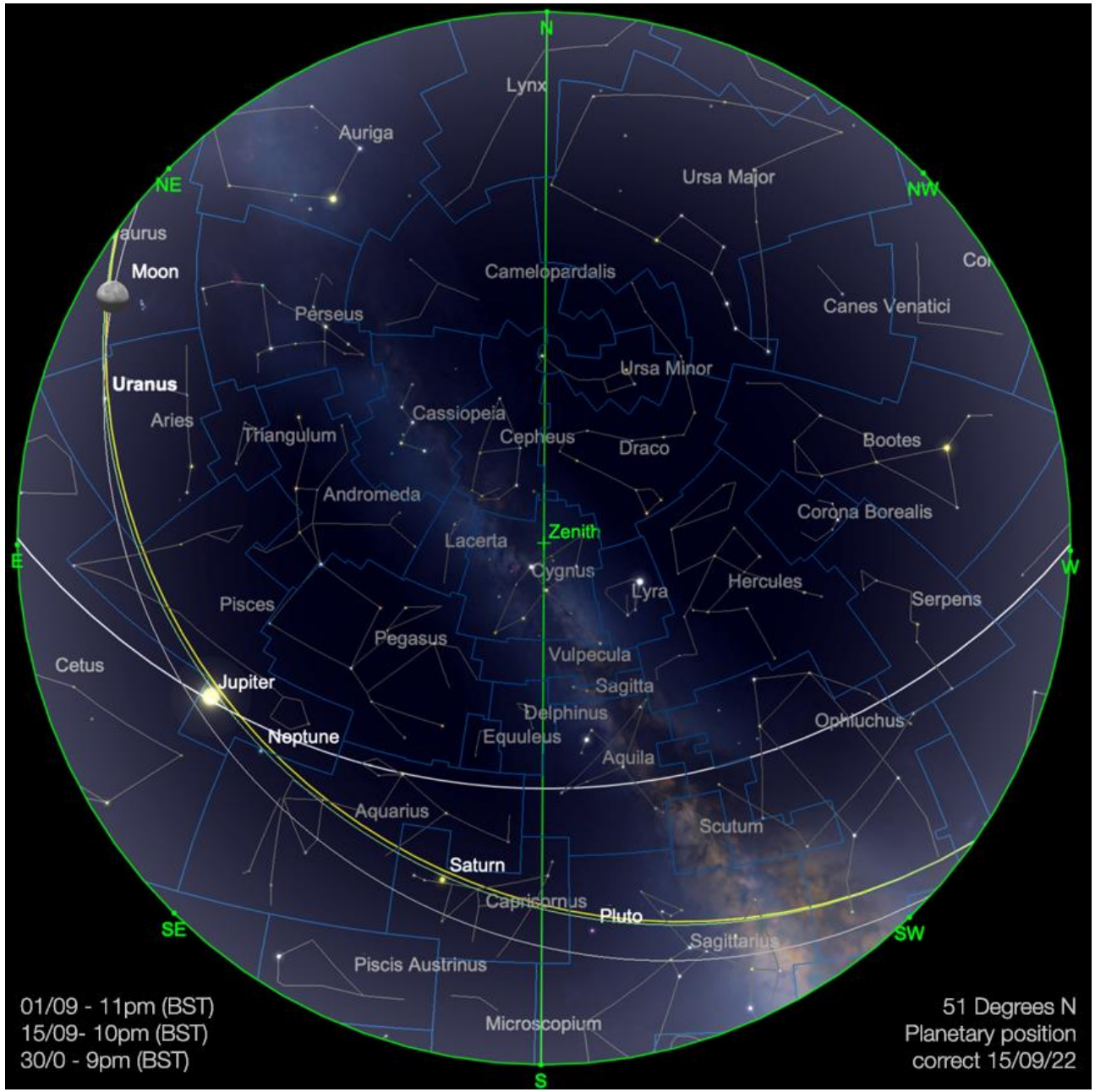
N
Lynx
Auriga
NE
Ursa Major
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aurus
Moon
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Canes Venatici
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Ursa Minor
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Aries
Cassiopeia
Triangulum
Cepheus
Draco
Bootes
Andromeda
Corona Borealis
Zenith
Lacerta
E
Cygnus
W
Lyra
Hercules
Serpens
Pisces
Pegasus
Vulpecula
Cetus
Jupiter
Sagitta
Delphinus
Ophiuchus
Neptune
Equuleus
Aquila
Aquarius
Scutum
Saturn
Capricornus
Pluto
SE
SW
Sagittarius
Piscis Austrinus
Microscopium
S
01/09 - 11pm (BST)
15/09- 10pm (BST)
30/0 - 9pm (BST)
51 Degrees N
Planetary position
correct 15/09/22

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

Telescope House September 2022 sky guide

September brings the Autumnal Equinox for the Northern Hemisphere and the Vernal, or Spring Equinox for this in the Southern Hemisphere. This year these events occur on 23rd of September, where for a brief period for day and night are of nearly equal length. The etymology of the word “Equinox” comes from the Latin “Equi” - equal and “Nox” - night. This equality of dark and light really depends on where you find yourself, as there are few places on Earth on the 23rd September where day and night are truly equal. However, crucially, the 23rd marks the point where the Sun crosses into the southern celestial hemisphere - which results in increasingly more hours of darkness than light for those of us in the Northern Hemisphere and of course increasingly less darkness for those in the Southern reaches of our planet. Many people for whom astronomy is of no more than at most a passing interest will bemoan the lack of daylight in the Northern Hemisphere - the same cannot (in all probability) be said of the many readers of this Sky Guide. For us astronomers in higher northern latitudes, the dive towards Winter does have its perks.

As ever, there's a lot to see in skies above us this month...

The Solar System

The Moon

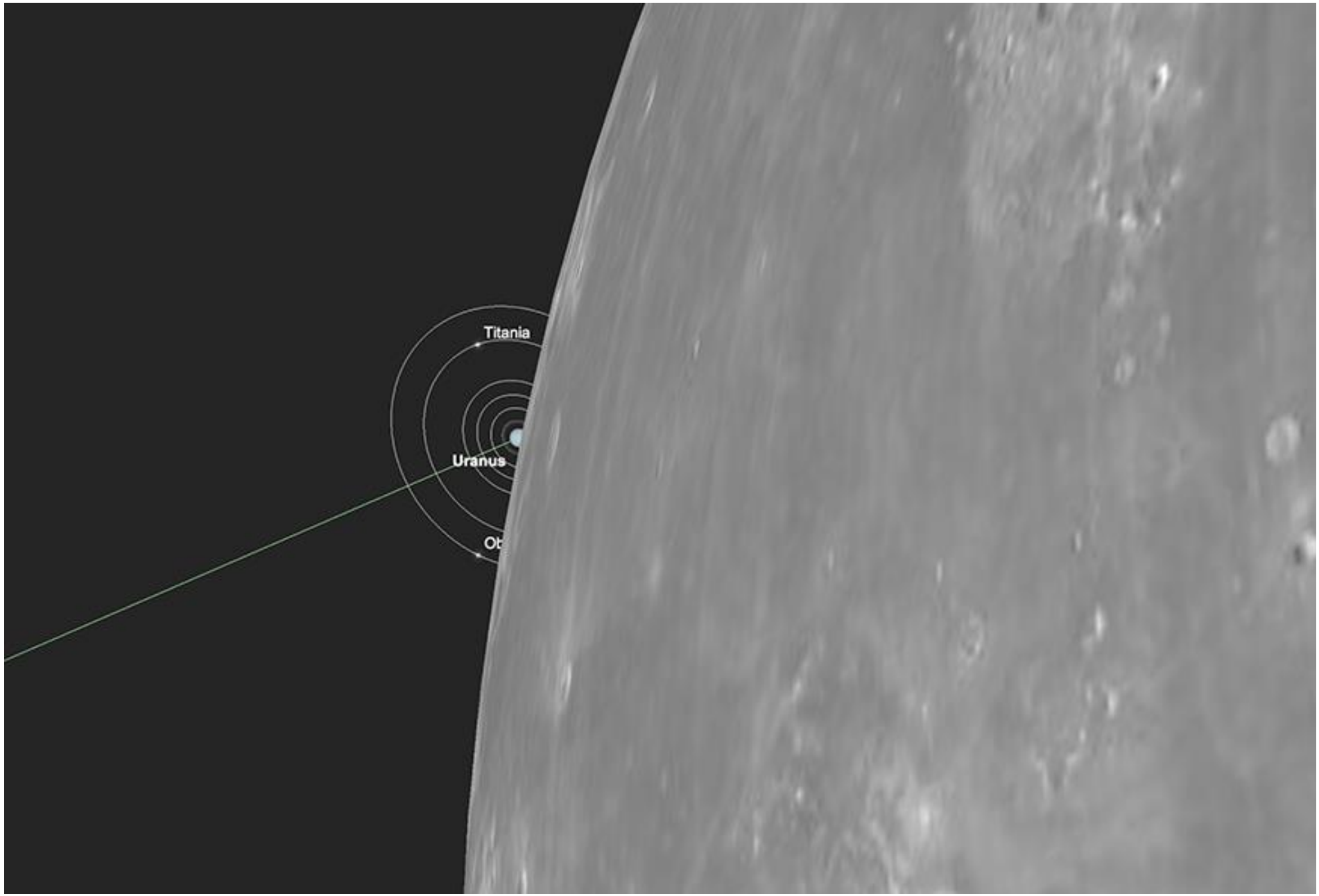
The Moon begins its monthly amble around the sky in the constellation of Libra. At 29% illuminated waxing crescent phase, the Moon rise little afternoon and transit around 5 pm, setting a just before 10 pm on the 1st.

At this time of the year the Moons new crescent phase occurs what is it is in the most southerly part of the Ecliptic. Subsequently, the Moon won’t appear to rise particularly high above the horizon, especially for those in higher northern latitudes.

The Moon comes to First Quarter phase on September 3rd, when it will be briefly resident of the constellation of Scorpius, sitting just above the prominent red star Antares, the heart of the scorpion, in the early evening. The Moon continues it swoop through the lowest part of the Ecliptic over the next few days passing through Ophiuchus, Sagittarius and only into Capricornus and then Aquarius, where it becomes Full on the evening of September 10th. On this evening, the Moon will rise at a little past 8 pm and transit at just before 1 am the following morning, setting at just after 6 am. Naturally, this part of the month will be an inopportune time for observing for deep sky targets, or imaging these with anything other than very severe filtration.

The Moon continues to climb up the northerly part of the Ecliptic through Pisces, Cetus, and then back into Pisces. On the evening of the 12th the Moon appears a little to the east of Jupiter, the two will making a prominent pair in the sky.

On the evening of the 14th, the Moon, now in the constellation of Aries, will occult the planet Uranus. This event will be a relatively short one, taking place just after Moonrise from Western Europe. The occultation will begin at a little after 10:25 pm (BST) and Uranus will emerge from behind the Moon at around 11:17 pm (again, BST). Occultations of Uranus are difficult to observe, due to the inherent faintness of the planet in comparison to the Moon's overarching brightness, but if you have reasonable size binoculars or a telescope, it may be interesting to see if you can detect it.


Titania
Uranus

The Moon occults Uranus, 10.27pm (BST) 14th September 2022. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

The next few days find the Moon drawing closer to the most northerly point in the Ecliptic, passing through the constellation of Taurus from the 15th to the 18th. On the evening of the 16th, a day before the Moon reaches Last Quarter, it will be found just to the north of the increasingly prominent Mars, in Taurus. This again should be a pretty spectacular sight for widefield observation, but you will have to be an early riser to see it at its best - the Moon and Mars transit at around 6:30 am (BST) on the morning of the 17th.

The next week or so find the Moon cresting over the top of the northern part of the Ecliptic and down its southerly side. This part of the year affords morning observers the chance to see the Moon in late waning crescent phase at a particularly high separation from the horizon. Similarly to Spring's "High Evening Crescent" phases, we are now entering into the period of the Moon's "High Morning Crescent" phases, as observed from the northern hemisphere. As the Moon moves through Gemini and Cancer over the next few days, we can observe its Waning illuminated phase in very sharp relief, at a significant elevation from the horizon. The combination of improved seeing conditions, due to the Moon's elevation and the dramatic illumination of the steadily decreasing crescent, will reward the early riser. This is arguably the best time of the year for northern hemisphere astronomers to observe our natural satellite's western limb.

The Moon, steadily diminishing in phase, will begin to dip down towards the Sun towards the latter part of the month, decreasing its apparent separation from our parent star, as it draws between the Earth and the Sun. On the morning of the 25th, the Moon will sit a little to the east of Venus as the Sun rises, though it will be illuminated by just 0.5% and to all intents and purposes be unobservable. New Moon technically occurs a little later in the day, as it draws closest to the Sun.

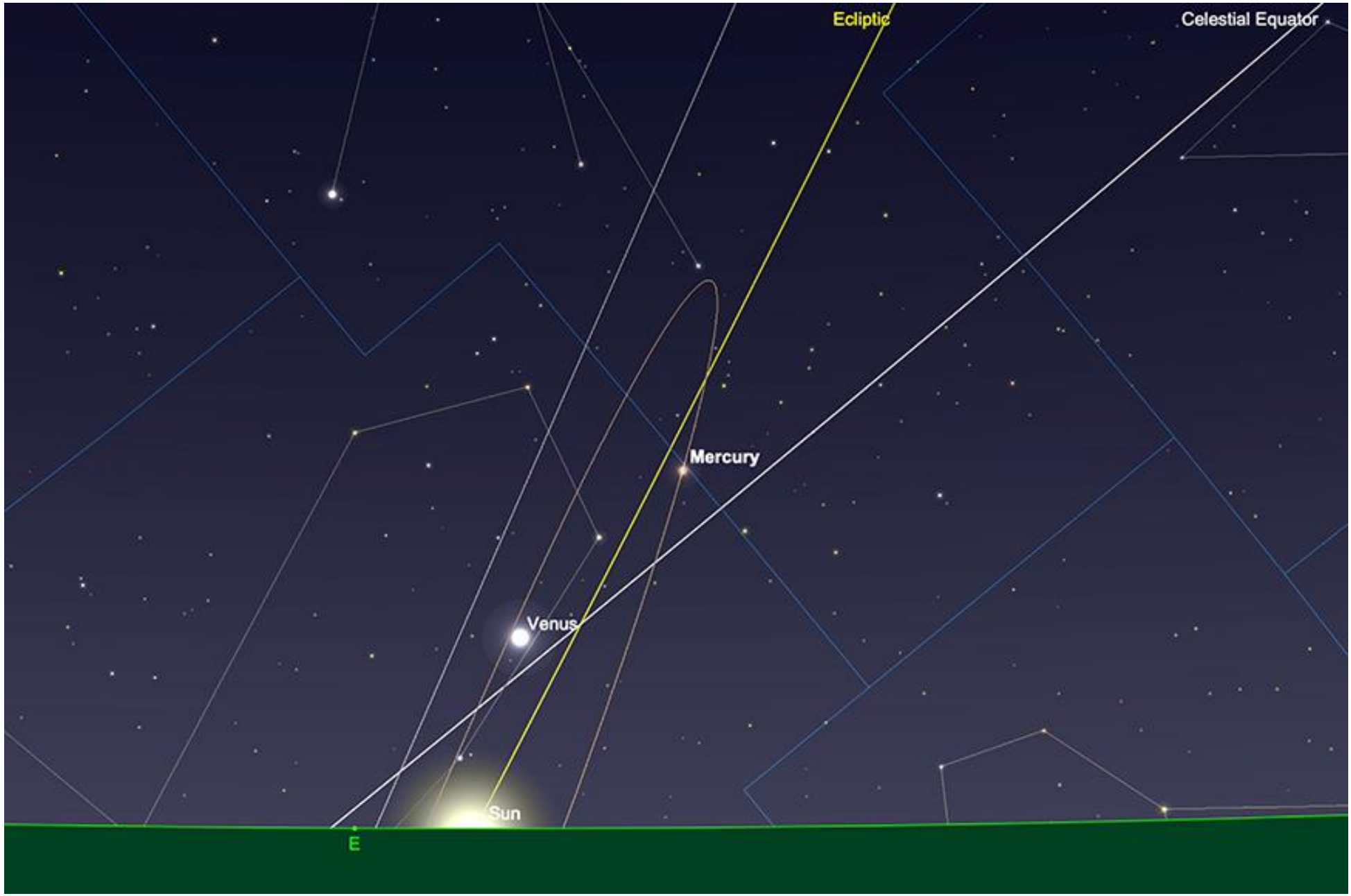
After New Moon occurs, the Moon will remerge on the evening side of the Sun, though will again sit fairly low to the horizon during its Waxing Evening Crescent phase. Moving through Virgo, into Libra and back into Scorpius, the month ends with the Moon again sitting very close to Alpha Scorpii, Antares, as the Sun sets on the 30th.

Mercury

Sitting in Virgo, to the east of the Sun in the evening sky, Mercury is a steady, if rather unspectacular +0.4 magnitude, presenting a 7.9 arc second, 45% illuminated disc, on the evening of the 1st. As the planet is sitting in a rather shallowly-setting part of the sky, it will not appear very high above the horizon at all for those in higher northern latitudes. From 51° north, Mercury appears to sit just three and three-quarter degrees above the horizon at sunset. This means it will be very difficult to observe, even for those with clear westerly horizons. Mercury is also sinking in a southerly direction, towards the Sun - and this will compound the difficulty of observation as the next few days continue. Those in more southerly parts of the world, particularly around the equator, will be able to observe Mercury with much more ease.

By mid-month, Mercury will have sunk below the Sun from mid-northern latitude and will be impossible to observe from these areas.

Mercury's Inferior Conjunction will take place on the 23rd of September, when it will be found in between the Earth and the Sun. It will then re-emerge as a morning target, but will take some time to gain reasonable elevation and become observable. However, by the end of the month Mercury is in a better position for observation in the morning sky, sitting at an elevation of over 8° (as observed from 51° north), displaying a magnitude of +1.7. Mercury will continue to improve in both brightness and elevation above the horizon into the early part of October, which will represent one of the best morning apparitions of the planet this year.


Ecliptic
Celestial Equator
Mercury
Venus
Sun
E

Mercury and Venus, sunrise, 30th September 2022. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

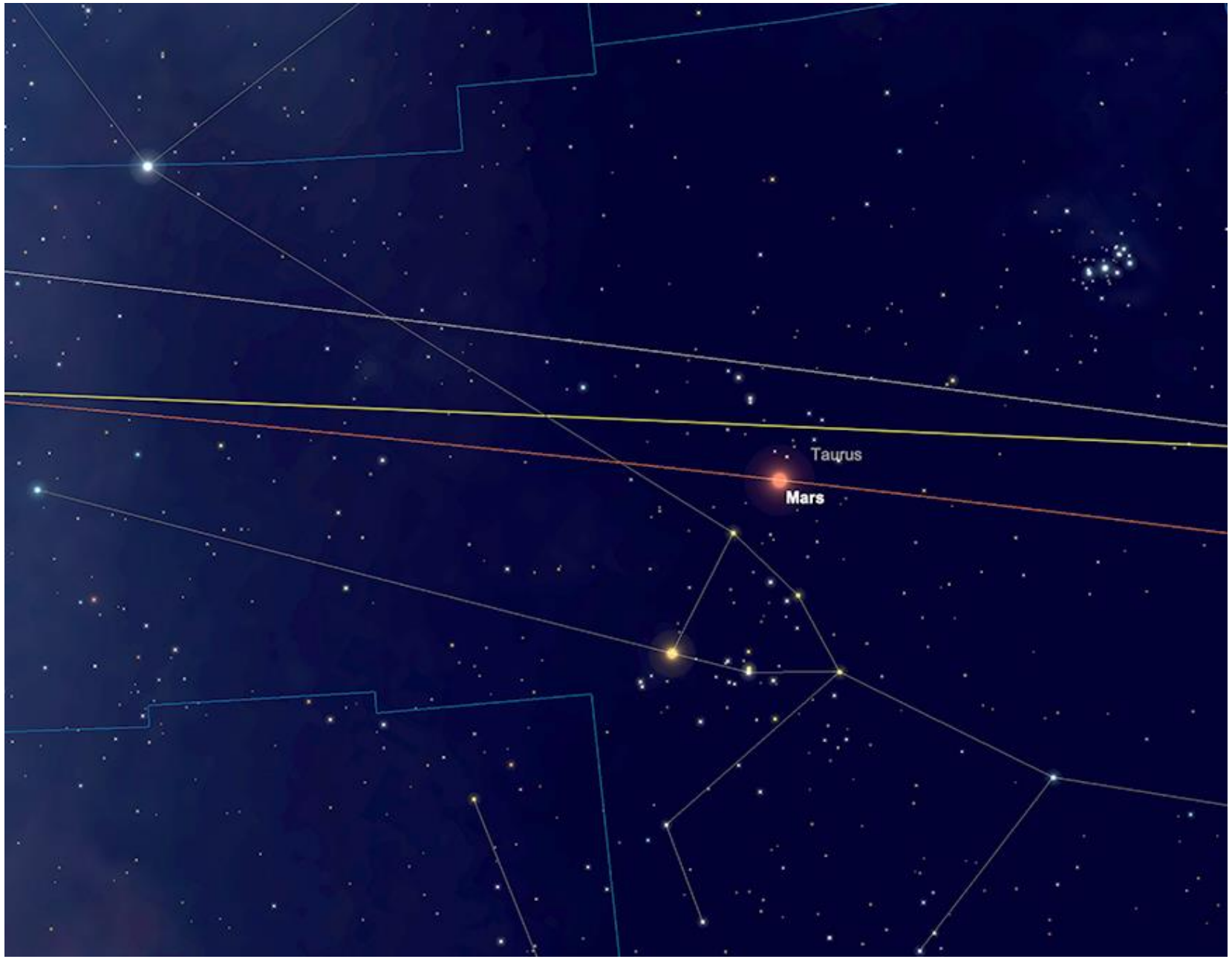
Venus

Venus is most definitely a morning target at this time. We begin the month with the planet situated in the constellation of Leo, separated from the Sun bye just under 14°. At -3.9 magnitude, Venus will – as ever - be extremely easy to observe, as long as you have a clear easterly horizon. The morning of the 1st finds the planet standing at a little over 11 1/2° elevation (from 51° north), at sunrise.

Venus is steadily drawing towards the Sun and Superior Conjunction, which it will reach in late October. As the month progresses, not much changes in terms of Venus's brightness, but its separation from the Sun diminishes considerably. By the 15th, Venus will stand just over 8 1/2° above the horizon at sunrise. By the time we reach the end of the month, on the morning of the 30th, Venus will be separated from our parent star by just over 6° - and will sit just over 5° elevation at sunrise (again, from 51° north). The trend is definitely decline, as far as Venus is concerned, so catch the planet as early in the month as you can.

Mars

Where Venus is in decline, Mars is exactly the opposite. We are now at the beginning of September - a little over three months from Martian opposition at the beginning of December 2022. The 1st find Mars sitting in between the Pleiades and Hyades star clusters in Taurus, at -0.1 magnitude, displaying a disc which is illuminated by 85% and just under 10 arc seconds diameter. As suggested in last month's sky guide, it will be interesting to compare Mars with the nearby Aldebaran, Alpha Tauri, as the two are quite similar in colour and also very similar in brightness at this point in time.


Taurus
Mars

Mars in Taurus, in between the Hyades and Pleiades star clusters, 1st September 2022. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Turning your telescope towards Mars at this time will start to become quite a rewarding experience. Although Mars is still relatively small in size, it should be possible to observe darker continental-sized features and the south pole of the planet, if conditions are kind. Coloured filters can also be used to isolate certain features.

By the middle of the month, Mars has tracked a little further east in the Ecliptic and more now sits to the east of the Hyades star cluster. By this point it has brightened to -0.3 magnitude and now displays a disc just under 11 arc seconds diameter.

By the end of the month, Mars will have brightened yet further to -0.6 magnitude and on the evening of the 30th, will display a disc just under 12 seconds in diameter, illuminated by 87.5%. Although the Red Planet has still some way to go before reaching its best and is also most definitely a better early morning target, those who are prepared to rise early enough will start to be rewarded by quite an impressive sight in larger telescopes, by September's end.

Jupiter

The King of the Planets, Jupiter, reaches its brightest and closest point to Earth - and comes to Opposition on September 26th.

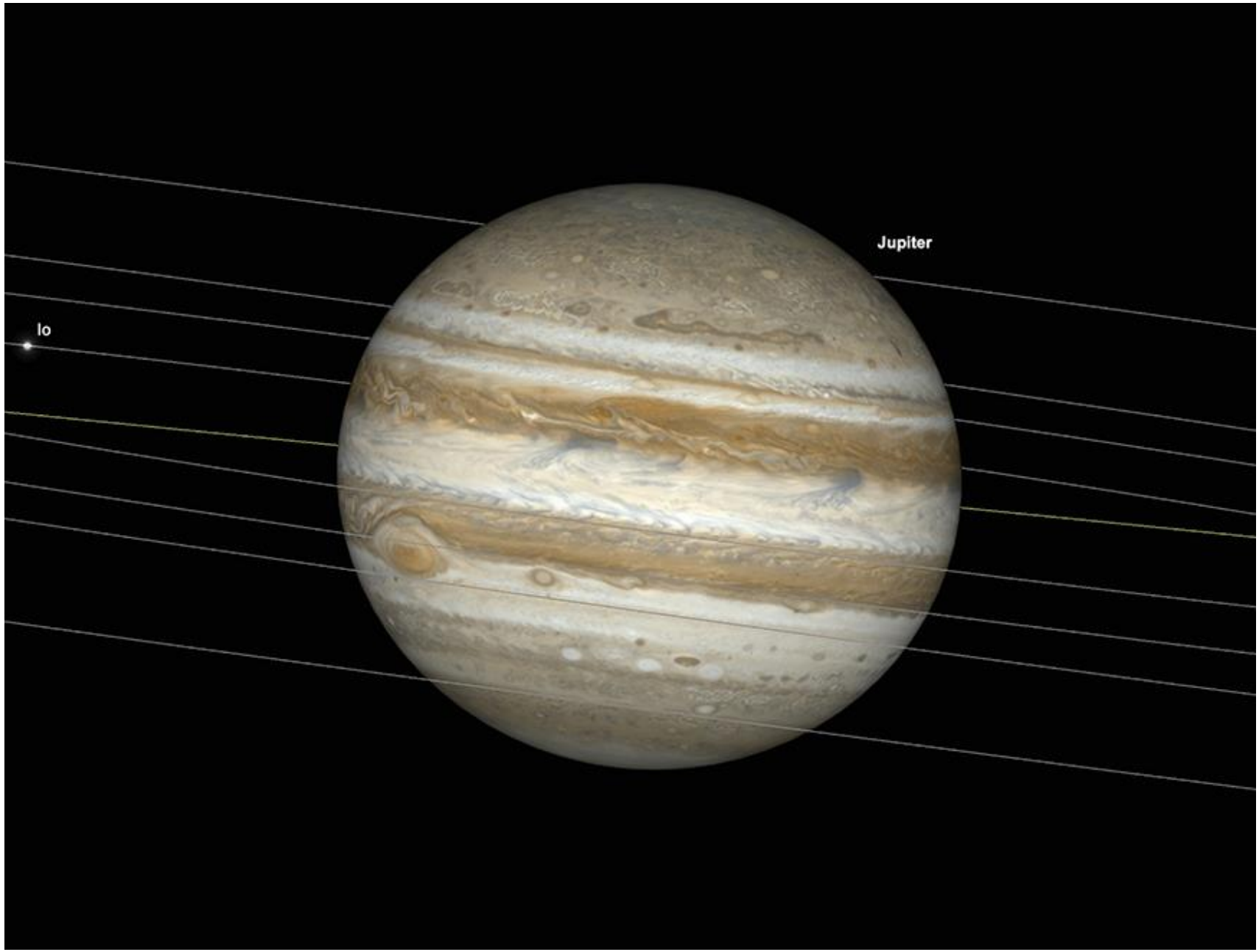
We find Jupiter in the non-zodiacal constellation of Cetus on the evening of the 1st, shining at a brilliant -2.9 magnitude, displaying a 48.7 arc second diameter disc.

By mid month, Jupiter will be the same brightness, though has tracked back in a retrograde direction in the Ecliptic, into the constellation of Pisces and is now displaying a 49.64 arc second diameter disc.

Opposition night finds Jupiter at fractionally below -2.93 magnitude, displaying a 49.9 arc diameter disk - this is not far below the maximum possible 50.1 arc seconds diameter it can reach from our perspective here on Earth. Indeed, this Opposition of Jupiter will be the largest apparent diameter (and brightness) that the planet reaches this decade. It won't be this big or as brilliant until 2034 - though next

year’s showing will be nearly as big as this year’s. Jupiter can never quite hit the -3.0 magnitude range, as observed from our planet. It can peak at -2.94 magnitude - so we’re not too far off maximum here. We also have the added bonus of Jupiter sitting significantly higher in the sky than it has in recent years, as seen from a northern hemisphere perspective, with the considerable improvement in seeing conditions that this brings. All-in-all, this Opposition promises much - as long as the weather delivers.

The planet will rise at just after 7 pm (BST) on Opposition night and transit add a little after 1 am the following morning, setting at a little after 7 am.


Jupiter
Io

Jupiter, with great Red Spot transit, 11.30pm, Opposition evening, 26th September. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

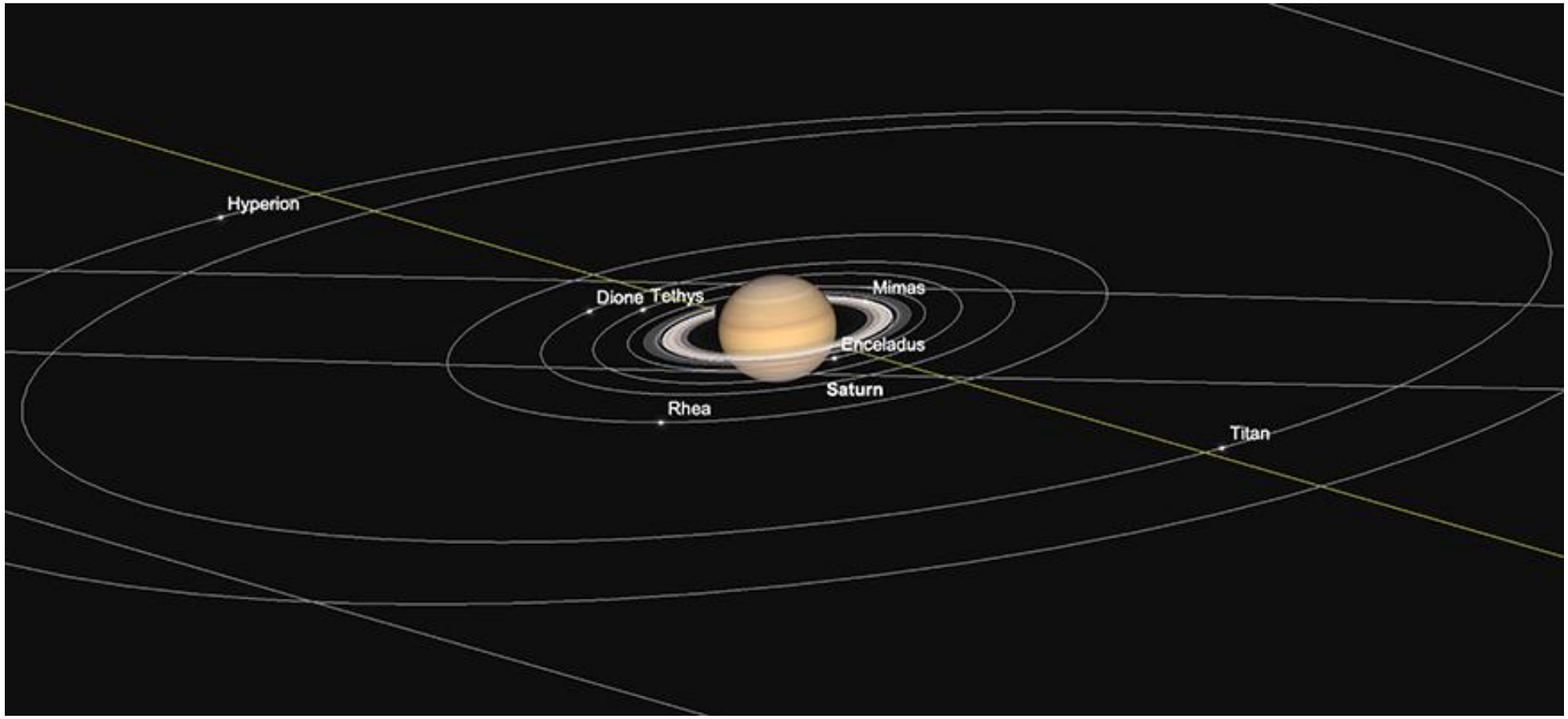
There are a few mutual transit events to look forward to for those with telescopes to observe. At around midnight on September 3rd, there's a nice mutual transit of the Great Red Spot and Io. At just after midnight on September 10th there's another GRS/Io/Io shadow transit to observe. At just after 9 pm on September 17th there's a favourable GRS/Europa transit. This is followed by a similar event starting at around 10 pm on September 24th.

Jupiter ends September still a resident of Pisces and still shining at -2.9 magnitude. The planet now displays 49.8 arc second diameter disk.

Saturn

Saturn is just past Opposition itself, which occurred on the 14th of August. As such, it is still very favourably situated for observation, rising just before 7:30 pm (BST) and transiting at a little after midnight on the 1st. The Ringed Planet shows a visual magnitude of +0.3 and apparent size of 18.7 arc seconds diameter at the month's beginning.

As September progresses, not a huge amount changes as far as Saturn is concerned. The evening of the 15th finds the planets +0.4 magnitude and now displaying an 18.5 second diameter disc. It will rise at a little before 6:30 pm and transits just after 11 pm.



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

By the end of the month September, Saturn will have dimmed fractionally 2+0.5 magnitude but still displays a healthy 18.1 arc second diameter disc. At this point, it will rise at a little before 5:30 (BST) and transit at just after 10 pm. Reaching an altitude of around 23° at its highest point, from 51° north, Saturn is still not ideally placed for those in higher northern latitudes to observe telescopically. But it is such a lovely target that even if seeing conditions are not great, it's still very rewarding to observe. As Saturn never reaches the dizzy heights of

Venus, Jupiter and Mars at their brightest, it is argued by some observers that less-than-ideal seeing conditions affect the observation of Saturn more kindly than they do brighter targets. While this is probably down to visual perception of atmospherically-induced errors being somewhat more difficult for fainter targets, than they are for brighter ones, it's well worth testing your personal perception of this on Saturn, if you have your own telescope to observe with.

Uranus and Neptune

As previously reported, probably the highlight of observational opportunities as far as the outer gas giants go this month is the Moons occultation of Uranus. However, it is not only Jupiter that comes to Opposition this month, but also Neptune which reaches closest point to Earth on the evening of 16th September.

Neptune is not far from Jupiter in the sky, sitting as it does on the border between Aquarius and Pisces. As September progresses, Jupiter begins to draw closer to Neptune, providing a useful pointer for the rough location of the outer planet in the sky.

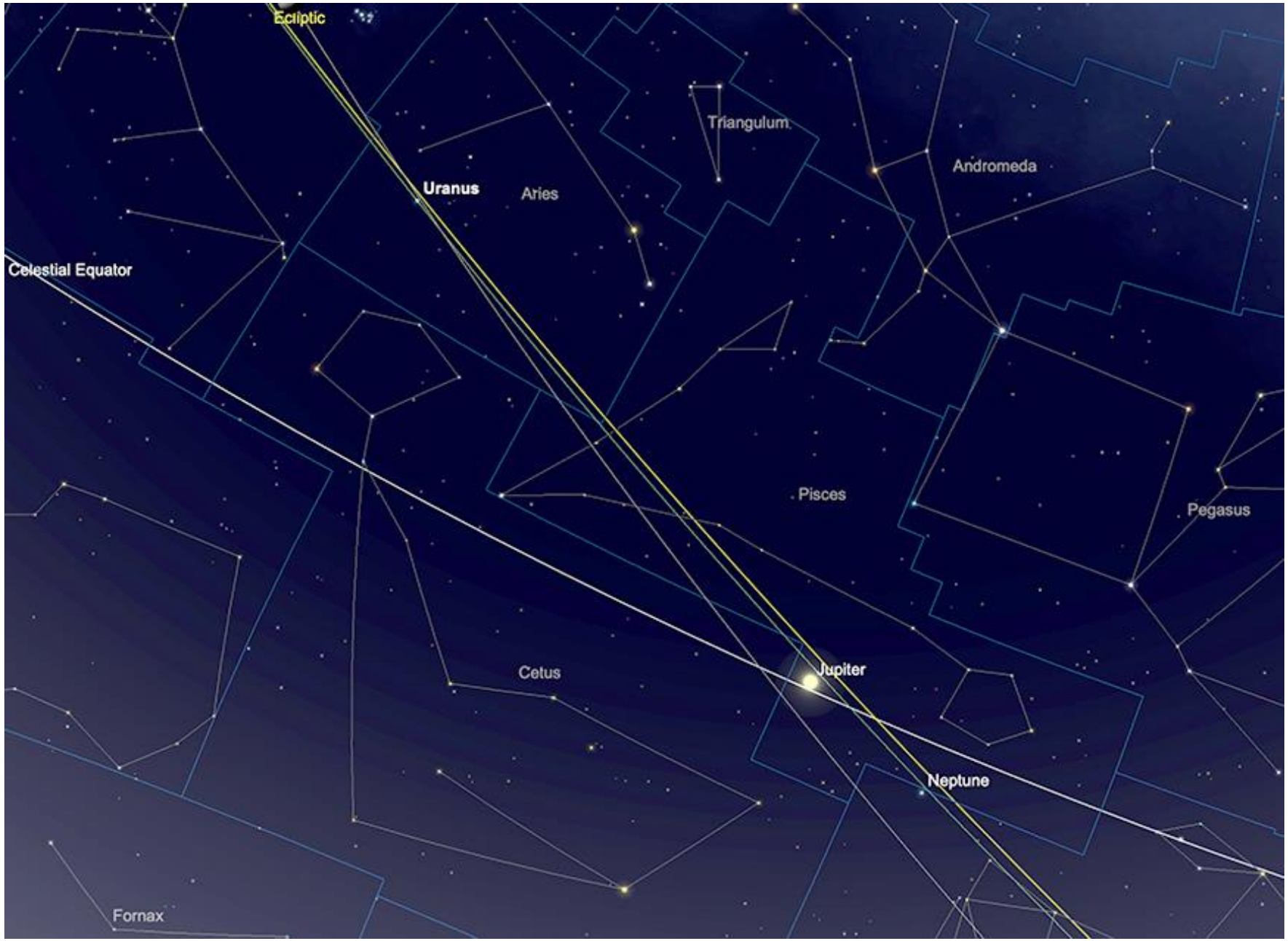
Unlike the brighter Uranus, Neptune can never be seen by the naked eye, reaching +7.8 magnitude on the evening of opposition. The planet displays a 2.4 arc second diameter disc, which is within reach of binoculars and smaller telescopes, if your observing area is fairly free from light pollution.

As seen in a telescope at fairly decent magnification, Neptune appears a vibrant blue in colour, which is generally remarked to be more prominent than Uranus's green-grey hue. In truth, while Opposition is the best time to observe any of the outer planets, in the case of Uranus and definitely Neptune, they are so far removed from our position here in the warmth of the inner solar system, that brightness and apparent size vary very little in regards to wherever they are observed on our orbit around the Sun. Even at its furthest observable position from Earth, Neptune only appears 0.2 magnitudes fainter than it does at the height of Opposition. Still, around this time presents the best observational opportunities for study of the solar system's outmost "true" planet.

Neptune will rise at just before 7:30 pm, transiting a little before 1:15 am (BST) on Opposition night.

Uranus is further east in the Ecliptic, in the constellation of Aries. At +5.7 magnitude, displaying a 3.7 arc second diameter disc, technically it is in the reach of naked eye observation under ideal conditions. However, in practice, binoculars are very often needed in order to make positive identification of the planet at all.

Rising at a little after 9 pm and transiting at just after 4:30 am the following morning, during mid-Month, Uranus is most definitely better-seen in the early morning sky. It will come to Opposition in November 2022.


Ecliptic
Triangulum
Andromeda
Uranus
Aries
Celestial Equator
Pisces
Pegasus
Cetus
Jupiter
Neptune
Fornax

Uranus and Neptune's relative positions, mid-September 2022. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Comets

Comet C/2017 K2 (panSTARRS) has put on a very reasonable display in the early evening sky over the past couple of months. The beginning of September find the comet in the head of Scorpius and while it will be technically possible to observe it a little after sunset, in truth, those of us in the northern hemisphere are, close to losing the opportunity to observe it at all. The comet is heading in a very southerly direction and this will make observation impossible beyond the very beginning of September, for those in higher northern latitudes. Those in the southern hemisphere, however, will be able to observe the comet for a much longer period of time - into 2023. It is expected to stay around the 8th magnitude for some time, which will make it a relatively easy target in small telescopes or larger binoculars.


2022 Aug 02
2022 Aug 16
Libra
Moon
2022 Aug 30
C/2017 K2 (PANSTARRS)
2022 Sep 13
2022 Sep 27
Scorpius
2022 Oct 11
S

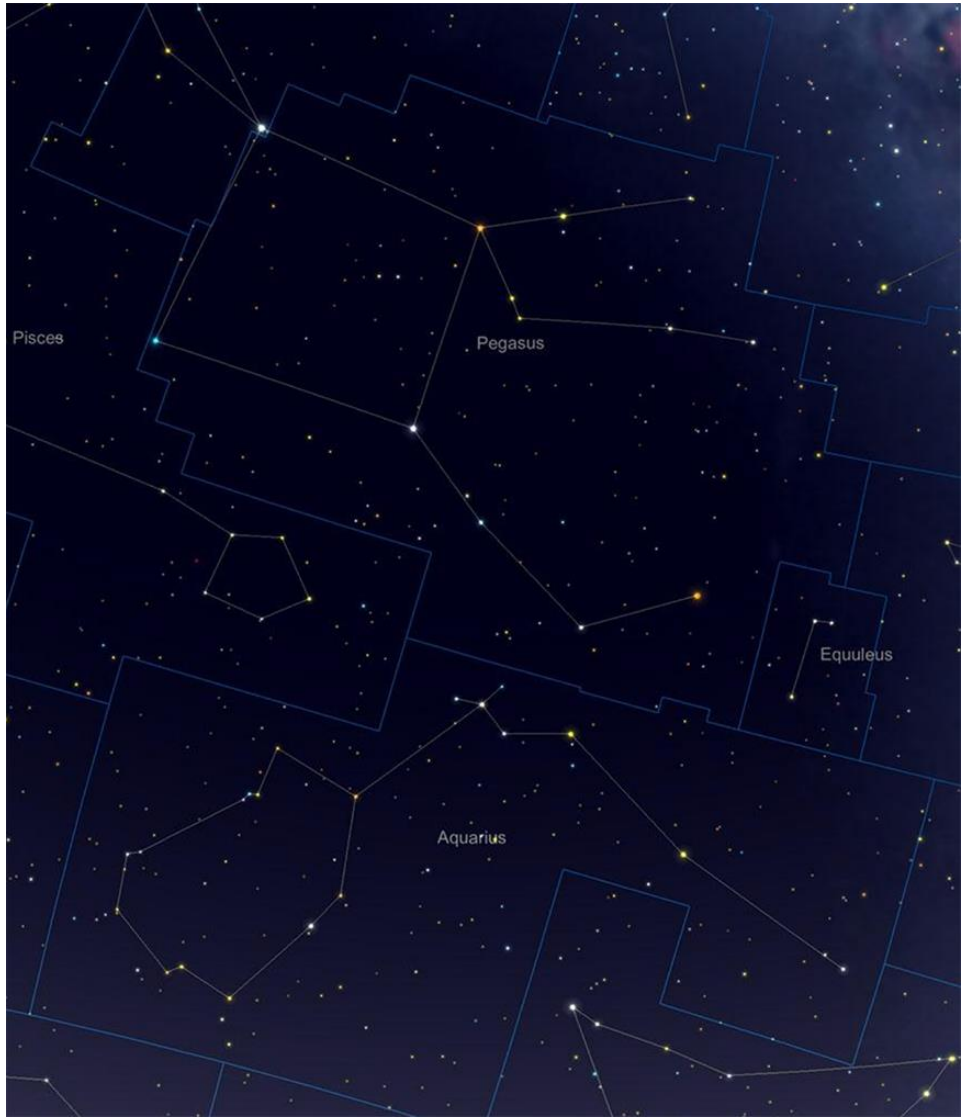
Comet C/2017 K2 (panSTARRS) path through September (comet position shown 1st Septemeber). Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

It has been reported from a couple of sources that the relatively recently-discovered comet C/2022 E3 (ZTF) shows signs of potentially becoming reasonably bright. It could become as bright as magnitude +4 in late January/early February of next year. However, as we have often pointed out potential is one thing - actuality is another, certainly as far as comets are concerned. At time of writing, the comet is a resident of Hercules, at around 13th magnitude. Come the end of January and beginning of February, C/2022 E3 (ZTF) will be circumpolar in the northern hemisphere and rocketing through the polar regions at quite a speed - an impressive 6° plus a day when during closest approach to Earth. It will pass us at a respectable 0.28 AU at nearest. Certainly one to look out for, though as ever, there's no guarantees of a decent display.

Meteors

There are no major meteor showers during September. Observers out in reasonable locations in the early part of the month, may see the absolute tail end of the Perseid meteor shower, which can last until the early part of August/beginning of September. However, when you are out of particularly dark location, there is always a good chance of seeing a sporadic meteor, which can come from any direction in the sky and not be associated with any particular shower.

Deep Sky Delights in Pegasus and Aquarius



Pegasus and Aquarius. Image created with SkySafari for Mac OS X, ©2010-2012 by Southern Stars, www.southernstars.com.

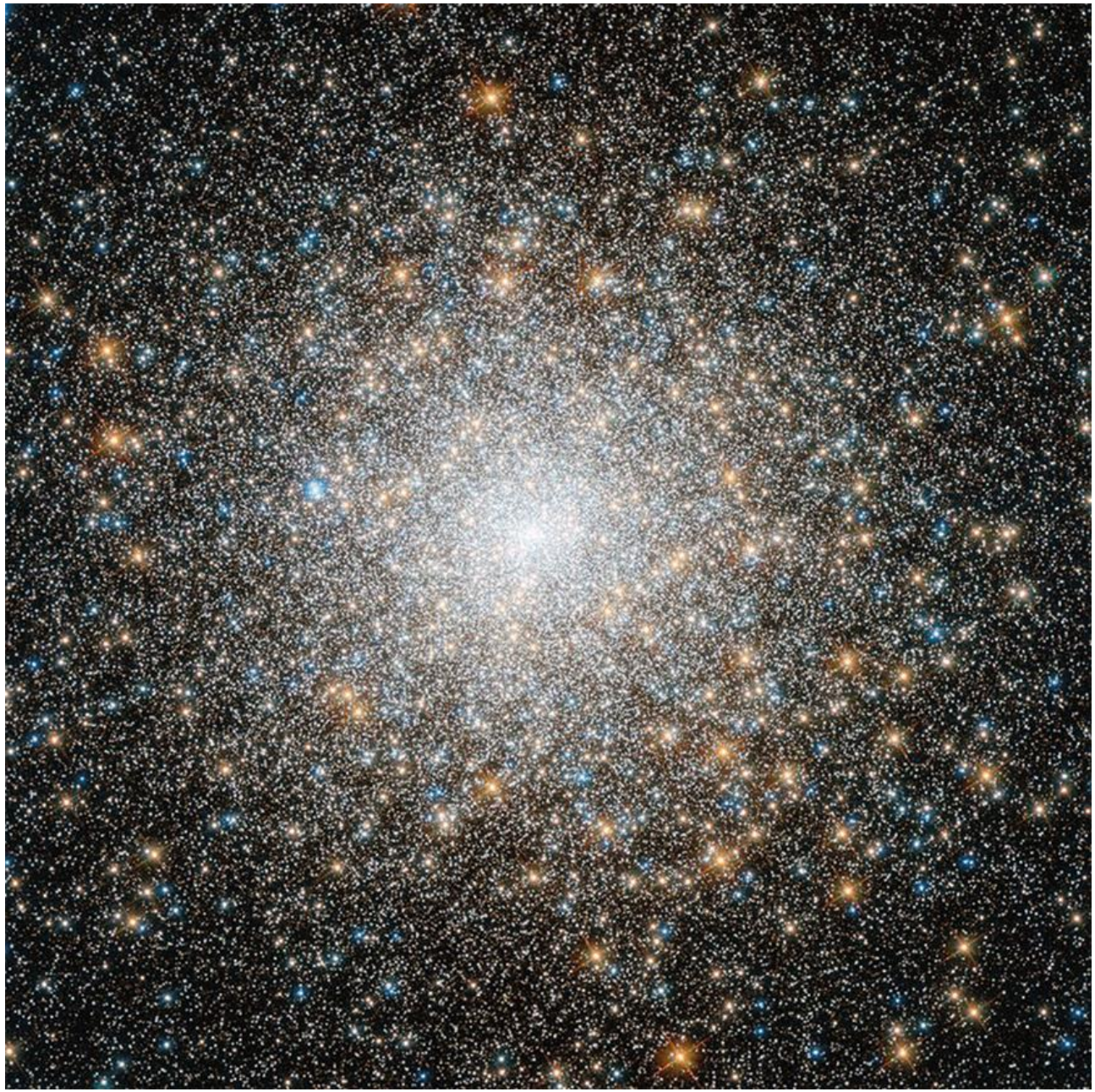
The arrival of Pegasus and Aquarius in the evening skies are a sure sign of the approach of Autumn. These two fairly large constellations share a border and are home to some easy - and not-so-easy - deep sky targets.

Though lacking in major nebulae, Pegasus is a haven for galaxies - maybe not quite to the extent of the Virgo and Leo regions - but has many extra-galactic targets worth attention.

The most famous feature of Pegasus is readily observable without a telescope - this is, of course, the famous Square of Pegasus. Consisting of the stars Alpheratz (Arabic for “the navel”), Scheat (”the leg”), Algenib (”the flank”), Markab (”the saddle”), the Square of Pegasus dominates this area of sky and can be used as a useful “jumping off” guide for starhopping. However, the Square of Pegasus is not solely “of Pegasus”, as Alpheratz is actually now officially a part of neighbouring Andromeda. This is a similar situation to Elnath (Beta Tauri) which is officially now part of Taurus, but has been shared as Gamma Aurigae with neighbouring Auriga. These constellations are rare as they are still shown on modern star charts as connected via their “shared” star.

A third of the way along the line between the lower stars of the Square, Markab and Algenib, lies an object not visible to the naked eye at all. This is the notable (if unspectacular) Pegasus Dwarf Galaxy, This is an associated galaxy with the nearby M31, the Andromeda Spiral and as such a neighbour of our own Milky Way. It’s a rather faint object at +13.2 mag and spread out over a reasonable area of sky, so is only really detectable in long duration photos. Dwarf galaxies are often (though not always) older, more primitive than galaxies such as our own. However, whilst they are not brilliant in the conventional visual sense, dwarf galaxies such as the Pegasus Dwarf are havens for Dark Matter. The Pegasus Dwarf lies 3 million light years away from the Milky Way and is tidally interactive with M31.

Much more easily-observed and better-known is an object on the other side of Pegasus: the great globular cluster, M15. Found 4 degrees north-east of the star Enif (Arabic for “nose”), or Epsilon Pegasi, M15 is a glorious object in any telescope or binoculars and at +6.2 mag can be seen as a naked eye object from a reasonable site. This globular was discovered by Maraldi in September 1746 and catalogued 18 years later by Messier in 1764. Located about 33600 light years away, M15 contains around 100,000 stars. As a well-known object, it has been studied exhaustively and found to contain the first extra-galactic planetary nebula discovered: Pease 1, first identified in 1928. In addition to Pease 1, M15 has a pair of co-orbiting neutron stars, 8 pulsars and two strong X-ray sources. It has been postulated that one of these sources is in fact a Black Hole, to which has been attributed M15’s relatively recent core collapse. Globular clusters are both beautiful and intriguing objects and M15 is almost certain to contain more as-yet-undiscovered features.

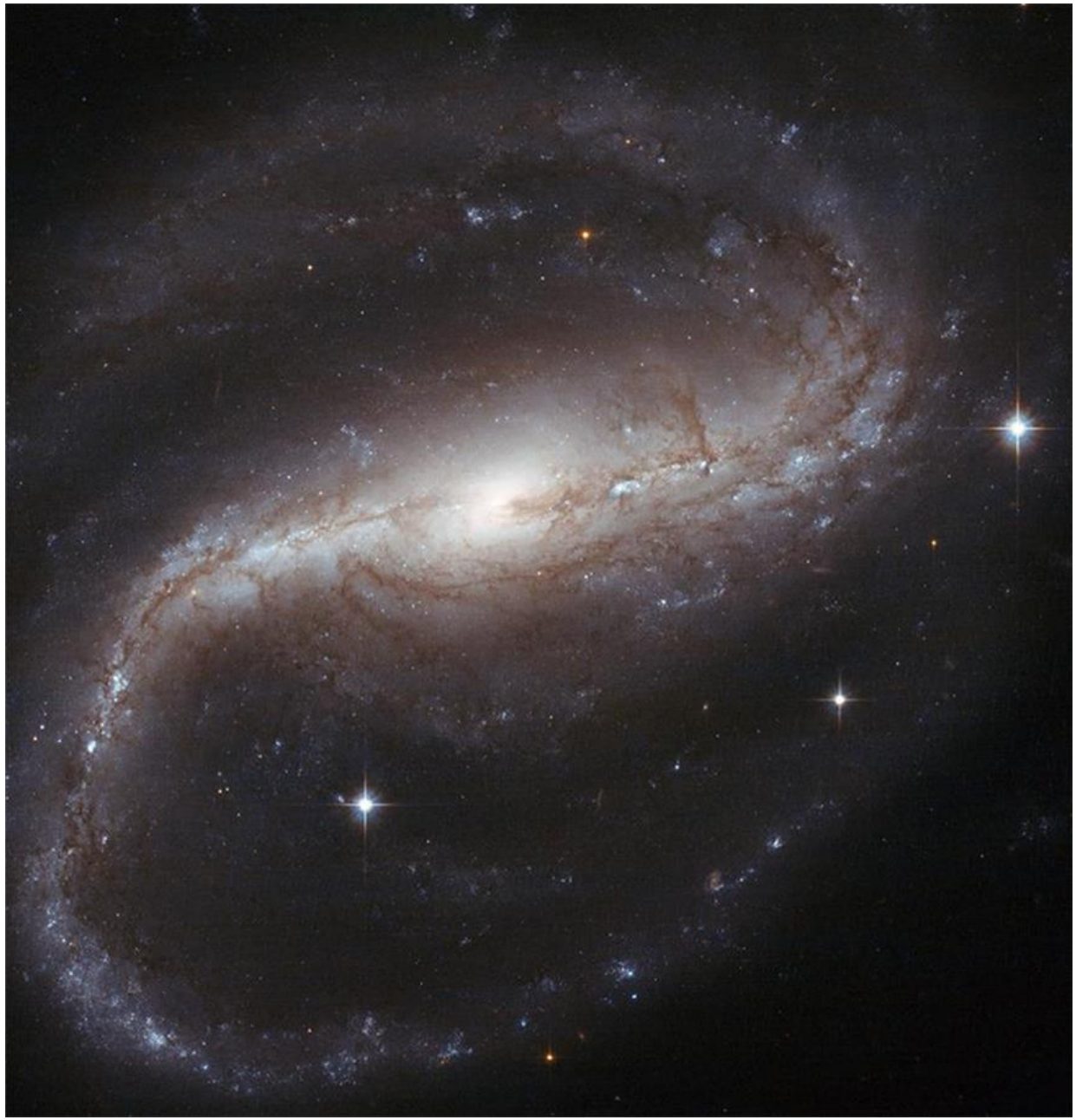


M15, pictured by the Hubble Space Telescope (showing Pease 1, upper left centre). Image Credit: NASA/ESA, Public Domain.

Back inside the Square of Pegasus lies the lovely NGC7814 - the “Little Sombrero” (so called because it resembles the Sombrero Galaxy, M104, in Virgo). NGC7814 is a Spiral, presented edge-on to our line of sight. This reveals a dark dust lane bisecting a bright core. At +10.6 mag this galaxy isn’t overly bright, but due to its compact nature, is still well-seen in small telescopes. NGC7814 is easily found due to its proximity to Algenib.

NGC7814. Image Credit: Hunter Wilson, Creative Commons.

Another galaxy near to a member of The Square is NGC7479, which lies just under 3 degrees south of Markab. This is one of the most photogenic Barred Spirals in the sky, lying almost face on to us. It was discovered in 1784 by William Herschel and is just slightly fainter than 7814 at +10.9 mag. NGC7479 is a very active galaxy - a so-called Seifert Type, in which enormous amounts of star formation are taking place. The serpentine structure of NGC7479 is beautifully depicted in long-duration photos - it almost seems to be slithering like a Sidewinder through space!



NGC7479, pictured by the Hubble Space Telescope. Image Credit: NASA/ESA, Public Domain.

Further north are a fascinating collection of galaxies: the NGC7331 group and Stephan's Quintet. These two groups of galaxies are separated by just half a degree of sky and can be found north of Matar (Eta Pegasi). Of the two groups, the NGC7331 group are the more conspicuous and their principle member was discovered first - by William Herschel - in 1784. This principle galaxy, NGC7331, was thought to be a very similar size, mass and taxonomy to our own Milky Way: a tightly-barred spiral. However, most up-to-date surveys of the Milky Way suggest that it may only have two massive spiral arms, whereas NGC7331 has more (NGC6744 in Pavo is now seen to be the nearest Milky Way analogue). Behind NGC7331 lie NGCs 7340, 7336, 7335, 7327 and 7338 - some of which can be seen with averted vision in reasonable-size telescopes. NGC7331 at +9.5 mag is by far and away the most prominent of the group and can be seen in smaller scopes. The whole group is a great target for astrophotography as regular contributor Mark Blundell's picture below clearly shows.


NGC 7331 Galaxy
and Stephan's Quintet
Const: Pegasus
By Mark Blundell
2nd October 2015

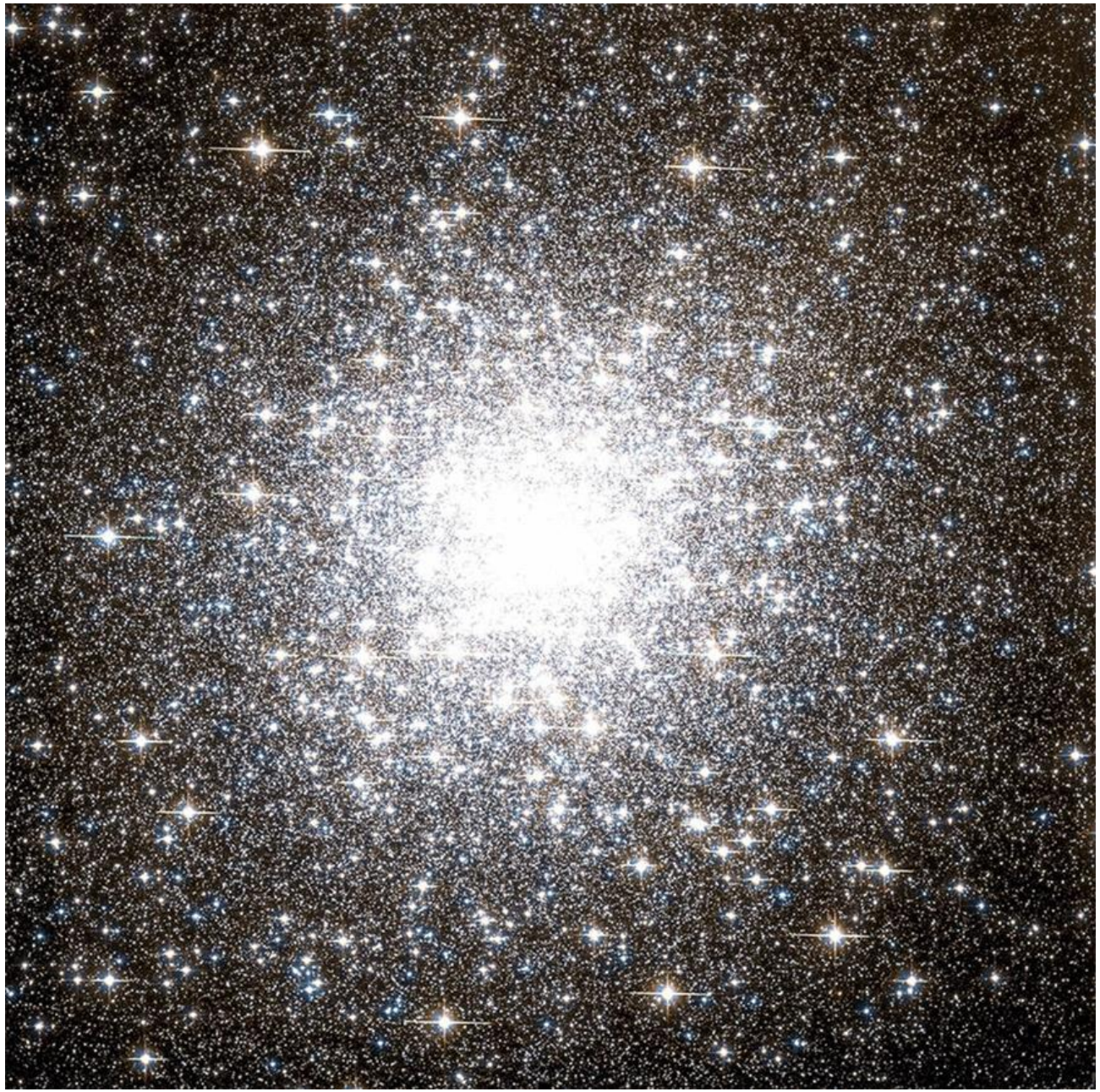
NGC7331 and Stephan's Quintet. Image Credit: Mark Blundell.

The second of these two galaxy groups is the famous Stephan’s Quintet. Discovered in 1877 at Marseilles Observatory by Eduoard Stephan, the Quintet consists of NGCs 7317, 7318, 7318A, 7318B, 7319 and 7320 (this is technically a Sextet as 7318A and B are separate galaxial cores). Stephan’s Quintet occupies a tiny area of 3.5 ‘x 3.5 ’of sky and is an area of both enormous destruction, as the component galaxies literally rip each other apart and massive areas of creation where the resulting gas-rich loops of material released by these dynamics leads to starbirth.

The interior of Stephan's Quintet, pictured by the Hubble Space Telescope. Image Credit: NASA/ESA, Public Domain.

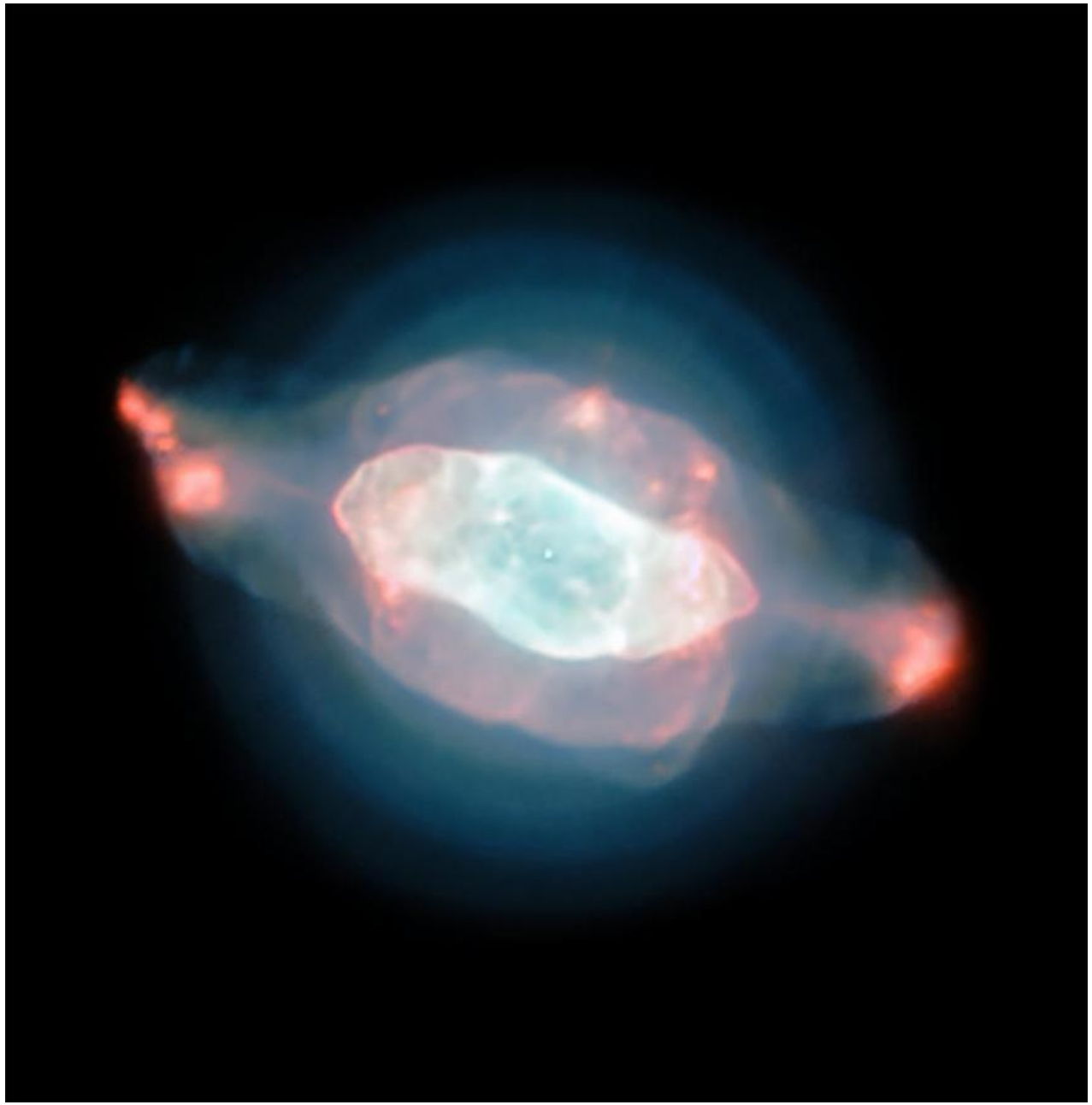
Of the components of the Quintet, NGC7320 appears to be an unrelated foreground object - much closer to us at 39 million light years distance as opposed to the 210-350 million light years of the other members.

Moving south into the Zodiacal constellation of Aquarius, the Water Carrier, we are presented with a large, but quite a barren area of sky. Although Aquarius is rather muted in terms of brighter stars, it is a haven for deep sky objects. The most northerly of these is the very fine globular cluster M2. At +6.46 mag, it is amongst the brighter of these interesting objects, lying 37,500 light years away from us and about 175 light years in diameter. From Earth, it appears 2.1 arc minutes in diameter, M2 is about the same relative size and brightness of the neighbouring M15 and the second of Hercules ’well-known globulars, M92. Discovered by Comet Hunter Jean-Dominique Maraldi in 1746, it languished in relative obscurity until Messier added it to his list in 1760, describing it as a “Nebula without stars”. Modern instruments show it as most definitely “with stars”, indeed there are several beautiful star chains visible through telescopes, as well as some deep, dark lanes and patches, adding to the “three-dimensionality” of the object, particularly in larger telescopes. There are quite a mix of older orange and newer blue stars within M2, making it a particularly pretty telescopic sight.



M2, pictured by the Hubble Space Telescope. Image Credit: NASA/ESA, Public Domain.

Moving SW from M2, we arrive at three objects in quick succession: NGC 7009, The Saturn Nebula, the asterism M73 and another globular, M72. The Saturn Nebula is a fascination Planetary Nebula, well worth seeking out in any telescope, as it is reasonably bright, at +7.8 mag, yet compact at 0.5 arc minutes across. Telescopes of 6-8-inch aperture will be needed in order to see the two extended lobes that give the object its popular name. Lord Rosse, observing NGC 7009 in 1850, described two lobes or projections sitting either side of the nebula, making it appear very similar to Saturn, when its rings are edge on to us. Although the object has a distinctly un-Saturn-like green-blue hue, which is most easily seen in long duration photographs. The Saturn Nebula, in common with some other Planetaries - including the Blinking Planetary - can appear to blink on and o when looking at it for prolonged periods. This is of course a trick of the eye, caused by NGC 7009's reasonably bright central star overwhelming a dark-adapted observers eye. When the observer averts their vision slightly, the Saturn Nebula returns to view. Although the Blinking Planetary is the most well-known object that exhibits this phenomenon, to the writer's mind, the Saturn Nebula is actually the best example of a "Blinking" Planetary Nebula. As ever, aperture helps in resolving the finer details of NGC 7009 (especially the projections), but the Saturn Nebula should be sought out by all those with telescopes - it's certainly bright enough to be seen in even the smallest scopes.



Saturn Nebula, pictured by the Hubble Space Telescope. Image Credit: NASA/ESA, Public Domain.

The next object is an interesting one. When is a star cluster not a star cluster? Answer: when it's an Asterism like M73. Lying less than 2 degrees SW of the Saturn Nebula, M73 has been the subject of some controversy over the years since its discovery. Charles Messier first noted it in 1780 as a "cluster of four stars with nebulosity", although this nebulosity has never been picked up by any other observers. John Herschel, whilst including it in his General Catalogue, was suspicious of its definition as a true cluster. Debate raged on throughout the 20th century as to the true nature of the Y-shaped M73, with evidence of a relationship between the members of the group being published for and against. The matter was finally and conclusively put to bed in 2002, when spectral signatures of each of the constituent members, gathered in high resolution, concluded that they were all moving in different directions and the cluster was not, it fact, a cluster. M73 is not unique amongst the Messier list for controversial description, but remains interesting for the fact that it took so long to finally work out its true nature.

1.5 degrees to the west of M73 is the slightly less controversial Globular Cluster M72. At +9.27 mag, it is considerably fainter than M2, despite being not much smaller. M72 is considerably further away from us than M2 - it lies 55,000 light years distance from Earth. As it is fainter and further away, M72 requires a larger telescope to resolve individual stars. It is a pleasing sight in a 10-inch reflector and above, though William Herschel in his observing notes of 1783, noted that a power of 150x was needed to resolve the individual stars "fairly".

M72, pictured by the Hubble Space Telescope. Image Credit: NASA/ESA, Public Domain.

Lastly, we journey 23 degrees east of NGC 7252, to rendezvous with the closest Planetary Nebula to Earth, NGC 7293 - The Helix Nebula. Overlooked by experienced observers, such as Messier and William Herschel, it is not difficult to understand why. Though intrinsically quite bright at +7.59 mag, the Helix is half the diameter of the Full Moon, which spreads its surface brightness out considerably. The Helix was eventually discovered around 1824 by German Astronomer Karl Ludwig Harding. Observation or the Helix requires either large binoculars and a very dark site, or a wide eld low power eyepiece and as much telescopic aperture as you can throw at it! Large Dobs are the ideal instrument for observing the Helix, particularly when coupled with an OIII filter. From our perspective on Earth, we see the Helix like looking down a tube. Its prolate spheroid shape is almost aligned on axis with us, at a distance of 650 light years. 2.5 Light years across, the Helix appears 14.7 arc minutes across at its widest point. A magnificent object, it will take the right conditions to see it well - if the Moon’s up, you’ll have to wait until it has set before attempting to locate the Helix. It will be well worth the wait though.

The Helix Nebula, pictured by the Hubble Space Telescope. Image Credit: NASA/ESA, Public Domain.