Sky Calendar – June 2023

2 Mars 0.16° NNE of Beehive cluster (M44) at 23h UT (56° from Sun, evening sky). Mag. 1.6.
3 Moon near Antares at 23h UT (evening sky).
4 Venus at dichotomy (D-shape) at 3h UT (evening sky).
5 Full Moon at 3:43 UT.
6 Venus at greatest elongation east at 11h UT (45° from Sun, evening sky). Mag. –4.3.
7 Moon at perigee (closest to Earth) at 23:14 UT (distance 364,861km; angular size 29.5').
8 New Moon at 4:38 UT. Start of lunation 1243.
9 Moon near Mars at 4h UT (44° from Sun, evening sky). Mag. –4.4. Beautiful pairing with Mars nearby!
10 Moon, Venus and Mars within circle of diameter 5° at 8h UT (46° from Sun, evening sky). Mags. –4.4 and 1.7.
11 Moon near Mars at 14h UT (evening sky). Mag. 1.7.
12 Moon at apogee (farthest from Earth) at 19h UT (distance 405,385km; angular size 29.5').
13 Moon near Regulus at 12h UT (evening sky).
14 First Quarter Moon at 7:50 UT.
15 Moon near Spica at 23h UT (evening sky).
16 More sky events and links at http://Skymaps.com/skycalendar/All times in Universal Time (UT). (USA Eastern Daylight Time = UT – 4 hours.)
About the Celestial Objects
Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars. They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky
When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it’s always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today’s large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary
Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.
Constellation – A defined area of the sky containing a star pattern.
Diffuse Nebula – A cloud of gas illuminated by nearby stars.
Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (').
Ecliptic – The path of the Sun’s center on the celestial sphere as seen from Earth.
Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.
Galaxy – A mass of up to several billion stars held together by gravity.
Globular Star Cluster – A ball-shaped group of several thousand old stars.
Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.
Magnitude – The brightness of a celestial object as it appears in the sky.
Open Star Cluster – A group of tens or hundreds of relatively young stars.
Opposition – When a celestial body is opposite the Sun in the sky.
Planetary Nebula – The remnants of a shell of gas blown off by a star.
Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. USA Eastern Standard Time (for example, New York) is 5 hours behind UT.

Easily Seen with the Naked Eye
Altair Aql • Brightest star in Aquila. Name means “the flying eagle”. Dist=16.8 ly.
Arcturus Boo • Orange giant star. Name means “bear watcher”. Dist=36.7 ly.
δ Cephei Cep • Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
Deneb Cyg • Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400x200 ly.
α Herculis Her • Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion.
Vega Lyn • The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
Antares Sco • Red, supergiant star. Name means “rival of Mars”. Dist=335.9 ly.
Polaris UMI • The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.
Spica Vir • Latin name means “ear of wheat” and shown held in Virgo’s left hand. Dist=250 ly.

Easily Seen with Binoculars
1 η Aquilae Aql • Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.
M3 Cvn • Easy to find in binoculars. Might be glimpsed with the naked eye.
π Cephei Cep • Herschel’s Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
Mel 111 Com • Coma Berenices. 80 mag 5-6 stars in 5 deg. Dist=283 ly. Age=400 million years.
χ Cygni Cyg • Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
M39 Cyg • May be visible to the naked eye under good conditions. Dist=900 ly.
ν Draconis Dra • Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
M13 Her • Best globular in northern skies. Discovered by Halley in 1714. Dist=23,000 ly.
M92 Her • Fainter and smaller than M13. Use a telescope to resolve its stars.
λ Lyrae Lyn • Famous Double Double. Binoculars show a double star. High power reveals each a double.
R Lyrae Lyn • Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
M12 Oph • Close to the brighter M10. Dist=18,000 ly.
M10 Oph • 3 degrees from the fainter M12. Both may be glimpsed in binoculars. Dist=14,000 ly.
IC 4665 Oph • Large, scattered open cluster. Visible with binoculars.
6333 Oph • Scattered open cluster. Visible with binoculars.
M8 Sgr • Lagoon Nebula. Bright nebula bisected by a dark lane. Dist=6,200 ly.
M25 Sgr • Bright cluster located about 6 deg N of “teapot’s” lid. Dist=1,900 ly.
M22 Sgr • A spectacular globular star cluster. Telescope will show stars. Dist=10,000 ly.
M4 Sco • A close globular star. May just be visible without optical aid. Dist=7,000 ly.
M6 Sco • Butterfly Cluster. 30+ stars in 7x binoculars. Dist=1,960 ly.
M7 Sco • Superb open cluster. Visible to the naked eye. Age=260 million years. Dist=780 ly.
M5 Ser • Fine globular star cluster. Telescope will reveal individual stars. Dist=25,000 ly.
Mizar & Alcor UMa • Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.
Cr 399 Vul • Coathanger asterism or “Brocchi’s Cluster”. Not a true star cluster. Dist=218 to 1,140 ly.

Telescopics Objects
ε Boötis Boo • Red giant star (mag 2.5) with a blue-green mag 4.9 companion. Sep=2.8”. Difficult to split.
M4 Cvn • Compact nearly face-on spiral galaxy. Dist=15 million ly.
M51 Cvn • Whirlpool Galaxy. First recognised to have spiral structure. Dist=25 million ly.
M64 Com • Black-Eye Galaxy. Discovered by J.E. Bode in 1775 - "a small, nebulous star".
Albireo Cyg • Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4”.
61 Cygni Cyg • Attractive double star. Mag 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4”.
β Delphini Del • Appears yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Strew 2725 double in same field.
β Lyrae Lyn • Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Fainter mag 7.2 blue star.
M57 Lyn • Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
M23 Sgr • Elongated star cluster. Telescope required to show stars. Dist=2,100 ly.
M20 Sgr • Trifid Nebula. A telescope shows 3 dust lanes dissecting nebula. Dist=5,200 ly.
M21 Sgr • A fine and impressive cluster. Dist=4,200 ly.
M17 Sgr • Omega Nebula. Contains the star cluster NGC 6638. Dist=4,900 ly.
M16 Ser • Eagle Nebula. Requires a telescope of large aperture. Dist=8,150 ly.
M81 UMa • Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope.
M82 UMa • Close to M81 but much fainter and smaller.
M87 Vir • Supergiant galaxy with supermassive black hole at its core. Dist=53.5 million ly.
γ Virginis Vir • Superbright and largest white star. Dist=169 years. At their closest in 2005.
M27 Vul • Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.

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