

## Celestial Highlights of the International Year of Astronomy 2009

Richard Tresch Fienberg  
Editor Emeritus, *Sky & Telescope*  
December 2008

The International Year of Astronomy 2009 celebrates the 400th anniversary of Galileo's first look at the night sky through a telescope. Galileo's pioneering observations, presented in his landmark book *Sidereus Nuncius* (*The Starry Messenger*), brought about a fundamental change in our perception of the universe: Earth is just one of many worlds.

Amateur and professional astronomers in at least 135 countries will sponsor IYA2009 events and activities throughout the year, reaching many millions of people around the globe. IYA2009 will nourish a scientific outlook in society and help "connect the dots" between science/technology and prosperity. This will in turn increase public support for scientific research, improve science education at all levels, and attract students to careers in science and technology.

On a global scale, IYA2009 is being coordinated by the International Astronomical Union (IAU), the world's largest professional society for astronomers. The IAU's IYA2009 website is at <http://www.astronomy2009.org>. In the United States, the American Astronomical Society (AAS) and NASA are taking the lead, with websites at <http://www.astronomy2009.us> and <http://astronomy2009.nasa.gov>, respectively.

IYA2009 aims to stimulate worldwide interest in science, especially among young people, with the theme "The Universe: Yours to Discover." After all, astronomy is experiential — *anyone* with a telescope can see what Galileo saw. Thus, a significant component of any IYA2009 effort should be to offer as many people as possible a chance to look through a telescope, especially at the targets that Galileo himself observed, including lunar mountains and craters, the phases of Venus, Jupiter with its four bright moons, Saturn and its rings, the Pleiades and Beehive star clusters, the Trapezium cluster in Orion, the double star Mizar/Alcor in the Big Dipper's handle, and the spotted Sun. These are all bright enough to be seen in even the smallest telescopes from virtually anywhere on Earth, even in light-polluted cities.

### Observing Calendar for 2009

Tables 1–12 list selected naked-eye, binocular, and telescopic highlights of the sky for each month of 2009, in chronological order, compiled from many sources (including the incomparable Jean Meeus). I make no pretense that the list is comprehensive; for example, it doesn't list predicted maxima and minima of bright variables. But it does include many other astronomical objects and phenomena that you might wish to feature at an IYA2009 star party or other event:

- Phases of the Moon
- Conjunctions of the Moon and planets
- Elongations of Mercury and Venus
- Outer-planet oppositions
- Occultations involving the Moon, planets, and bright stars

- Shadow transits and unusual groupings of Jupiter's moons
- Solar and lunar eclipses
- Meteor showers
- Conjunctions of the brightest asteroids with naked-eye stars
- Midnight transits of the brightest deep-sky objects

All dates and times are in Universal Time (UT); if you don't know your local time zone's offset from UT, you can find it at <http://www.timeanddate.com/worldclock>. Not all listed events are visible from all locations on Earth. If an event is listed at a UT corresponding to daytime at your location, it obviously won't be visible to you in a dark sky. And even if an event occurs in prime evening viewing hours, there's always a chance the weather won't cooperate.

Some times in the tables are given to the nearest minute, but most are given to the nearest hour. In the latter case, the time usually refers to the approximate midpoint of an event that lasts several hours, for example, an eclipse or a particularly striking grouping of Jupiter's moons. To find the exact time of an event and whether it's visible from your location, consult the issue of *Sky & Telescope* magazine for the month during which the event occurs, simulate the event in your favorite desktop-planetarium program, or search for more information on the Web.

No time is given for events that last all night, such as meteor showers, or for events that are essentially unobservable, such as penumbral lunar eclipses (which are included just for those who enjoy a challenge). To figure out if a particular meteor shower is likely to be favorable, note the phase of the Moon. Meteor showers are seen at their best in the predawn sky, when we're facing into the oncoming stream of meteoroids. So if the Moon is full or waning gibbous and therefore up in the morning sky, its bright light will wash out faint meteors.

When Mercury and Venus are at eastern elongation (east of the Sun), they're visible in the west after sunset. When these inner planets are at western elongation (west of the Sun), they're visible in the east before sunrise. If you need a mnemonic to help you remember this, note that the words "eastern," "elongation," and "evening" all start with the same letter.

## Special Targets & Events

Each month throughout IYA2009, NASA will highlight key space missions, science discoveries, and celestial sights relevant to the agency's endeavors. Many of NASA's featured objects are ones observed by Galileo, including the Moon, Venus, Jupiter, Saturn, the Milky Way, and the Sun. Among these, two pose special challenges. The Milky Way — which Galileo resolved into stars for the first time — is visible only from dark sites. The Sun, on which Galileo observed dark sunspots (though he never really understood what they were), is visible every clear day. But it is absolutely crucial that any Sun-watching event be held under strict supervision by knowledgeable experts and with safe Sun-viewing equipment — either projection devices (in which the viewer never looks directly at the Sun) or special-purpose solar filters placed over the front of any telescope or binoculars used to view the Sun.

Also on NASA's list of featured objects are the Andromeda Galaxy (Messier 31), the Crab Nebula (M1), the Orion Nebula (M42), the great globular cluster in Hercules (M13), and the Whirlpool Galaxy (M51). M31, M42, and M13 are easily visible in small telescopes from light-polluted urban and suburban sites. M1 and M51, on the other hand, are difficult targets except under dark skies and/or with relatively large-aperture instruments.

Several entries in Tables 1–12 refer to other IYA2009 projects, such as the Great World Wide

Star Count ([http://www.windows.ucar.edu/citizen\\_science/starcount](http://www.windows.ucar.edu/citizen_science/starcount)) and GLOBE at Night (<http://www.globe.gov/GaN>), two important efforts to educate the public about light pollution, and 100 Hours of Astronomy (<http://www.100hoursofastronomy.org>), a four-night-long, global, round-the-clock star party and observatory open house. For more information about Astronomy Day, visit the Astronomical League at <http://www.astroleague.org/al/astroday/astroday.html>.

Table 1. Celestial Highlights of January 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
2 Jan	17 <sup>h</sup>	Uranus 5° S of Moon
3 Jan	—	Quadrantid meteor shower (Jan 3/4)
4 Jan	11:56	First-quarter Moon
4 Jan	14 <sup>h</sup>	Mercury at greatest elongation (19° east of Sun)
4 Jan	15 <sup>h</sup>	Earth at perihelion
11 Jan	3:27	Full Moon
14 Jan	14:47	Venus only 1' from Lambda Aquarii (mag. 3.8)
14 Jan	21 <sup>h</sup>	Venus at greatest elongation (47° east of Sun)
15 Jan	12 <sup>h</sup>	Saturn 6° N of Moon
18 Jan	2:46	Last-quarter Moon
21 Jan	13 <sup>h</sup>	Moon occults Antares
23 Jan	16 <sup>h</sup>	Venus 1.4° N of Uranus
26 Jan	7:55	New Moon
26 Jan	06 <sup>h</sup> –10 <sup>h</sup>	Annular solar eclipse
27 Jan	18 <sup>h</sup>	Neptune 1.8° S of Moon
30 Jan	01 <sup>h</sup>	Uranus 5° S of Moon
30 Jan	12 <sup>h</sup>	Venus 3° S of Moon
31 Jan	—	Praesepe (M44) on meridian at midnight

Table 2. Celestial Highlights of February 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
2 Feb	23:13	First-quarter Moon
9 Feb	14:39	Full Moon
9 Feb	—	Penumbral lunar eclipse
11 Feb	20 <sup>h</sup>	Saturn 6° N of Moon
13 Feb	21 <sup>h</sup>	Mercury at greatest elongation (26° west of Sun)
16 Feb	21:37	Last-quarter Moon
17 Feb	10 <sup>h</sup>	Mars 0.6° S of Jupiter
17 Feb	21 <sup>h</sup>	Moon occults Antares
18 Feb	07 <sup>h</sup>	Ceres (mag. 6.9) 13' N of 64 Leonis (mag. 6.4)
19 Feb	15 <sup>h</sup>	Venus at greatest illuminated extent
22 Feb	13:51	Jupiter only 1' away from 19 Cap (mag. 5.9)
22 Feb	22 <sup>h</sup>	Moon occults Mercury
23 Feb	01 <sup>h</sup>	Moon occults Jupiter
23 Feb	08 <sup>h</sup>	Mars 1.7° S of Moon
24 Feb	03 <sup>h</sup>	Mercury 0.6° S of Jupiter
24 Feb	06 <sup>h</sup>	Planetary trio: Mercury, Mars, and Jupiter within 3° 40'
25 Feb	1:35	New Moon
25 Feb	—	Ceres at opposition (mag. 6.9)
27 Feb	23 <sup>h</sup>	Moon occults Venus

Table 3. Celestial Highlights of March 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
1 Mar	5:37	Jupiter only 1' away from 21 Cap (mag. 6.5)
1 Mar	20 <sup>h</sup>	Mercury 0.6° S of Mars
4 Mar	7:46	First-quarter Moon
4 Mar	09 <sup>h</sup>	Ceres (mag. 6.9) 19' N of 54 Leonis (mag. 4.5)
5 Mar	0:15	Saturn only 1' away from SAO 118806 (mag. 6.6)
8 Mar	1:29	Mercury occults Iota Aquarii (mag. 4.4)
8 Mar	04 <sup>h</sup>	Mars 0.8° S of Neptune
8 Mar	20 <sup>h</sup>	Saturn at opposition
11 Mar	2:38	Full Moon
11 Mar	11 <sup>h</sup>	Pallas (mag. 8.5) 3' S of Nu Leporis (mag. 5.3)
11 Mar	03 <sup>h</sup>	Saturn 0.6° N of Moon
16 Mar	—	GLOBE at Night star-counting commences (Mar 16–28)
17 Mar	05 <sup>h</sup>	Moon occults Antares
18 Mar	17:47	Last-quarter Moon
19 Mar	15 <sup>h</sup>	Ceres (mag. 7.2) 27' S of 40 Leonis Minoris (mag. 5.5)
20 Mar	11:44	March equinox
22 Mar	21 <sup>h</sup>	Jupiter 1.5° S of Moon
23 Mar	14 <sup>h</sup>	Neptune 2° S of Moon
24 Mar	14 <sup>h</sup>	Mars 4° S of Moon
26 Mar	16:06	New Moon
27 Mar	—	Messier Marathon Weekend (Fri–Sun, Mar 27–29)

Table 4. Celestial Highlights of April 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
2 Apr	14:34	First-quarter Moon
2 Apr	—	100 Hours of Astronomy commences (Apr 2–5)
7 Apr	07 <sup>h</sup>	Saturn 6° N of Moon
9 Apr	14:56	Full Moon
10 Apr	08 <sup>h</sup>	Pallas (mag. 8.7) 1' N of SAO 132841 (mag. 5.4)
13 Apr	—	Mizar/Alcor on meridian at midnight
13 Apr	13 <sup>h</sup>	Moon occults Antares
15 Apr	04 <sup>h</sup>	Mars 0.5° S of Uranus
17 Apr	13:36	Last-quarter Moon
18 Apr	17 <sup>h</sup>	Venus 6° N of Mars
19 Apr	16 <sup>h</sup>	Jupiter 2° S of Moon
20 Apr	00 <sup>h</sup>	Neptune 2° S of Moon
21 Apr	—	Lyrid meteor shower (Apr 21/22)
22 Apr	08 <sup>h</sup>	Uranus 5° S of Moon
22 Apr	14 <sup>h</sup>	Moon occults Venus
22 Apr	19 <sup>h</sup>	Mars 6° S of Moon
25 Apr	3:23	New Moon
26 Apr	08 <sup>h</sup>	Mercury at greatest elongation (20° east of Sun)
26 Apr	16 <sup>h</sup>	Mercury 1.9° S of Moon
26 Apr	16:43	Jupiter just misses occulting 44 Capricorni (mag. 6.0)
30 Apr	23 <sup>h</sup>	Vesta (mag. 8.5) 18' N of Epsilon Tauri (mag. 3.6)

Table 5. Celestial Highlights of May 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
1 May	20:44	First-quarter Moon
2 May	—	Astronomy Day
2 May	15 <sup>h</sup>	Venus at greatest illuminated extent
4 May	11 <sup>h</sup>	Saturn 6° N of Moon
5 May	—	Eta Aquarid meteor shower (May 5/6)
9 May	4:01	Full Moon
10 May	21 <sup>h</sup>	Moon occults Antares
17 May	7:26	Last-quarter Moon
17 May	08 <sup>h</sup>	Jupiter 3° S of Moon
17 May	09 <sup>h</sup>	Neptune 3° S of Moon
19 May	20 <sup>h</sup>	Uranus 5° S of Moon
21 May	08 <sup>h</sup>	Venus 7° S of Moon
21 May	20 <sup>h</sup>	Mars 7° S of Moon
24 May	12:11	New Moon
25 May	13 <sup>h</sup>	Jupiter 0.4° S of Neptune
26 May	06 <sup>h</sup>	Jupiter appears with only one satellite (Europa)
31 May	3:22	First-quarter Moon
31 May	17 <sup>h</sup>	Saturn 6° N of Moon

Table 6. Celestial Highlights of June 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
5 Jun	21 <sup>h</sup>	Venus at greatest elongation (46° west of Sun)
7 Jun	18:12	Full Moon
7 Jun	04 <sup>h</sup>	Moon occults Antares
13 Jun	12 <sup>h</sup>	Mercury at greatest elongation (23° west of Sun)
13 Jun	16 <sup>h</sup>	Neptune 3° S of Moon
13 Jun	18 <sup>h</sup>	Jupiter 3° S of Moon
15 Jun	22:15	Last-quarter Moon
15 Jun	23 <sup>h</sup>	Moon occults Juno
16 Jun	06 <sup>h</sup>	Uranus 6° S of Moon
17 Jun	6:43	Venus only 1' from 31 Arietis (mag. 5.7)
19 Jun	14 <sup>h</sup>	Venus 2° S of Mars
19 Jun	17 <sup>h</sup>	Mars 6° S of Moon
19 Jun	17 <sup>h</sup>	Venus 8° S of Moon
20 Jun	03 <sup>h</sup>	Ceres (mag. 8.6) 16' N of Theta Leonis (mag. 3.4)
21 Jun	5:46	June solstice
21 Jun	09 <sup>h</sup>	Mercury 7° S of Moon
22 Jun	19:35	New Moon
22 Jun	14 <sup>h</sup>	Mercury 3° N of Aldebaran
23 Jun	08 <sup>h</sup>	Pluto at opposition
28 Jun	02 <sup>h</sup>	Saturn 7° N of Moon
29 Jun	11:28	First-quarter Moon

Table 7. Celestial Highlights of July 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
4 Jul	02 <sup>h</sup>	Earth at aphelion
4 Jul	10 <sup>h</sup>	Moon occults Antares
7 Jul	9:21	Full Moon
7 Jul	09 <sup>h</sup> –10 <sup>h</sup>	Penumbral lunar eclipse
10 Jul	22 <sup>h</sup>	Jupiter 4° S of Moon
10 Jul	22 <sup>h</sup>	Neptune 3° S of Moon
13 Jul	12 <sup>h</sup>	Uranus 6° S of Moon
13 Jul	19 <sup>h</sup>	Jupiter 0.6° S of Neptune
14 Jul	18 <sup>h</sup>	Venus 3° N of Aldebaran
15 Jul	9:53	Last-quarter Moon
18 Jul	12 <sup>h</sup>	Mars 5° S of Moon
19 Jul	05 <sup>h</sup>	Venus 6° S of Moon
22 Jul	2:35	New Moon
22 Jul	01 <sup>h</sup> –04 <sup>h</sup>	Total solar eclipse (visible mainly in India, China, and the Pacific)
24 Jul	2 <sup>h</sup>	Io, Europa, Callisto grouped tightly W of Jupiter
25 Jul	15 <sup>h</sup>	Saturn 7° N of Moon
27 Jul	11 <sup>h</sup>	Mars 5° N of Aldebaran
28 Jul	22:00	First-quarter Moon
28 Jul	—	Cygnus Milky Way on meridian at midnight
28 Jul	—	S. Delta Aquarid meteor shower (Jul 28/29)

Table 8. Celestial Highlights of August 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
2 Aug	19 <sup>h</sup>	Mercury 0.6° N of Regulus
3 Aug	24 <sup>h</sup>	Jupiter occults 45 Capricorni (mag. 5.9)
6 Aug	0:55	Full Moon
6 Aug	—	Epsilon Aurigae partial eclipse begins
6 Aug	00 <sup>h</sup> –01 <sup>h</sup>	Penumbral lunar eclipse
6 Aug	22 <sup>h</sup>	Jupiter 3° S of Moon
7 Aug	02 <sup>h</sup>	Neptune 3° S of Moon
9 Aug	17 <sup>h</sup>	Uranus 6° S of Moon
12 Aug	—	Perseid meteor shower (Aug 12/13)
13 Aug	18:55	Last-quarter Moon
14 Aug	18 <sup>h</sup>	Jupiter at opposition
16 Aug	03 <sup>h</sup>	Mars 3° S of Moon
16 Aug	12 <sup>h</sup>	Jupiter appears with only one satellite (Callisto)
17 Aug	21 <sup>h</sup>	Neptune at opposition
17 Aug	21 <sup>h</sup>	Venus 1.7° S of Moon
18 Aug	07 <sup>h</sup>	Moon occults Vesta
18 Aug	21 <sup>h</sup>	Mercury 3° S of Saturn
20 Aug	01 <sup>h</sup>	Jupiter appears with only one satellite (Callisto)
20 Aug	10:02	New Moon
22 Aug	04 <sup>h</sup>	Venus 7° S of Pollux
22 Aug	06 <sup>h</sup>	Saturn 7° N of Moon
22 Aug	12 <sup>h</sup>	Mercury 3° N of Moon

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
23 Aug	14 <sup>h</sup>	Jupiter appears with only one satellite (Callisto)
24 Aug	16 <sup>h</sup>	Mercury at greatest elongation (27° east of Sun)
25 Aug	11:30	Io, Europa, Callisto grouped tightly E of Jupiter
27 Aug	03 <sup>h</sup>	Jupiter appears with only one satellite (Callisto)
27 Aug	11:42	First-quarter Moon
27 Aug	22 <sup>h</sup>	Moon occults Antares
30 Aug	16 <sup>h</sup>	Jupiter appears with only one satellite (Callisto)

Table 9. Celestial Highlights of September 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
2 Sep	21 <sup>h</sup>	Jupiter 3° S of Moon
3 Sep	04 <sup>h</sup>	Jupiter appears with only one satellite (Ganymede)
3 Sep	05 <sup>h</sup>	Jupiter without satellites (JWS)
3 Sep	06 <sup>h</sup>	Jupiter appears with only one satellite (Io)
3 Sep	07 <sup>h</sup>	Neptune 3° S of Moon
4 Sep	16:03	Full Moon
4 Sep	—	Saturn ring-plane crossing
5 Sep	21 <sup>h</sup>	Uranus 6° S of Moon
6 Sep	19 <sup>h</sup>	Jupiter appears with only one satellite (Callisto)
10 Sep	08 <sup>h</sup>	Jupiter appears with only one satellite (Callisto)
11 Sep	19 <sup>h</sup>	Io, Europa, Callisto grouped tightly W of Jupiter
12 Sep	2:16	Last-quarter Moon
13 Sep	16 <sup>h</sup>	Moon occults Mars
13 Sep	04 <sup>h</sup>	Vesta (mag. 8.4) 17' S of 35 Cancri (mag. 6.5)
16 Sep	05 <sup>h</sup>	Vesta (mag. 8.4) 28' S of Epsilon Cancri (mag. 6.3)
16 Sep	18 <sup>h</sup>	Venus 3° N of Moon
17 Sep	06 <sup>h</sup>	Juno (mag. 7.7) 7' E of 29 Piscium (mag. 5.1)
17 Sep	10 <sup>h</sup>	Uranus at opposition
18 Sep	18:44	New Moon
19 Sep	16 <sup>h</sup>	Juno (mag. 7.7) 22' E of 27 Piscium (mag. 5.1)
20 Sep	10 <sup>h</sup>	Venus 0.5° N of Regulus
21 Sep	—	Juno at opposition
22 Sep	21:19	September equinox
24 Sep	06 <sup>h</sup>	Moon occults Antares
26 Sep	4:50	First-quarter Moon
18 Sep	00 <sup>h</sup>	Jupiter appears with only one satellite (Ganymede)
28 Sep	3:40	Europa, Ganymede, Callisto grouped tightly W of Jupiter
30 Sep	00 <sup>h</sup>	Jupiter 3° S of Moon
30 Sep	13 <sup>h</sup>	Neptune 3° S of Moon

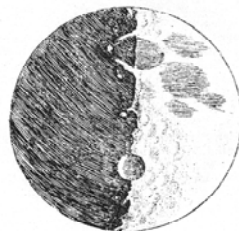


Table 10. Celestial Highlights of October 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
3 Oct	02 <sup>h</sup>	Uranus 6° S of Moon
4 Oct	6:10	Full Moon
5 Oct	22 <sup>h</sup>	Mars 6° S of Pollux
6 Oct	02 <sup>h</sup>	Mercury at greatest elongation (18° west of Sun)
8 Oct	09 <sup>h</sup>	Mercury 0.3° S of Saturn
9 Oct	—	Great World Wide Star Count commences (Oct 9–23)
11 Oct	8:56	Last-quarter Moon
12 Oct	01 <sup>h</sup>	Moon occults Mars
13 Oct	16 <sup>h</sup>	Venus 0.6° S of Saturn
16 Oct	13 <sup>h</sup>	Saturn 7° N of Moon
16 Oct	19 <sup>h</sup>	Venus 7° N of Moon
18 Oct	5:33	New Moon
21 Oct	—	Orionid meteor shower (Oct 21/22)
21 Oct	15 <sup>h</sup>	Moon occults Antares
22 Oct	17 <sup>h</sup>	Vesta (mag. 8.2) 20' S of 8 Leonis (mag. 5.9)
26 Oct	0:42	First-quarter Moon
27 Oct	09 <sup>h</sup>	Jupiter 3° S of Moon
27 Oct	21 <sup>h</sup>	Neptune 3° S of Moon
30 Oct	09 <sup>h</sup>	Uranus 6° S of Moon
30 Oct	18 <sup>h</sup>	Double shadow transit on Jupiter (Io, Ganymede)

Table 11. Celestial Highlights of November 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
2 Nov	02 <sup>h</sup>	Venus 4° N of Spica
6 Nov	20 <sup>h</sup>	Double shadow transit on Jupiter (Io, Ganymede)
9 Nov	15:56	Last-quarter Moon
9 Nov	06 <sup>h</sup>	Mars 3° N of Moon
13 Nov	01 <sup>h</sup>	Saturn 8° N of Moon
16 Nov	19:14	New Moon
17 Nov	—	Leonid meteor shower (Nov 17/18)
18 Nov	—	Pleiades (M45) on meridian at midnight
23 Nov	22 <sup>h</sup>	Jupiter 4° S of Moon
23 Nov	24 <sup>h</sup>	Vesta (mag. 7.8) 20' N of 37 Leonis (mag. 5.7)
24 Nov	21:39	First-quarter Moon
24 Nov	06 <sup>h</sup>	Neptune 3° S of Moon
26 Nov	18 <sup>h</sup>	Uranus 6° S of Moon



R. T. Fienberg



NASA

Table 12. Celestial Highlights of December 2009

<i>Date (UT)</i>	<i>Time (UT)</i>	<i>Object or Phenomenon</i>
2 Dec	7:30	Full Moon
7 Dec	03 <sup>h</sup>	Mars 6° N of Moon
9 Dec	0:13	Last-quarter Moon
10 Dec	11 <sup>h</sup>	Saturn 8° N of Moon
12 Dec	01 <sup>h</sup>	Vesta (mag. 7.5) 30' S of 46 Leonis (mag. 5.7)
13 Dec	—	Geminid meteor shower (Dec 13/14)
15 Dec	—	Orion Nebula (M42) on meridian at midnight
16 Dec	12:02	New Moon
18 Dec	08 <sup>h</sup>	Mercury 1.4° S of Moon
18 Dec	17 <sup>h</sup>	Mercury at greatest elongation (20° east of Sun)
20 Dec	05 <sup>h</sup>	Jupiter 0.6° S of Neptune
21 Dec	17:47	December solstice
21 Dec	—	Epsilon Aurigae total eclipse begins
21 Dec	15 <sup>h</sup>	Jupiter 4° S of Moon
21 Dec	15 <sup>h</sup>	Neptune 4° S of Moon
24 Dec	17:36	First-quarter Moon
24 Dec	02 <sup>h</sup>	Uranus 6° S of Moon
31 Dec	19:13	Full Moon / Blue Moon (by <i>Sky &amp; Telescope</i> definition)
31 Dec	19 <sup>h</sup> –20 <sup>h</sup>	Partial lunar eclipse

**References & Resources**

Cesarsky, C., Russo, P., and Christensen, L. L., “The Year to Celebrate Astronomy,” *Sky & Telescope*, January 2009 (Cambridge: New Track Media, 2008).

Gibbs, M. G., Barnes, J., Manning, J. G., and Partridge, B., editors, *Preparing for the International Year of Astronomy: A Hands-On Symposium*, ASP Conference Series, Vol. 400 (San Francisco: Astronomical Society of the Pacific, 2008).

Nautical Almanac Office, U.S. Naval Observatory, and Her Majesty’s Nautical Almanac Office, U.K., *Astronomical Phenomena for the Year 2009* (Washington, DC: U.S. Government Printing Office, 2006).

Seronik, G., editor, *SkyWatch 2009* (Cambridge: New Track Media, 2008).

