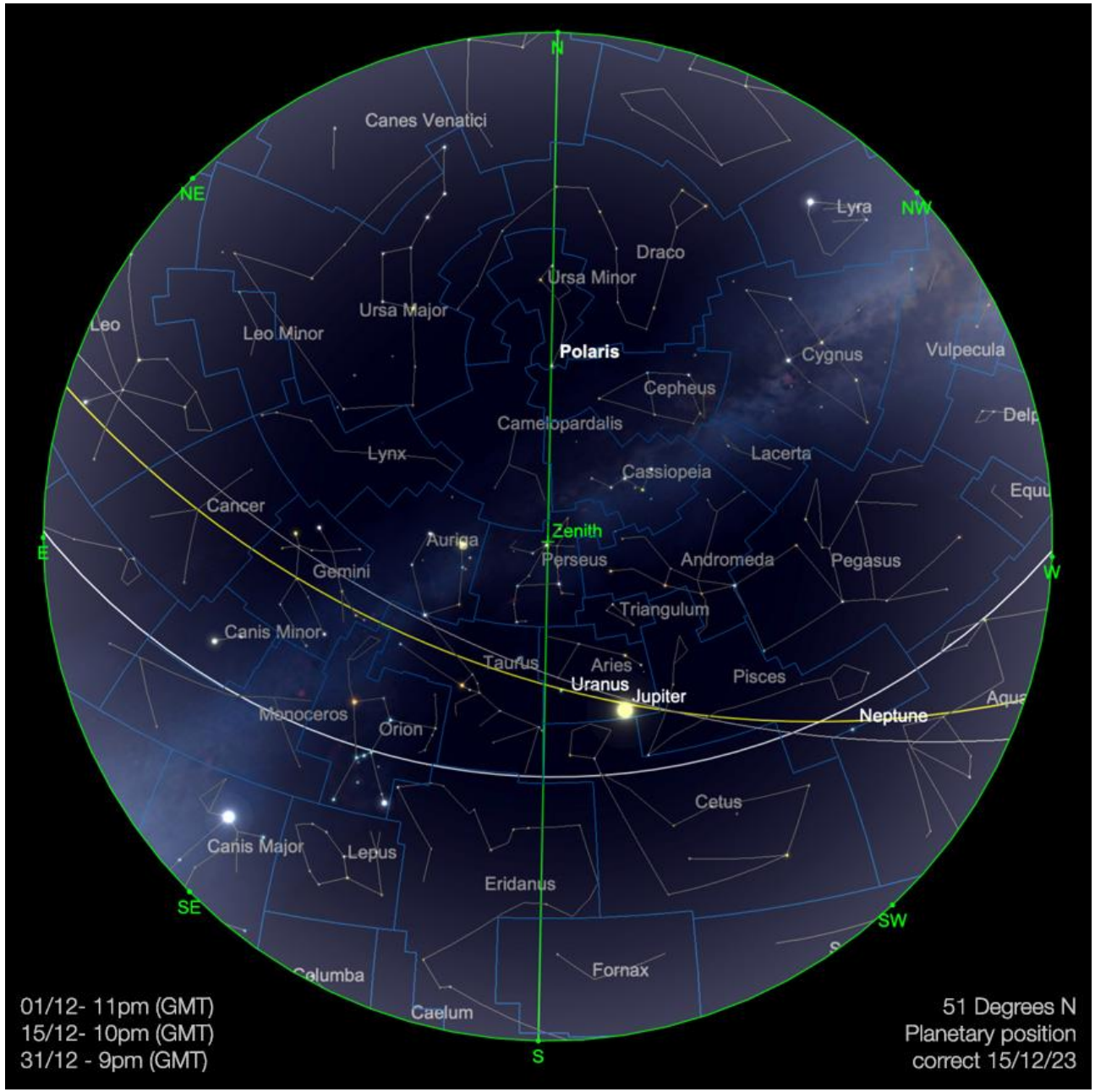
Telescope House December Sky Guide


N
NE
NW
E
W
SE
SW
S
Canes Venatici
Lyra
Draco
Ursa Minor
Ursa Major
Leo
Leo Minor
Polaris
Cygnus
Vulpecula
Cepheus
Camelopardalis
Lynx
Lacerta
Cassiopeia
Cancer
Zenith
Auriga
Perseus
Andromeda
Pegasus
Gemini
Triangulum
Canis Minor
Taurus
Aries
Pisces
Uranus
Jupiter
Neptune
Monoceros
Orion
Cetus
Canis Major
Lepus
Eridanus
Fornax
Columba
Caelum
01/12- 11pm (GMT)
15/12- 10pm (GMT)
31/12 - 9pm (GMT)
51 Degrees N
Planetary position
correct 15/12/23

It’s December and the Northern Hemisphere experiences the annual Winter Solstice on December 22nd, marking the shortest day and the longest night. As the Sun reaches its southernmost point in the ecliptic, it resides in Sagittarius, close to the borders with Ophiuchus and Scorpius. The farther north you are, the longer the Sun remains below the horizon, with around twice as many hours of darkness than sunlit hours, for those around 51° latitude. Beyond the Arctic Circle, darkness is perpetual during this time. Meanwhile, in the Southern Hemisphere, it's midsummer and residents experience their Summer Solstice.

Wherever in the world you find yourself, as ever, there’s plenty to see in the skies above us….

The Solar System

The Moon

We begin December with the Moon in the constellation of Cancer. Rising at just after 7:30 pm (GMT), the Moon will transit as a little after 3 am the following morning and set just before midday. The Moon is currently at waning gibbous phase, at around 80% illumination and while a little past full phase, will still be around for much of the night during the early part of the month. This will have naturally deleterious effects for those interested in deep sky observation and imaging at the beginning of December.

The Moon will reach last quarter phase on December 5th, where it will be a resident of Leo. After this point, the Moon will drift through the largest constellation of them all, Virgo, decreasing its phase day by day. The morning of 9th sees the very thin 14.7% illuminated crescent Moon sit side-by-side with the brilliant Venus just before dawn. The two worlds will be separated from each other by under 5° at their closest.

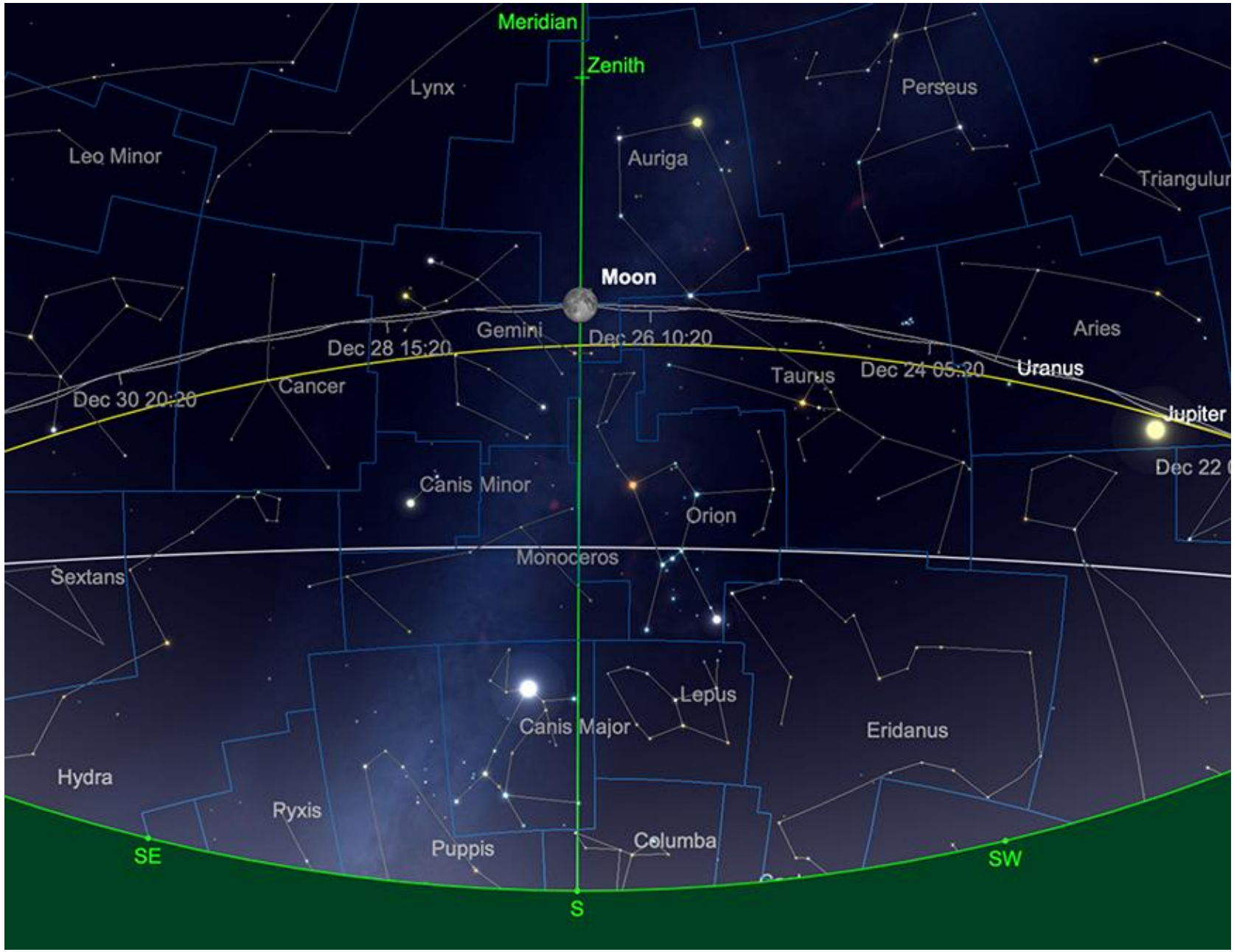
New Moon is reached on December 12th, when our natural satellite passes to the south of the Sun on the Scorpius/Ophiuchus borders. This point in the month is the best for those interested in deep sky observation and imaging, as the Moon is thoroughly out of the way during hours of darkness.

Past the point of New Moon, the Moon begins to rise as an evening target. It will remain pretty low in the sky for those of us in the northern hemisphere for the first few days of its evening present phase though - skirting through the southern part of the ecliptic in Sagittarius and Capricornus. The evening of 17th December, finds the Moon in reasonably close conjunction with the planet, Saturn in Aquarius. The two bodies will be separated from each other by a little under 6°, as the Sun sets.

The Moon comes to first quarter on 19th December, on the Aquarius/Pisces borders. Over the next few days, the Moon moves through Pisces, the non-zodiacal constellation of Cetus and back into Pisces, before crossing the border into Aries, where it joins Jupiter in close conjunction on the evening of the 22nd. Jupiter and the Moon will be separated by a little under 5° in the early evening.

The Moon spends the next few days, crossing Aries and Taurus until it reaches Full on December 27th, when on the Gemini/Auriga borders. This will be the most northerly Full Moon of the year and at this time the Moon will occupy a very similar area of sky to the Sun, when at the summer solstice for the northern hemisphere. At transit point on December 27th, the Moon will stand an impressive, 67° high in the sky (as observed from 51° north). It will dominate proceedings from when it rises at just after 4 pm and will not set until nearly 9:15 the following morning. Again, this time of the month will not be the greatest for those interested in observing and imaging the fainter targets in the night sky.

The Moon spends the rest of 2023 gently rolling through Cancer and Leo, where it will end December back at waning gibbous phase at just under 85% illumination. At this point, the Moon will rise at a little before 9 pm (GMT), transit at a little after 3:30 am the following morning and set just after 11 am.


Meridian
Zenith
Lynx
Perseus
Leo Minor
Auriga
Triangulur
Moon
Gemini
Dec 28 15:20
Dec 26 10:20
Aries
Dec 24 05:20
Uranus
Taurus
Cancer
Dec 30 20:20
Jupiter
Dec 22
Canis Minor
Orion
Monoceros
Sextans
Lepus
Canis Major
Eridanus
Hydra
Ryxis
Puppis
Columba
SE
SW
S

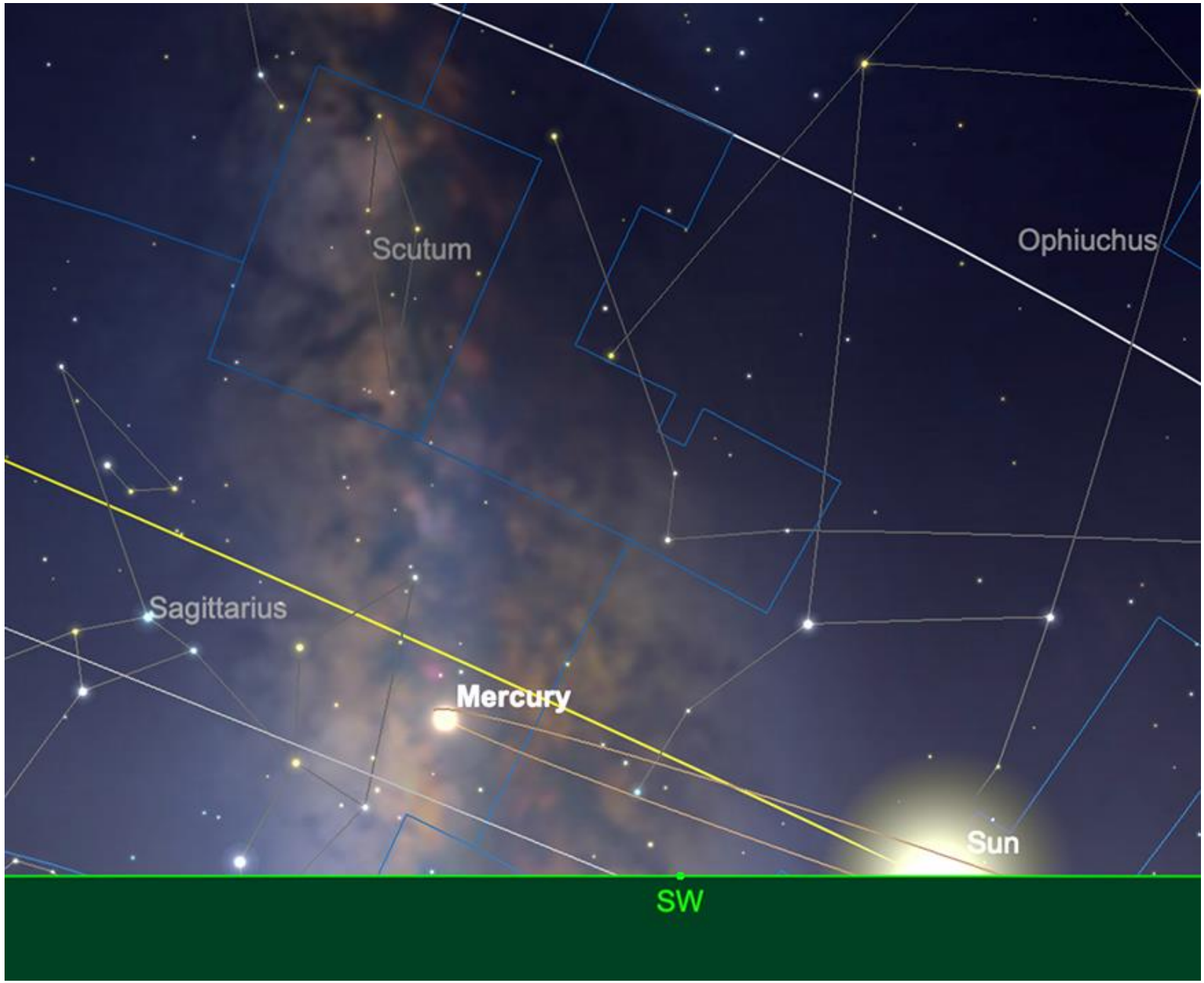
Full Moon, 27th December. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com

Mercury

The Solar System's smallest planet starts December as a -0.4 magnitude target in Sagittarius. Mercury is currently moving away from the Sun as seen from our perspective here on Earth and reaches maximum easterly elongation from the Sun on the 4th of December. As the Sun is sitting in a very southerly part of the ecliptic, mercury will not attain a huge elevation above the horizon, even at its furthest point from the Sun. On the evening of the fourth Mercury will stand just over 6 1/2° elevation above the horizon (as observed from 51° north), as the Sun sets. At this point in time, Mercury will be separated from the Sun by around 21° and will remain at -0.4 magnitude, with a 62% illuminated disc of 6.7 arc seconds diameter.

As Mercury is swinging round the Sun towards us, after maximum elongation, while the planet increases in size quite dramatically, its phase also decreases in a similar dramatic way. By the middle of December, Mercury will have dimmed to +1.1 magnitude and despite displaying a healthy 8.9 arc second diameter disk, will have a narrow 19% illumination. This will make it the planet harder to spot in the glare of the evening sky. By this point in time, Mercury will be separated from the Sun by around 14° and will stand around 6° above the horizon (as observed from 51° north).

The rest of December sees the planet arching steadily Sun-ward, decreasing in magnitude significantly, as it does. Mercury will reach inferior conjunction - the position between the Earth and the Sun - on December 22, and will then re-emerge as a morning target, though it will be very late in December before it has attained significant separation from the Sun, illumination and concurrent brightness and can easily be observed again. We find Mercury on the morning of December 31st, a resident of Ophiuchus, displaying a brightness of +0.8 magnitude and an apparent size of 8.8 arc seconds. By this point in time the planet will be illuminated by just over 24%, but now being resident of a significantly steeper-rising part of the ecliptic, will have attained an elevation of just over 10° (from 51° north) above the horizon as sun rises on the 31st.


Scutum
Ophiuchus
Sagittarius
Mercury
Sun
SW

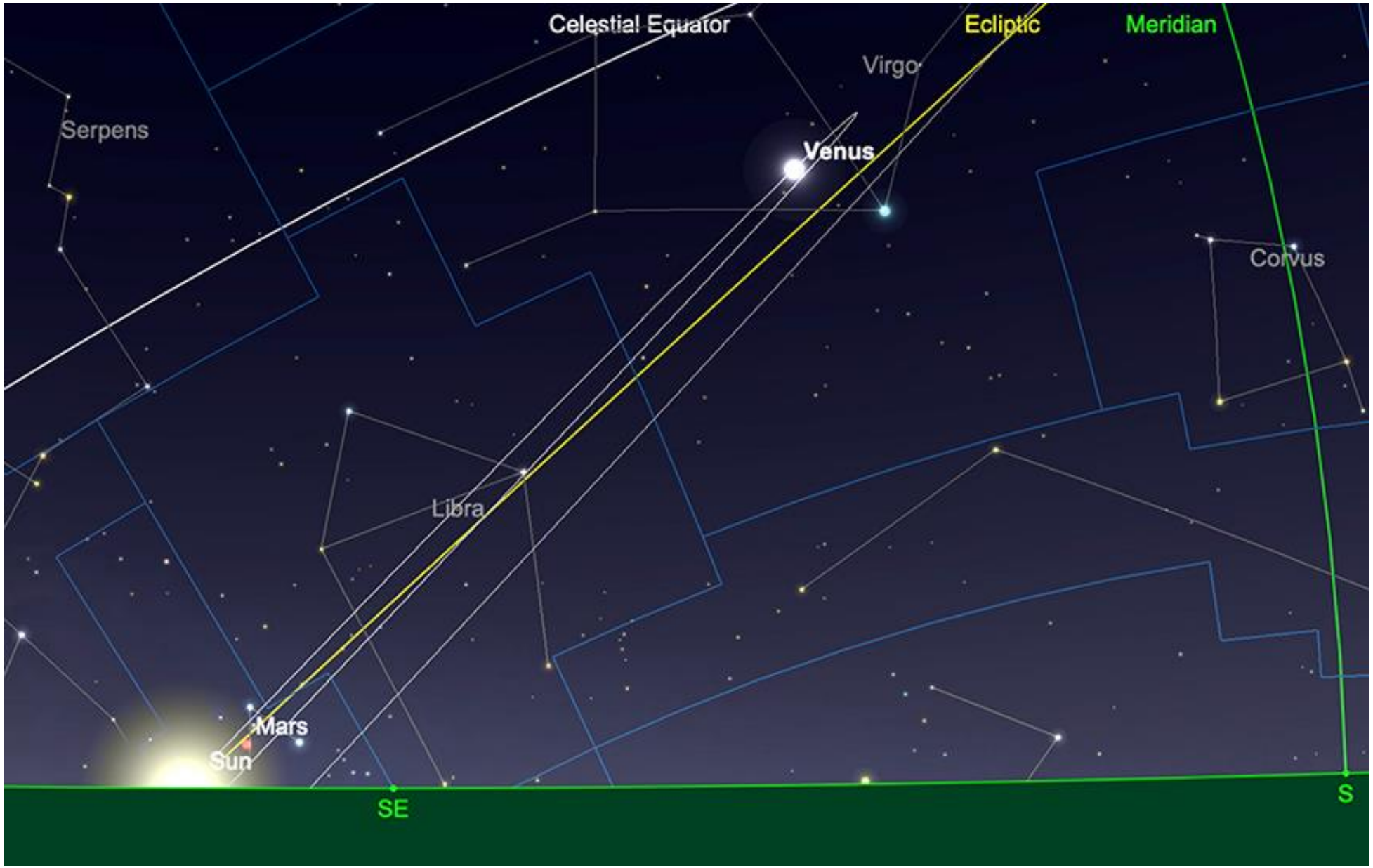
Mercury, sunset, 1st December. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com

Venus

While Venus is now heading back in a Sun-ward direction after late October maximum western elongation, it is still an impressive sight in December in the morning sky. Venus appears to move at a much more sedate pace than its neighbour Mercury, so orbital changes and its relative position in the sky don't vary by anything like Mercury's pace. The 1st sees Venus shining at a dazzling -4.2 magnitude, displaying 17 arc second diameter disk, which is illuminated by just under 68%. The planet stands at around 29° altitude (as observed from 51° north), as Sun rises.

Mid-month finds Venus, having crossed over the boundaries from the expensive Virgo, into neighbouring Libra. It has dimmed by a fractional (though visually undetectable) amount to a visual magnitude of -4.1 and now displays 15.5 arc second diameter disk illuminated by just under 73%. The planet now sits just under 24° above the horizon (again as observed from 51° north). By this point in the month, the planet is now just over 40° from the Sun.

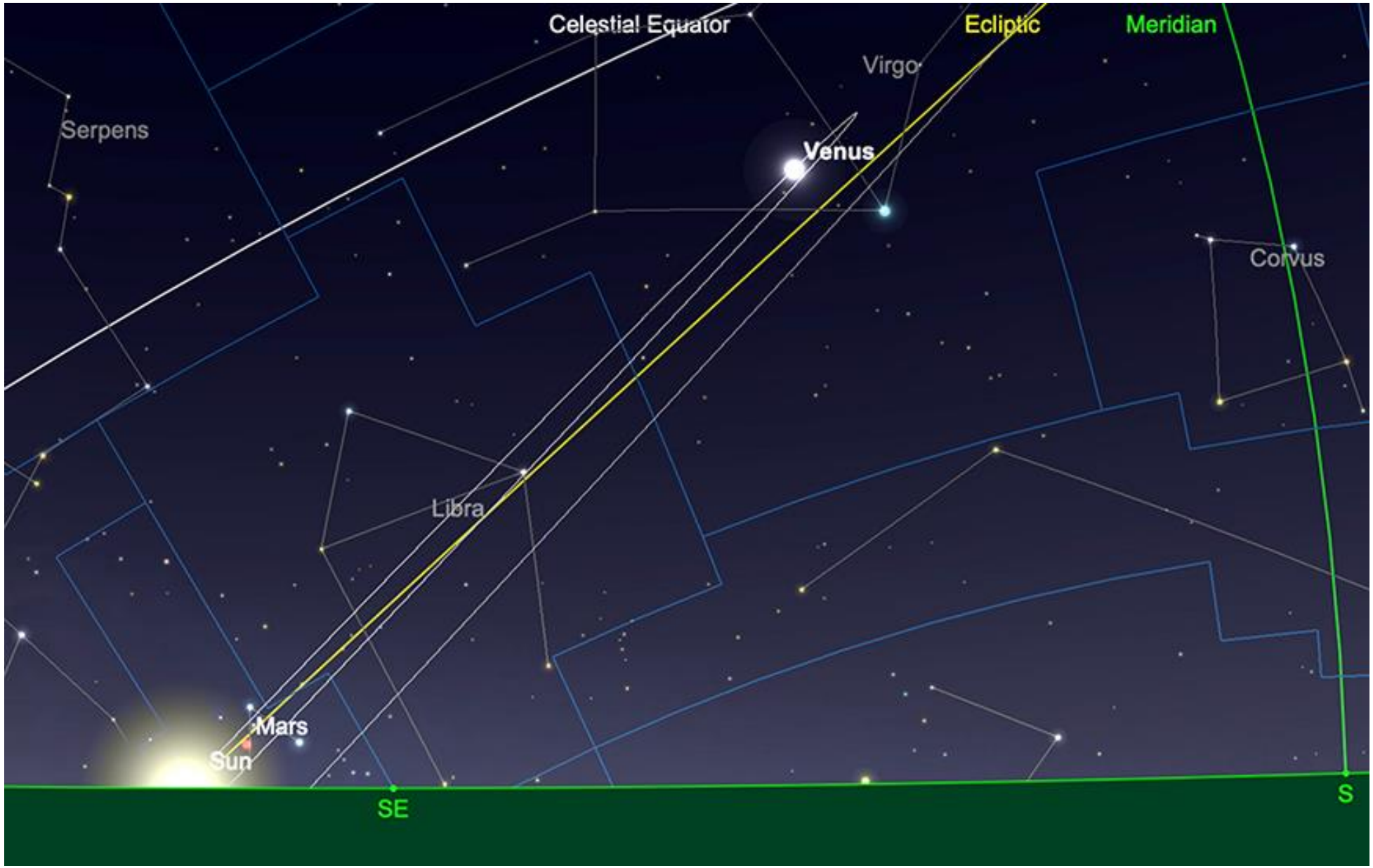
By the end of December, not much has changed in terms of Venus' brightness, as it is still found at -4.1 magnitude. The planet now displays a 14.2 arc seconds diameter disc illuminated by just under 78%. The planet will now stand around 18 1/2° above the horizon and is separated from the Sun by just over 37 1/2°. As Venus is moving into the most southerly part of the ecliptic, as it trails behind the Sun, it is now dipping down towards the horizon and will continue to move further south with the inevitable loss of observing potential for those in the northern hemisphere, as it does. Subsequently, you encouraged to get out and observe Venus in the early part of December to make the most of optimal conditions.


Celestial Equator
Ecliptic
Meridian
Virgo
Serpens
Venus
Corvus
Libra
Mars
Sun
SE
S

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

Mars

Mars is emerging on the morning side of the Sun, after its recent superior conjunction and due to its current distance from us, subsequent low brightness and proximity to our parent star, is unobservable for December. This time next year Mars will be significantly brighter and in a much better part of the sky to observe, in the run-up to January 2025's opposition. We must bide our time until then.


Celestial Equator
Ecliptic
Meridian
Virgo
Serpens
Venus
Corvus
Libra
Mars
Sun
SE
S

Mars, sunrise, 1st December. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Jupiter

Jupiter, at just past opposition, is exceptionally well placed for observation during the entirety of December. The first finds the planet a resident of Aries, shining at a brilliant -2.8 magnitude and displaying a 49.7 arc second diameter disc. Jupiter rises in the afternoon at a little before 3 pm, and transit at a little before 10 pm on the 1st, when it will stand at just under 52° elevation, as observed from 51° north).

Mid-month will find Jupiter having faded by a tiny amount to magnitude -2.7 and will now display a 46.2 arc second diameter disc. The planet will transit at a little before 9 pm on the evening of the 15th, where it will attain an elevation of just under 52° (again as seen from 51° north).

Fast forward to the end of December and not much has changed as far as Jupiter is concerned. The planet has faded fractionally again to -2.6 magnitude and now displays of 44 arc second diameter disc Jupiter will rise at a little before 1pm and transit at a little before 8 pm.

As usual, there is much to see as far as the major moons of Jupiter and the Great Red Spot are concerned. Here are a few of the highlights for December (All times GMT):

There's a mutual Ganymede and GRS transit starting at around 1:45 am on 2nd December.

An Io and GRS mutual transit occurs on December 8th starting at around 5:30 pm. There's another Io and GRS mutual transit, which starts a little before 7:30 pm on December 15th.

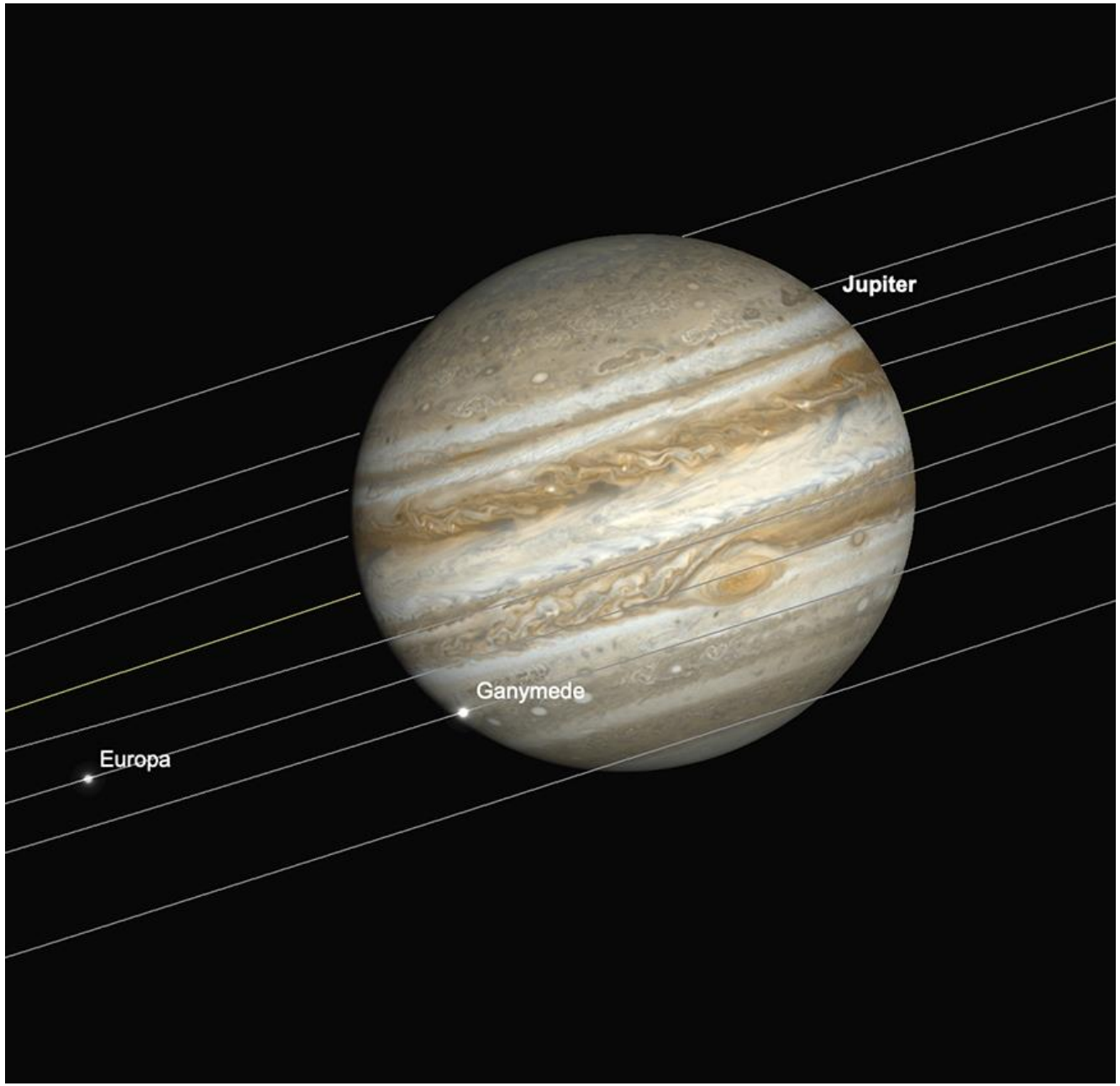
There's a comparatively rare mutual transit of Callisto and the GRS, which starts at around 8:30 pm, December 17th.

A mutual transit of Europa and Ganymede starts at a little before 4:30 pm, December 23rd.

There's a brief window of a GRS and Io/Io shadow transit event on Christmas Eve, starting at around 7 pm.

A triple event, including transits of the Great Red Spot, Ganymede and Europa begins at around 4 pm on December 30th and concludes a few hours later.

December 31st has a Great Red Spot and Io/Io shadow transit starting at a little after 7:30 pm.


Jupiter
Ganymede
Europa

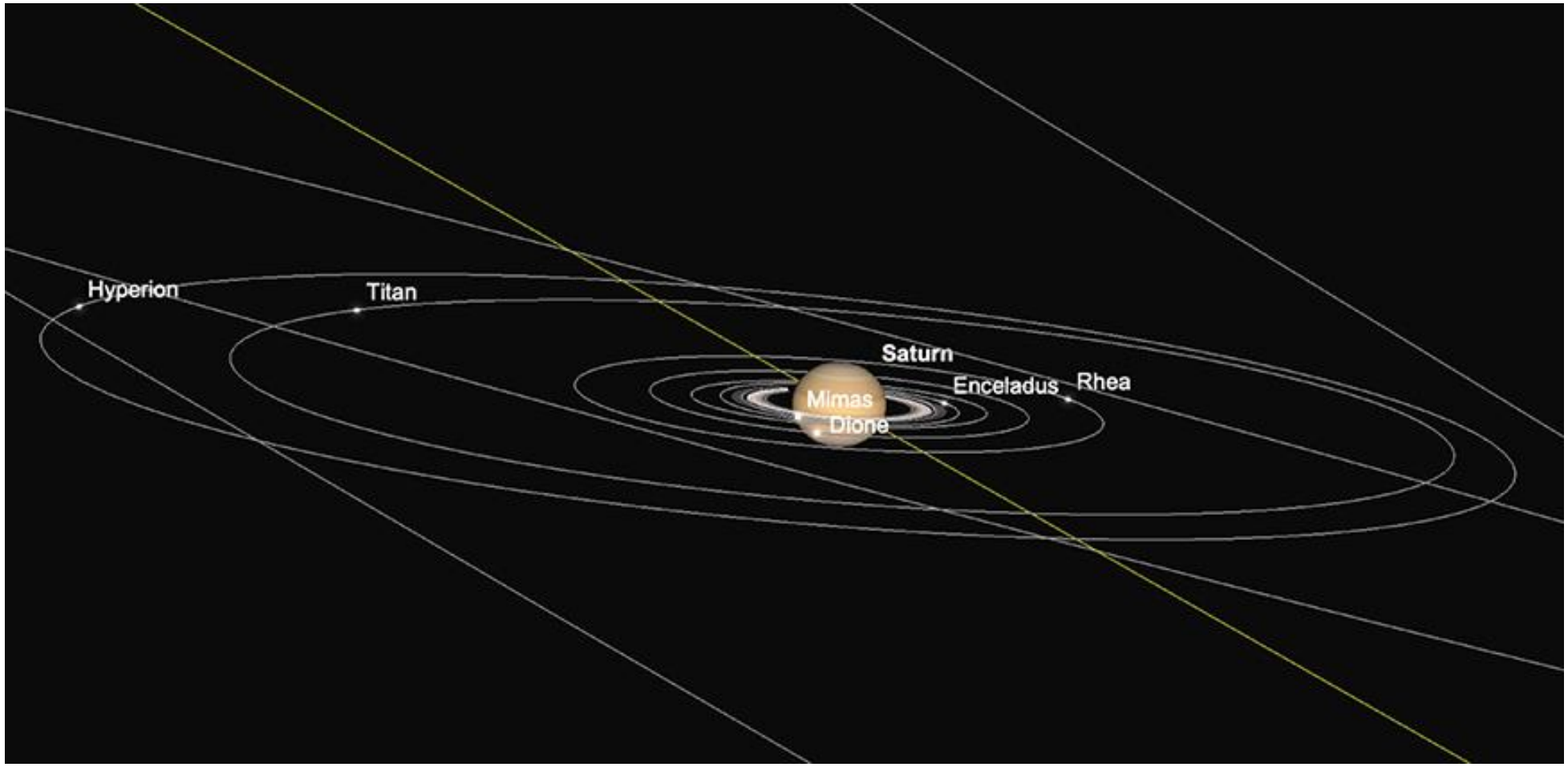
Jupiter, GRS, Ganymede and Europa transit, 4pm 30th December. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com

Saturn

Saturn begins December, a resident of Aquarius, at +0.9 magnitude at this point in time. Saturn's apparent size is just under 17 arc second diameter and the planet transits at around 5:47 pm (GMT). At transit point, Saturn will stand at an altitude of around 26 and three-quarter degrees above the horizon (as observed from 51° north). Those with access to telescopes are thoroughly recommended to make the most of Saturn's early evening apparition, as it's only for a fairly brief window of time that we have such a spectacular target available to us at such a clement hour of the evening. As the evenings, drawing and get darker, it's possible to observe Saturn against the truly dark background sky earlier and earlier up until the winter solstice.

By mid-December, nothing much has changed as far as Saturn is concerned - it remains at +0.9 magnitude, displaying a 16.5 arc second diameter disc. The planet will transit at a little before 5 pm and set at just before 10 pm.

By the end of December, Saturn will remain at +0.9 magnitude, though its apparent size will have shrunk a little to 16.1 arc seconds diameter. The planet will rise a little before 4 pm and set at around 9 pm (GMT). At transit point, the planet will sit at around 26° elevation (as observed from 51° north).



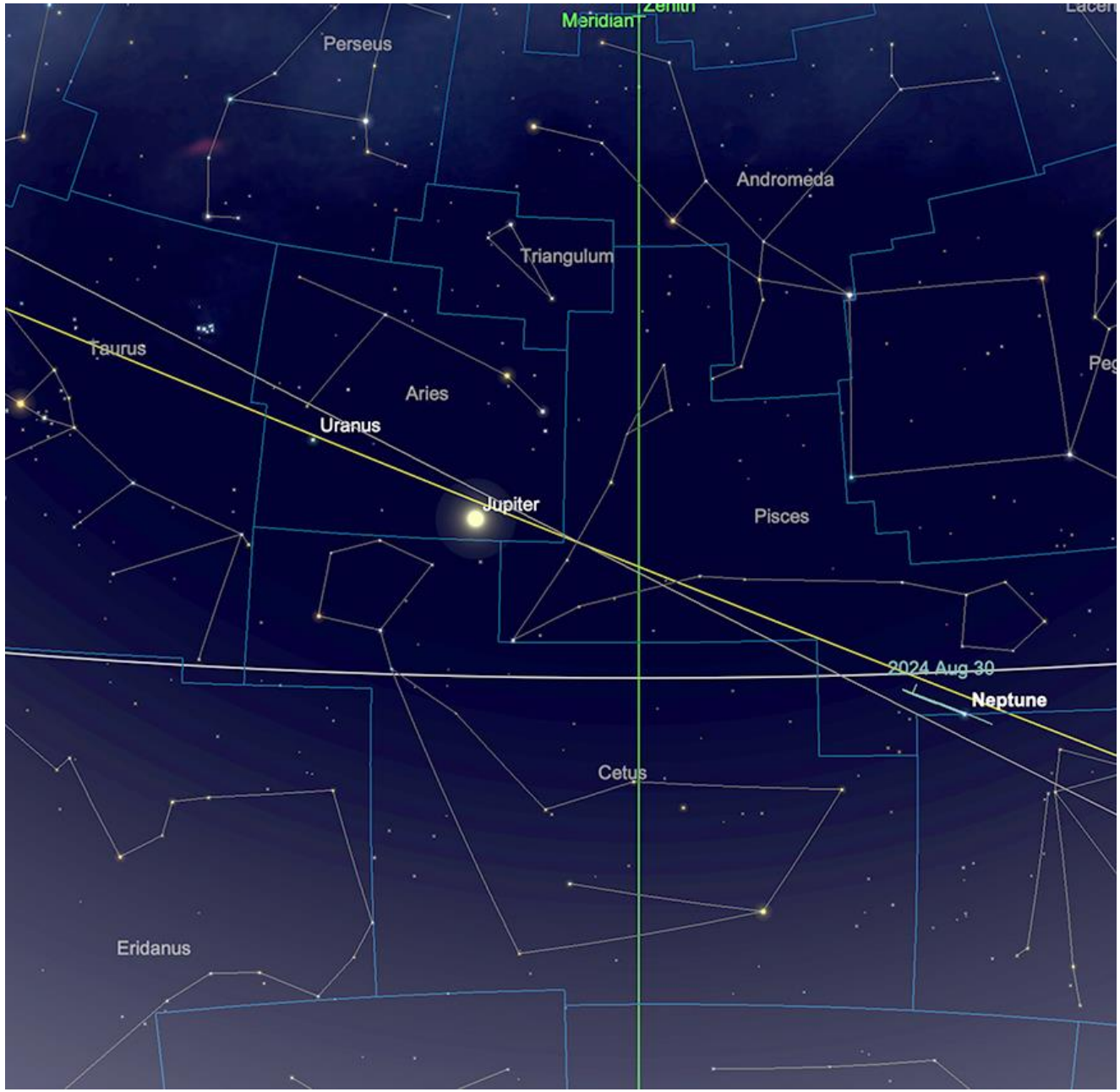
Saturn and major moons, 5pm (GMT) December 31st. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Uranus and Neptune

Uranus, a neighbour to the much brighter Jupiter in Aries at present, is still close to maximum magnitude, being just past opposition, which reached in mid-November. The planet will display a +5.6 magnitude, 3.8 arc second diameter disc on the evening of December 1st and will

rise at a little past 3 pm, transiting at just before 11 pm. As frequently mentioned in the sky guide, Uranus is technically visible with the naked eye from a very dark site, but is a much easier target to find in binoculars and telescopes. Its relative proximity to Jupiter at present, make it slightly more easy to find, with the two planets separated from each other at just over 13° at present. The evening of the 1st finds Uranus roughly halfway between Jupiter and the Pleiades star cluster in Taurus. The planet is also to be found just over 2° to the south of Botein, Delta Arietis, which is slightly brighter than Uranus, at 4th magnitude.

The more distant Neptune, is much fainter at +7.9 magnitude and displays tiny 2.3 arc second diameter disc. Neptune currently sits on the borders between Pisces and Aquarius and is solely the preserve of observation with binoculars and telescopes. Planet rises at a little before 1:30 pm on 1st and transits at 7:15 pm (GMT). While Neptune is the most distant of the "true" planets and very small, and much fainter than any of the major members of the solar system (as observed from Earth) once found it is pretty obvious that it is not a star. Sitting around 36° elevation at transit point on the first, Neptune is in an area of sky where seeing conditions dramatically improve, when compared to targets sitting lower to the horizon. As such, even though it is a challenging target to try and find, it's worth doing so. Those with larger instruments, experiencing good seeing conditions, have reported seeing striation across the tiny disk of Neptune when observed with high magnification. Patience is a key here, as Neptune will never be as immediate a target as Jupiter, Saturn or Venus, but it and its neighbour Uranus are still fascinating worlds in their own right and deserve their own observing attention.

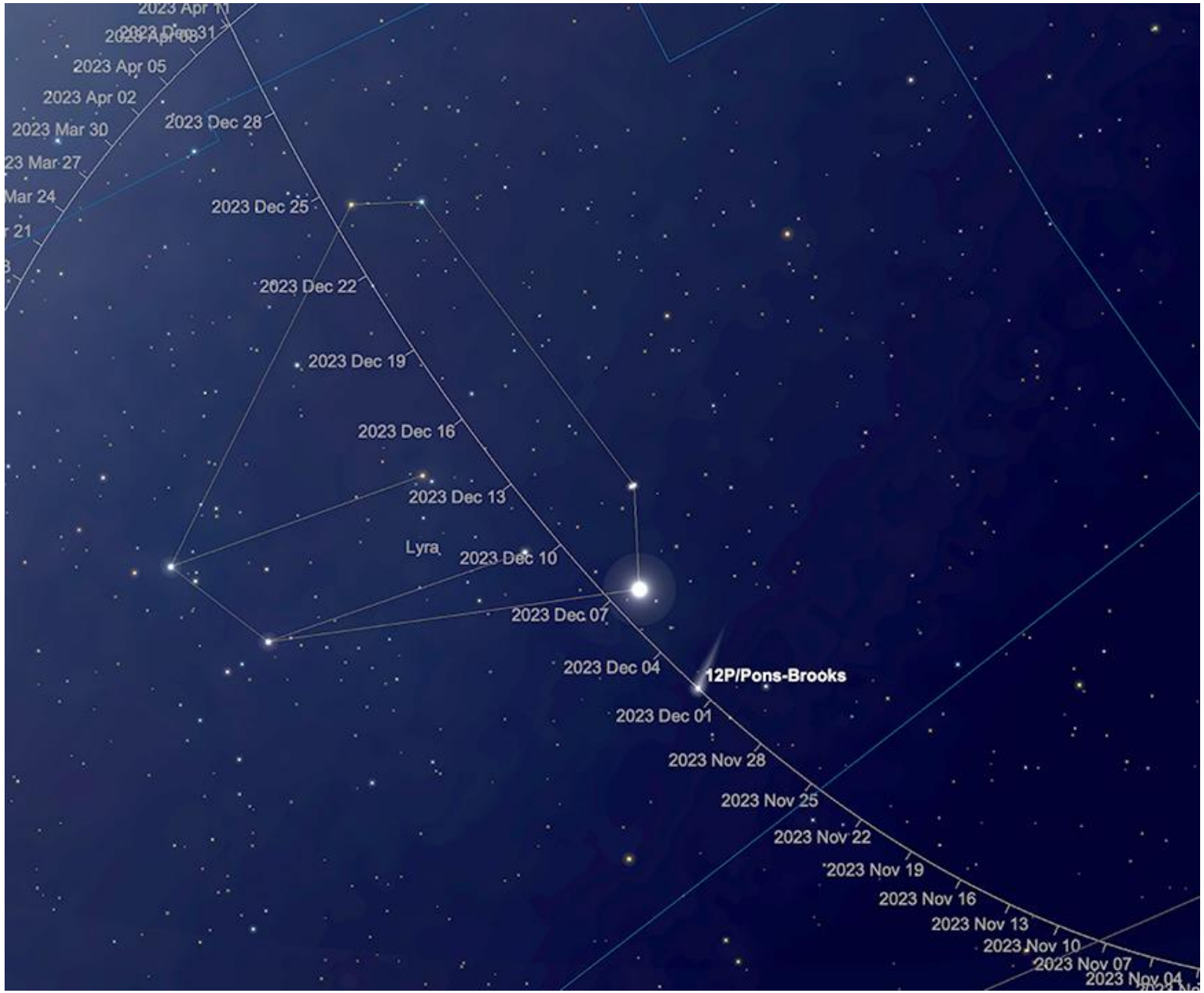

Meridian
Zenith
Perseus
Andromeda
Triangulum
Taurus
Aries
Uranus
Jupiter
Pisces
2024 Aug 30
Neptune
Cetus
Eridanus

Uranus and Neptune relative positions, 15th December. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com

Comets

C/2023 H2 is heading south and will become progressively more difficult to observe from the temperate northern hemisphere. The comet put on quite a reasonable display during mid-November, peaking at an estimated sixth magnitude. However, the comet was rather large and spread out surface brightness and required telescopes and/or binoculars to observe it at all. It is receding from Earth now and southern hemisphere observers will still be able to track its progress, though the comet will be getting progressively fainter as December marches on.

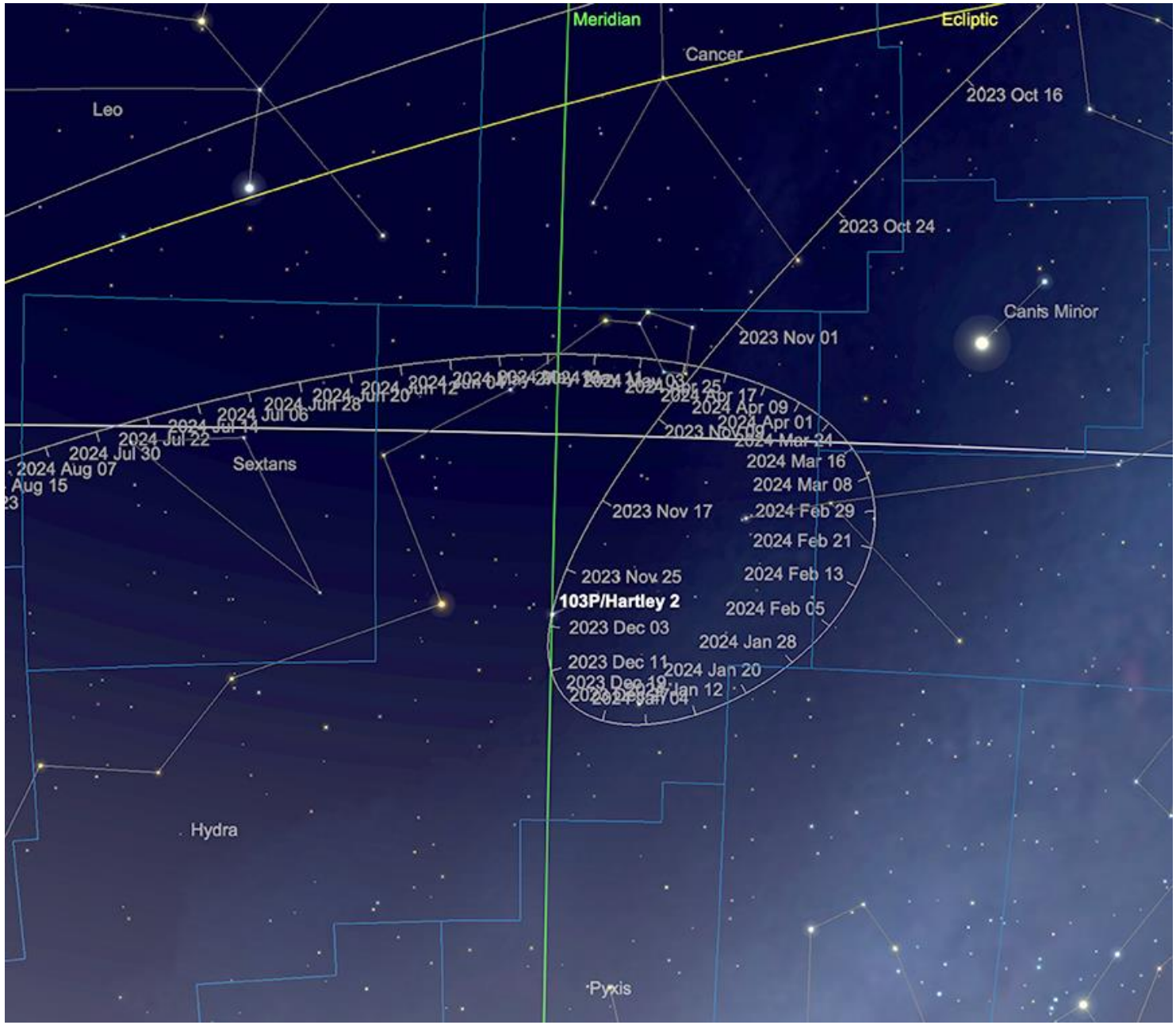
Comet 12/P Pons-Brooks has undergone a couple of significant outburst events, the most recent of which being mid-November. While the comet is in a particularly favourable part of the sky for observation, despite these outbursts, it is still relatively faint at around ninth magnitude. 12/P is found very close to the prominent Star Vega, Alpha Lyrae, at the beginning of December, and will pass extremely close to the Star on the evening of the 5th and 6th of December. At closest approach, the comet and Vega will be separated by around 28 arc minutes - just under half a degree. While it's impossible to tell if further outbursts may occur, it will be interesting to monitor the progress of the comet to see if there's any more activity.


2023 Apr 11
2023 Apr 08
2023 Apr 05
2023 Apr 02
2023 Mar 30
2023 Dec 28
2023 Dec 25
2023 Dec 22
2023 Dec 19
2023 Dec 16
2023 Dec 13
Lyra
2023 Dec 10
2023 Dec 07
2023 Dec 04
12P/Pons-Brooks
2023 Dec 01
2023 Nov 28
2023 Nov 25
2023 Nov 22
2023 Nov 19
2023 Nov 16
2023 Nov 13
2023 Nov 10
2023 Nov 07

Comet 12/P path December 2023 (comet position shown 1st December). Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com

Comet outbursts are not rare events and can sometimes be spectacular. The most spectacular of these of recent times was the 2007 outburst of 17/P Comet Holmes. This outburst caused the comet to brighten by factor of (reputedly) over 1 million times and temporarily its coma became the largest object in the solar system. While it's unlikely that 12/P's outbursts will be quite as spectacular, this comet is one to keep an eye on at present.

103/P Hartley will be still visible during December, but will have faded considerably from its relatively recent maximum. Expected to be around 10th or 11th magnitude, it will appear to loop round through Hydra during December, fading as it does.

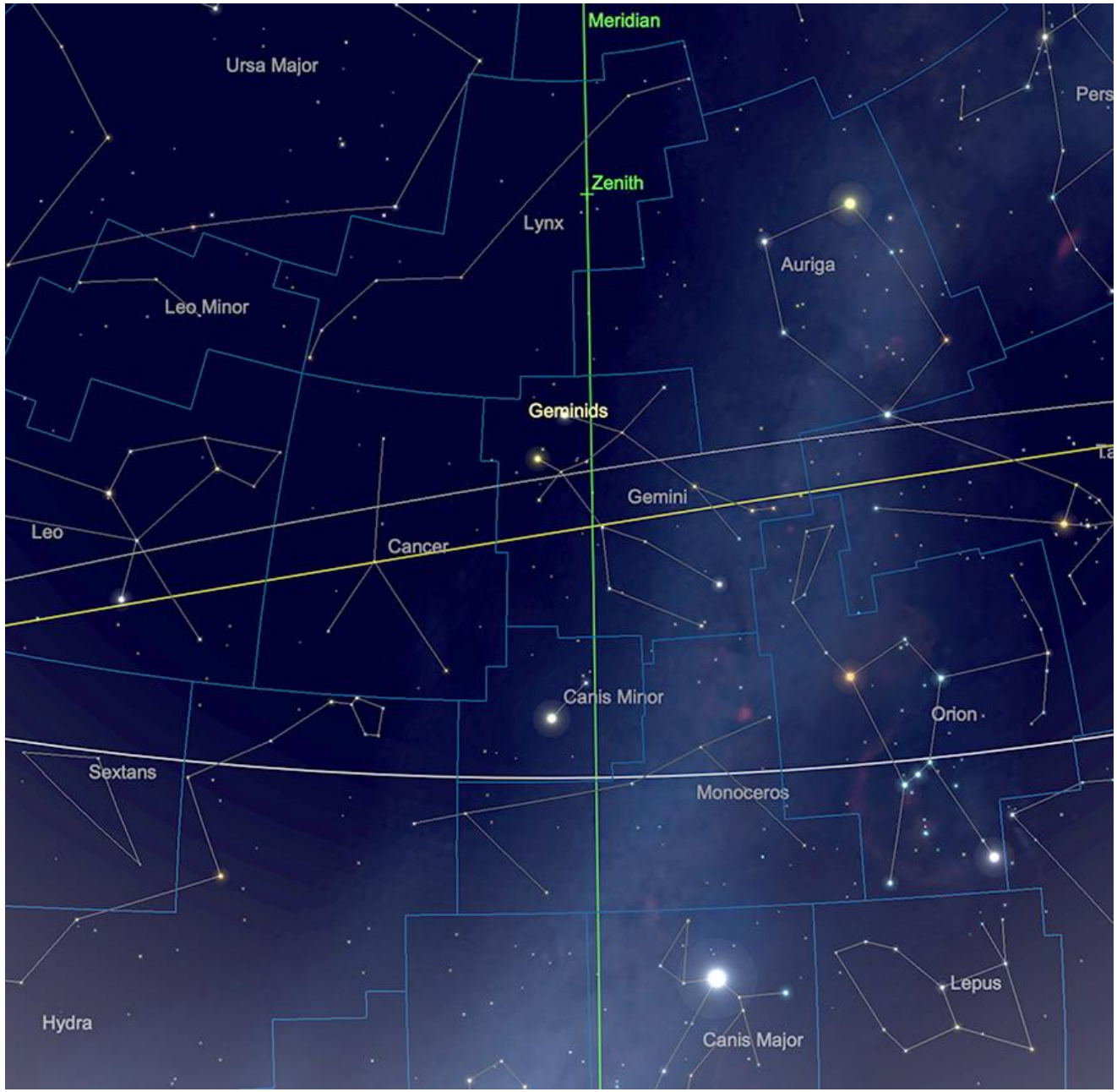

Meridian
Ecliptic
Cancer
Leo
2023 Oct 16
2023 Oct 24
Canis Minor
2023 Nov 01
2024 Apr 17
2024 Apr 09
2024 Apr 01
2024 Mar 24
2024 Mar 16
2024 Mar 08
2024 Feb 29
2024 Feb 21
2024 Feb 13
2024 Feb 05
2024 Jan 28
2024 Jan 20
2024 Jan 12
2024 Jul 30
2024 Aug 07
Sextans
2023 Nov 17
2023 Nov 25
103P/Hartley 2
2023 Dec 03
2023 Dec 11
Hydra
Pyxis

Comet Hartley path, December 2023 (Comet position shown 1st December). Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com

Meteors

The annual spectacle of the Geminid Meteors, which peak on the night of the 13th-14th December, are always worth looking forward to. Peaking at anything up to 100 meteors per hours (not all of which will be visible from any given location), the Geminids are arguably the most reliable shower of the year, fed by the mysterious "rock comet" asteroid 3200 Phaethon. The shower is expected to be visible from 4th/5th to the 17th December this year.

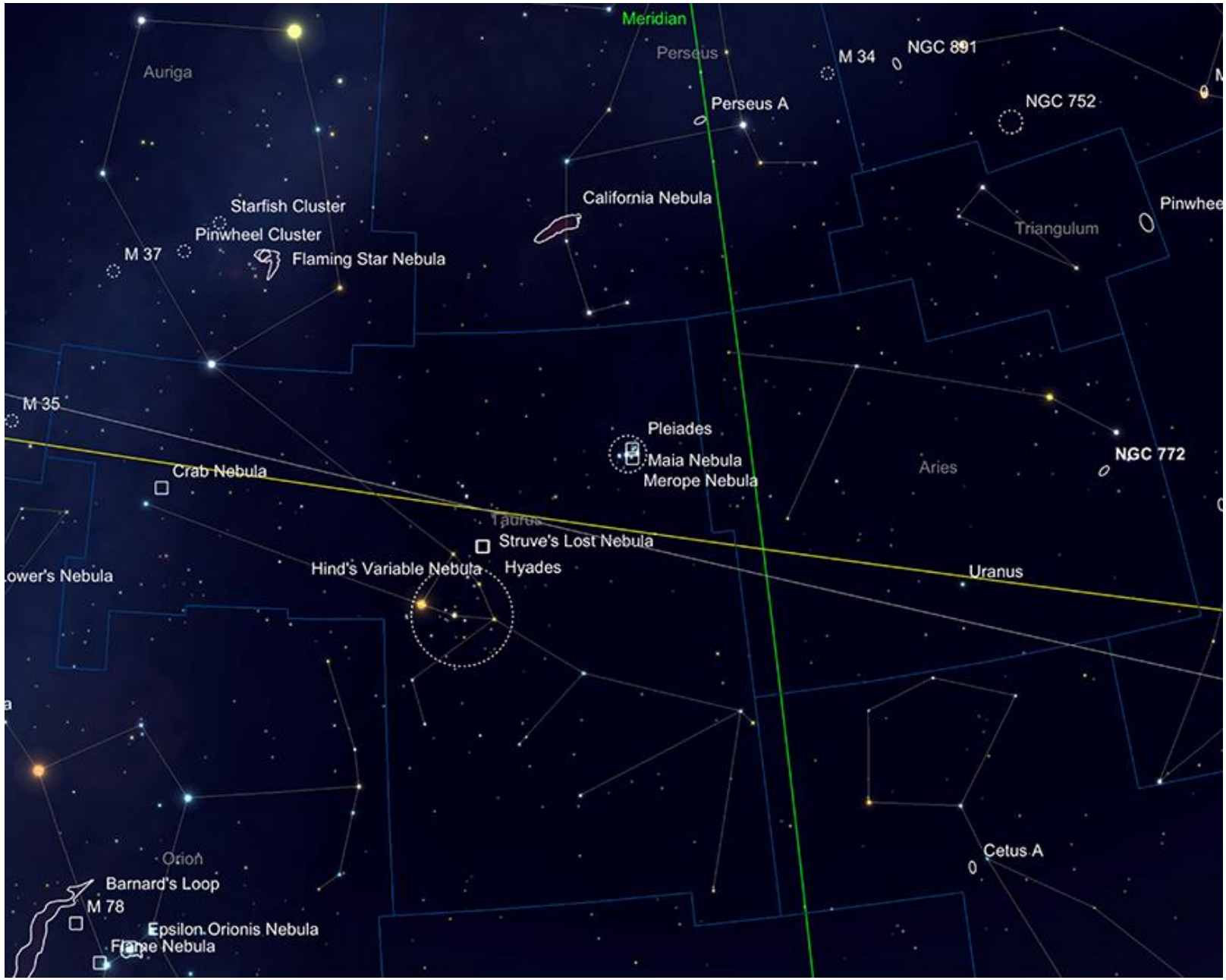
The Geminids radiate from an area inside the constellation of Gemini and are usually very well seen from the northern hemisphere. 2023's shower is quite a reasonable scenario in terms of the influence of Moonlight, with the Moon at just past new almost completely out of the way. The Geminids present great opportunities for astrophotographic record - all you need is a solidly mounted camera, capable of timed exposures, with a reasonably wide field lens. Once set up - even in a fairly light polluted environment - you will be unlucky not to capture a couple of brighter meteors, given an hour-or-so's multiple exposures. The brightest of the Geminids will cut through even the worst influence of light pollution.


Meridian
Ursa Major
Zenith
Lynx
Auriga
Leo Minor
Geminids
Gemini
Leo
Cancer
Canis Minor
Orion
Sextans
Monoceros
Lepus
Hydra
Canis Major

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

Deep Sky Delights in Taurus and Aries

This month we shall examine the spectacular Taurus and its distinctly less-spectacular neighbour, Aries.


Meridian
Perseus
M 34
NGC 891
Auriga
Perseus A
NGC 752
California Nebula
Starfish Cluster
Pinwheel Cluster
M 37
Flaming Star Nebula
Triangulum
Pinwhee
M 35
Pleiades
Maia Nebula
Merope Nebula
NGC 772
Aries
Crab Nebula
Taurus
Struve's Lost Nebula
Hind's Variable Nebula
Hyades
Uranus
Orion
Barnard's Loop
M 78
Epsilon Orionis Nebula
Flame Nebula
Cetus A

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

The zodiacal constellation of Taurus, The Bull, is home to some of the most outstanding deep sky objects in the sky, the most notable of these is perhaps M45, the Pleiades, or the Seven Sisters. At collective magnitude of +1.5, M45 is easily seen with the naked eye and has been recorded by numerous cultures throughout the world. The ancients knew the Pleiades by different names: Subaru in Japanese, Krittika in Hindi, Soraya in Persian amongst many others. The Pleiades are mentioned in Homer's Odyssey and Iliad, the Bible and the Quran. It is known that cultures as far apart as the Maori and Aborigines and the Native Plains Tribes of North America had knowledge of this star cluster - which makes it pretty well-known worldwide!


M45 Pleiades Cluster
©2020 Mark L Blundell

The Pleiades, M45. Image credit: Mark Blundell. Image used with kind permission.

M45 presents its nine major members, (named after siblings from classical Greek mythology), the "sister" stars of Merope, Sterope, Electra, Maia, Tygeta, Celaeno and Alcyone - along with the "parent" stars Altas and Pleione - to the naked eye from a very dark location, but most people with reasonable eyesight can split six under average skies. Telescopes and binoculars reveal many more of the 1000-or so members of the cluster and larger instruments and photography can pick up blue-hued reflection nebulosity surrounding the cluster - particularly around Maia and Merope. This nebulosity is caused by illumination of left-over material from the cluster's formation. The view of M45 with a widefield, low power eyepiece is one of the most glorious sights in any telescope, though at 2 degrees in diameter, one has to be careful about eyepiece choice in order to get the outlying members in a useable field of view.

The Pleiades are thought to be around 100 million years old and lie between 430 and 440 light years away.

Next door - though not cosmically speaking - to the Pleiades is the older and more spread-out Hyades cluster. Its major naked eye members are arranged in a V-shape, which marks the head of Taurus. Again, similarly to M45, the Hyades have been known since antiquity and were traditionally seen by the Ancient Greeks as being the sisters of the Pleiades - via their shared father Atlas.

The distinct "V"-shape of the Hyades, peeking through high cloud, shown in wide field. Image credit: Kerin Smith

The Hyades lie 152 light years away, and as such are nearest star cluster to us on Earth (though arguably the stars in the Plough or Big Dipper in Ursa Major can actually be thought of as a cluster and are closer). The Hyades consist of over 300 individual stars and modern estimates put its age at around the 600+ million year mark - making it markedly older than the Pleiades. The Hyades share a galactic trajectory with M44, the Beehive in nearby Cancer, again suggesting a common origin point in space. However, the Beehive appears to be slightly older at 600-730 million years.

Line of sight puts Taurus' principle Alpha star Aldebaran - the eye of the Bull - within the boundaries of the Hyades, though this Red Giant is unrelated and distinctly closer to us at 65 light years.

Reaching East down the Southerly "horn" of the Bull, we come to the +3 mag star Zeta Tauri. This star is a convenient location point for another jewel of the night sky - the Crab Nebula, M1 on Messier's List.

The Crab Nebula is the remnant of a star which went Supernova in the year 1054 (to us here on Earth). This event was recorded throughout the world, from New Mexico to China. It would have been a dazzling sight, peaking at -6 mag, brighter than the planet Venus and visible in daylight. After it faded, the event receded from popular consciousness and it was nearly 700 years later, in 1731, that the object than would become known as the Crab was discovered by Astronomer John Bevis. Messier rediscovered it when searching for the return of Halley's Comet 27 years later in 1758. First thinking the object was a comet, it was the Crab that prompted Messier to compile his list, so other comet-hunters would not be confused by these static, cloud-like objects when searching the heavens.

Lord Rosse, observing the Crab with what was then the largest telescope in the world at his Birr Castle Observatory in Ireland, in 1844, made a sketch that showed claw-like protrusions - presumably the filament structure of the outer lying regions. The object was nicknamed the Crab - and the moniker stuck.

Early both Century photographic observations of M1 showed that the object was expanding rapidly. This expansion was extrapolated backwards and it was noted that the object should have started its expansion around 900 years previously. A little bit of astronomical detective work ensued and the events of 1054 and the Crab were tied together.

Although a hardly dazzling +8.39 mag, the Crab's is quite well condensed and as such, its surface brightness is fairly high. It can be found as a misty patch with ordinary binoculars, though larger binoculars reveal it as a definite elongated, round-edged feature. Telescopically,

the texture of the Crab becomes evident in refractors of 4-inches aperture or reflectors of the 6-8-inch class. Reflectors of 16+ inches in aperture and dark skies are needed to glimpse the filament structures of M1's outlying regions and real striation in its core. Filtration will help with this object, especially in small instruments where it can sometimes be difficult to isolate the nebulosity of the object from the rich background of the Milky Way.

Photographically, the Crab Nebula is a rewarding target, with the "Hubble Palette" of H-Alpha, OIII and SII being particularly useful in bringing out the tangled, chaotic structure of the object's core. Though it can be very effectively recorded with single shot colour cameras, as displayed by Mark Blundel's picture below.


M1 Crab Nebula
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The Crab Nebula, M1. Image credit: Mark Blundell. Image used with kind permission.

No-one with any form of optical equipment should ignore the Crab Nebula. While not as spectacular is the neighbouring Orion Nebula, it is the only easily-observed remnant of a Supernova that humans have actually observed in relatively recent history. Given the dearth of Supernovae in our galaxy in recent times, the Crab remains a special object to us.

Where Taurus is rich with bright stars and interesting objects, Aries is much less so. However, it is not without interest. Aries has been known as a constellation since Egyptian and Mesopotamian times, but is now generally recognised to represent the Ram Chrysomallos, who was sent by Hermes (later the Roman equivalent, Mercury), to rescue Phrixus and Helle, the son and daughter of King Athamas and his Queen Nephele. Helle fell from the back of the Ram during the rescue, drowning in the Straits of Gallipoli, also known as the Hellespont (the sea of Helle). No sooner than Phrixus had made it to the safety of Colchis (now the Georgian Black Sea coast), he sacrificed the unfortunate Chrysomallos to give thanks for his rescue. Chrysomallos was placed in the sky as the constellation of Aries and his Golden Fleece (later to be the focus of the quest of Jason and the Argonauts) was placed in a sacred grove, guarded by a dragon.

Aries itself consists of only four bright stars, the principle of which is known as Hamal (Alpha Arietis). Hamal is second magnitude and is found near to Shertan (Beta Arietis: third magnitude) and Mesarthim (Gamma Arietis, fourth mag) with the outlying 41 Arietis (again, fourth magnitude) lying over 10 degrees to the east.

Of the four main stars in Aries, Gamma Arietis is the most interesting for regular telescopic astronomy. This is one of the most famous double stars in the sky, having been first observed as such in the mid 1660s by the English Astronomer Robert Hooke. Separated by just over 6 1/2 orc seconds the two components of gamma Aretis are very similar stars in terms of brightness and spectral type. With an orbital period of greater than 5000 years the two components stars can easily be split in small telescopes, making this a great target for those interested in getting into double star observation. The stars are thought to lie around 165 light years distance, based on the most modern observations made by the Hipparcos satellite. There are a few other double stars in Aries including Epsilon, Lambda and Pi Aretis - but none are as prominent and easily-observed as Gamma.

Aries is also home to a few galaxies, many of which are in the 13th to 14th magnitude range and subsequently only readily observable for those with larger instruments. The brightest of these is in NGC772, A fascinating spiral galaxy which is thought to be twice the mass of the Milky Way. This galaxy shows extended spiral arms including one large one thought to be drawn out from the central galaxy by the tidal effects of its satellite galaxy NGC770. Although NGC 772 is listed as a 10th magnitude object it is a fairly low surface brightness, so will

need a reasonable aperture telescope to observe. There were two notable supernovae observed in quick succession in 2003 within NGC 772 - this was quite a rarity, with both being visible at the same time.

NGC722. Image credit: Goran Nilsson & The Liverpool Telescope. Creative Commons

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