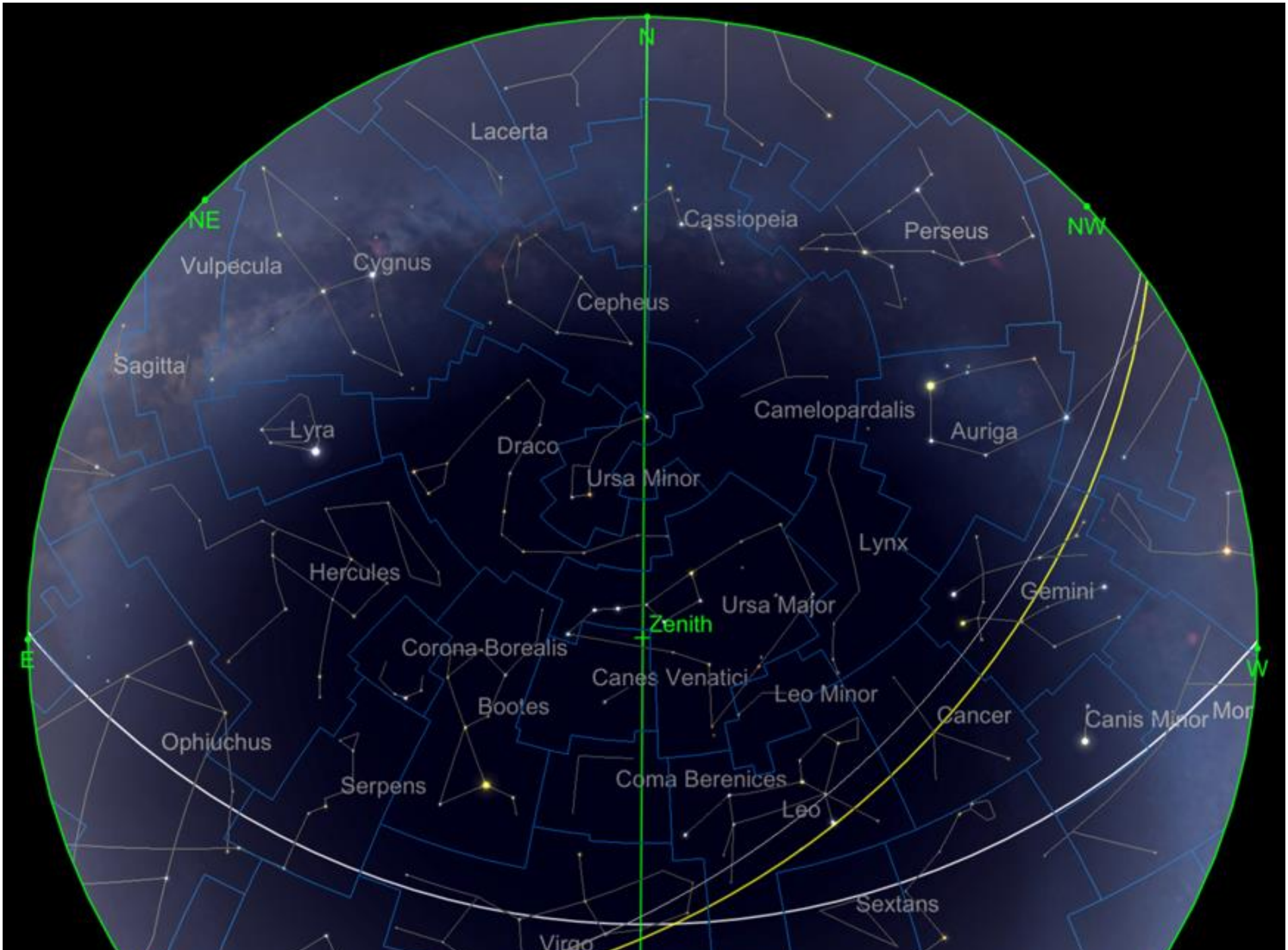

N
NE
NW
E
W
Lacerta
Cassiopeia
Perseus
Vulpecula
Cygnus
Cepheus
Sagitta
Camelopardalis
Auriga
Lyra
Draco
Ursa Minor
Lynx
Hercules
Gemini
Ursa Major
Zenith
Corona Borealis
Canes Venatici
Leo Minor
Bootes
Cancer
Canis Minor
Ophiuchus
Serpens
Coma Berenices
Leo
Sextans
Virgo

May 2022 Sky Guide. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Telescope House May 2022 Sky Guide

We begin May under two months from Northern Hemisphere Midsummer - and of course Midwinter for those in the Southern Hemisphere. This begins to have some knock on effects for readers at higher mid-northern latitudes, such as much of Northern Europe and North America. True darkness begins to rapidly diminish, for those at mid-to-high northern latitudes, due to the Earth's angle of rotation in relation to the plane of our Solar System. For those around 50 degrees latitude N, astronomical dusk begins at just before 11pm on the 1st May and ends at just past 3 in the morning. Fast forward two weeks to the 15th and astronomical dusk begins at 11.46pm and ends at 2.11am. By the end of the month, there is no astronomical dusk and dawn for those at this latitude, as the Sun never sets more than 18 degrees below the horizon - and true astronomical darkness is never achieved. This naturally has a knock-on effect for observation and astrophotography of fainter deep sky targets, but thankfully has no effect on brighter solar system objects.

The Solar System

The Moon

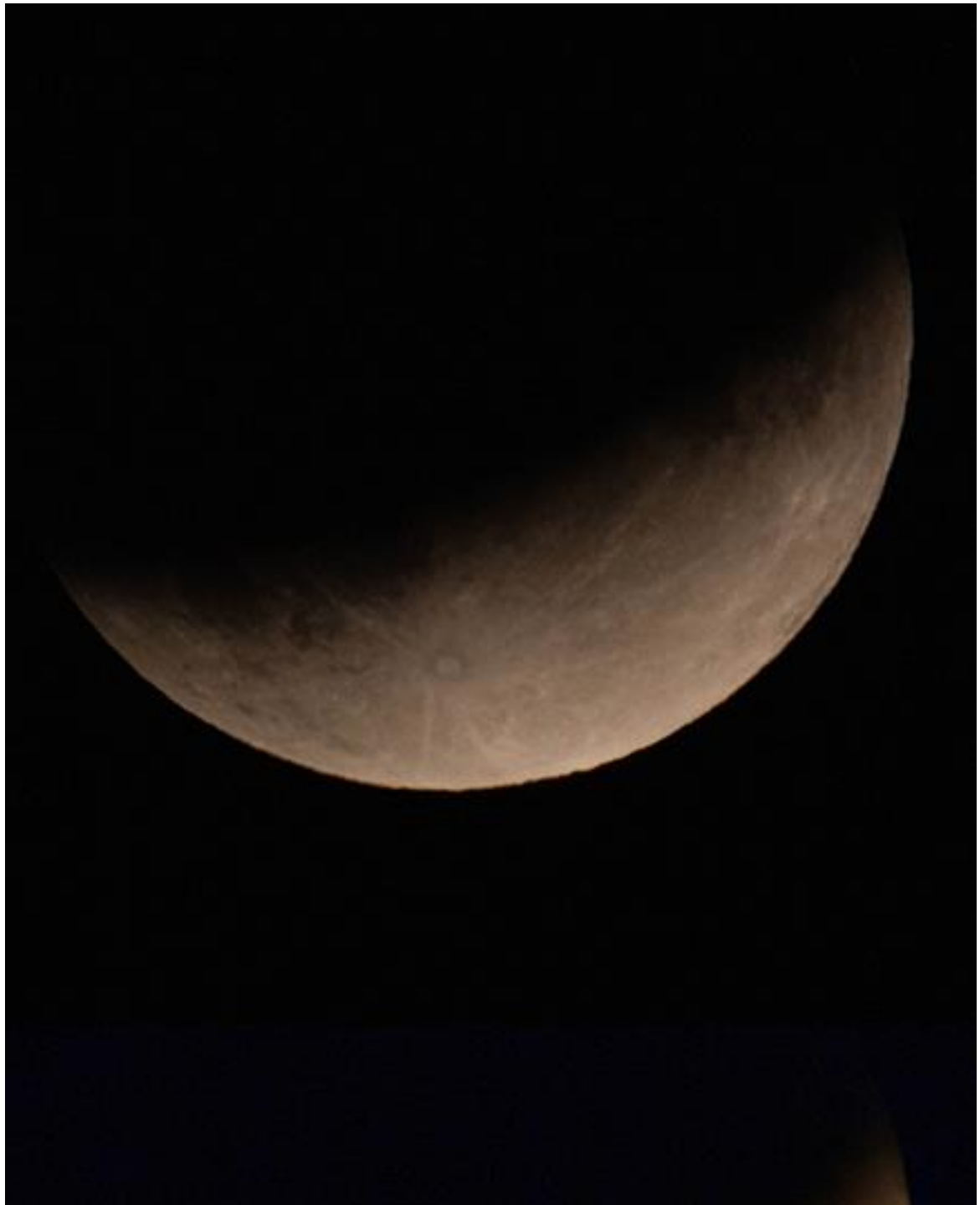
Our natural satellite begins May in Aries, at New Phase. The following evening the Moon can be found just next to the planet Mercury. Both bodies can be found between the Pleiades and Hyades clusters of stars in Taurus. However, you will need an extraordinarily clear sky and horizon to be able to see the tiny 3.6% illuminated crescent of the Moon before it sets, which occurs at just before 10:45 pm (BST).

Over the next week the Moon will rise steeply up through the zodiacal constellations of Taurus, Gemini, Cancer and into Leo, where it reaches First Quarter phase on the 7th. We are now past the highest of the so-called Evening Spring Crescent phases that we have mentioned before in previous sky guides. Despite this, the first week of May presents us with some great opportunities for observing the Moon at Crescent phase.

The second week of May, find the Moon traversing through the eastern part of Leo, into the expanse of Virgo (the largest constellation in the modern IAU classification of our night sky) and then into Libra. It is here, that the Moon becomes Full during May and also where we have the opportunity to observe the latest Lunar Eclipse.

The eclipse begins its Penumbral phase at around 1:30 am (BST). The Penumbral phase is where the delicate shadow of the Earth's atmosphere begins to pass over the face of the Moon, in anticipation of the darker Umbral phase, which occurs later when sunlight is completely extinguished by the deeper shadow of our planet. The Umbral phase begins at around 2:30 am (BST) and reaches total phase just under an hour later.

Total lunar eclipses often make the Moon a dusky red colour, similar to the hue that it takes on just before setting. However, other times the Umbral phase can be so deep that the Moon pretty much disappears from view in the sky. This latter event is rare, and often caused by increased pollution in the Earth's atmosphere – mostly by particles from volcanic eruptions. Naturally, a total lunar eclipse and the lead up to it is a fantastic opportunity for photographic record. A wide field lens can record the entirety of the event from start to finish in multiple exposures, in certain circumstances. Even Smartphone cameras can be used for this sort of eclipse photography. Telescopic photography of the Moon during the eclipse will naturally reveal more detail and higher resolution, but a lunar eclipse can be recorded well using the simplest of gear. We encourage readers to get out there with whatever you've got and get some images of the eclipse. Please send us any results you get!



Lunar Eclipse Montage, taken with Explore Scientific 80mm Refractor, as the Moon set, July 2019. Image credit: Kerin Smith

The eclipse will set during the Umbral phase from most of Europe and the West coast of Africa. From the British Isles this happens around 5:30 am (BST). Most of North and South America the Atlantic, and much of the Pacific Ocean will see the eclipse in full from start to finish. No matter where you find yourself it'll be well worth seeing (even if those of us in Europe will have to brave the small hours of the morning to do so).


Libra
Moon
SW

The Moon entering Umbral phase, 3am 16th May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

After the excitement of the eclipse, the Moon spends the next week gliding through the southern part of the Ecliptic, via Scorpius, Ophiuchus, Sagittarius and Capricornus, where it will meet Saturn on the morning of May 22nd, which coincides with Last Quarter phase.

The last week of May finds the Moon catching up with the majority of planets in our solar system, which are currently resident in Pisces. The morning of the 25th find the Moon a little to the south of Jupiter and Mars, the three bodies forming a pretty spectacle in the predawn sky. Two days later on the 27th, the Moon comes into close conjunction with Venus in the morning sky, the two bodies separated by around a degree at their closest.

The month is neatly rounded off with the Moon returning to new phase, joining the Sun in Taurus, on 30th May.

Mercury

The innermost planet of the Solar System begins May at just past maximum eastern elongation and as such is a decent target for evening observation. However, the planet is now fading and while actually getting closer Earth on its orbit, is rapidly decreasing its phase and illuminated area as it does. The planet can be found at a magnitude of +0.7 in Taurus on the evening of the 1st, which really represents its peak observing potential for this month. At an altitude of over 17° high in the west at sunset, (from 51° north), Mercury is in a very favourable position for observation for those of us in the upper parts of the northern hemisphere. It has often been remarked that Mercury is a difficult planet to find, but the very beginning of May certainly represents the tail end one of the best chances to do this year.

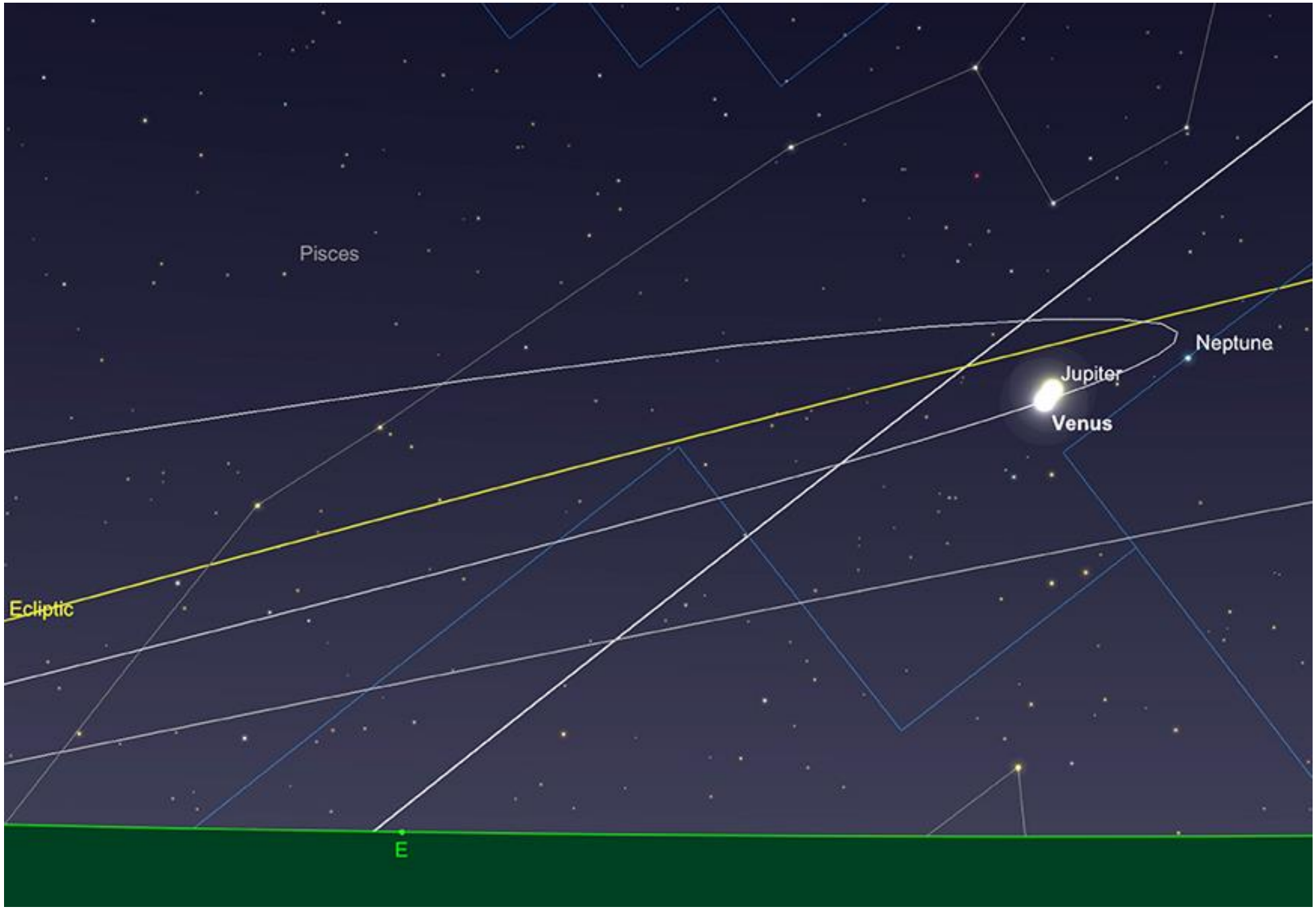

Taurus
Moon
Mercury

Mercury and the Moon, just after sunset, 2nd May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

As we've often remarked in previous sky guides, nothing remains stationary for Mercury for very long at all. The first three weeks of May finds the planet hurtling sunward, getting progressively fainter and much more challenging to observe as it does. By the time Mercury reaches Inferior Conjunction, between Earth and the Sun, on the 21st of May it will be it will have been invisible to us for some time - lost in the Sun's glare. After this point Mercury will become a morning object, though it will be significantly further into June before it's visible again, very low in the sky before sunrise.

Venus

As covered in last month's sky guide, the highlight for Venus (and indeed Jupiter) this month is a close conjunction between the two worlds in the morning sky just before sunrise on the 1st. Having the sky's two most brilliant planets in the same telescopic field of view is a chance few observers would choose to ignore. At barely a third of the degree apart, this should be quite a spectacular sight to both the naked eye and in binoculars and telescopes. While this will require a fairly early morning get up time, we would heartily recommend readers to make plans and enjoy the spectacle - though do be warned, you will need good skies and clear easterly horizons to see the two planets as they will only have risen around 10° high (from 51° north), before the Sun rises. While the two worlds may appear very close together in the sky, they are actually in very different parts of our solar system, and it is just a pure line of sight effect, from our perspective on Earth that brings them together in the sky.


Pisces
Neptune
Jupiter
Venus
Ecliptic
E

Venus and Jupiter Conjunction, sunrise, 1st May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Venus is now past the point of maximum Western elongation, which it reached at the end of March and is now drifting back towards the Sun. This would normally lead to it dropping slightly in altitude from the northern hemisphere's perspective, as it does so. However, as the Sun is still climbing in the Ecliptic towards mid-summer, Venus actually continues to appear to gain altitude at sunrise from a mid-northern hemisphere perspective, ending the month at just under 12° in altitude (from 51° north), as the Sun rises. While it will be very well placed for observation for sometime to come from the equatorial regions of our planet, Venus is not especially well-situated for us in the northern hemisphere. As such, we must be cautious in our attempts to observe at telescopically, as at low altitude we are looking through much more of the Earth's atmosphere when we observe a planet. Venus - brilliant though it always is - is no exception to this at present.

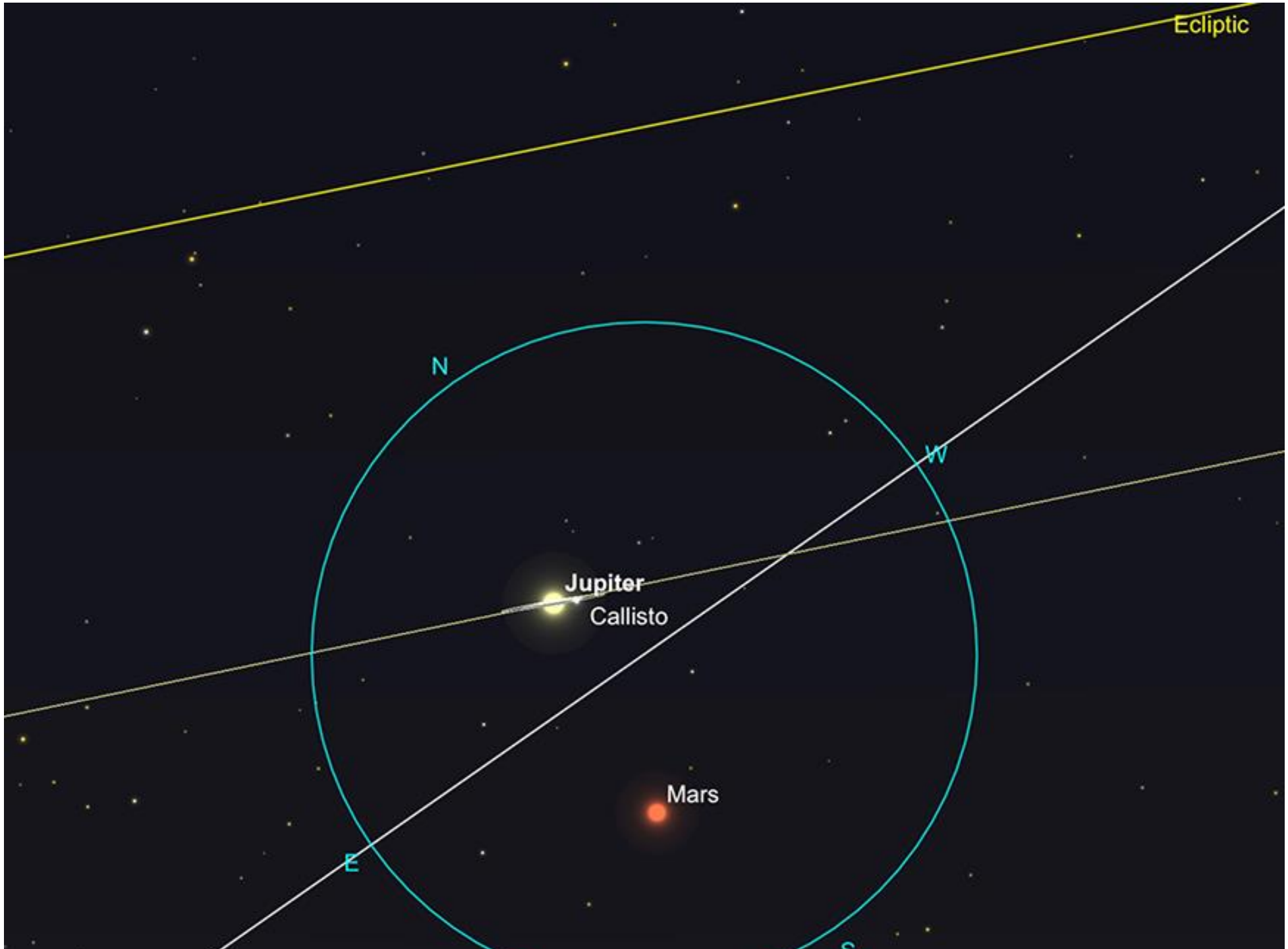
Venus ends May at -4.0 magnitude, displaying a 13.7 arc second diameter disc and a gibbous phase of 77% illumination.

Mars

Mars starts May as a +0.9 magnitude, 5.8 arc second diameter target in the constellation of Aquarius. Rising about an hour and a half before the Sun, it reaches an altitude of just over 13 1/2° by sunrise (from 51° north).

Unlike nearby Jupiter and Saturn, Mars is not a brilliant target at present, and as such easily overlooked. However, the trend is definitely upwards as far as Mars is concerned - albeit painfully slowly. By mid-month the planet will be +0.8 magnitude and now show a six arc second disc, standing at just under 16° elevation as the Sun rises.

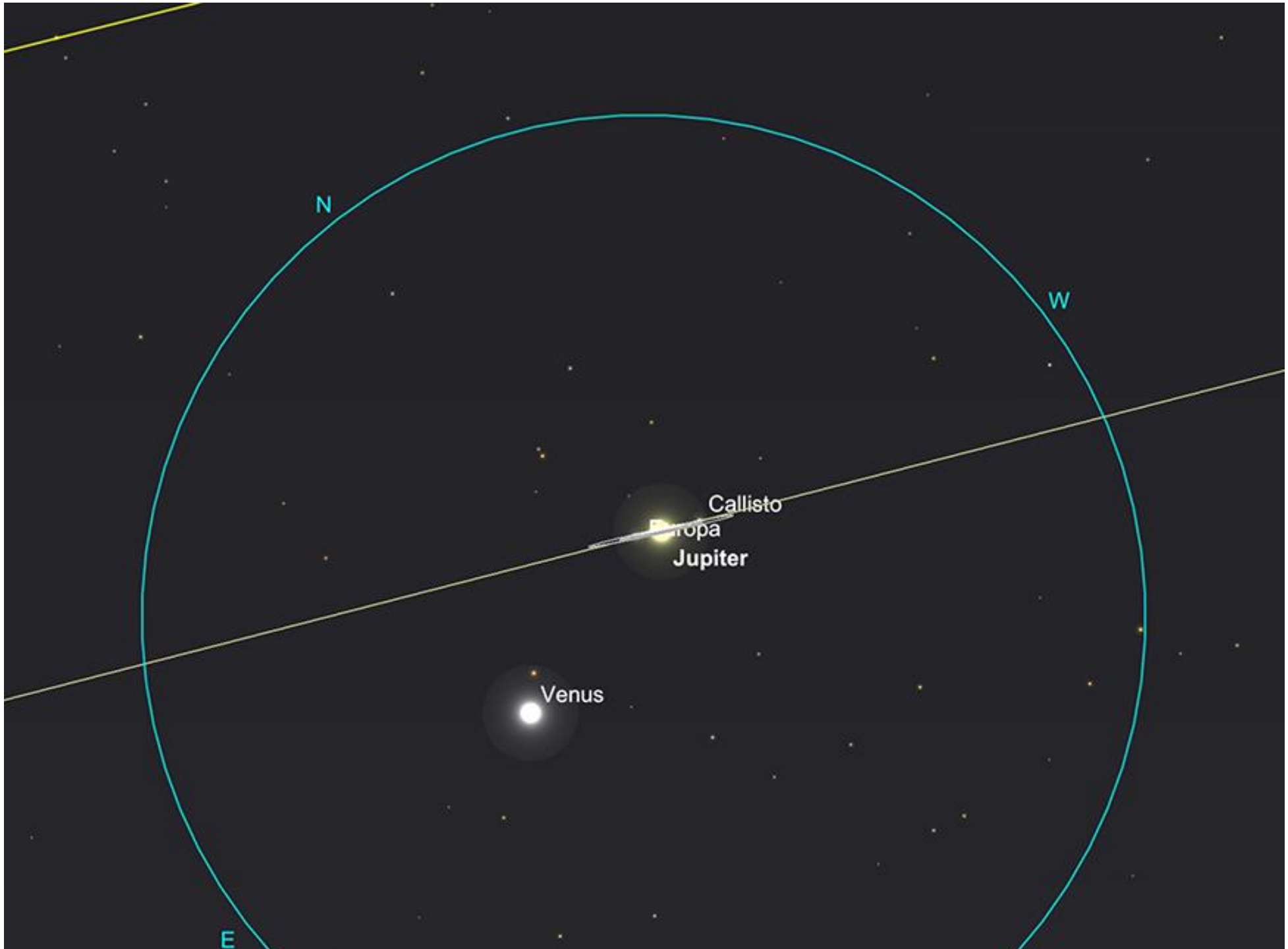
The highlight as far as the Red Planet is concerned, during May, comes at the end of the month, when Mars and Jupiter come into close conjunction with each other. On the mornings of May 29th and May 30th Mars and Jupiter can be found approximately half a degree from each other. This means that they can be observed in the same field of view of a low to medium power telescope. At this point, Mars will be +0.7 magnitude and displaying a 6.4 arc second diameter disc. Contrasted with Jupiter, which at present displays a 37.1 arc second diameter disc, shining at -2.2 magnitude, Mars will be somewhat disappointing in comparison. Still, it will be fun to observe these two very different members of the solar system in the same telescopic field.


Ecliptic
N
W
Jupiter
Callisto
Mars
E

Mars and Jupiter, sunrise 29th May 2022. Blue ring demonstrates 30x field of view. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Jupiter

As previously mentioned, the highlights for Jupiter this month are a couple of very close conjunctions with the planets Venus and Mars, which neatly booking and the beginning and end of May. The beginning of the month finds Jupiter in Pisces, shining at -2.1 magnitude and displaying a 34.8 arc second diameter disc. Rising a little over an hour before the Sun, Jupiter retains an altitude of just over 10° above the horizon as the Sun rises (from 51° north).


N
W
Callisto
Jupiter
Venus
E

Jupiter and Venus, sunrise, 1st May. Blue ring shows 30x telescopic field of view. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

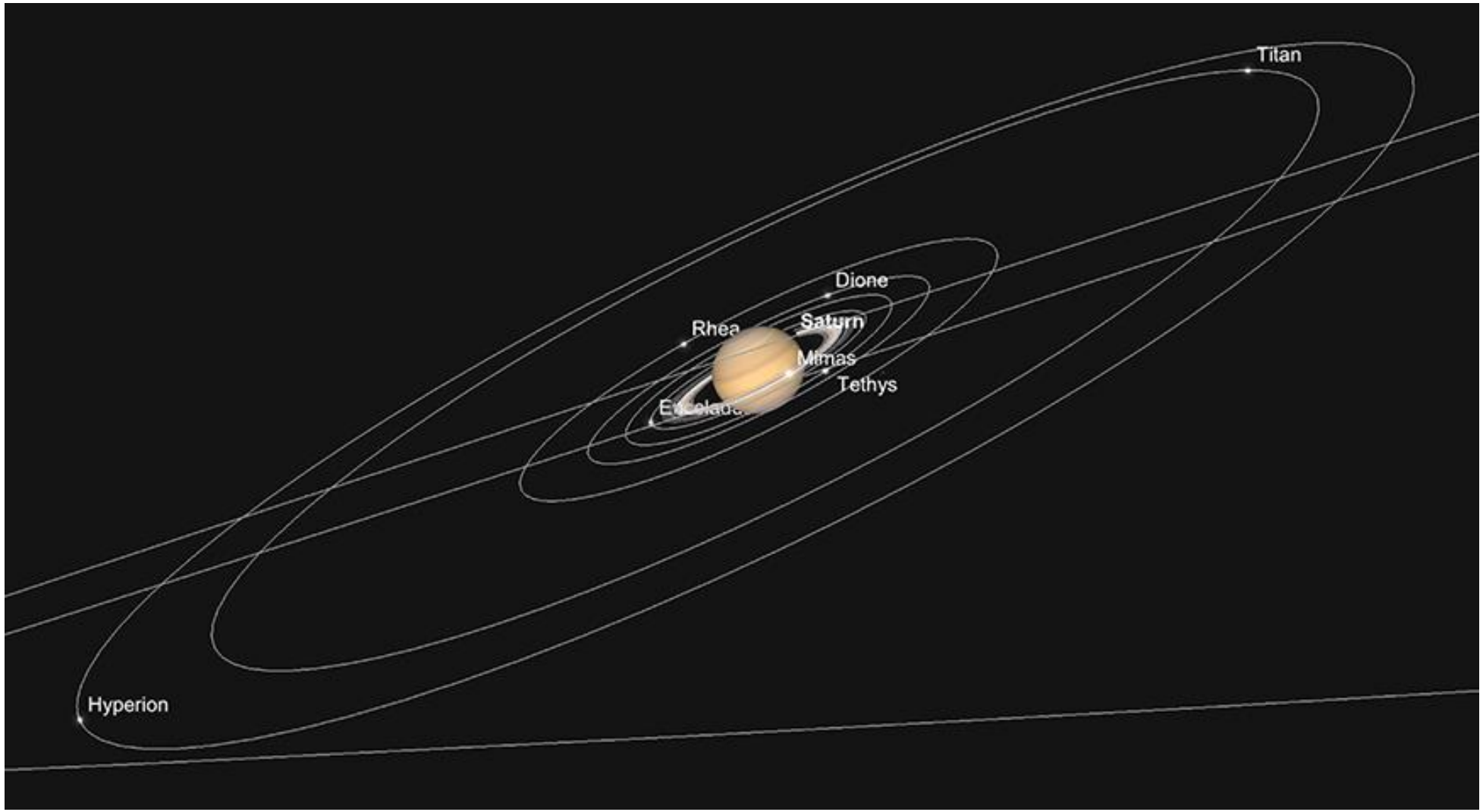
Jupiters position in the sky is not especially favourable for high power telescopic observation during most of the month. Having relatively recently emerged from Superior Conjunction, it is not until the end of May that Jupiter becomes more easy to observe in the morning sky. While it is not especially high in the sky at present, a significant event occurs on May 25 this year, when Jupiter appears to crossover into the northern hemisphere of the sky, for the first time since 2016. While Jupiter will cross back into the southern hemisphere the sky, as it goes retrograde later on in the year (before crossing back into the northern hemisphere in early 2023), this is a significant point in time for observers in the northern hemisphere, as it will have been a good while since Jupiter has been in a more “suitable” area of sky for observation from these parts of the world. This tends to have a massive knock-on effect in terms of quality of views for those observing Jupiter, especially in the higher northern latitudes, and as such is very welcome.

On May 31 Jupiter can still be found in Pisces, having brightened fractionally to -2.2 magnitude, now displaying 37.3 arc second diameter disc and standing just under 21° high in the south-east as the Sun rises (from 51° north).

Saturn

Saturn begins May in the constellation of Capricornus. Shining at a steady, if unspectacular, +0.9 magnitude, the Ringed Planet is never as prominent as nearby Venus and Jupiter are, but being situated further west in the Ecliptic, rising distinctly earlier, Saturn reaches an elevation of just over 16 1/2° as the Sun rises on the 1st.

By at the end of May Saturn will have brightened a tiny amount to +0.8 magnitude and is now showing a 17.3 arc second diameter disc. A resident in the eastern reaches of Capricornus, it will not be long before the planet goes retrograde in motion - a sure sign of impending Opposition, which will occur in mid-August this year. Saturn can be found at a little below 23° elevation as the Sun rises on 31st (from 51° north)

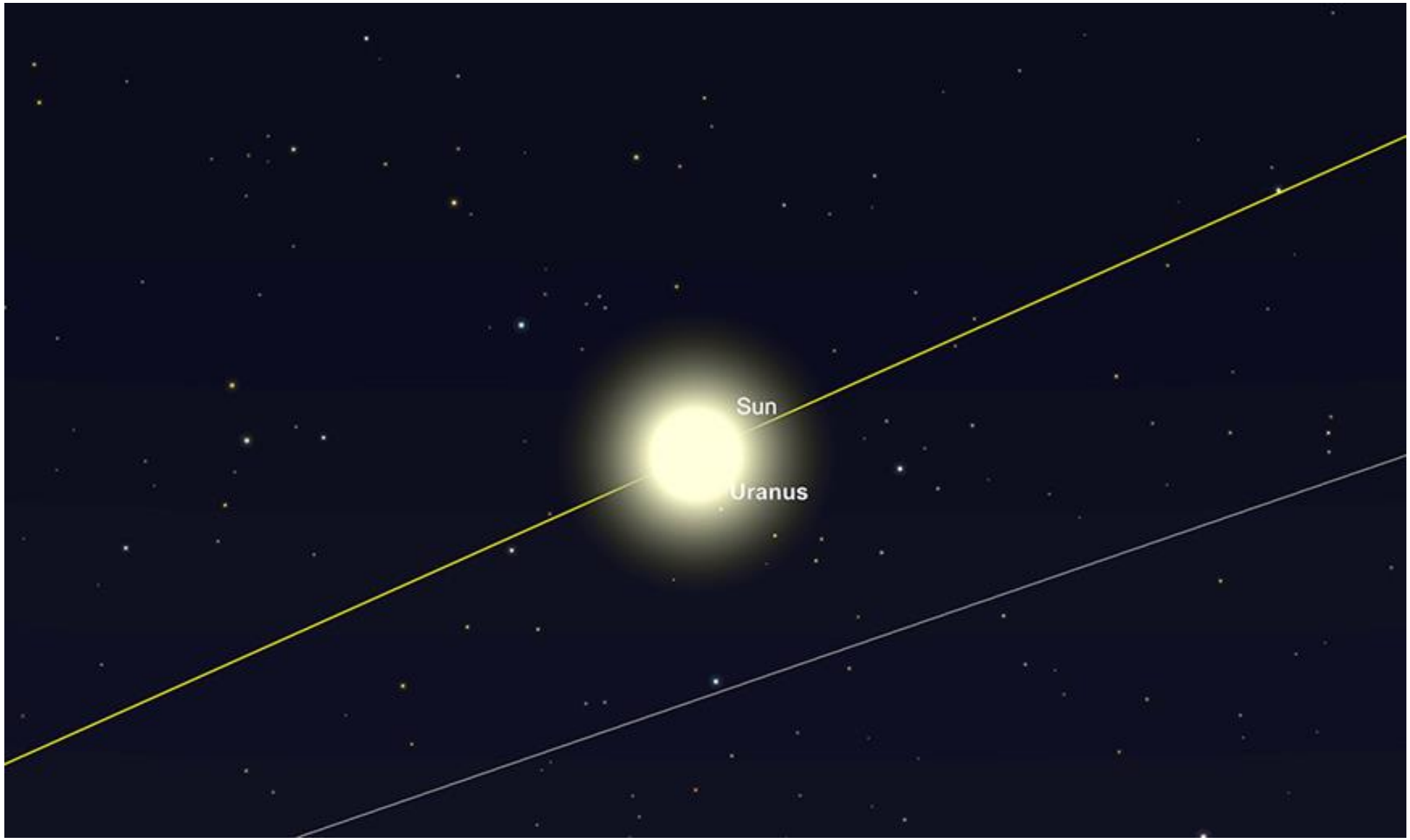


Saturn and moons, sunrise, 15th May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Uranus and Neptune

Both the outer planets are poorly placed for observation during May. Uranus, especially so, as it reaches Superior Conjunction, the opposite side of the Sun from our perspective here on Earth, on May 5th and is thus unobservable during the month.

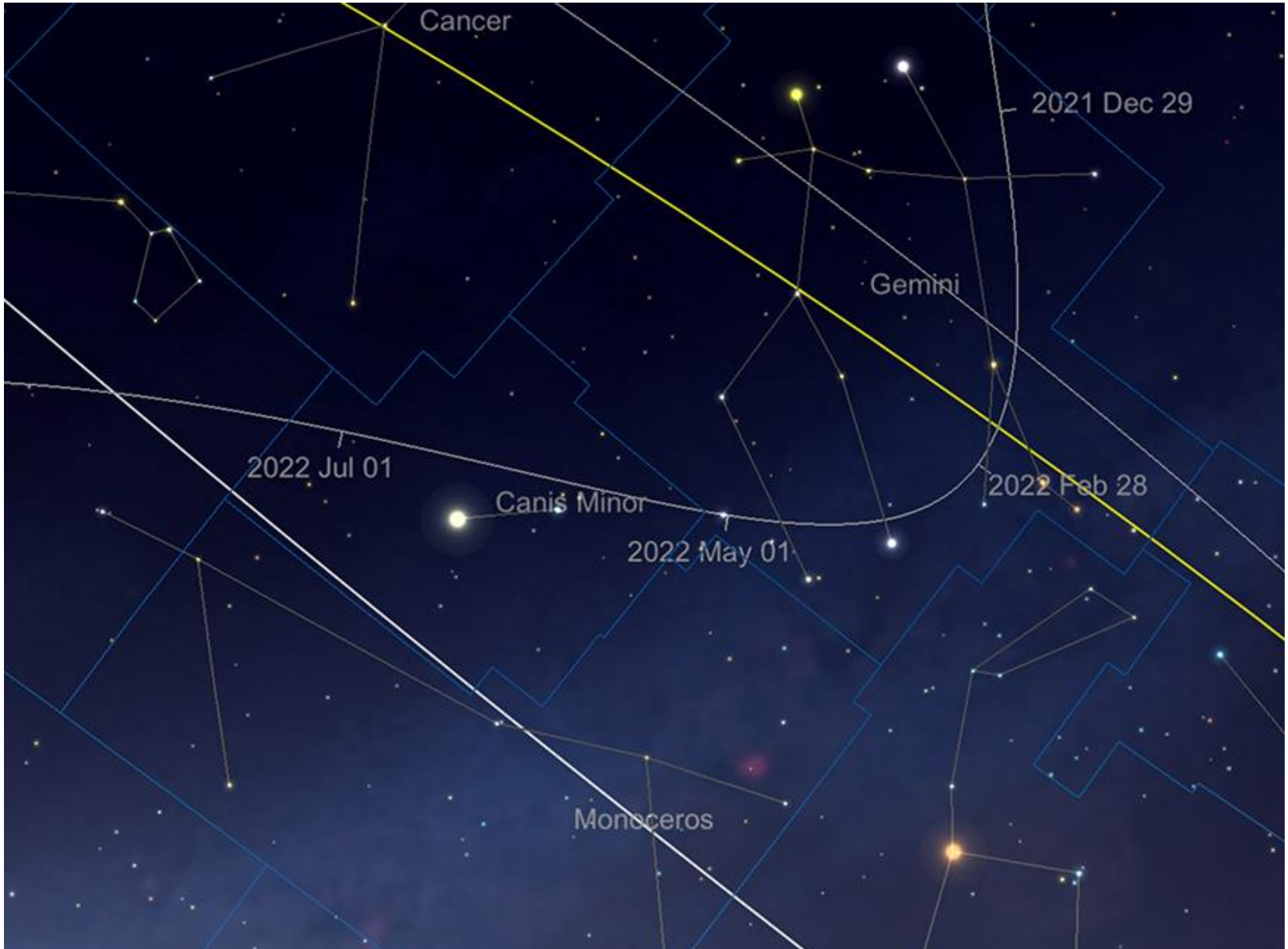
Neptune is further west in the Ecliptic and can be found on the Pisces/Aquarius borders in the early part of May. However the planet is so faint at +7.9 magnitude, it will be impossible to track down in the dawn sky. This is a pity, because the planet comes into close conjunction with Venus, Jupiter and Mars during the month. But Neptune's comparative faintness in the glare of the dawn sky will be its undoing from an observational point of view. We must bide our time as far as observing both of these outer worlds goes.


Sun
Uranus

Uranus at Superior Conjunction, 5th May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Comets

There are no reasonably bright comets to observe this month. The comet C/2019 L3 Atlas is probably our best bet for observing during May. It is an evening object during the month, moving through the southern part of Gemini and into Canis Minor, though will be far from bright.

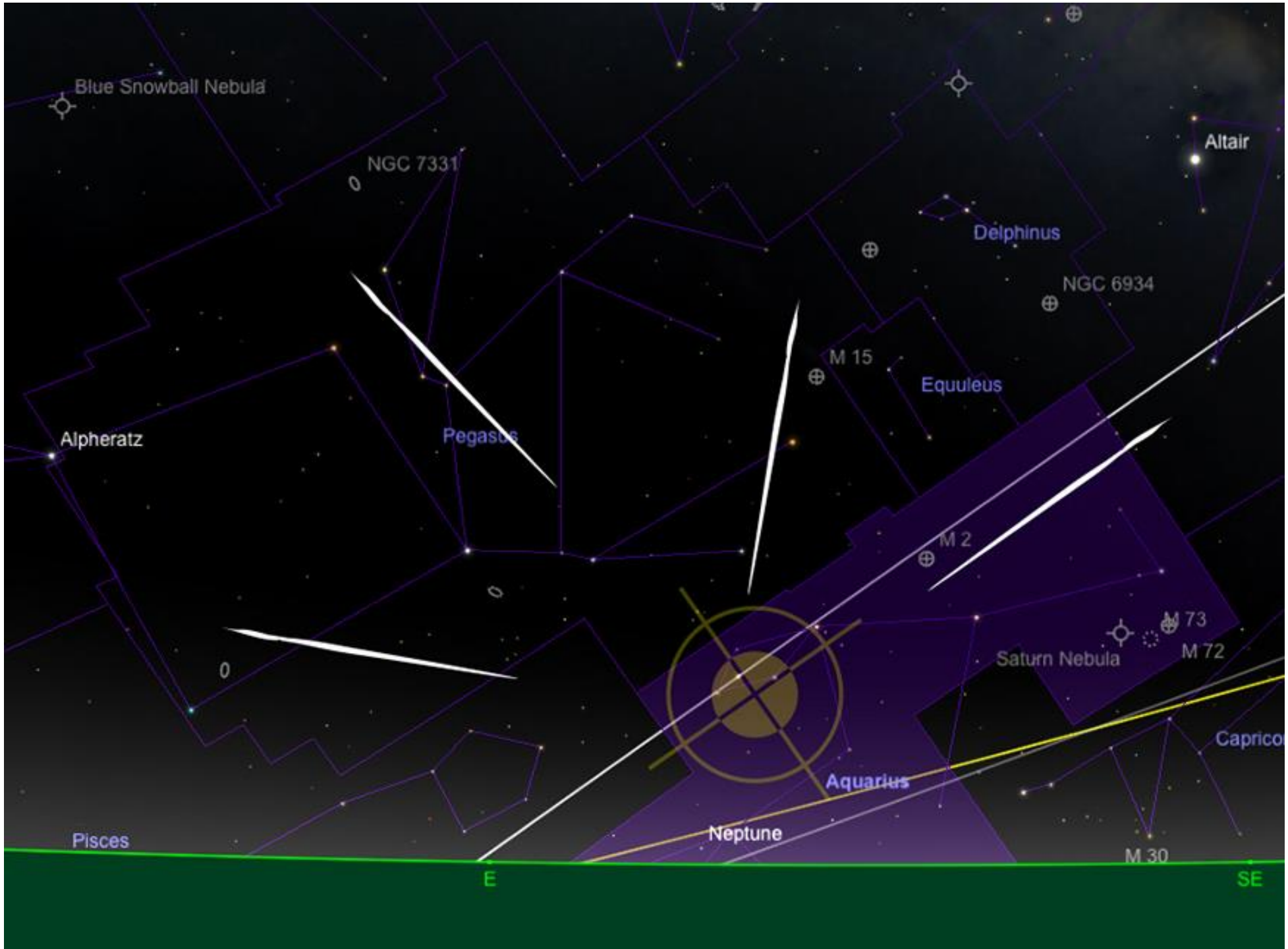

Cancer
2021 Dec 29
Gemini
2022 Jul 01
Canis Minor
2022 Feb 28
2022 May 01
Monoceros

C/2019 L3 Atlas path May 2022 (comet position shown 1st May). Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Continuing observations of Comet 2017/K2 (PanSTARRS) suggest it is still brightening relatively rapidly, but it is still around the 10th magnitude at best presently. The comet may however become brighter from August of this year, but is unlikely to get any brighter than 7th or 8th magnitude, making it very much one for telescopic or large binocular observations.

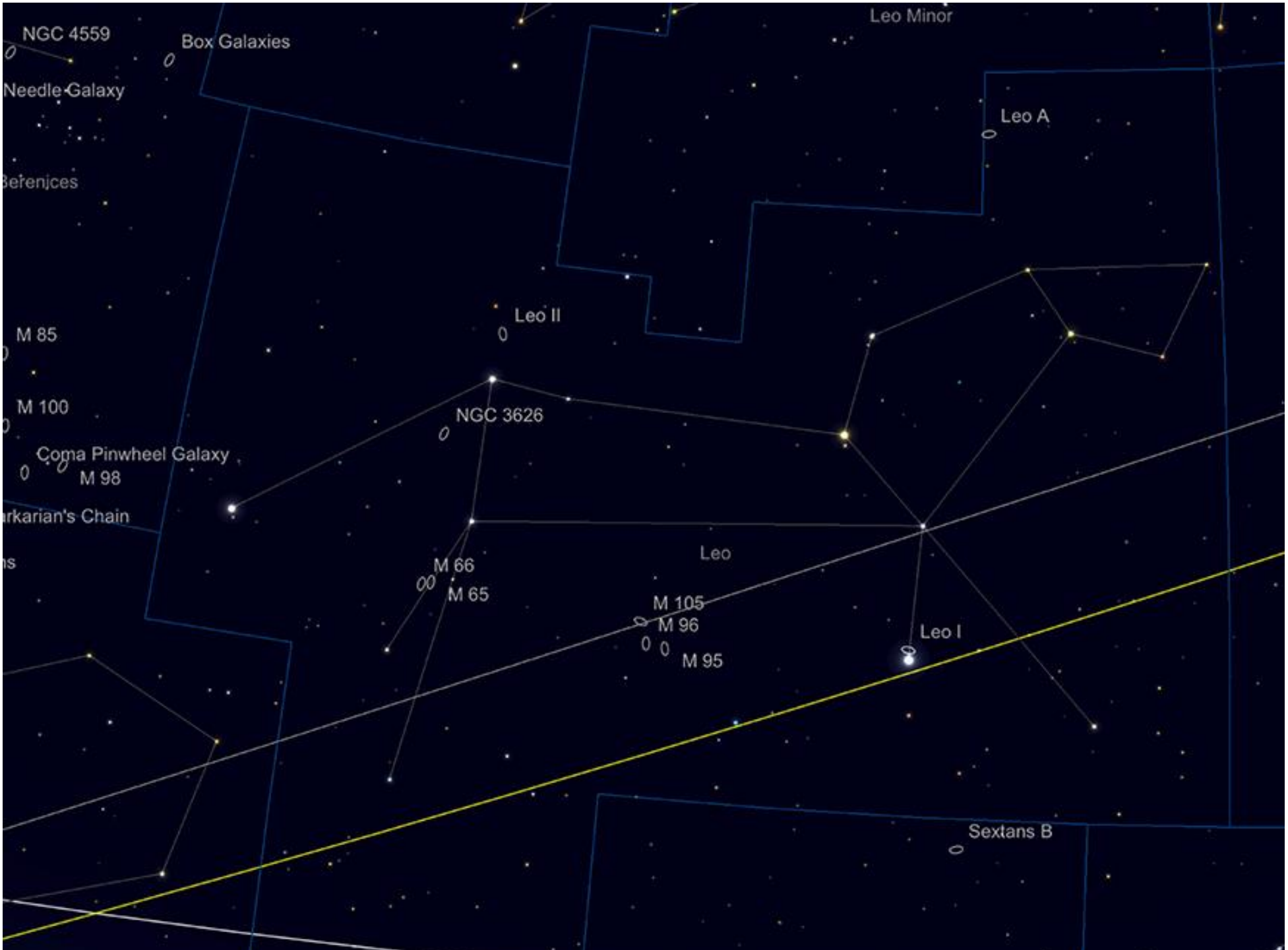
Meteors

Reaching their upper range of activity between the 4th-6th May, the Eta Aquariids meteor shower peaks on the night of May 5th this year. While the zenith hourly rate of this shower - around 30-40 at maximum, this year - is not as high as some of the major annual showers, this event is worth staying up for (or attempting to record photographically), as the Moon, the perennial menace of meteor shower observation, will be at narrow crescent phase and will have set in the evening, long before the radiant of the shower rises. As meteors from any radiant can be seen in any part of the sky, observers do not have to solely concentrate on the part of the sky the radiant is located in to catch some decent meteor activity. However, as the radiant rises so late, it is often commented that the Eta Aquarius are better seen in the southern hemisphere, but those in the northern hemisphere should still try and catch a few meteors, if possible. This shower is seeded by the famous Halley's Comet, whose debris is quite fast-moving, resulting in bright, energetic meteors. The best of these will be visible, even from relatively light polluted environments, though naturally, the darker your observing site, the better, as far as all meteor observations are concerned.


Blue Snowball Nebula
NGC 7331
Altair
Delphinus
NGC 6934
M 15
Equuleus
Alpheratz
Pegasus
M 2
M 73
M 72
Saturn Nebula
Aquarius
Neptune
Pisces
M 30
E
SE

Eta Aquariids meteor shower radiant rising, early morning, 5th May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Deep Sky Delights: Galaxy Season Part 2 - Leo


NGC 4559
Box Galaxies
Needle Galaxy
Leo Minor
Leo A
Leo II
M 85
M 100
NGC 3626
Coma Pinwheel Galaxy
M 98
M 66
M 65
Leo
M 105
M 96
M 95
Leo I
Sextans B

The galaxy-rich constellation of Leo. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

When gazing towards Leo, there can be little doubt we are now in the part of the year known as "Galaxy Season", as this area of sky is littered with them. Galaxy hunting is not solely the preserve of those with the supposedly prerequisite "Big Dob". Although to see much in the way of detail in many of the objects mentioned this month, aperture will certainly help, a good deal of these can be seen with smaller telescopes and large binoculars from decent, dark observing sites. However, patience and care will be needed to pick the faint glow of these fantastically distant objects from the background sky. However, to discern structure in many of the galaxies we'll cover requires one of two things: a large telescope of at least 10-inches of aperture (preferably more), or reliance on accurate, autoguided long-duration exposure astrophotography. To appreciate the true beauty of these massive, yet seemingly delicate structures, you need one or the other - though their location and observation (yet again), will largely be down to sky conditions - with galaxies, the darker the better! Careful, gentle filtration will help with galaxy observation from more light polluted environments, but narrowband filters like the OIII, H-Alpha and others will rarely help as much for galaxy observation as they do for nebulous objects (except when a galaxy has particular emission regions, peculiar to these wavelengths of light). A good Skyglow, CLS or broader "Deep Sky" filter will help increase the contrast of an object against the background sky, without cutting off many of the useful wavelengths that the galaxy is transmitting on. A galaxy's spectral output is much broader than typical nebulosity, so gentle filtration produces the best results.

The first object on the list for observation is one of the most difficult to see, but probably one of the simplest to locate and the closest, galaxy-wise - the Leo I galaxy. Leo I sits a third of a degree north of Regulus, Alpha Leonis - the principle star of Leo (though some publications rate it as closer). Leo I is an elliptical galaxy of reasonable angular size (12 x 8.5 arc minutes) and of photographic magnitude +11.15. Leo I is a one of its furthest satellite galaxies of our own Milky Way, lying just over 800,000 light years from us. Leo I was first detected in the Palomar Sky Survey, taken with the observatory's 48-inch Schmidt Camera in 1950. Leo I's visual magnitude is deemed to be around +9.8 mag, which should put it easily within the reach of amateur instruments. However, Leo I's easy-to-find location is also its potential downfall from a visual perspective: it lies so close to Regulus that the neighbouring galaxy is almost drowned out by its glare. There are reports of the galaxy being found in 10-12-inch class telescopes, but it is very likely that an observer would have to place Regulus just outside of the field of view, using appropriate magnification, in order to see our galaxy's most distant satellite at all. Leo I will appear as a misty oval of light, with no great discernible structure even in large telescopes.The galaxy appears to have no attendant globular clusters and contains few stars of advanced metallicity, meaning the stellar population is comparatively young - probably little over twice the age of the Sun. The galaxy is surrounded by a halo of attendant gas, which it may (or may not) have formed from.
This unusual object will be a challenge, but if found, you will be witnessing the furthest reaches of our own galaxy's orbital sphere of influence and in all likelihood its youngest attendant.

Roughly nine degrees east of Leo I lie a spectacular grouping of galaxies: the Messier objects M95, 96 and 105 (and its attendant galaxies NGC 3377 and NGC3384). This group occupies a compact area of sky (about 3 x 1.5 degrees of sky) and can be found halfway on a line drawn between Regulus and Iota Leonis - one of the rear legs of Leo. Of the three galaxies, the beautiful M95 is the most Westerly. M95 is a barred spiral galaxy, placed almost face-on from our perspective. M95 was discovered - along with the nearby M96 - in 1781, by Pierre Mechain. Messier catalogued both objects less than a week after Mechain found them. At +9.69 mag, M95 is a relatively easy, compact object at 7.4 x 5 arc minutes in dimension. Lying 31 million light years away from us, it is the closest of its group by a million light years. As M95 is a barred spiral, it is likely that most observers with decent-sized telescopes will see the galaxy's central core region as a slightly elongated object, surrounded by a fainter haze of its arms. Long duration images of the system reveal its structure in all its glory - the two massive spiral arms shedding stars into further outlying feathered lesser arms. If, as it has been suggested, our own galaxy is a barred spiral, it could look much akin to M95 to outside observers, though our galaxy may have more in the way of outlying spiral structure in its arms.


M95 - M96 Galaxies
© 2018 Mark L Blundell

M95 and M96 by Mark Blundell. Image reproduced by kind permission.

Next door to M95 by a mere two-thirds of a degree is another lovely spiral, M96. A similar angular size to its neighbour, it is slightly brighter at +9.3 mag. In contrast to M95, M96 appears to be dustier, but has a more compact core. It is often listed as a double barred spiral. This double barring, along with the wide spread of its arms and the galaxy's dusty nature make its spiral structure less well-defined than its neighbour M95's. Similar in angular size to M95, at 7.8 x 5.2 arc minutes, M96 appears as a more compact 3 x 5 arc minute object in a 10-12-inch-class telescope, its bright central core surrounded by a fainter ring of starlight which make up its arms. The reason it also appears slightly brighter than M95 in some listings is that the galaxy is considerably foreshortened in comparison to its neighbour. Some listings incline it as much as 53 degrees to our line of site, whereas M96 is also recorded as being at a less extreme 35 degrees! Whichever listing is correct, M96 is a great target for visual and photographic observations.

Just under a degree to the north of M96 sits the grouping of M105 and the nearby NGC 3384 and 3389. Of the three, M105 is the dominant and brightest at +9.3 mag. It is often described as the analogue of Elliptical galaxies - and as such is much studied. M105 is a later addition to the Messier list (added by 20th Century Astronomer Helen Sawyer Hogg), though discovered in 1781 by Mechain, Charles Messier did not confirm its discovery at the time and it was left out of his original listing. It's difficult to understand why Messier chose not to include M105, as it is prominent enough - a misty patch of light in small telescopes and a condensed glow, with a healthy-size core in larger instruments. Elliptical galaxies, but their nature are not generally thought to be as beautiful or as characterful as their spiral counterparts, but this should not put observers off trying to locate M105. Indeed, many Astronomers now consider Elliptical galaxies to be the ultimate evolution of galaxial structure after two spirals merge - the end result of the Milky Way's potential meeting with M31 may well result in a similar structure to M105. A clue to M105's past is that it contains few areas of star formation and a reasonably elderly stellar population, suggesting it is a more advanced galaxy in terms of age.

The second Elliptical in this close trio, NGC 3384, 7 arc minutes to the NE of M105, is almost as conspicuous as its neighbour at +9.89 mag, but is presented to us at a much more oblique angle. Appearing elongated, even in small telescopes, larger instruments can reveal a clear, bright core and the misty halo of NGC 3384's outer regions. So easy is it in comparison and proximity to M105, it is difficult to believe that it was overlooked by Mechain and Messier. William Herschel discovered it in 1784. Although listed as the catch-all description of an elliptical galaxy, the more precise description of NGC 3384 should be as a Lenticular. The galaxy has revealed a central bar structure in long duration astrophotography and like M105 shows an older star population than the mean average.

NGC 3389 is the most challenging of this trio to observe - whereas the two previously-mentioned ellipticals are bright and their structure obvious, NGC3389 is a whole two magnitudes fainter than either at +11.89 mag and much more the visual preserve of larger telescopes. NGC 3389 is a spiral galaxy and shows a much more blue, energetic cast in long duration images (maybe somewhat reminiscent of a mini M33). This is largely due to its disassociation with the group - although close in angular proximity to M105 and NGC 3384, NGC 3389 actually lies round 64 million light years distance, roughly twice that of its neighbours and has no connection to them. Instruments of the 10-inch+ range will show it, though it will be a

struggle to observe in less powerful scopes. It appears as a pale misty patch to the SE of NGC 3384 and little detail is to be expected in most telescopes, though those owning larger instruments have reported a certain textured "lumpiness" to its appearance in the eyepiece.

At low power (sub x40) it is possible to squeeze M96, M105 and NGC3384 in the same eyepiece, as it is also possible to do with M95 and M96 - though owners of low focal ratio reflectors should be advised that it is often inadvisable to attempt to use such low magnifications, lest the shadow of the secondary mirror interfere with the view!

Leaving this group of galaxies aside, we return to the aforementioned Iota Leonis and trace a line back up one of the rear "legs" of Leo, until we come across the +3.34 mag star Chertan or Theta Leonis (sometimes known as Chort or Coxa). Tracing the line back to Iota Leonis, stop approximately halfway: here is location of the next group of galaxies, the M65 Triplet, more commonly known simply as the Leo Triplet. This triplet contains the Messier objects M65 and 66 and the elongated NGC 3628. All three objects are spiral structures, though unsurprisingly they present themselves to us in differing aspects.

M65 and 66 were discovered by Charles Messier in 1780, though often misattributed to Mechain. Of the two, M65 is slightly smaller and fainter at + 9.30 mag. It has a bright central bulge and pretty luminous arms. Presented at a significant incline to our perspective, occupying an area of 9.8 x 2.9 arc minutes, M64 also features noticeable dusky lanes within its arms, though these may well be made more prominent by foreshortening. M66, on the other hand, is a broader barred spiral, brighter than its neighbour at +8.9 mag and taking up more area in the sky at 9.1 x 4.1 arc minutes. M66's spiral arms are not as regular as M65's, which seems to suggest total interactions with neighbouring NGC 3628 in the past, as does a displaced cloud of hydrogen which has moved outwards from its arms and now sits, motionless, around its galactic halo.


Leo Triplet M65, M66 & NGC3628
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The Leo Triplet: M65, M66 and NGC3628, by Mark Blundell. Image reproduced by kind permission.

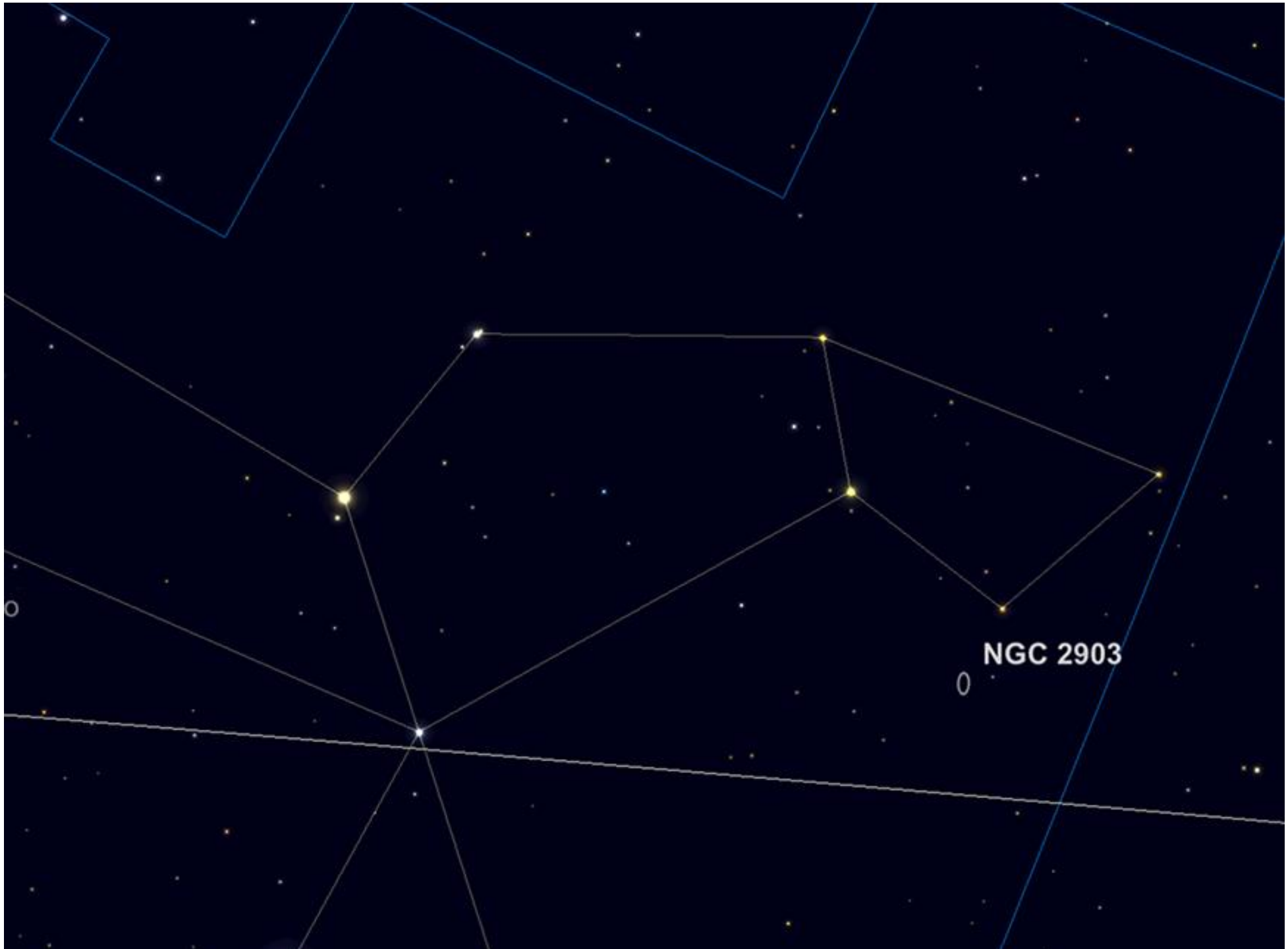
NGC 3628 is the faintest of the three at +9.50 mag and the longest at 13.1 x 3.1 arc minutes in dimensions. This is a fascinating spiral, which is presented edge on to us and is bisected through its centre by a long, dark dust lane. This is difficult in smaller telescopes, but becomes extremely prominent in larger telescopes. 10-12-inches of aperture will show it well, but in a telescope of 14-16-inches of aperture it is unmistakable (in a similar way to NGC 891). Discovered by William Herschel in 1784, NGC 3628 is pretty obvious in relation to its neighbours, so again, it is mysterious why it wasn't discovered earlier. NGC 3628 has tidally interacted with M66 which has lead to a huge stream of stars breaking away in a staggering 300,000 light year long trail. This feature is only apparent in very long and well-processed astrophotographs, but is amongst the most spectacular and extreme pieces of evidence for gravitational interaction amongst galaxies in the sky.

All three galaxies can sit within the field of view of a low power eyepiece in a rich field instrument, but large binoculars will show them well as a triplet too. Sadly, NGC 3628's dark lanes won't be revealed by binoculars, but the Leo Triplet is well worth your attention, regardless of whatever optical aid you deploy.

All the galaxies mentioned so far, bar the outlying NGC 3384 and (confusingly) the much more local Leo I, are all members of the extended Leo I group of galaxies. For clarification, Leo I the galaxy and the Leo I group of galaxies are completely unrelated! The next group of galaxies we shall come to belong to the Leo II population, an associated, but separate group.

Moving Northwards from the M65 Triplet, we come to another compact triplet of galaxies, the spiral NGC 3632 and a close pairing of elliptical galaxies NGC 3607 and 3608. 2 1/2 degrees S from Zosma, Delta Leonis, (the base of the Lion's tale), the pairing of NGC 3607 (+ 9.89 mag) and NGC 3608 (+ 10.80 mag) can be found. Separated by just 5 arc minutes, the pair are easily located in small instruments, though it is the brighter (4.6 x 4.0 arc minutes) 3607 that is the more conspicuous. NGC 3632 is to be found three quarters of a degree to the east of this pairing. At+10.6 mag NGC 3632 was discovered by Herschel, again in 1784. It is a lovely, if compact, spiral and is also listed at number 40 on Patrick Moore's Caldwell Catalogue. Although recorded as an 11th magnitude object, it appears brighter due to the concentration of this light over its compact 2.7 x 1.9 arc minute area. Larger telescopes are needed to bring out any detail in its outlying spiral arms.

Finally, we come to a rather brighter galaxy, NGC 2903. This is a wonderful spiral structure and at magnitude 8.9, it is easily visible with a small telescope. With dimensions of 12.6 x 6.6 arc minutes the galaxy is seen from a rather oblique angle, which contributes to its relatively high surface brightness. NGC 2903 is pretty easy to find, located as it is around 1 1/2 degrees below Leo's "chin" or "mouth" star, Lambda Leonis.


NGC 2903

NGC2903 location - under the "chin" of Leo. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Sitting at a distance of 20.5 million light years, it is still fairly easy to see the dust lanes and emission nebulae. NGC 2905 is a prominent bright area in NGC 2903. NGC 2903 is thought to be about 80% as large as our own Milky Way Galaxy. The similarities continue with NGC2905's spiral structure and noticeable central bar. Hubble images show that NGC 2903's globular clusters seem somewhat brighter and more prominent than our Milky Way's globulars would be if viewed at a similar distance. This suggests they and their parent galaxy may be somewhat younger than our own.

NGC 2903 also appears very efficient in terms of star formation - its notable ring of material around its core being particularly rich in new stars. It is thought that the central bar's tidal forces are compressing this material and this is the driving mechanism behind this formation.


NGC 2903 Galaxy
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NGC 2903 by Mark Blundell. Image reproduced by kind permission.

Original text: Kerin Smith