes -0.6 and 1.0
8834.792	17 Tue	7	Moon 3.7° N.N.E. of Regulus; 115° from the Sun in the morning sky
8836.344	18 wed	20:16	Moon at perigee; distance 58.05 Earth-radii
8836.348		20	Sun enters Sagittarius, at longitude 266.61° on the ecliptic
8836.707	19 Thu	4:58	<b>Last Quarter Moon</b>
8837.358		21	Mercury at descending node through the ecliptic plane
8837.5	20 Fri		December Leo Minorid meteors; ZHR 5; peak Dec 20 5; 1 day after Last Quarter
8838.442		23	Venus at southernmost latitude from the ecliptic plane, -3.4°
8838.646	21 SAT	4	Moon 7.2° N.N.E. of Spica; 65° from the Sun in the morning sky
8839.5	22 SUN		<b>Ursid meteors</b> ; ZHR 15; peak Dec 22 21; 3 days before New
8839.681		4:21	<b>December or winter solstice</b>
8839.681		4:21	Sun enters the astrological sign Capricornus, i.e. its longitude is 270°
8840.688	23 Mon	5	Moon 3.4° N.N.E. of Mars; 38° and 39° from the Sun in the morning sky
8841.958	24 Tue	11	Moon 7.1° N.N.E. of Antares; 22° and 23° from the Sun in the morning sky
8842.5	25 wed		Christmas
8843.000		12	Moon 1.93° N.N.E. of Mercury; 9° from the Sun in the morning sky
8843.151		16	The equation of time is 0.
8843.718	26 Thu	5:14	<b>New Moon</b> ; beginning of lunation 1200. Annular eclipse of the Sun

8843.833		8	Moon 0.30° N.E. of Jupiter; 1° from the Sun in the evening sky
8844.043		13	Moon at descending node; longitude 278.4°
8844.333		20	Moon at southernmost declination in year, -23.23°
8845.021	27 Fri	13	Moon 1.23° S.S.E. of Saturn; 16° and 15° from the Sun in the evening sky
8845.273		19	Jupiter at conjunction with the sun; 6.213 AU from Earth; latitude 0.11°
8846.604	29 SUN	3	Moon 1.01° S.S.E. of Venus; 34° from the Sun in the evening sky
8847.728	30 Mon	5	Mercury at aphelion, 0.4667 AU from the Sun
8847.845		8	Middle of eclipse season: Sun is at same longitude as Moon's descending node, 278.3°