

## March Celestial Calendar by Dave Mitsky

All times, unless otherwise noted, are UT (subtract five hours and, when appropriate, one calendar day for EST and four hours for EDT from March 12th onwards)

- 3/1 Venus is 9.7 degrees north-northwest of the Moon at 2:00; Uranus is 3.4 degrees north-northwest of the Moon at 18:00; the Moon, Mars, and Uranus lie within a circle with a diameter of 4.2 degrees at 20:00; Mars is 4.1 degrees north-northwest of the Moon at 21:00
- 3/2 Neptune is in conjunction with the Sun at 3:00; Venus is stationary in right ascension at 14:00; asteroid 1 Ceres is 0.8 degree north of the Moon, with an occultation visible from South Georgia, the Antarctic peninsula, and the southern half of South America, at 3:00
- 3/3 The Moon is at perigee, subtending 32' 23" from a distance of 369,063 kilometers (229,325 miles), at 7:33; asteroid 29 Amphitrite (magnitude +9.1) is at opposition at 12:00
- 3/4 The Moon is 9.3 degrees south-southeast of the bright open cluster M45 (the Pleiades or Subaru) in Taurus at 10:00; Mercury is 1.0 degree south-southeast of Neptune at 12:00
- 3/5 The 45%-illuminated Moon is 0.25° north-northwest of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation visible from the western Caribbean, Central America, most of the continental United States, Hawaii, Micronesia, and the Solomon Islands, at 3:00; the Lunar X (the Purbach or Werner Cross), an X-shaped clair-obscure illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 9:56; First Quarter Moon occurs at 11:32
- 3/6 The Moon is 5.5 degrees south of the bright open cluster M35 in Gemini at 17:00
- 3/7 Mercury is in superior conjunction with the Sun at 0:00; asteroid 4 Vesta is stationary at 3:00
- 3/8 The Moon is 10.1 degrees south of the first-magnitude star Pollux (Beta Geminorum) at 7:00; asteroid 41 Daphne (magnitude +9.6) is at opposition at 7:00
- 3/9 The Moon is 3.6 degrees south of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 7:00
- 3/10 Comet 2P/Encke is at perihelion (0.3359 astronomical units from the Sun) at 2:00; the Moon is 0.8 degrees south-southwest of the first-magnitude star Regulus (Alpha Leonis) at 22:00;
- 3/11 The Moon is at the ascending node (longitude 153.4 degrees) at 4:20; the Sun enters Pisces, at longitude 351.6 degrees on the ecliptic, at 23:00
- 3/12 Daylight Saving Time (DST) begins today; Full Moon (known as the Crow, Lenten, and Sap Moon) occurs at 14:54
- 3/14 Venus is at its greatest latitude north of the ecliptic plane (3.4 degrees) at 6:00; Jupiter is 2.3 degrees south-southwest of the Moon at 22:00
- 3/15 The Moon is 6.1 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 3:00; asteroid Pallas is in conjunction with the Sun at 3:00
- 3/17 Saturn is at western quadrature (i.e., 90 degrees from the Sun) at 22:00
- 3/18 The Moon is at apogee, subtending 29' 32" from a distance of 404,649 kilometers (251,438 miles), at 17:25; Mercury (magnitude -1.3) is 8.5 degrees south-southeast of Venus (magnitude -4.2) at 18:00; Mercury is at the ascending node at 22:00; the Moon is 9.8 degrees north of the first-magnitude star Antares (Alpha Scorpii) at 23:00
- 3/20 Saturn is 3.4 degrees south of the Moon at 10:49; the vernal equinox occurs at 11:29; Last Quarter Moon occurs at 15:58
- 3/21 The Curtiss Cross, an X-shaped clair-obscure illumination effect located between the craters Parry and Gambart, is predicted to be at a midpoint at 12:42
- 3/25 Venus is in inferior conjunction with the Sun at 10:00; the Moon is at the descending node (longitude 333.1 degrees) at 15:43
- 3/26 Neptune is 0.01 degree east-northeast of the Moon, with an occultation visible from southwest Asia, Oman, Yemen, northern Madagascar, South Africa, and Ascension Island, at 8:00; Mercury (magnitude -0.8) is 2.1 degrees north-northwest of Uranus (magnitude +5.9) at 10:00

3/27 Venus is 10.7 degrees north-northwest of the Moon at 19:00  
3/28 New Moon (lunation 1166) occurs at 2:58  
3/29 Uranus is 3.4 degrees north-northwest of the Moon at 5:00; Mercury is 6.3 degrees north-northwest of the Moon at 11:00  
3/30 The Moon is at perigee, subtending 32' 50" from a distance of 363,854 kilometers (226,088 miles), at 12:32; Mars is 5.3 degrees north-northwest of the Moon at 16:00  
3/31 The Moon is 9.2 degrees south-southeast of M45 at 17:00

Nicolas-Louis de Lacaille (1713-), Caroline Herschel (1750-), Josef von Fraunhofer (1787-), John Herschel (1792-1871), Percival Lowell (1855-1916), Albert Einstein (1879-1955), and Walter Baade (1893-1960) were born this month.

Titan, Saturn's largest satellite, was discovered on March 25, 1655 by the Dutch astronomer Christiaan Huygens. The English astronomer Edward Pigott discovered the spiral galaxy M63 (the Black Eye Galaxy) on March 23, 1779. The English astronomer Sir William Herschel discovered Uranus on March 13, 1781. Asteroid 4 Vesta was discovered by the German astronomer Heinrich Wilhelm Matthias Olbers on March 29, 1807. The first photograph of the Moon was taken on March 23, 1840. The Czech astronomer Luboš Kohoutek discovered Comet C/1973 E1 (Kohoutek) on March 7, 1973. The rings of Uranus were discovered on March 10, 1977. The Spanish amateur astronomer Francisco Garcia Diaz Garcia discovered supernova SN 1993 in the spiral galaxy M81 (Bode's Galaxy) on March 28th, 1993.

The zodiacal light may be visible in the western sky after sunset from dark locations during the second half of March.

Information on Iridium flares and passes of the ISS, the Tiangong-1, the Tiangong-2, the USAF's X-37B, the HST, and other satellites can be found at <http://www.heavens-above.com/>

The Moon is 2.4 days old, is illuminated 7.1%, subtends 32.3', and is located in the constellation of Cetus at 0:00 UT on March 1st. It's at its greatest northern declination of +18.9 degrees on March 7th and its greatest southern declination of -18.9 degrees on March 21st. Longitudinal libration is at a maximum of +4.7 degrees on March 11th and a minimum of -6.4 degrees on March 25th. Latitudinal libration is at a maximum of +6.8 degrees on March 5th and a minimum of -6.8 degrees on March 18th. The Moon, Mars, and Uranus lie within a circle with a diameter of 4.2 degrees on March 1st. New Moon occurs on March 28th. The Moon will occult Aldebaran on March 4th (March 5th UT) for most of the Caribbean, Central America, and the continental United States. A grazing occultation will take place in some portions of southern Canada, most of the states bordering Canada, and some of the northeastern states. The Hyads  $\theta$ 1 and  $\theta$ 2 Tauri will also be occulted, as will some of the other bright stars in Melotte 20 (the Hyades). Consult <http://www.lunar-occultations.com/iota/bstar/bstar.htm> and <http://occultations.org/aldebaran/2017march/> for information on these lunar occultation events. Visit <http://saberdoesthestars.wordpress.com/2011/07/05/saber-does-the-stars/> for tips on spotting extreme crescent Moons. Click on [http://www.calendar-12.com/moon\\_calendar/2017/march](http://www.calendar-12.com/moon_calendar/2017/march) for a March lunar calendar. Times and dates for the lunar light rays predicted to occur this month are available at <http://www.lunar-occultations.com/rlo/rays/rays.htm>

The Sun is in Aquarius on March 1st at 0:00 UT. The Sun crosses the celestial equator at 10:29 on March 20th, bringing spring to the northern hemisphere.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on March 1st: Mercury (magnitude -1.3, 4.9", 99%, 1.38 a.u., Aquarius), Venus (magnitude -4.8, 46.9", 17% illuminated, 0.36 a.u., Pisces), Mars (magnitude +1.3, 4.6", 94% illuminated, 2.04 a.u., Pisces), Jupiter (magnitude -2.3, 42.1", 100% illuminated, 4.68 a.u., Virgo), Saturn (magnitude

+0.5, 16.2", 100% illuminated, 10.28 a.u., Sagittarius), Uranus (magnitude +5.9, 3.4", 100% illuminated, 20.81 a.u. on March 16th, Pisces), Neptune (magnitude +8.0, 2.2", 100% illuminated, 30.92 a.u. on March 16th, Aquarius), and Pluto (magnitude +14.2, 0.1", 100% illuminated, 33.67 a.u. on March 16th, Sagittarius).

In the evening, Mercury, Venus, Mars, and Uranus can be seen in the west. Jupiter is located in the southeast at midnight. Venus is in the east, Saturn is in the south, and Jupiter is in the southwest in the morning sky.

Mercury is in superior conjunction on March 7th. The speediest planet undergoes its best evening apparition of 2017 for observers at mid-northern latitudes during the second half of March. It is at perihelion on March 23rd. Mercury (magnitude -0.8) passes about two degrees to the right of Uranus (magnitude +5.9) on the evening of March 25th.

Venus is stationary in central Pisces and begins retrograde motion on March 2nd. It is at greatest heliocentric latitude north on March 14th. Venus is eight degrees north of the Sun at inferior conjunction on March 25th, which makes the brightest planet observable during both morning and evening twilight for a period of a few days.

Mars is located two degrees northeast of Uranus and four degrees northwest of the waxing crescent Moon on March 1st. Mars exits Pisces and enters Aries on March 8th.

Jupiter retrogrades through central Virgo this month but remains within four to six degrees of Spica. The King of the Planets brightens from magnitude -2.3 to magnitude -2.5 and increases in apparent size by two arc seconds. The Moon passes two degrees north of the planet on March 14th. Shadow transits by Io take place on the mornings of March 2nd, March 9th, March 16th, and March 25th. Europa's shadow crosses Jupiter on the nights of March 15th/16th and March 22nd/23rd and on the morning of March 30th. Shadow transits by Ganymede occur on the nights of March 9th/10th and March 16th/17th. Callisto passes due south of Jupiter on the morning of March 13th. Data on these and other Galilean satellite events is available online at <http://www.shallowsky.com/jupiter/> and <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/> and on page 51 of the March issue of *Sky & Telescope*. Click on <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/> or consult page 50 of the March issue of *Sky & Telescope* to determine transit times of the central meridian by the Great Red Spot.

Saturn rises in western Sagittarius at approximately 2:30 a.m. local time on March 1st. Saturn is located less than five degrees from M8 (the Lagoon Nebula), M20 (the Trifid Nebula), and the open cluster M23 for the entire month. At mid-month, the planet's disc spans 17 arc seconds at the equator, while its rings measure 38 arc seconds and are tilted by 26 degrees. Saturn is at western quadrature on March 17th, a situation that enhances views of the shadows of the planet's globe and rings. The Last Quarter Moon passes three degrees to the north of the Ringed Planet on the morning of March 20th. Click on <http://www.curtrenz.com/saturn> for a wealth of information on Saturn. For information on the major satellites of Saturn, browse <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/>

Uranus is four degrees north of the Moon on March 1st. The seventh planet disappears into evening twilight in late March.

Neptune is in conjunction with the Sun on March 2nd and will not be visible again until April.

A finder chart for Uranus appears on page 50 of the October 2016 issue and page 49 of the December 2016 issue of *Sky & Telescope*. Online finder charts can be found at

<http://www.nakedeyepanets.com/uranus.htm> and at [http://www.skyandtelescope.com/wp-content/uploads/WEB\\_UrNep16\\_Finders.pdf](http://www.skyandtelescope.com/wp-content/uploads/WEB_UrNep16_Finders.pdf)

Click on <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/> for JavaScript utilities that will illustrate the positions of the five brightest satellites of Uranus.

See <http://www.curtrenz.com/uranep.html> for additional information on Uranus.

Pluto is not a viable target this month.

For more on the planets and how to locate them, browse <http://www.nakedeyepanets.com/>

Comet 41P/Tuttle-Giacobini-Kresak may brighten to binocular visibility as it travels northeastward through Ursa Major this month. The periodic comet is at perihelion on March 10th and passes within one degree north of the second-magnitude star Dubhe (Alpha Ursae Majoris) on the evening of March 27th. Comet 41P will come closer to our planet in March than any time since 1858. Visit <http://cometchasing.skyhound.com/> and <http://www.aerith.net/comet/future-n.html> for additional information on comets visible this month.

Asteroid 4 Vesta travels eastward through northern Gemini this month. The main belt asteroid decreases in brightness from magnitude +7.1 to magnitude +7.6 during March. It lies about one degree south of the fourth-magnitude star Upsilon Geminorum on March 27th. Asteroids brighter than magnitude +11.0 coming to opposition this month include 29 Amphitrite (magnitude +9.1) on March 3rd, 16 Psyche (magnitude +10.3) on March 3rd, 41 Daphne (magnitude +9.6) on March 8th, and 409 Aspasia (magnitude +10.8) on March 29th. The 15.2-magnitude asteroid 1343 Nicole occults HIP 46938, a 6.3-magnitude star located in western Leo less than one degree northeast of Lambda Leonis, for up to 3.4 seconds on the night of March 10th/11th. A map of the occultation track and other information is available at [http://asteroidoccultation.com/2017\\_03/0311\\_1343\\_52460\\_Map.gif](http://asteroidoccultation.com/2017_03/0311_1343_52460_Map.gif) and [http://asteroidoccultation.com/2017\\_03/0311\\_1343\\_52460\\_Summary.txt](http://asteroidoccultation.com/2017_03/0311_1343_52460_Summary.txt)

A wealth of current information on solar system celestial bodies is posted at <http://www.curtrenz.com/astronomical> and <http://nineplanets.org/>

Free star maps for March can be downloaded at <http://www.skymaps.com/downloads.html> and <http://www.telescope.com/content.jsp?pageName=Monthly-Star-Chart>

The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in magnitude from 2.1 to 3.4, on March 3rd, 6th, 9th, 12th, 15th, 17th, 20th, 23rd, 26th, and 29th. Consult <http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/> for the times of the eclipses. Favorable dates for observing Algol at mid-eclipse from the eastern United States include March 15th (12:24 a.m. EDT or 4:24 UT) and March 17th (9:14 p.m. EDT or 1:14 UT March 18th). For more on Algol, see <http://stars.astro.illinois.edu/sow/Algol.html> and <http://www.solstation.com/stars2/algol3.htm>

It is possible to observe all 109 (or 110) Messier objects during a single night around the time of the vernal equinox, if the Moon phase and local latitude are favorable. For information on running a so-called Messier Marathon, browse <http://messier.seds.org/xtra/marathon/marathon.html> and <http://www.richardbell.net/marathon.html>

Information pertaining to observing some of the more prominent Messier galaxies can be found at <http://www.cloudynights.com/topic/358295-how-to-locate-some-of-the-major-messier-galaxies-and-helpful-advice-for-novice-amateur-astronomers/>

Thirty binary and multiple stars for March: Struve 1173, Struve 1181, Struve 1187, Zeta Cancri, 24 Cancri, Phi-2 Cancri, Iota-1 Cancri, Struve 1245, Iota-2 Cancri, 66 Cancri, Struve 1327 (Cancer); Struve 1270, Epsilon Hydrae, 15 Hydrae, 17 Hydrae, Theta Hydrae, 27 Hydrae, Struve 1347, Struve 1357, Struve 1365 (Hydra); 3 Leonis, Struve 1360, 6 Leonis, Omicron Leonis (Leo); Struve 1274, Struve 1282, Struve 1333, 38 Lyncis, Struve 1369 (Lynx); h4046 (Puppis)

Notable carbon star for March: T Cancri (Cancer)

Thirty-five deep-sky objects for March: M44, M67, NGC 2775 (Cancer); Abell 33, M48, NGC 2610, NGC 2642, NGC 2811, NGC 2835, NGC 2855, NGC 2935, NGC 2992, NGC 3052, NGC 3078 (Hydra); NGC 2903, NGC 2916, NGC 2964, NGC 2968, NGC 3020 (Leo); NGC 2859, NGC 3003, NGC 3021 (Leo Minor); NGC 2683 (Lynx); NGC 2567, NGC 2571 (Puppis); M81, M82, NGC 2639, NGC 2654, NGC 2681, NGC 2685, NGC 2742, NGC 2768, NGC 2787, NGC 2841, NGC 2880, NGC 2950, NGC 2976, NGC 2985 (Ursa Major)

Top ten binocular deep-sky objects for March: M44, M48, M67, M81, M82, NGC 2571, NGC 2683, NGC 2841, NGC 2903, NGC 2976

Top ten deep-sky objects for March: M44, M48, M67, M81, M82, NGC 2654, NGC 2683, NGC 2835, NGC 2841, NGC 2903

Challenge deep-sky object for March: Abell 30 (Cancer)

The objects listed above are located between 8:00 and 10:00 hours of right ascension.