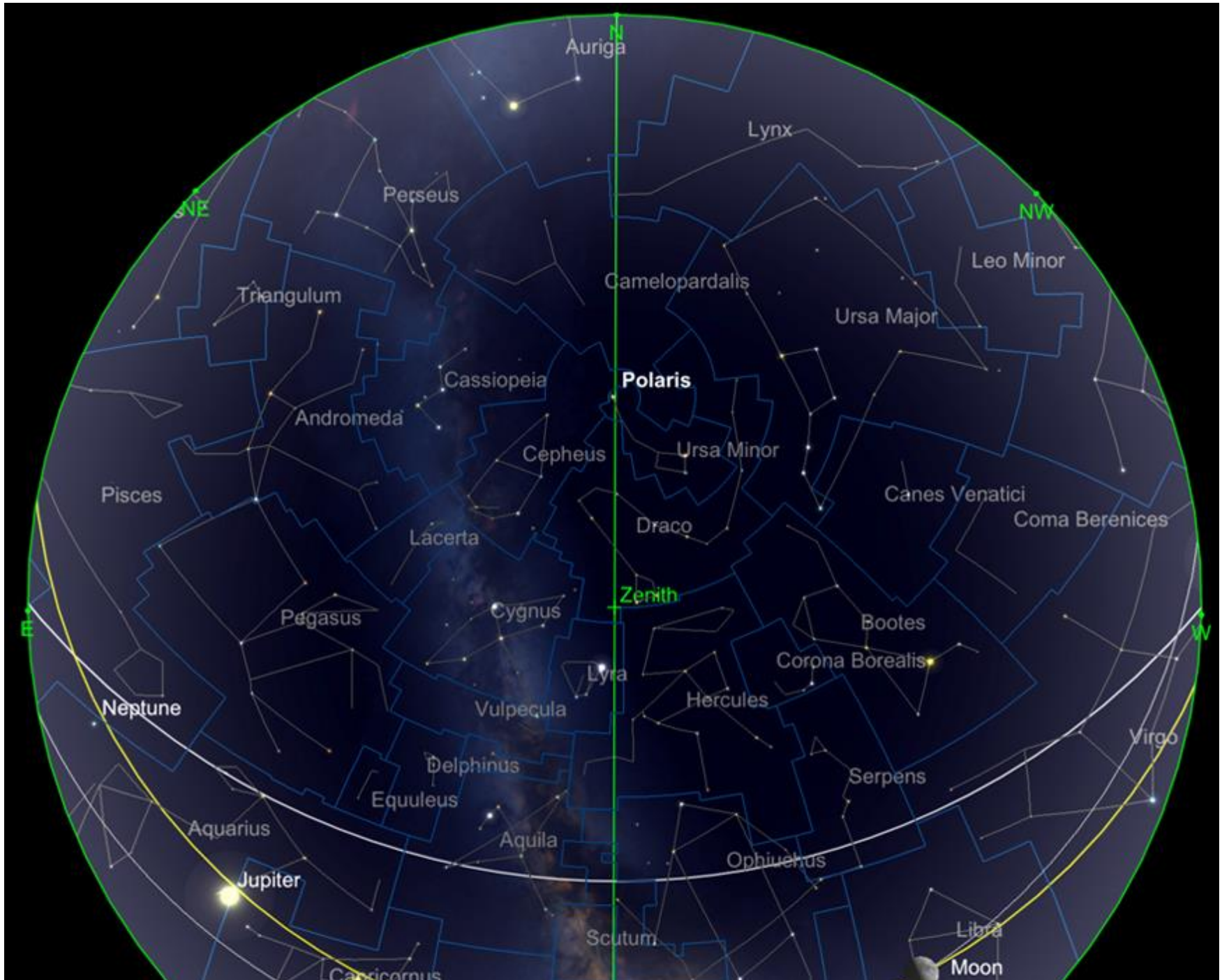

N
Auriga
Lynx
Perseus
NE
NW
Leo Minor
Camelopardalis
Triangulum
Ursa Major
Cassiopeia
Polaris
Andromeda
Cepheus
Ursa Minor
Pisces
Canes Venatici
Coma Berenices
Draco
Lacerta
Zenith
Pegasus
Cygnus
Bootes
E
W
Corona Borealis
Lyra
Neptune
Vulpecula
Hercules
Virgo
Delphinus
Serpens
Equuleus
Aquarius
Aquila
Ophiuchus
Jupiter
Scutum
Libra
Moon
Capricornus

Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

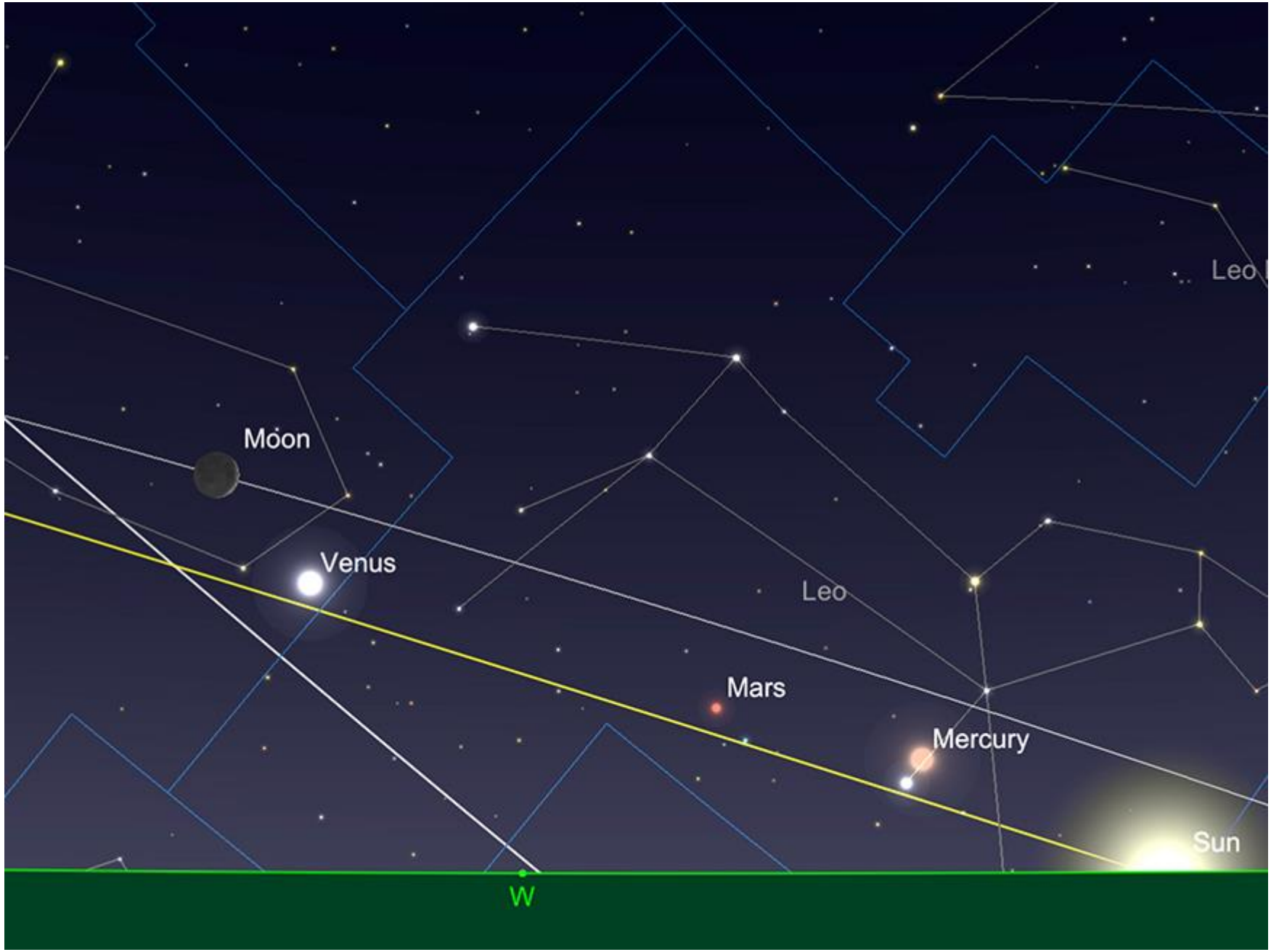
Although true darkness descended again for those in mid-temperate latitudes (around 51º N) from mid-July, August brings a welcome return to truly dark conditions for much of the UK and beyond - though the upper reaches of Scotland and especially the Shetland Isles and Northern Scandinavia will have to wait until the latter part of the month for this to occur. The lack of true astronomical darkness needn't be a hindrance to observation of planetary, lunar and the major deep sky targets, but it plays havoc with those trying to attempt meaningful deep sky imaging. As many of our readers are now experiencing true darkness, there's now no excuse to dust those cameras of and have a go at imaging those "faint fuzzies" - as we'll see in the deep sky section of this guide, there's more than a few of them to choose from at this time of year. Readers in the southern hemisphere will now be on the slow glide down towards summer, but will have no great issue with lack of true darkness. But no matter where you are in the world, as ever, there's lots of interesting things to see - so grab that telescope or pair of binoculars and let's have a look at what's on offer this month…

THE SOLAR SYSTEM

The Moon

Our natural satellite starts August in Aries at last Last Quarter. Rising at a little after midnight, it will transit at just after 7.30am and is found about 2 2/3rd degrees to the south of Uranus. The Moon will attain an altitude of 47º as the Sun rises (from 51º N).

The Moon will continue dipping towards the Sun as the next week progresses, until it becomes New on the 8th. The Moon will glide to the north of the Sun in Cancer, re-emerging as an evening target of the second week of August, passing by Mercury and the extremely faint Mars as it does. On the evening of the 11th, the 12% illuminated Moon can be found to the NE of Venus, in Virgo - the two forming a dramatic pair in the west just after sunset.


Leo
Moon
Venus
Leo
Mars
Mercury
Sun
W

The Moon, Venus, Mars and Mercury, sunset 11th August. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

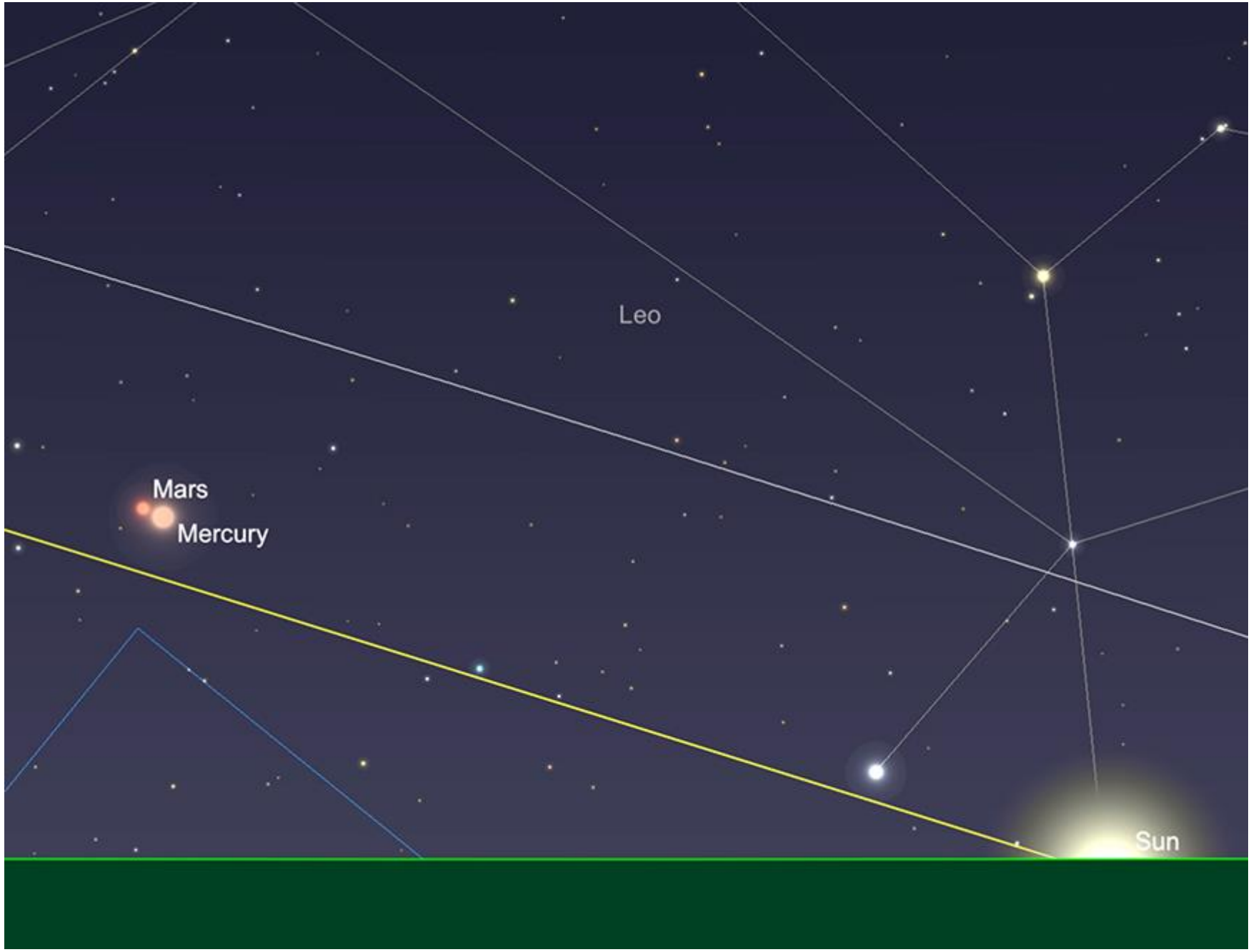
Over the next few days the Moon passes through Virgo into Libra, where it reaches First Quarter on the 15th. From then it slides through the lowest part of the Ecliptic: Scorpius, Ophiuchus, Sagittarius, before climbing back northward through Capricornus, where it passes to the south of Saturn on the 20th and Jupiter over the next couple of evenings. The Moon will come to Full in Aquarius on the 22nd August.

The Moon reaches the second Last Quarter of the month on the 30th, in Taurus. It will end the month the following evening, just shy of the most northerly part of the Ecliptic.

Mercury

The Solar System's innermost planetary member starts August at Superior Conjunction - the opposite side of the Sun - on the 1st. Subsequently, the planet won't be observable at the beginning of the month.

After the 10th, Mercury should be visible in the evening sky, though will be very low - just 4º above the horizon as the Sun sets (from 51º N), so will still be a difficult target to spot. As the month progresses, Mercury will continue to increase its distance from the Sun, but won't gain a huge amount of height from northern temperate latitudes (though will from the equatorial regions of the Earth). On the evening of the 18th, a -0.5 magnitude Mercury will come into very close conjunction with the planet Mars, but this will be difficult to observe, due to Mars' comparatively low brightness (it will be +1.8 magnitude at this time) . At closest point the two planets will appear to be separated by just over 4 minutes of arc (though by this time the two will have set from Europe).


Leo
Mars
Mercury
Sun

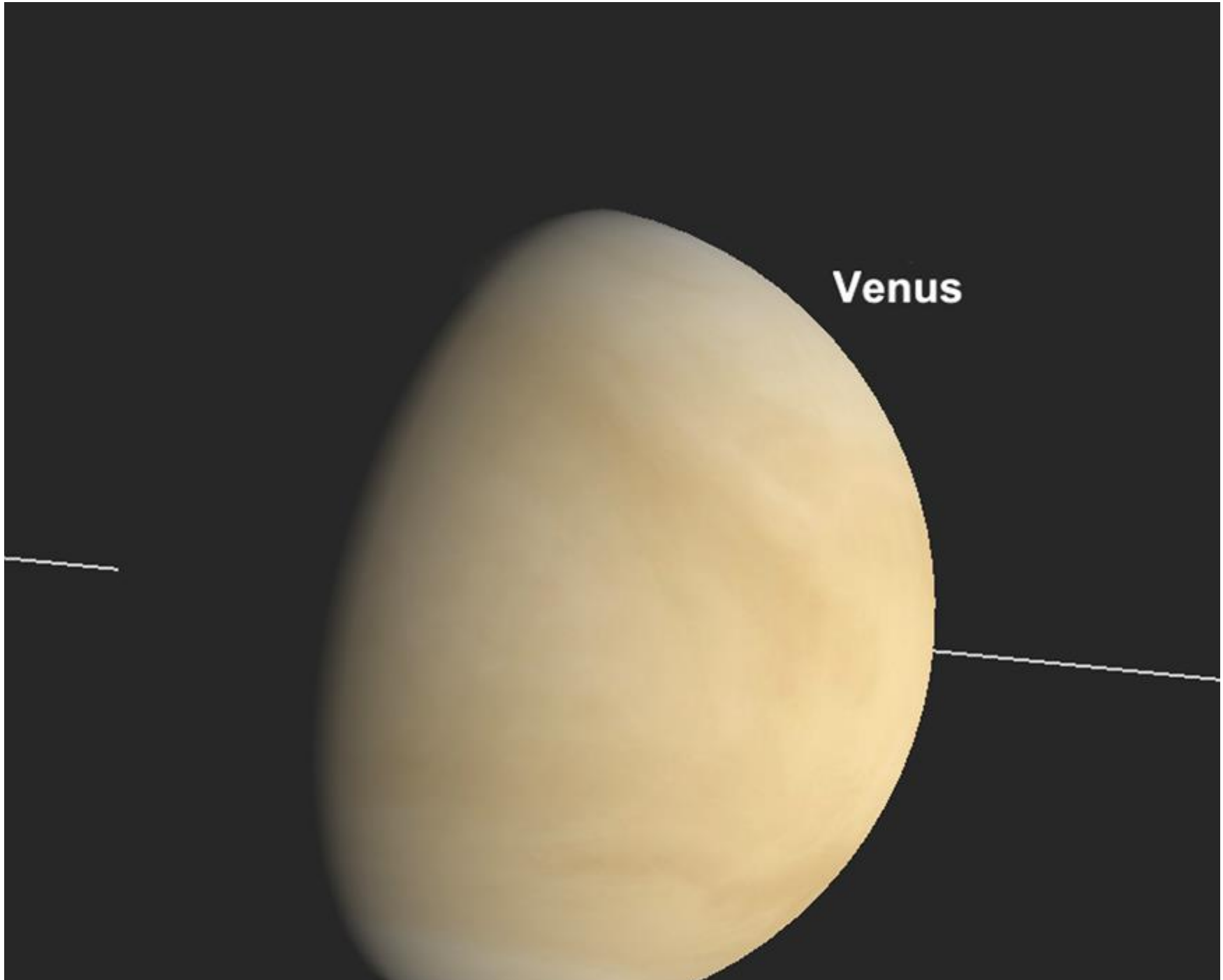
Mercury and Mars in close conjunction, 18th August. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

Mercury will continue to separate from the Sun as the month ends, finishing August 23 1/2 degrees to the east of the our parent star in Virgo. It will have faded a little to +0.0 mag and will stand 5 degrees high in the west as the Sun sets on the 31st.

Venus

The brightest of all the planets continues to be an evening object. At -4.0 magnitude at the month's beginning, Venus will 33 degrees to the east of the Sun, standing just over 11 degrees high (from 51º N) at sunset. Venus still has some way to go before it reaches maximum eastern elongation in late October, but will be the easiest of the evening planets to observe, even though the area of the Ecliptic it is currently located, like neighbouring Mercury and Mars is very shallow from a northern temperate hemisphere point of view, limiting these planet's potential separation from the horizon.

By mid-month, nothing much has changed as far as Venus is concerned. The planet is still -4.0 mag and will sit a little lower in the sky at sunset, at 10 degrees elevation (from 51º N). This trend of static brightness remains towards the end of the month, with the planet decreasing in phase, while drawing closer to us, leading to a temporary freeze in brightness.


Venus

Venus phase 31st August. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

Mars

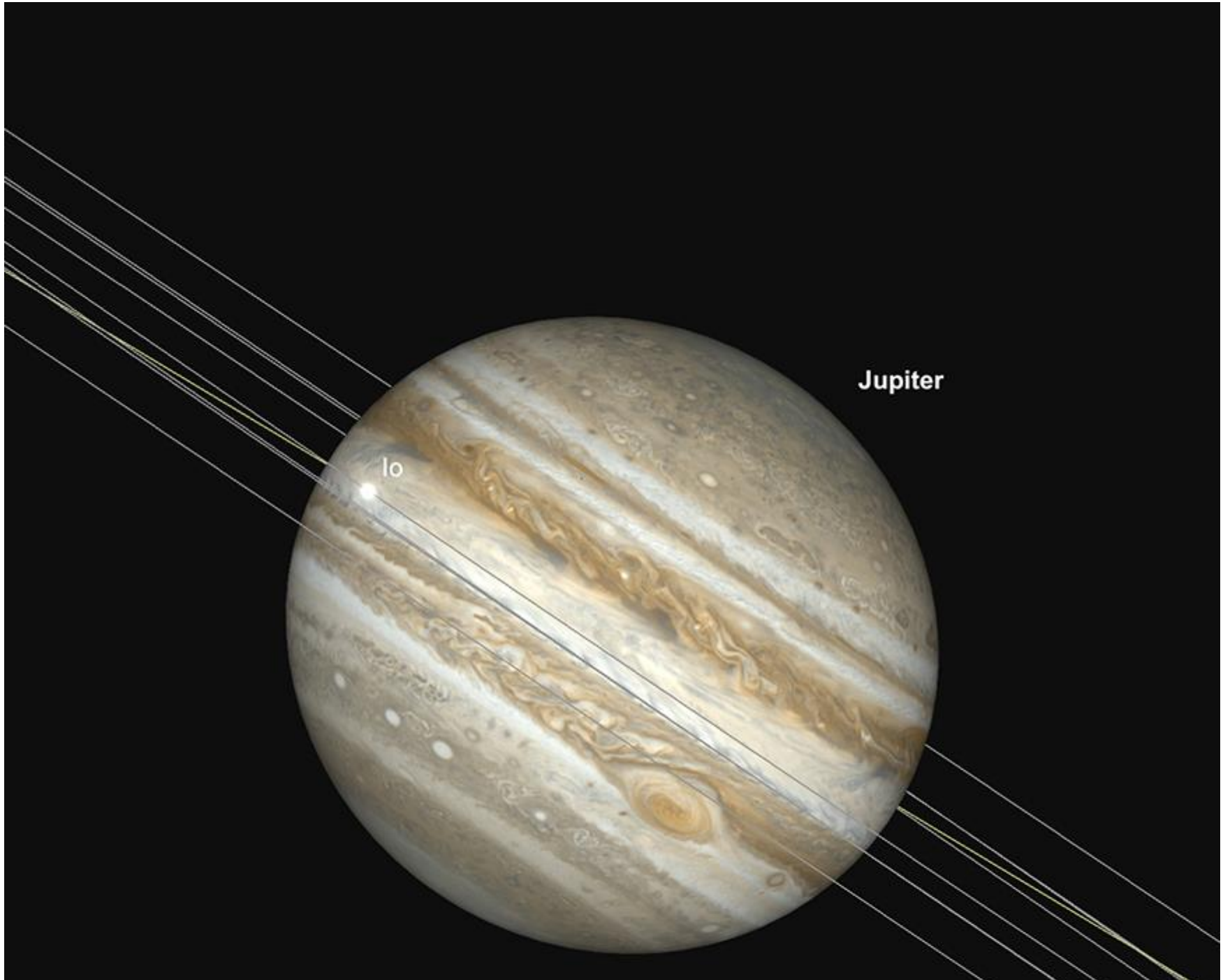
As reported earlier, Mars is dwindling in brightness and drawing closer and closer to the Sun as each day progresses. While it is still some time until the Red Planet reaches Superior Conjunction - in early October - Mars will be just 3.6 arc seconds across by August's conclusion (the same angular size as Uranus), making it a very poor telescopic target that is doubly difficult to find due to its increasing proximity to the Sun in the evening sky. Mars will be back to its best at the end of 2022, so it will be a little while to wait for a decent showing again. As previously reported Mars and Mercury will come together in very close conjunction on the 18th August, but this will be a very difficult (if not impossible) event to observe, certainly from the temperate northern hemisphere.

Jupiter

Whereas Mars disappoints, Jupiter is at its best for this year during August, coming to Opposition on the 20th. Jupiter starts the month off as a resident of Aquarius, though still in retrograde and "back tracking" in relation the the background stars of the Ecliptic. At -2.8 magnitude and displaying a large 48.5 arc second disk, the King of the Planets is ripe for observation. Jupiter will rise a little after 9.30pm BST on the 1st (from 51º N) and won't transit at its highest point in the sky until just before 3am the following morning.

Moving forward to mid-month, Jupiter has increased brightness fractionally to -2.9 mag and now displays a 49.1 arc second diameter disk (the brightest and largest it will get this apparition). On the 15th, it will rise at 8.40 pm BST (from 51º N), transiting 5 hours later, when it will stand 26º high in the south (from 51º N).

Opposition night occurs five days later, by which time Jupiter will have tracked over the border back into Capricornus. Those staying up will be able to witness a dual Great Red Spot and Io transit in the wee hours of the morning of the 20th.


Jupiter
Io

Jupiter, GRS and Io Transit. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

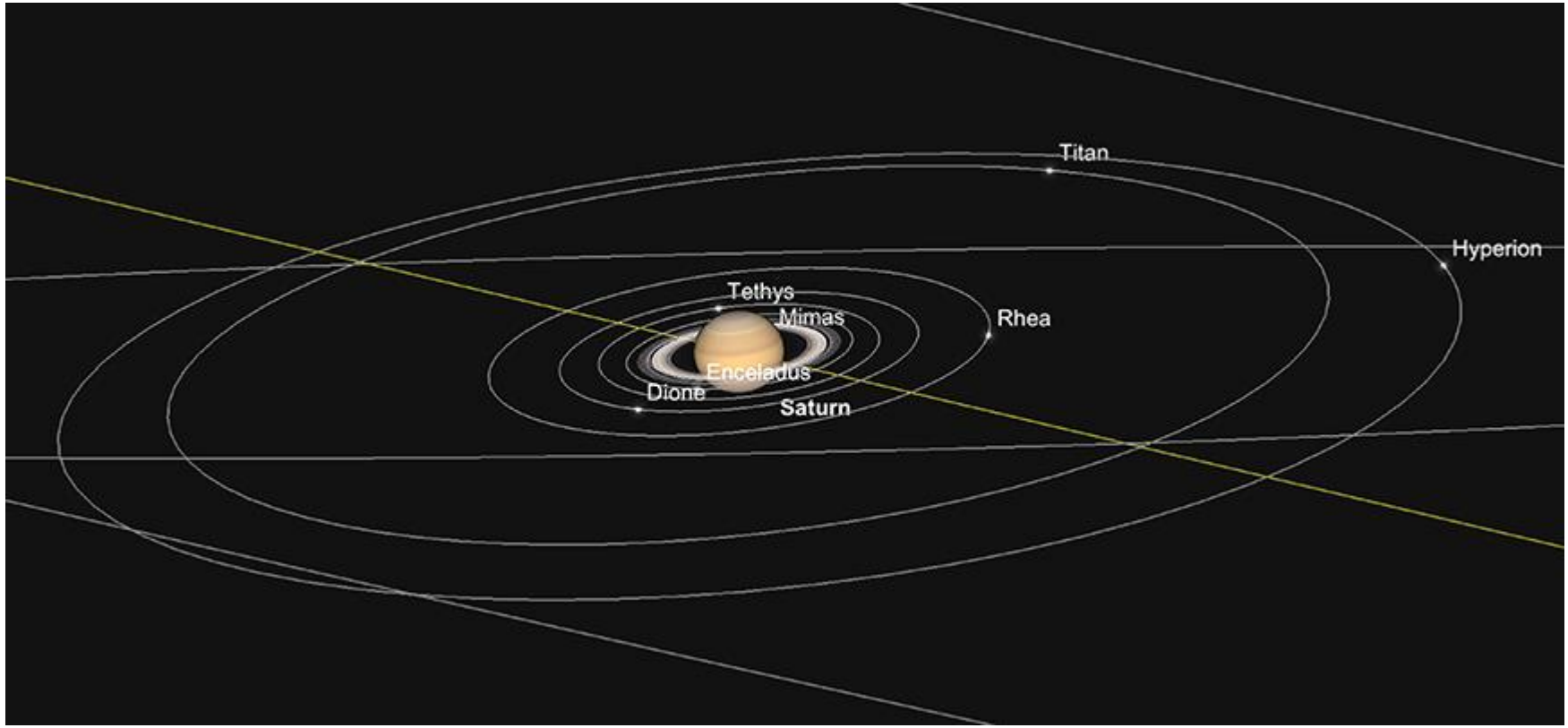
The evening of the 22nd will see a simultaneous GRS, Ganymede, Europa and shadow transit and at the same time the opportunity to see Io emerging from shadow occultation. However, this happens in the early evening (around 9.30pm BST) when Jupiter is only just over 10 degrees high in the sky (from 51º N) and will require a clear horizon and forgiving atmosphere to observe - it should be pretty interesting to see so much activity going on at the same time though.

Jupiter, GRS Europa and Ganymede Transit and Io Occultation Emergence. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

By the end of the month, Jupiter has shrunk imperceptibly to 48.9 arc seconds diameter but appears no fainter at a steady -2.9 mag. By this point, the giant planet rises at just after 7.30pm BST and transits at just before 12.30am the following morning. Jupiter will continue to be very well-placed for observing over the next few months and everyone with a telescope is encouraged to get out there and make the most of the opportunity to observe this fascinating world and its moons.

Saturn

Like Jupiter, Saturn is at Opposition in August - on the 2nd of this month and subsequently at its biggest and brightest. Rising at a little after 9.22pm on Opposition night, Saturn is firmly ensconced in Capricornus, sitting just over 20 degrees high at transit point, which it reaches at 2.13am BST the following morning. At +0.2 mag and 18.6 arc seconds across, it is by no means as large nor as bright as its neighbour, but if you can find Jupiter, Saturn is the slightly yellowy-looking 'star', 19 degrees to the right of it in the sky, as seen by observers in the temperate northern hemisphere. It is brighter than any other true star in its part of the sky, so is pretty easily found.



Saturn and Inner Moons, Opposition evening, 2nd August. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

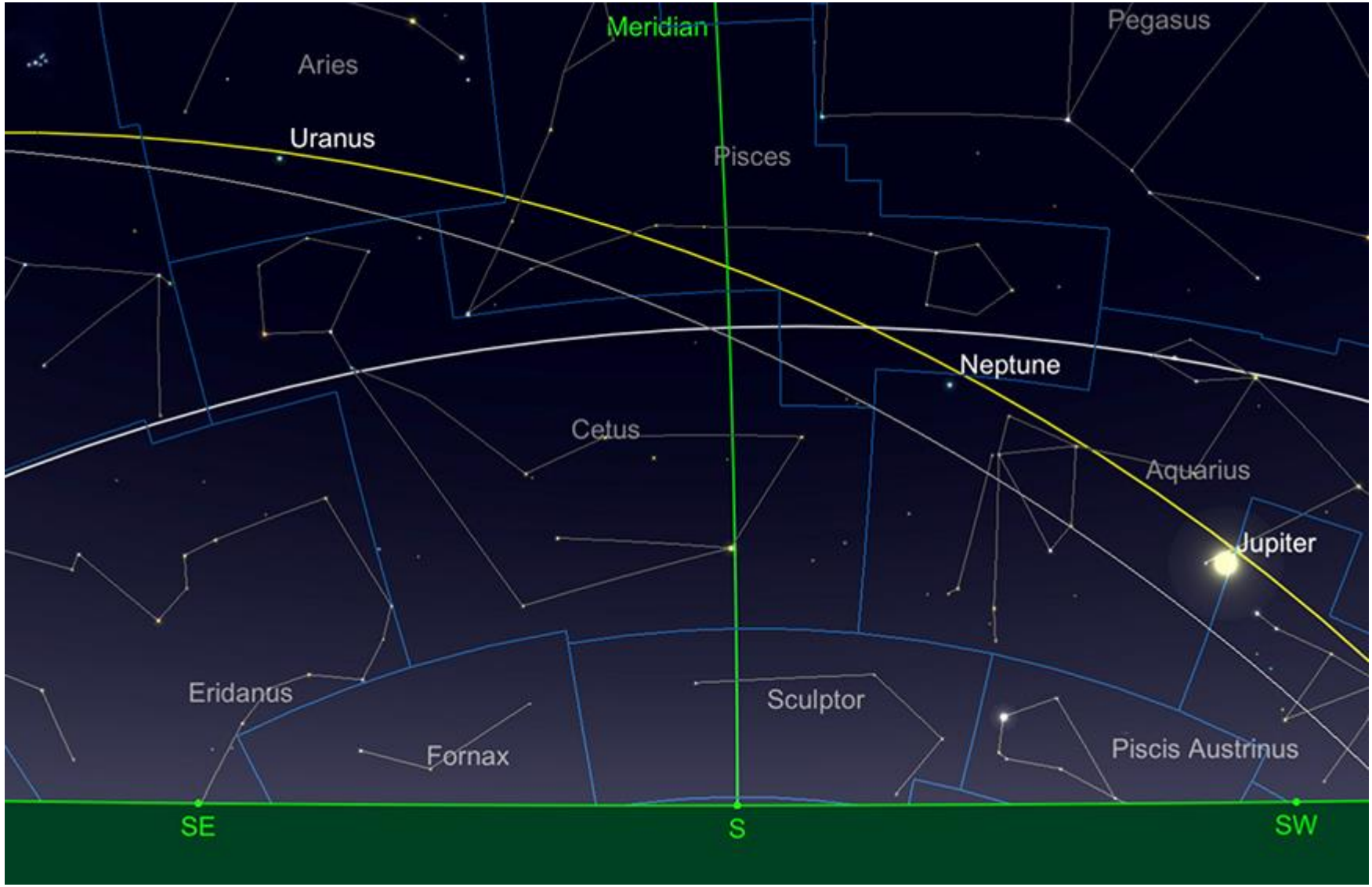
Binoculars will reveal more of Saturn's colour and show it as elongated. Magnification of at least 20-25x will be needed see the ring. However, most observers tend to need at least 45x magnification to see Saturn as a definitely "ringed" object, with the ring distinct from the the planet itself, with good seeing naturally playing a big part in this. More magnification and greater aperture will revel the true beauty of the ring system, which was first glimpsed by human eyes back in 1610 by Galileo. Back when he first observed Saturn, the planet was sitting in a similar part of the sky in Capricornus and came to Opposition on the 13th of August, so conditions for observation in Europe this year are very similar - though the ring plane was slightly more closed in 1610 than it appears now. Next year's Saturnian Opposition is an even closer approximation to the conditions of 1610, with Saturn further east in Capricornus. Galileo's telescope which he first turned towards Saturn was very small, with very primitive lenses and a small magnification of 20x and yet he was an astute enough observer to recognise that Saturn wasn't simply a disk. Although he was later to define a ring, at first he thought the planet was displaying "ears" either side of its tiny disk. Later observations showed these ears had disappeared, when the Earth crossed Saturn's ring plane and the ring later reappeared as it opened up again, by which time Galileo had a slightly more powerful instrument at his disposal and presumably better seeing conditions, with the planet climbing up north within the Ecliptic. His sketch of 1616 shows Saturn as we would reasonably expect in a small telescope, though it was to be the best part of four decades, in 1655, until Christiaan Huygens equipped with a yet more powerful telescope observed, recorded and described Saturn's ring as such - also discovering Titan, Saturn's largest moon in the same year. We cannot blame Galileo for not recognising Saturn's ring for what it was - considering how new the telescope was as a piece of technology and how limited our then understanding of the solar system. But it was observing Saturn's rings, Jupiter's moons and the phases of Venus which showed Galileo that the planets were not immutable and unchanging as had been previously thought, but very much "living" changeable bodies. It was these first observations which started a complete revolution in science and the way human beings see their place in the universe and as such, helped to shape the modern world we live in - all from a tiny refracting telescope.

By mid-month, Saturn will rise at a little before 8pm BST and transit at 12.26am the following morning. At the end of the month, the Ringed Planet will rise at just before 7pm BST and transit at 11.15pm BST (from 51º N).

As with Jupiter, the next few months present a great time to observe and image Saturn. If you have a telescope at your disposal, make the most of it. Although Saturn is still very low from a northern hemisphere perspective, it is slowly improving in its position in the sky for those of us in this part of the world and as such should not be missed. Even under relatively poor seeing conditions, it rarely disappoints.

Uranus and Neptune

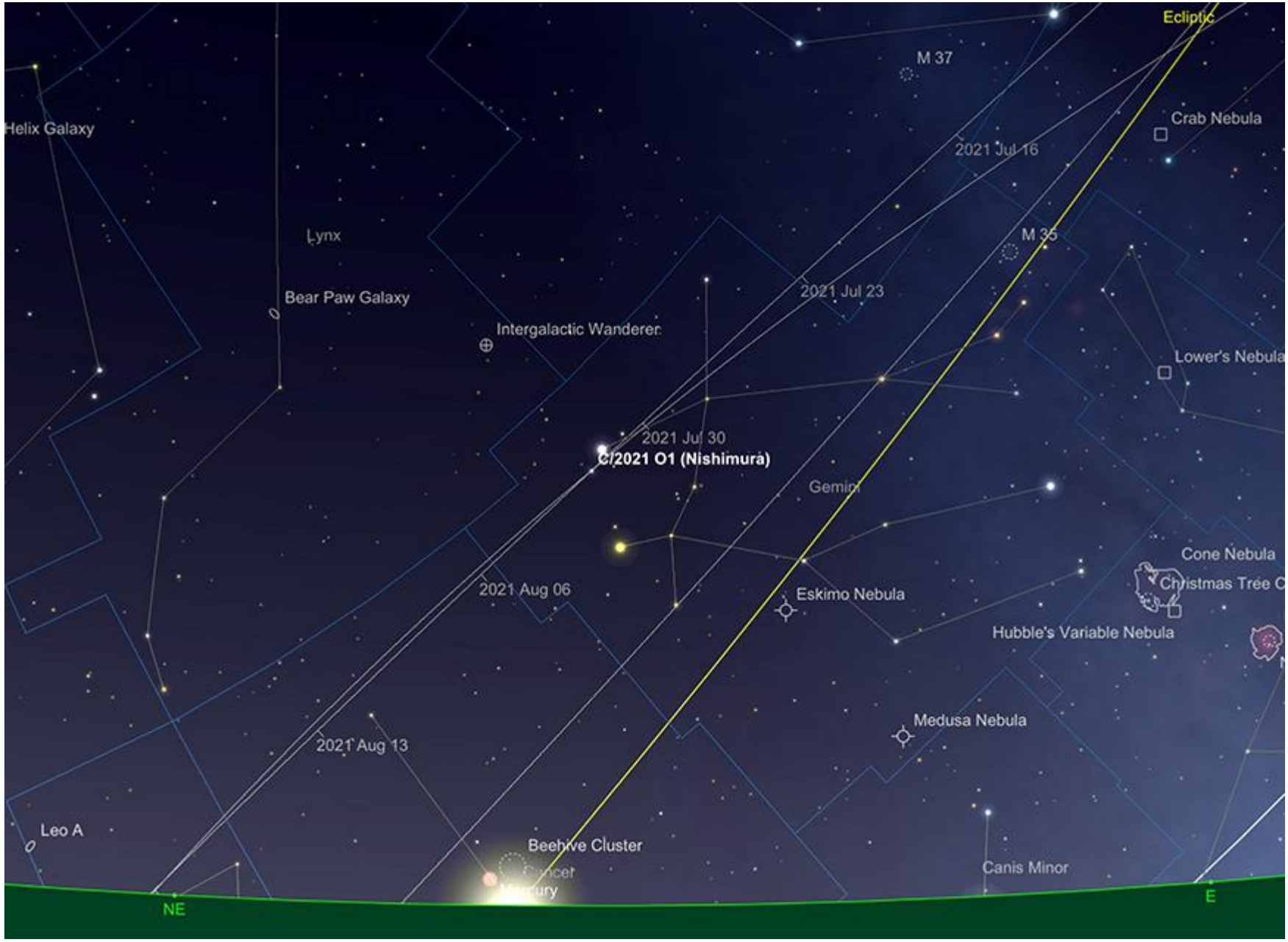
Uranus and Neptune are best observed as morning objects during Jul. Neptune, at +7.8 magnitude, being much further from the Sun in the Ecliptic in Aquarius, will rise earlier (9.25pm BST on the 15th) and attain a reasonable height at transit point - 35 degrees (from 51 degrees N), coming to Opposition next month. Uranus, while distinctly brighter at +5.8 mag, is more sunward, so will rise later, but is much further north within the Ecliptic in Aries than Neptune - so attains nearly 55 degrees height at sunrise on the 15th (from 51 degrees N). The lighter night skies in the higher northern latitudes during August will make finding both planets a little more challenging than they would be at other times from these locations, but those further south will enjoy darker skies towards the end of the month which will make locating both worlds and observations of them a little easier. As ever, finding and identifying both worlds is the real reward of observing the outer gas giants, though some advanced imagers can pick up interesting cloud patterns in both worlds, when conditions are right.



Uranus and Neptune relative positions, August 2021. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

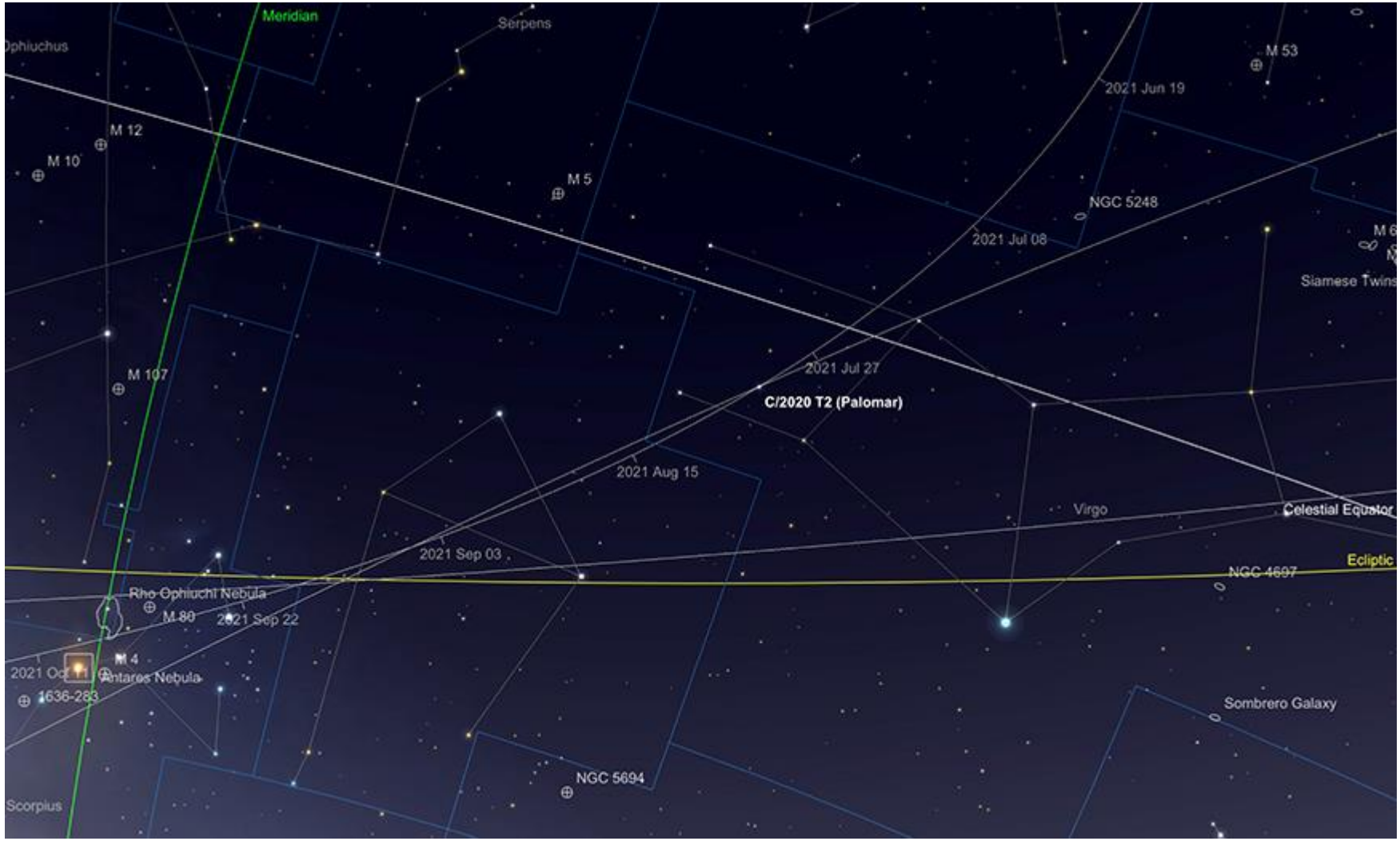
Comets

Recently-discovered comet C/2021 O1 Nishimura may just be ‘visible’ to those with imaging gear at the beginning of the month in Gemini, before sunrise - though the chances of picking it up visually are remote. It’s an interesting object that is coming to perihelion on the opposite side of the Sun to us here on Earth and as such appears to keep track with our orbital revolution, effectively hiding from us behind our parent star. Were it 6 months earlier or later in arrival it could well have been quite well-placed and as an Earth orbit crossing object had the potential to come pretty close to us - alas it was not to be.


Ecliptic
M 37
Helix Galaxy
Crab Nebula
2021 Jul 16
Lynx
M 35
Bear Paw Galaxy
2021 Jul 23
Intergalactic Wanderer
Lower's Nebula
2021 Jul 30
C/2021 O1 (Nishimura)
Gemini
Cone Nebula
2021 Aug 06
Eskimo Nebula
Christmas Tree C
Hubble's Variable Nebula
Medusa Nebula
2021 Aug 13
Leo A
Beehive Cluster
Canis Minor
NE
E

C/2021 O1 Nishimura (comet position shown 1st August). *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

Comet C/2020 T2 (Palomar) is still visible in telescopes and larger binoculars, though fading. At around 10th magnitude, C/2020 T2 can be found tracking south through eastern Virgo and into neighbouring Libra during the month and will be visible during the evening, setting in the early morning.



Comet C/2020 T2 Palomar (comet position shown 1st August). *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

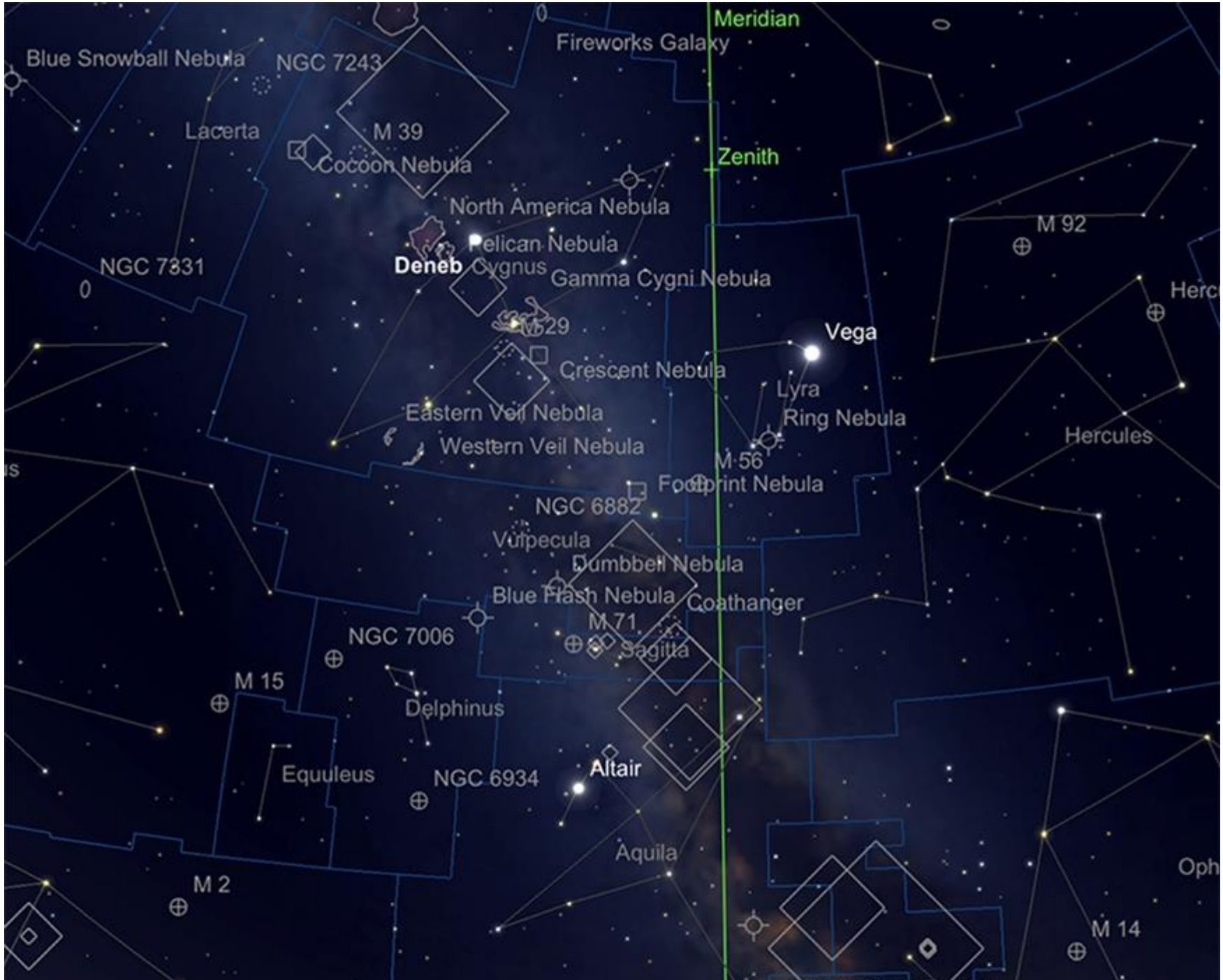
Meteors

It wouldn’t be August without the Perseid meteor shower, which actually run from mid-July to late August. They will normally reach their peak on (or around) August 12th. Last year’s shower peaked with a zenith hourly rate of around 60 meteors and this year is expected to put on a slightly better show, possibly peaking at over 100. ZHRs are those quoted under perfect seeing conditions and very dark skies, so it’s normal to halve this figure at least to work out a more realistic showing form a less-than-dark site. However, unlike last year, this year, the eternal nemesis of meteor observation, the Moon, will be out of the way early, being a very slim 13% Waxing Crescent in the 12th, so the peak night should present a really good opportunity for observing this year As ever, the opportunity to photograph the shower shouldn’t be neglected - just make sure you’re in the darkest accessible area whilst attempting to capture the best of the Perseids. Even if you are in the centre of cities, the brightest of the Perseids will cut through the worst light pollution, with many peaking in the minus magnitudes - meaning they will (briefly) be as bright as the brighter planets.

Photographic recording of the shower requires a regular DSLR, with a wide angle lens, set to a reasonably high ISO (800+) - this will undoubtedly pick up at least a couple of bright examples of the Peseids during an evening's worth of timed exposures. Multiple exposures of 30 seconds-or-so - depending on your sky conditions - will be more than adequate to pick up some Perseids over the space of an hour or so. Just make sure you have plenty of memory in your camera and that your batteries are fully charged, prior to any attempt.

Perseid over SW London. Image credit: Kerin Smith

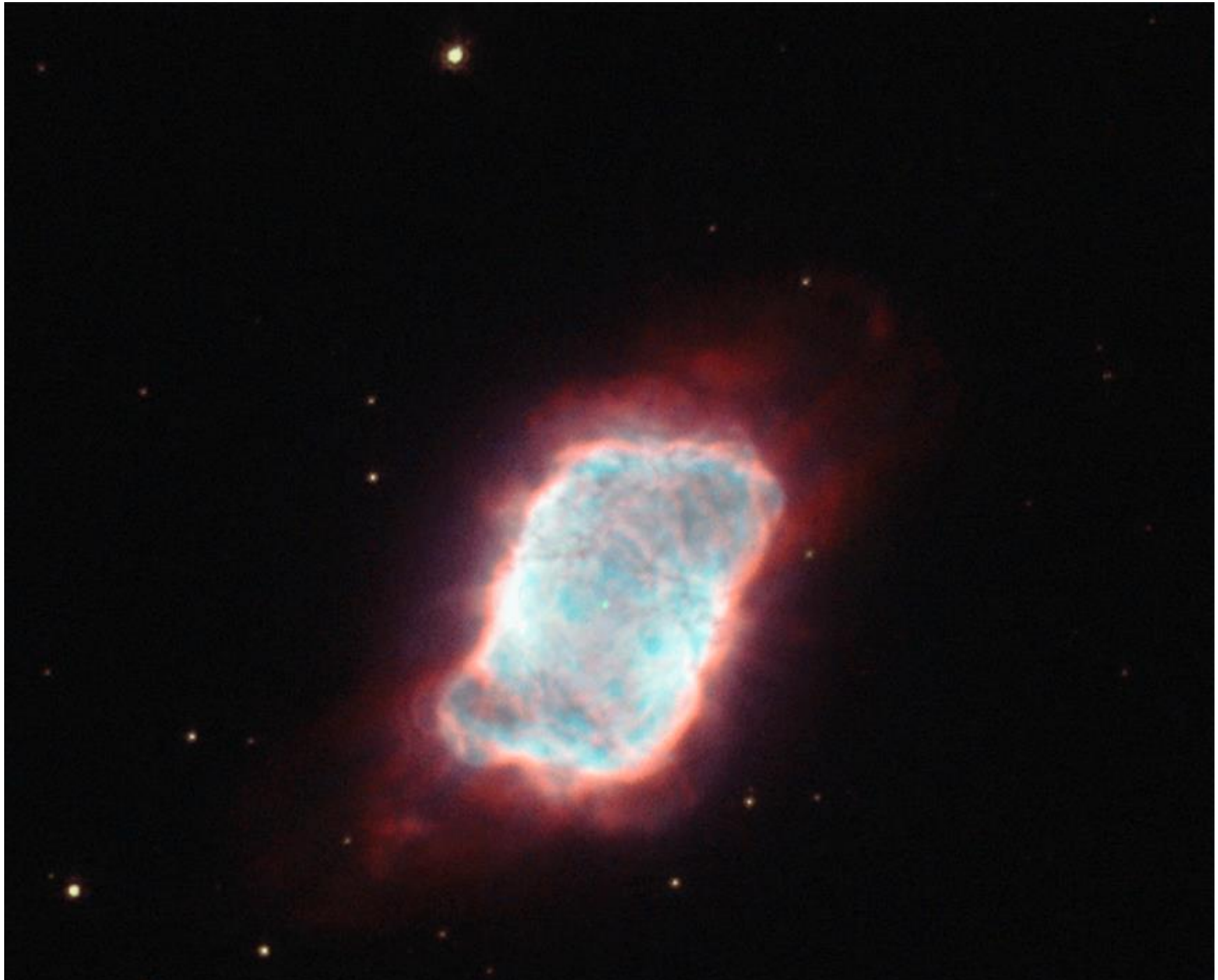
DEEP SKY DELIGHTS IN THE SUMMER TRIANGLE


Meridian
Fireworks Galaxy
Blue Snowball Nebula
NGC 7243
Lacerta
M 39
Cocoon Nebula
Zenith
North America Nebula
Pelican Nebula
Deneb
Cygnus
Gamma Cygni Nebula
NGC 7331
M 92
M 29
Vega
Crescent Nebula
Lyra
Ring Nebula
Eastern Veil Nebula
Western Veil Nebula
Hercules
M 56
Footprint Nebula
NGC 6882
Vulpecula
Dumbbell Nebula
Blue Flash Nebula
Coathanger
M 71
Sagitta
NGC 7006
M 15
Delphinus
Equuleus
NGC 6934
Altair
Aquila
M 2
M 14

The Summer Triangle. *Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.*

The Summer Triangle is an asterism that consists of the stars Vega, Deneb and Altair and was a term first associated with these stars by the Austrian astronomer Oswald Thomas in the early-to-mid 20th century, when he referred to it as *Grosses Dreieck* (Great Triangle) in the late 1920s and *Sommerliches Dreieck* (Summerly Triangle) in 1934. This area of sky takes in the constellations of Cygnus, Lyra, Aquila, Vulpecula and Sagitta and contains some of the best deep sky objects in the whole sky.

Starting from the most southerly tip of the Summer Triangle, we come to the major constellation of Aquila, The Eagle. Despite its size and prominent position along the plane of there Milky Way, this constellation is curiously lacking in major Deep Sky objects. The only one of great note is the interesting NGC 6741, otherwise known as The Phantom Streak. This object is a planetary nebula of +11.69 mag and diminutive in size (as many planetaries are), at just 0.1 arc minutes across. Looking like a ghostly parallelogram, the Phantom Streak is not an easy object, but its cocoon-like structure can be discerned by those with access to larger telescopes. It is a rewarding find for those with the ability to find it. The distance of NGC 6741 is not certain. Some sources list it as lying 7000 light years distant, though others think it a closer object at around 5000 light years from us. The Phantom Streak is notable for the possibility that its central star, a white dwarf remnant of a star much like the Sun, may be running out of hydrogen fuel and its dropping in luminosity. This means the Phantom Streak may not be visible in its present form for much longer - a sign we live in a dynamic Universe. Catch it while you can!



NGC 6741, The Phantom Streak. Image Credit - NASA/ESA Hubble Space Telescope, Creative Commons

Moving up past Altair, we take a brief dog leg East into the tiny constellation of Delphinus, The Dolphin. This lovely little collection of stars, though not especially bright, can easily be made out under dark conditions. Delphinus' kite-shaped arrangement of four stars and the Dolphin's tail marked by the prominently blue Epsilon Delphini is unmistakable.

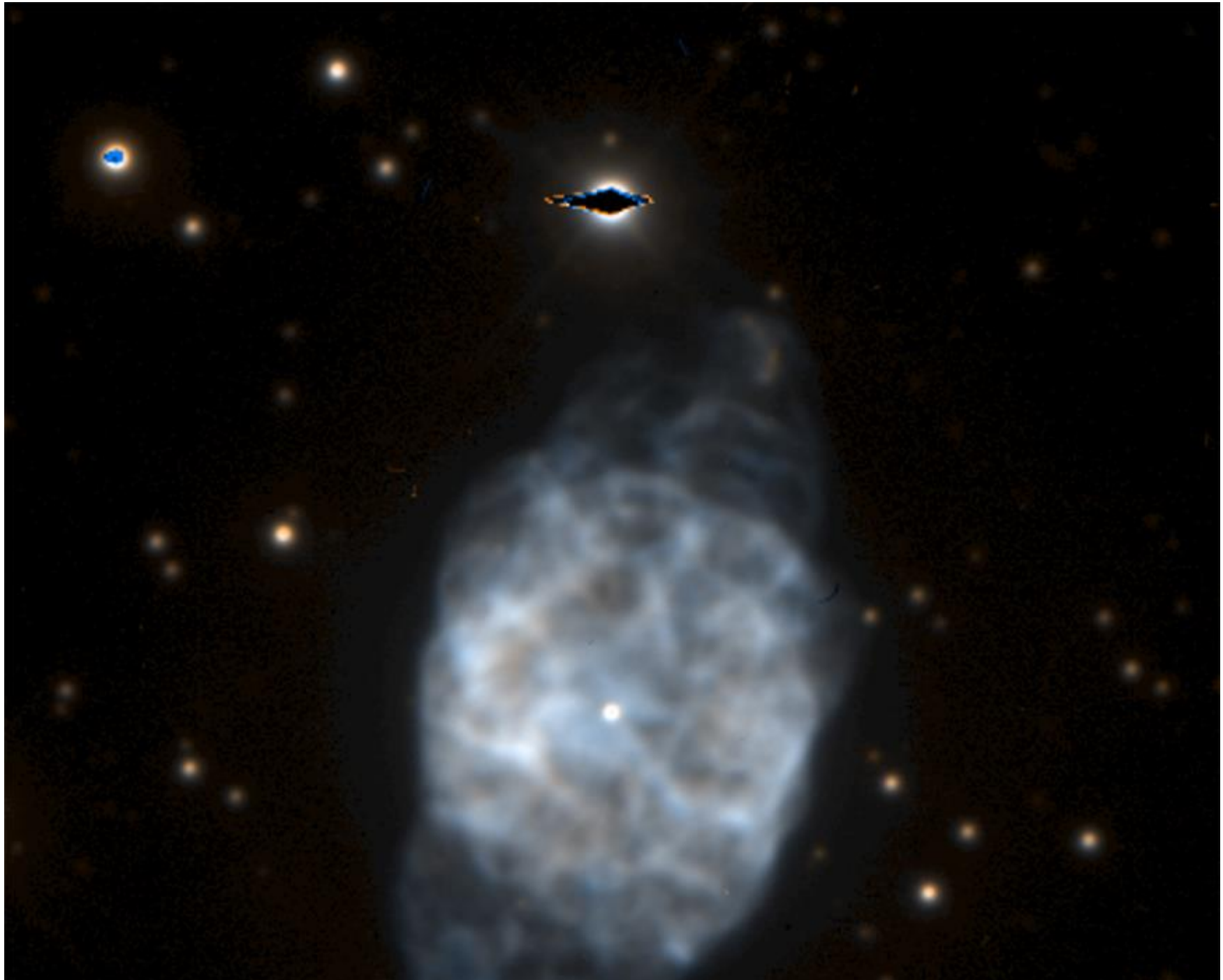
Delphinus contains two globular clusters - nether particularly bright, but worth seeking out nonetheless. NGC 6934 is the more Southerly and is found just under 11 degrees almost due east of Altair. At +8.8 mag and 1.4 arc minutes in diameter it is hardly prominent, but is location in the rich star fields of the Milky Way go someway to explaining this. Small telescopes show the cluster as a soft, rather indistinct ball of light, but larger instruments will be needed to show the scant detail it offers up to observers. Lying over 50000 light years away, NGC 6934 was one of William Herschel's many discoveries - he first catalogued it in 1785.

NGC 6934. Image Credit: Hubble Image NASA/ESA, Public Domain.

Herschel also Discovered NGC 7006 which is located some 11 degrees to the NE of NGC 6934. At +10.56, it is one of the fainter of our galaxy's globular clusters. This faintness is understandable when one considers NGC 7006's distance - an amazing 135,000 light years hence. This cluster is described by various observers as quite comet like in appearance - a condensed central region and a halo of stars are not as distinct as they are in its neighbour. A very large telescope of 16+ inches aperture will be needed to resolve individual stars in this challenging target.

NGC 7006. Image Credit: Hubble Image NASA/ESA, Public Domain.

Delphinus also contains a good planetary nebula: the Blue Flash, or NGC 6905. This is more easily seen in small telescopes than either of the globular clusters previously mentioned. Indeed, it is often overlooked, due to its proximity to the nearby M27 (more of which later), but the Blue Flash deserves more observation. A blue-white ball of light, with extending lobes either side, NGC 6905 is +10.89 mag and 0.8 x 0.6 arcminutes in dimension and lies 2200 light years away. Larger telescopes will start to pick up more of the object's uneven shape and central star. It seems decidedly egg-shaped to some.



NGC 6905, The Blue Flash Nebula. Image Credit - European Southern Observatory - Creative Commons

Just under 7 degrees to the west of The Blue Flash, over the border into Sagitta, The Arrow, sits another globular cluster - M71.

Discovered in 1746 by Philippe Loys de Cheseaux, M71 is a very loose globular, which was perhaps understandably classed as an open cluster for a considerable amount of time. Binoculars show it well, but smaller telescopes will start to resolve it into stars. At 3.3 arcminutes diameter and +8.18 mag, M71 is a curious beast: its spectral makeup and spread of differing star types is much more suggestive of an open cluster, though observations of the radial velocities of its constituent stars have pointed to its globular nature. It is thought to be particularly young for a globular cluster, being "only" 9 billion years of age.

M71. Image Credit: Hubble Image NASA/ESA, Public Domain.

Moving further Westward, over the border into Vulpecula, The Fox, we come to one of the most celebrated clusters in the whole sky - Collinder 399, otherwise known as The Coathanger, for obvious reasons! The asterism of The Coathanger contains ten bright stars, one of which is an orange-yellow colour, which contrasts nicely with the blue-white of the other nine. A perennial binocular favourite, The Coathanger is a large object at 89 arc minutes diameter is best seen in widefield instruments at low powers. Its unlikely appearance always raises a wry smile, as it is one of the sky's greatest practical jokes.

Chart showing the location of The Coathanger Asterism. *Image created with SkySafari for Mac OS X, ©2010-2012 by Southern Stars, www.southernstars.com.*

From the ridiculous to the sublime, the next object is one of the best examples of its type in the entire firmament - M27, The Dumbell Nebula. This planetary nebula is to be found 8 1/3 degrees to the east of The Coathanger and is a richly rewarding object to observe in any telescope. Small telescopes show it as an elongated glowing box. Larger apertures show more and more of the distinctive "apple core" shape. Long duration exposure images show the whole object, including its ghostly outer layers, beautiful colours and complex internal structure. The Dumbell is a true Messier object, as it was discovered by Charles Messier in 1764 and at about half the diameter of the Moon and +7.09 is easily one of the most prominent examples of its kind in the sky.


M27 Dumbbell Nebula
© 2008 Mark L. Blundell

M27, The Dumbell Nubula. Image Credit - Mark Blundell

We see M27 from the side on - hence its less-than-planetary shape. Were we observing it from a polar viewpoint, it would appear ring-like. But we are fortunate that the inner structure of the nebula is so well-defined from our perspective. M27's distance is heavily debated, but now appears to be around 1200-1700 light years away. Its age is thought to be relatively young - 3-4000 years-or-so. It is an easy object to locate and should not be missed by any observer.

NGC 6885 is another inhabitant of Vulpecula and lies 4 2/3 degrees NE of the Dumbell. It is a +8.10 open cluster, around 20 arc minutes in size. Although not exceptionally bright, NGC 6885 is easily located in binoculars and is probably best-seen in a large pair. This cluster contains over fifty member stars and has distance of around 1900 light years.

Eight and a half degrees NE of NGC 6885, across the border into Cygnus is the enchanting target of the Veil Nebula. The Veil Complex – NGCs 6960, 6974, 6979, 6992 and 6995 in Cygnus is a famous Supernova remnant, spread out over six times the diameter of the Full Moon. At combined brightness of +5 mag, The Veil can supposedly be glimpsed with the naked eye under truly exceptional conditions, but is much more likely to be seen (and better observed) in large binoculars and telescopes. The veil lies underneath the wing of Cygnus, close to Gienah (Epsilon Cygni). The brightest section this nebula is NGC6960, otherwise known as The Witches' Broom, due to its obvious broom-like shape, which reveals itself best in long duration exposures. NGC6960 has the star 52 Cygni apparently buried within it (it is in fact at least 10 times nearer to us), making this part of the nebula an easier target to find with non-Goto scopes. The Veil responds terrifically well to the OIII filter – indeed, it is almost the best-responding nebula to this particular narrowband wavelength. This beautiful structure can be seen in all manner of telescopes, but large instruments with low power, widefield eyepieces present it spectacularly well.


NGC 6960 Western Veil Nebula
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NGC 6960 - Western Veil Nebula, or Witches Broom. Image Credit - Mark Blundell.

Drifting Westwards, past one of the finest double stars in the entire sky, the Creamy Yellow and Electric Blue of Albireo (Beta Cygnii), just across the border into Lyra, The Lyre, sit two notable objects, the first of whichis M56, which lies roughly equidistant between Albireo and Sulafat (Gamma Lyrae). At +8.27, it is of similar brightness to the aforementioned M71, though at 2.2 Arcminutes diameter – when compared to the larger M71 at 3.3 Arcminutes in size – is slightly more condensed and appears brighter. Indeed, both objects would possibly appear more prominent were they not lying so close to the axis of our Galaxy and therefore obscured by parts of the Milky Way.

Roughly halfway between Sulafat and the neighbouring naked eye variable star, Sheliak (Beta Lyrae) sits one of the showpieces of the sky, the wonderful M57, the Ring Nebula. M57's enduring popularity as a Deep Sky target may be partially down to the ease with which its location is to be found. Looking like an elongated smoke ring drifting through space, the Ring Nebula is perhaps the archetype of all planetary nebulae. Discovered in 1779 by the astronomer Antoine Darquier de Pellepoix, Messier was hot on his heels and independently discovered it a matter of days afterwards. Rather disappointing in binoculars, yet easily spotted in most telescopes due to its comparatively high surface brightness, M57 takes magnification and filtration (especially the OIII filter) extremely well. Naturally, the larger the telescope you point at it, the more the keen observer is likely to see, but those with smaller telescopes will not be disappointed as long as you keep magnification up.

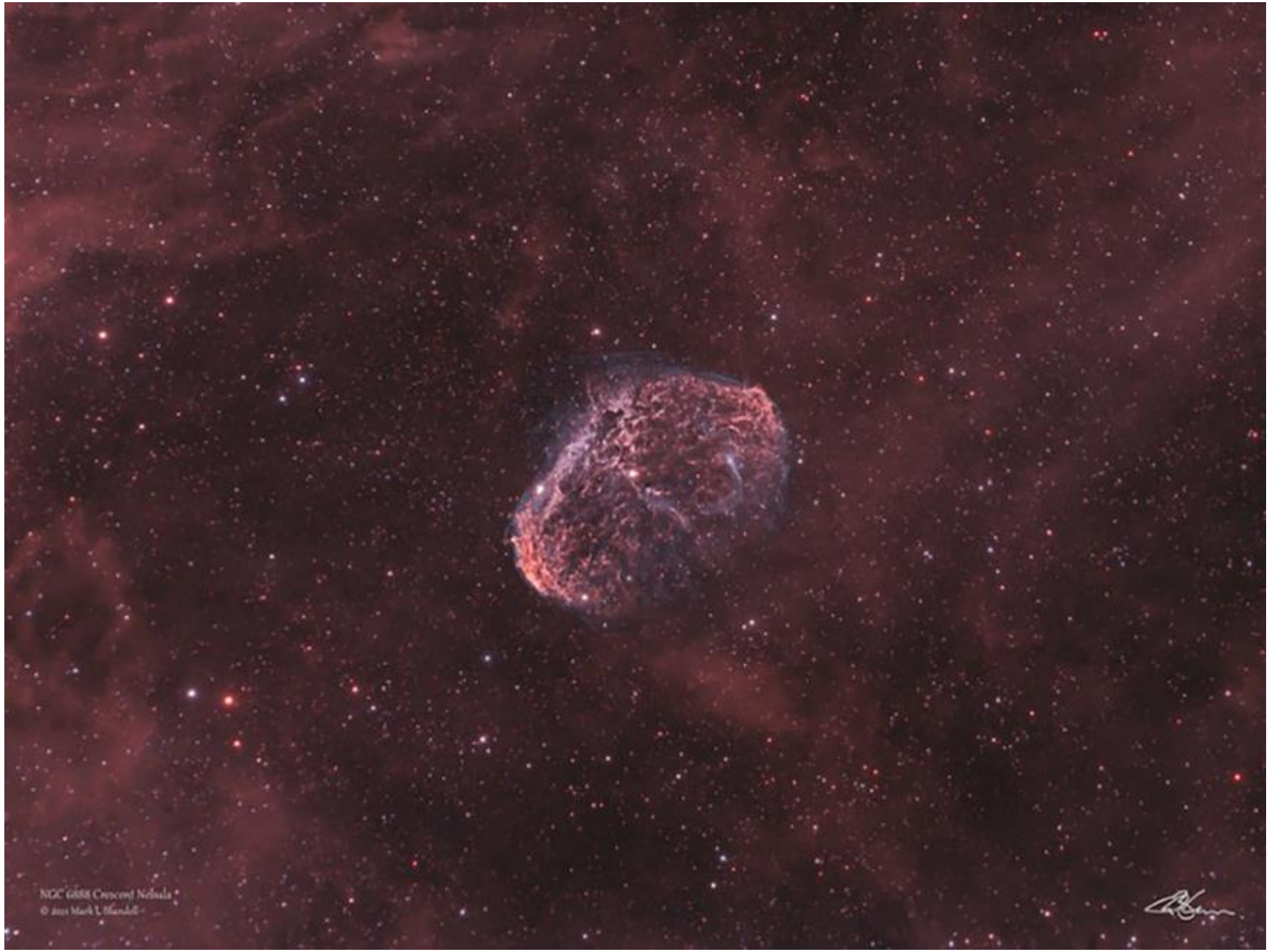

M57 Ring Nebula
By Mark Blundell
19th August 2014

M57, The Ring Nebula, in detail. Image Credit: Hubble Image NASA/ESA, Public Domain.

The Ring Nebula in an amateur telescope. Image Credit, Mark Blundell.

M57's distance is still up for debate, modern estimates of the central star put it at about 1400-4000+ light years away - quite a variation! It is thought is the former figure is the more correct, M57 is about a light year across from widest point to widest point and is a cylinder shape which we see from the end - quite the opposite, in fact, to M27's aspect. It is thought that The Ring Nebula is around 5-8000 years old.

Back into Cygnus, climbing higher North up the spine of the Milky Way, we come to a reasonably diminutive, but nonetheless fascinating object: NGC 6888, The Crescent Nebula. a bright, compact nebula, which is the expanding shell of a Wolf-Rayet Star (HD 192163), which is steadily shedding its outer layers. The nebula glows due to the fact that it is gas is superheated by the collision of the boundary layer of a faster-moving inner solar wind, meeting a less energetic layer of solar wind formed when the gaseous layer of HD192163's former outer atmosphere was ejected in its previous red giant phase. This bow shock is about 25 light years across and appears to us as a crescent shape, glowing at +7.40 mag. The "surface" of this crescent is incredibly detailed and its complicated texture can be noted in larger telescopes using OIII and UHC filtration. Much beloved of Astrophotographers, the Crescent Nebula is a rewarding target for imagers.


NGC 6888 Crescent Nebula *
© 2021 Mark S. Blundell

NGC 6888, The Crescent Nebula. Image Credit - Mark Blundell.

Right next door to the Crescent, clustered around the star Sadr (Gamma Cygni) is the vast expanse of the Gamma Cygni Nebula. Glimpsed in large binoculars and telescopes from an appropriately dark locale, IC 1318, or the Butterfly Nebula, as it is otherwise known, is a huge patch of red nebulosity, slightly larger in dimensions than the Veil. However, this nebula is very spread out, so its surface brightness is inherently low. It is best visually isolated with H-Alpha Filters, but is more easily captured in long duration astrophotography. The Gamma Cygni Nebula reaches out behind the Crescent and the star that is takes its name from. Sadr is around 750 light years away, whereas estimates for the distance of the nebula vary wildly from 2000-5000 light years distance.

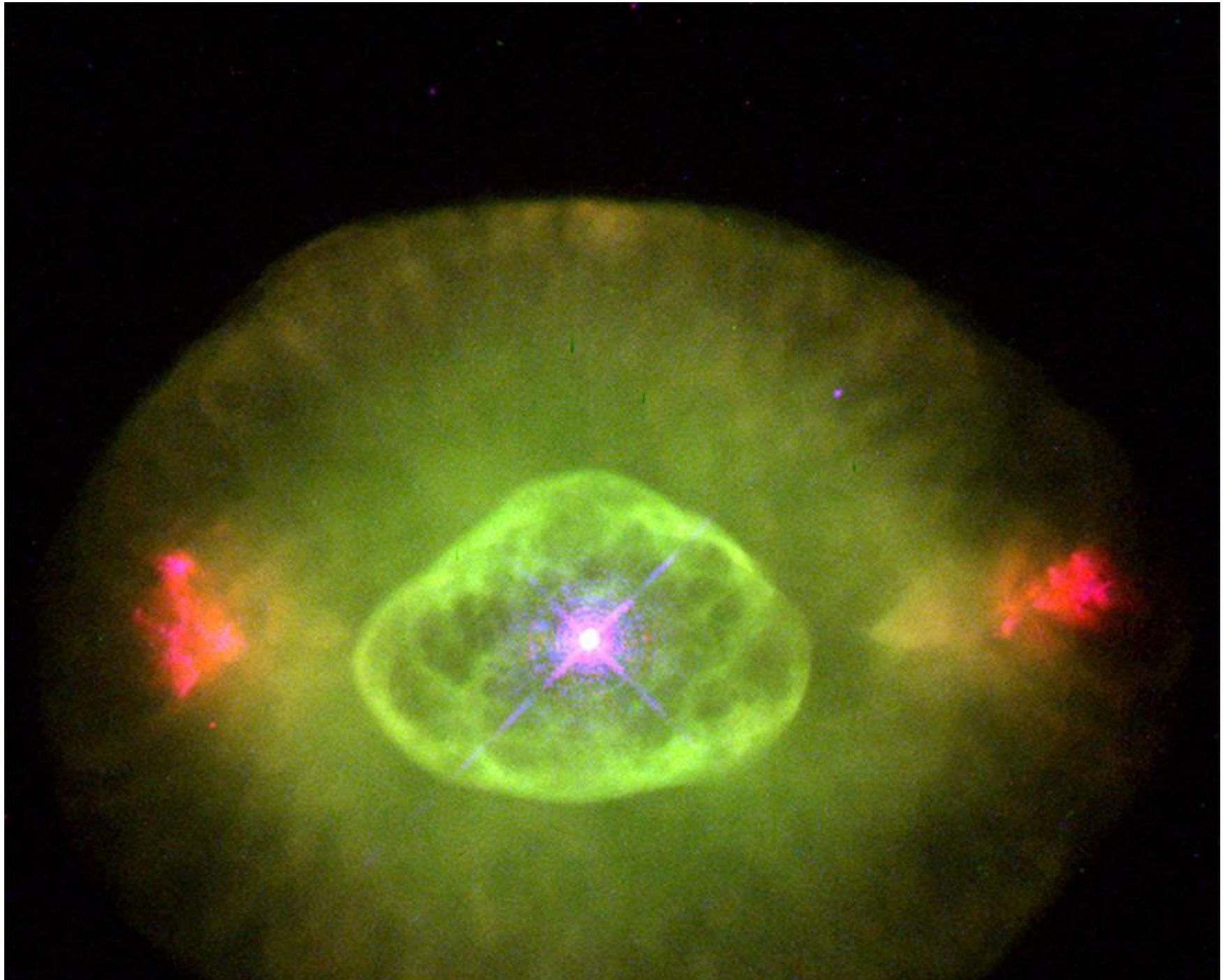

IC 1318 Butterfly Nebula
Const: Cyghus
By Mark Blundell
29th August 2016

The Butterfly or Sadr Nebula in detail. Image Credit: Mark Blundell.

Further up the spine of Cygnus, just beyond its principal star, Deneb, is another vast nebula system: the North America Nebula (NGC7000) and tucked underneath it, the Pelican Nebula (IC5070). Of the two, the North America is undoubtedly brighter (at +4 mag, compared to the Pelican's +8 mag) and can be seen very well in large binoculars from a dark site. An OIII or H-Beta filter can be used successfully to enhance NGC7000 in widefield telescopes, but the complex does not respond well to magnification. Both nebulae are part of the same gas cloud, which may be ionised by emissions from nearby Deneb. If this is the case, their distance would be in the region of 1800+ light years away from our Solar System.

NGC 7000, The North America Nebula. Image Credit - Mark Blundell.

Last, but not least, is a much smaller object, the Blinking Planetary or NGC 6826. This nebula is 2.1 arc minutes in diameter and located towards Iota Cygni. Dimensionally, NGC6826 is fractionally larger than the Ring Nebula and about the same brightness. The "blinking" nature of this planetary is caused when an observer stares at the nebula's central star, at medium to high power, this overwhelms the eye and the nebula fades from view. When you look away to the nearby +8.5 magnitude star in the same field, the nebula reappears. This is not a unique phenomenon and is noted in other compact planetary nebulae with prominent central stars, but is best seen in the Blinking Planetary. Visually, the NGC6826 present two brighter regions on either side of its disc. These regions are Fast Low-Ionization Emission Regions or FLIERs for short. These FLIERs are parts of the planetary formation which are expanding at extreme speeds in comparison to the surrounding nebula. It is postulated that these areas are so dense that the ionising effect of the ultraviolet radiation emitted from the parent star cannot penetrate them. The Blinking Planetary and the Saturn Nebula are two of the best known examples of planetaries that exhibit these FLIERs.



NGC 6826, The Blinking Planetary. Image Credit: Hubble Image NASA/ESA, Public Domain.

Text - Kerin Smith