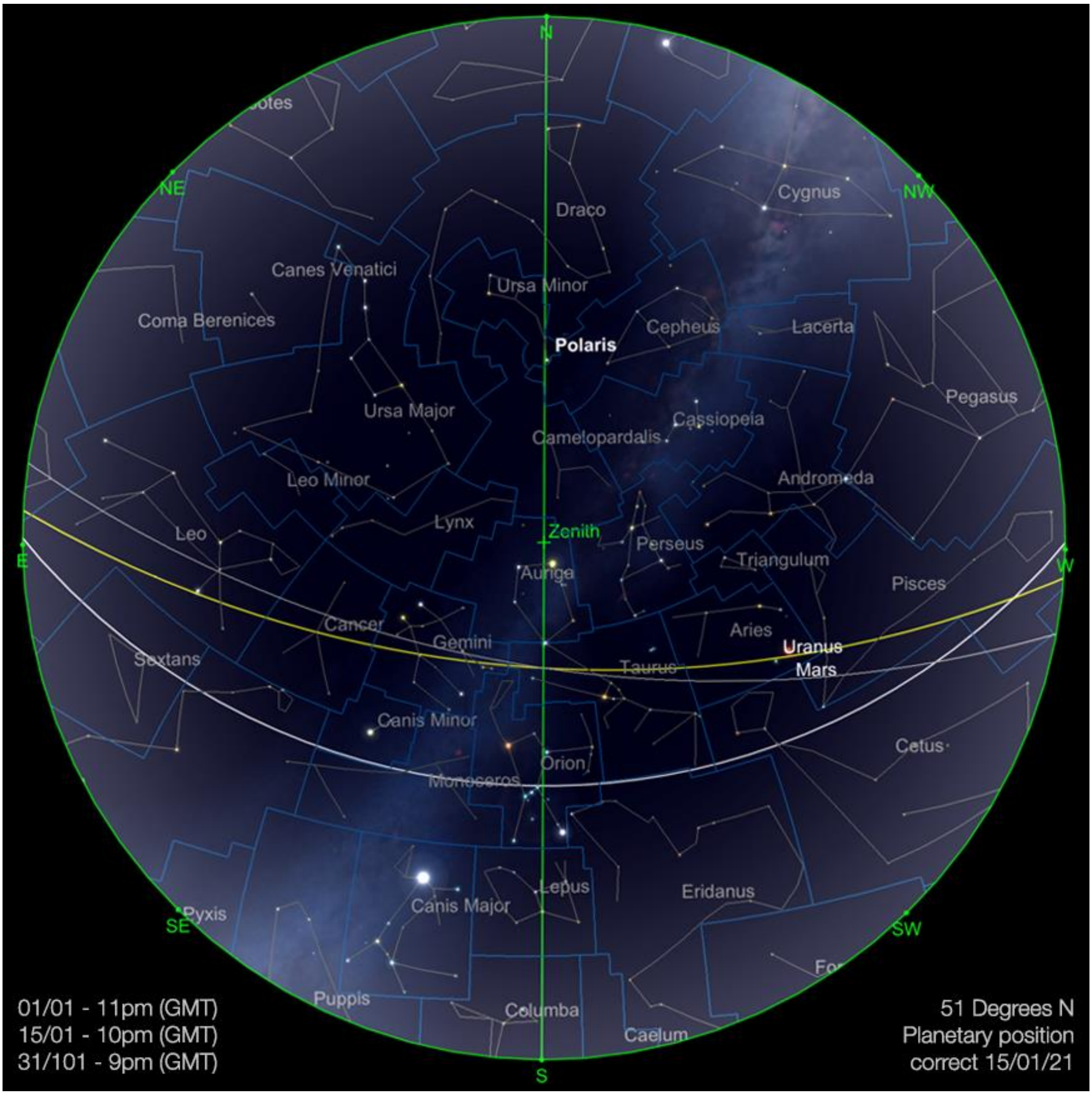
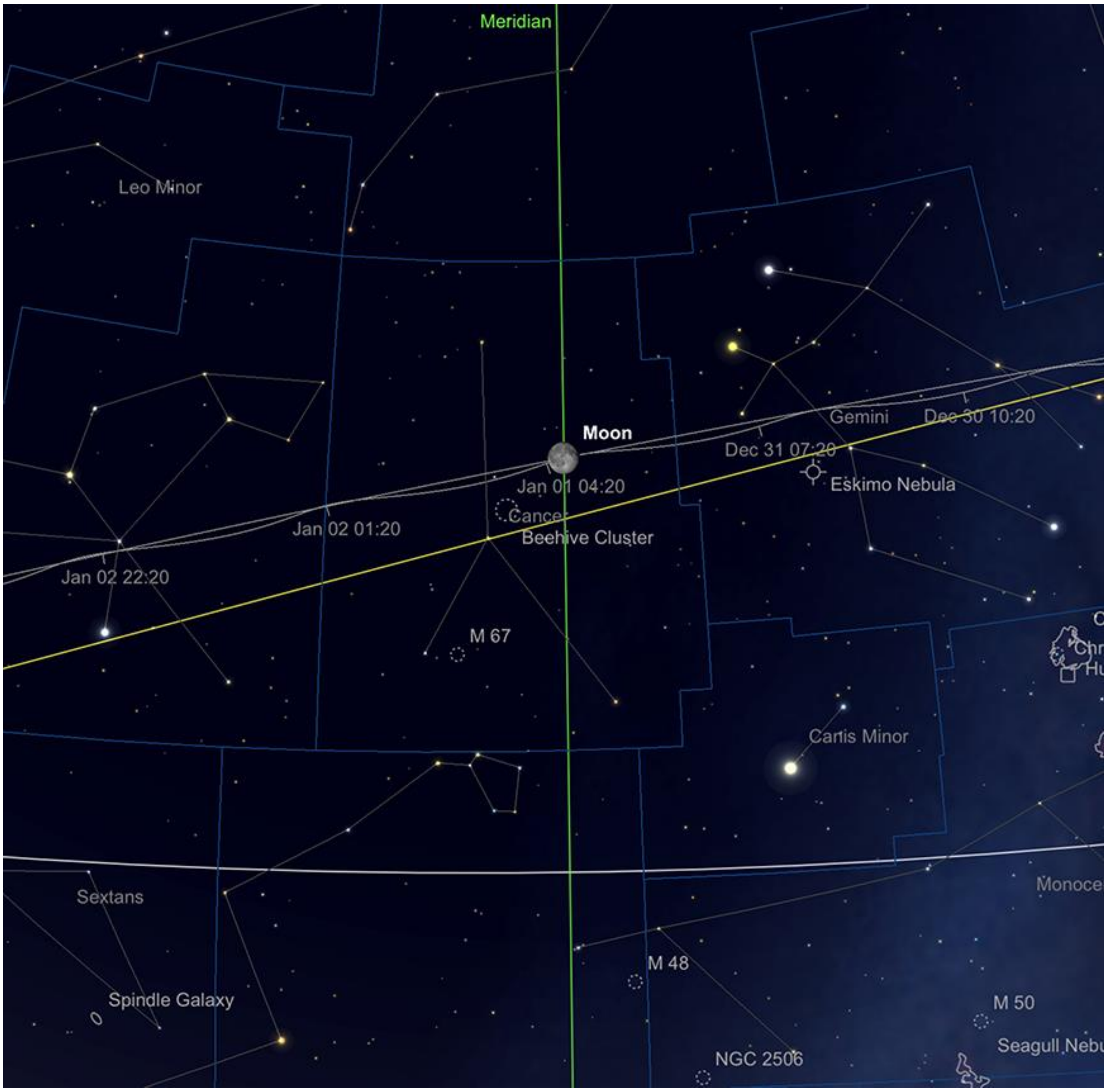
Telescope House January 2021 Sky Guide



The Solar System

The Moon

The Moon begins January at 96% Waning Crescent phase in Cancer. High in the sky from the northern hemisphere. Naturally this part of the month and its end will not be the best time for observations of deep sky objects, or astrophotography (without narrowband filtration).



The Moon at transit point, early evening, 1st January. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Last Quarter occurs on the 6th, with the Moon in Virgo. As the Full Moon appears at this time of year occurs in the very northerly part of the Ecliptic, its natural that New Moon will occur in the more southerly part of the solar system's plane. This will happen on the 13th with the Moon in the Zodiacal constellation of Sagittarius. The Moon will pass to the south of the Sun, before starting the climb up the "evening" side of the Ecliptic, passing to the south of the planets Mercury, Jupiter and Saturn on the evenings of the 14th in Capricornus - but at just one day past New and at 2.3% illumination, won't be visible.

First Quarter is reached on the 20th, in Aries, with the Moon 8 degrees to the west of the planets Mars and Uranus in neighbouring Pisces.

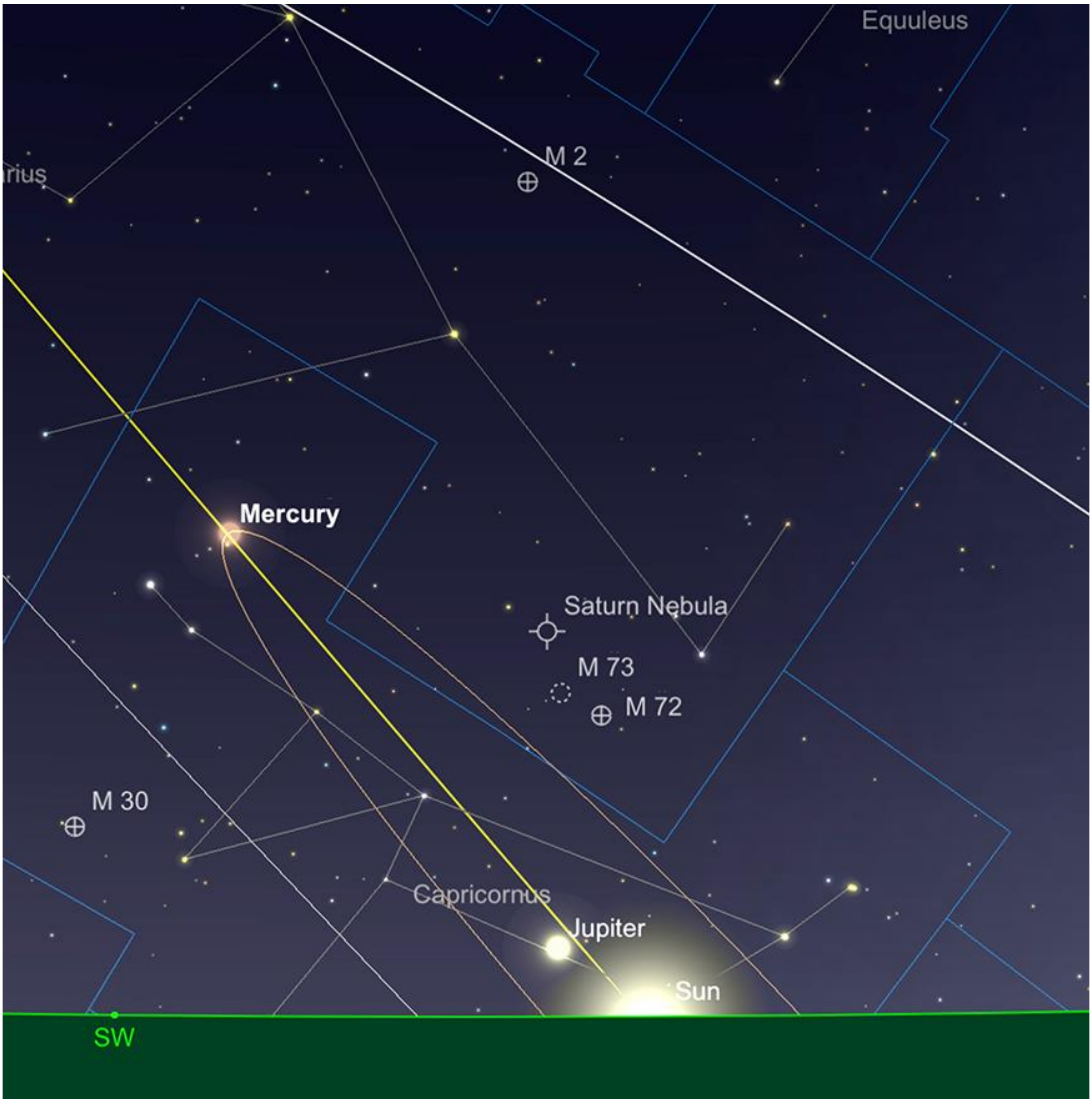
As previous reported, Full Moon occurs on the 30th in Cancer and the Moon ends January two days later in Leo at a 93% illuminated Waning Gibbous phase.

Mercury

The solar system’s smallest true planet starts the month as an evening object in Sagittarius. Sitting just over a degree high (from 51 degrees N), Mercury is -1.0 magnitude in brightness on the 1st, presenting a just under 5 arc second diameter 98% illuminated disk. The planet is separated from the Sun by just under 8 degrees, making it impossible to spot at the month’s beginning.

As usual, nothing stays static as far as Mercury in concerned, as the fast moving planet whips round the Sun and starts to gain altitude from northern hemispherical perspective. By the 10th, Mercury forms a tight triangle in the sky with Jupiter and Saturn in western Capricornus. Mercury sits 6 1/2 degrees high from the horizon at sunset. The proximity of the brighter Jupiter may make Mercury easier to spot, but the window of observing opportunity will be slim from northern temperate locations.

Towards the month’s end, Mercury reaches greatest eastern elongation from the Sun, shining at -0.5 mag and displaying a an illumination of around 53% and a diameter of just over 7 arc seconds. The planet will attain a maximum altitude of just over 13 1/4 degrees (from 51 degrees N). The extra altitude will certainly help in locating the planet, but the



Mercury at Greatest Eastern Elongation, January 24th. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

drop in brightness, due to decreasing phase, will even out the chances of making a positive identification and observations of the elusive innermost planet.

Venus

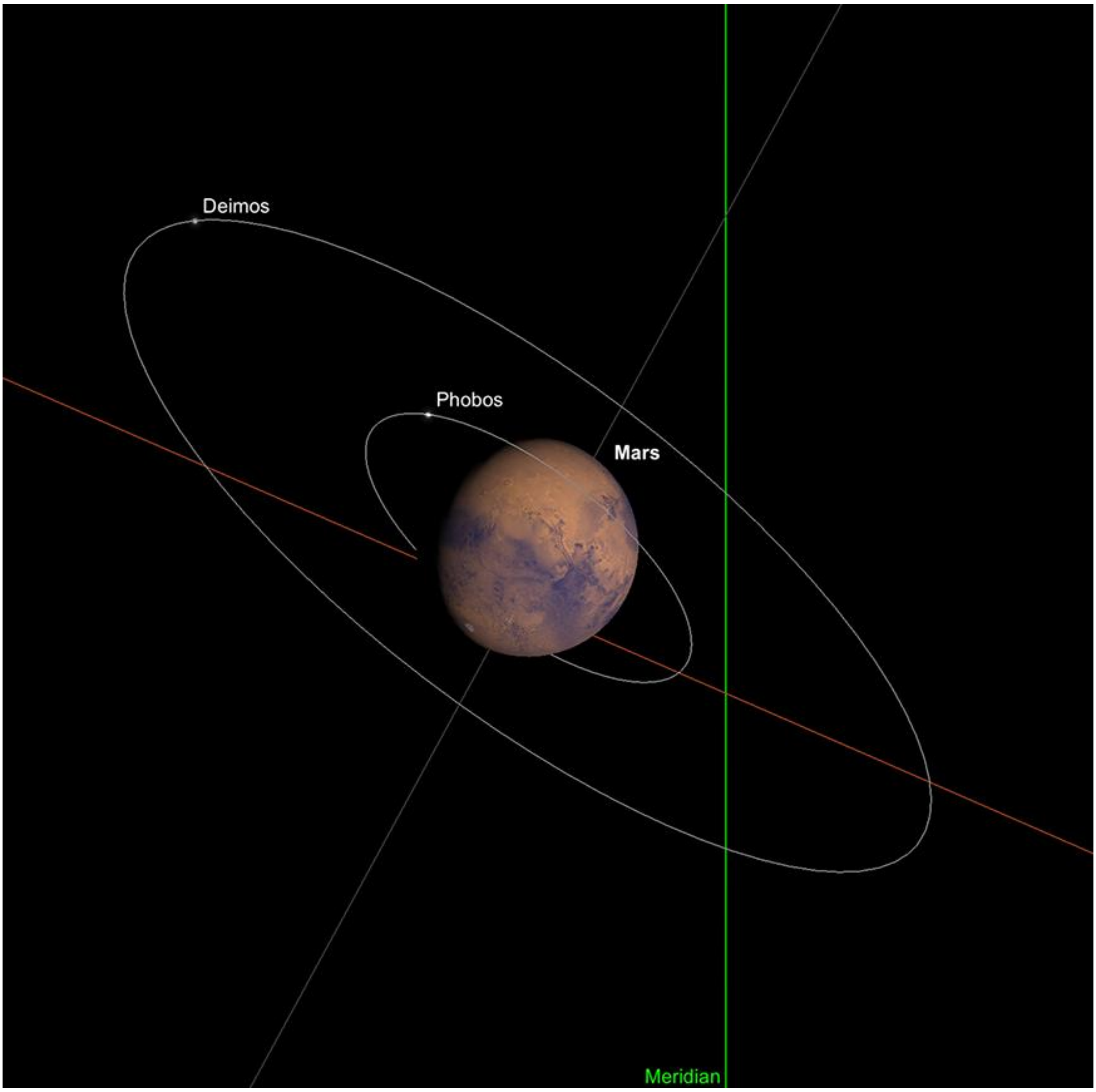
Venus is found in Ophiuchus at the month's beginning. At 94% illuminated Gibbous Phase and -3.9 mag, the planet is its usual conspicuous self, much brighter than anything in the same area of sky (excepting the Sun itself). The planet is travelling sunward at a regular pace and it will still be some time (March 2021) before it reaches Superior Conjunction. However, due to the complex arrangement of the plane of the horizon, to that of the plane of the Ecliptic, Venus continues to appear to sink quite rapidly horizon-ward from mid-northern latitudes as the month progresses. Venus stands 9 1/2 degrees high (from 51 degrees N), on the morning of the 1st, separated from the Sun by just over 20 degrees.

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

As January continues, Venus remains at the same brightness, as its modest increase in phase evens out its decrease in angular size. By mid-month, Venus stands just over 6 degrees high (again, from 51 degrees N) at sunrise. This decreases to just over 3 degrees elevation at the month's end, by which point, the planet will still be -3.9 magnitude.

Mars

Mars remains well-placed for evening observations on the Pisces/Aries borders. Transiting at just after 7pm, Mars is 10.3 arc seconds across and is -0.2 magnitude on the 1st.



Mars at transit point, 1st January. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

As Mars is a comparatively small planet in relation to the Earth, once we begin to pull away from it on our faster interior orbit, the planet's disk appears to shrink quite rapidly. Subsequently, the earlier Mars is observed during January, the better.

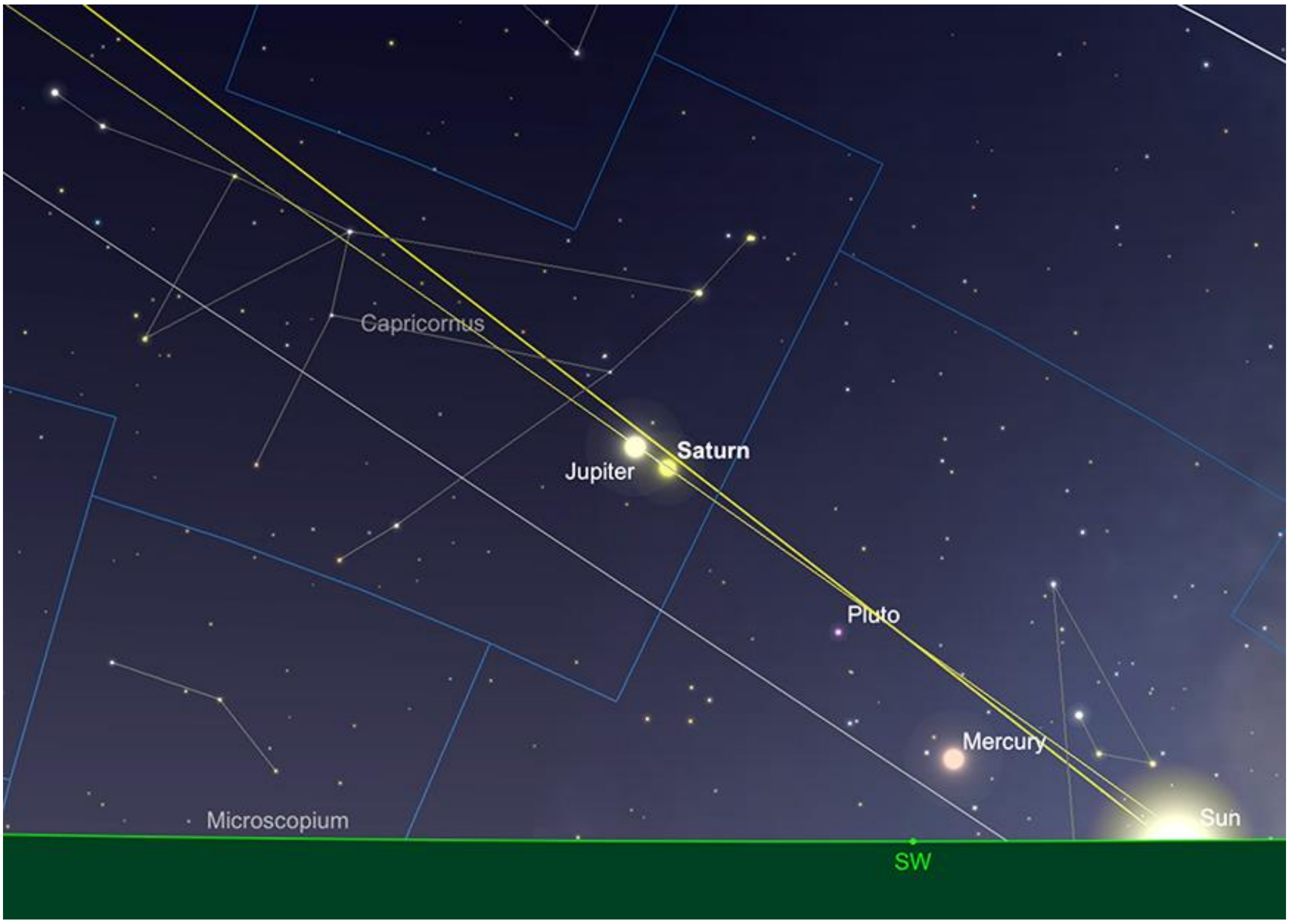
By mid-month, Mars has crossed over into Aries and shrunk to a 9 arc second diameter target, shining at +0.1 magnitude. The planet appears to be climbing northward in the Ecliptic from our perspective and is a very reasonable height from the horizon at transit point - just over 53 degrees (from 51 degrees N).

By the end of the year, Mars will present a 7.9 arc second disk. By this point, the planet will be +0.4 mag brightness. Mars is still worth observing with reasonable magnification in a telescope, but the later in the month it is observed, the less visually impressive it will be.

Jupiter

After the excitement of the close conjunction of Jupiter and Saturn, January finds the two bodies still very close together in the sky, but the impact of their separation is not quite as pronounced as it has been of late. The 1st finds Jupiter at -2.0, presenting a disk just shy of 33 arc seconds diameter, separated from neighbouring Saturn by just under 1 1/4 degrees. Jupiter sets just under two hours after the sun, so observing time is limited and obviously limited by atmospheric seeing. As previously mentioned, the evenings of 10th-12th finds Mercury very close to Jupiter, aiding the location of the smallest planet considerably.

As January progresses, the planet dives sunward, reaching Superior Conjunction on 29th January. The evening apparition of Jupiter will have ended and it will emerge as a morning object, though not immediately observable. Catch the King of the Planets in the evening while you still can - the earlier in the month the better!



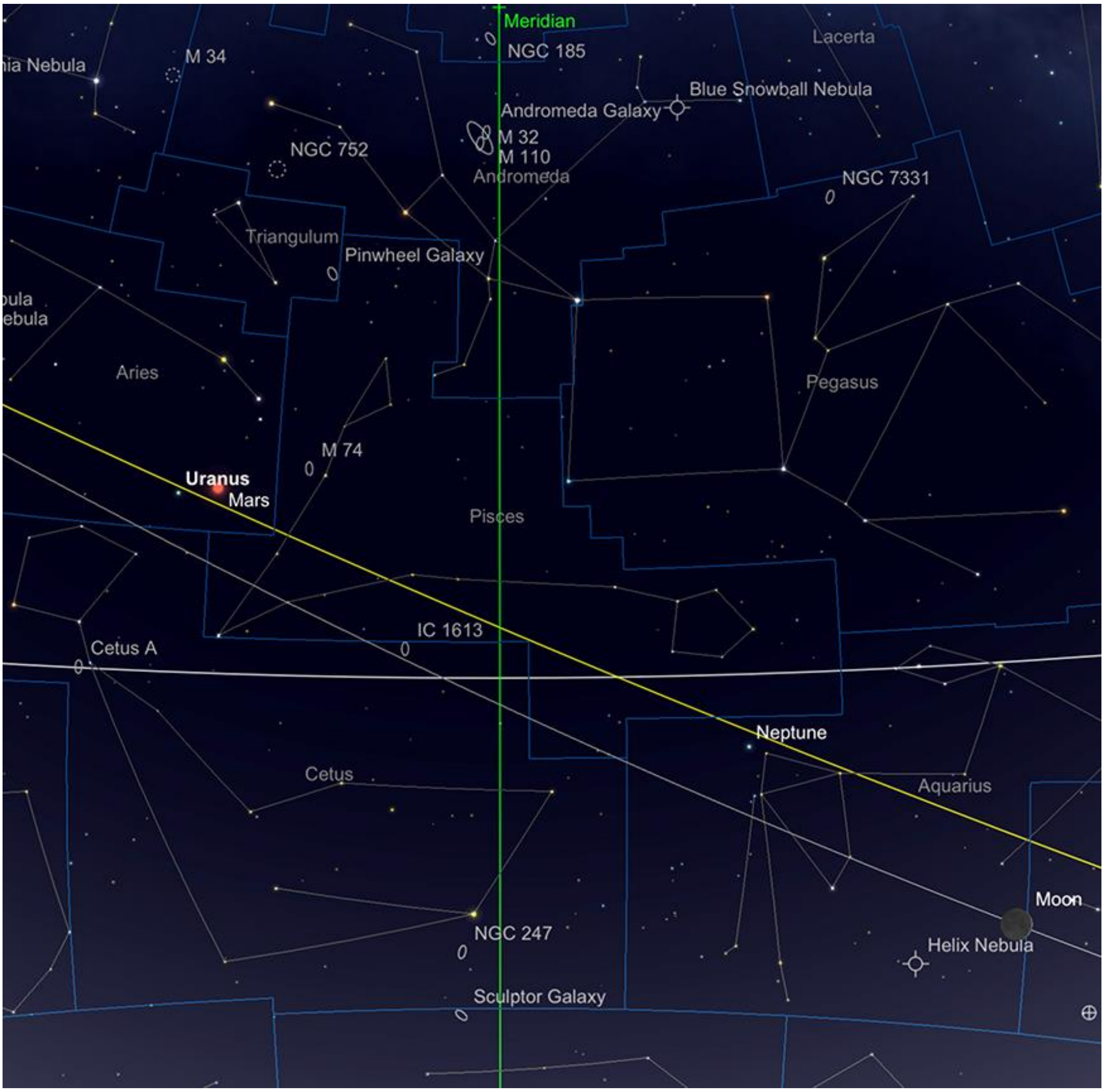
Jupiter and Saturn, 1st January. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Saturn

Similarly to Jupiter, Saturn's visibility in the evenings is limited. Sitting just under a degree 1/4 to the east of Jupiter, at +0.6 magnitude, at the month's beginning, the Ringed Planet will reach Superior Conjunction five days earlier that its neighbour, on the 24th January. As with Jupiter, Saturn will re-emerge as a morning target, but it will be a couple of weeks before it is an easier find in the morning twilight.

Uranus and Neptune

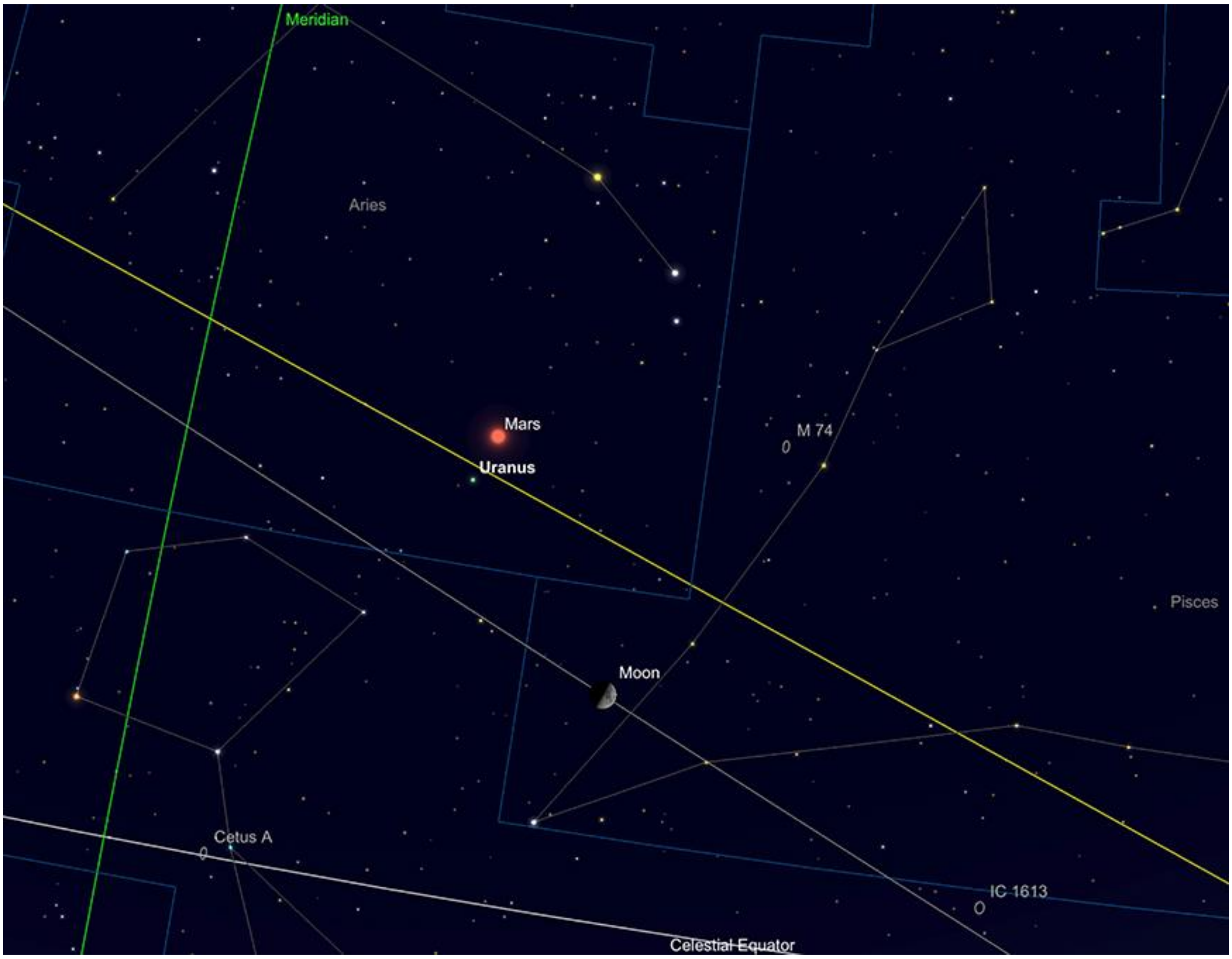
The two outer gas giants continue to be well-placed for observations in the early evening. The fainter Neptune is further west within the Ecliptic than Uranus and subsequently rises and sets earlier. At the beginning of January, Neptune is a +7.9 magnitude, 2.3 arc second diameter target in Aquarius. The planet transits a little after sunset at 4.46pm (GMT) on thUrnaus ae 1st and sets at



just before 10.30pm.

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

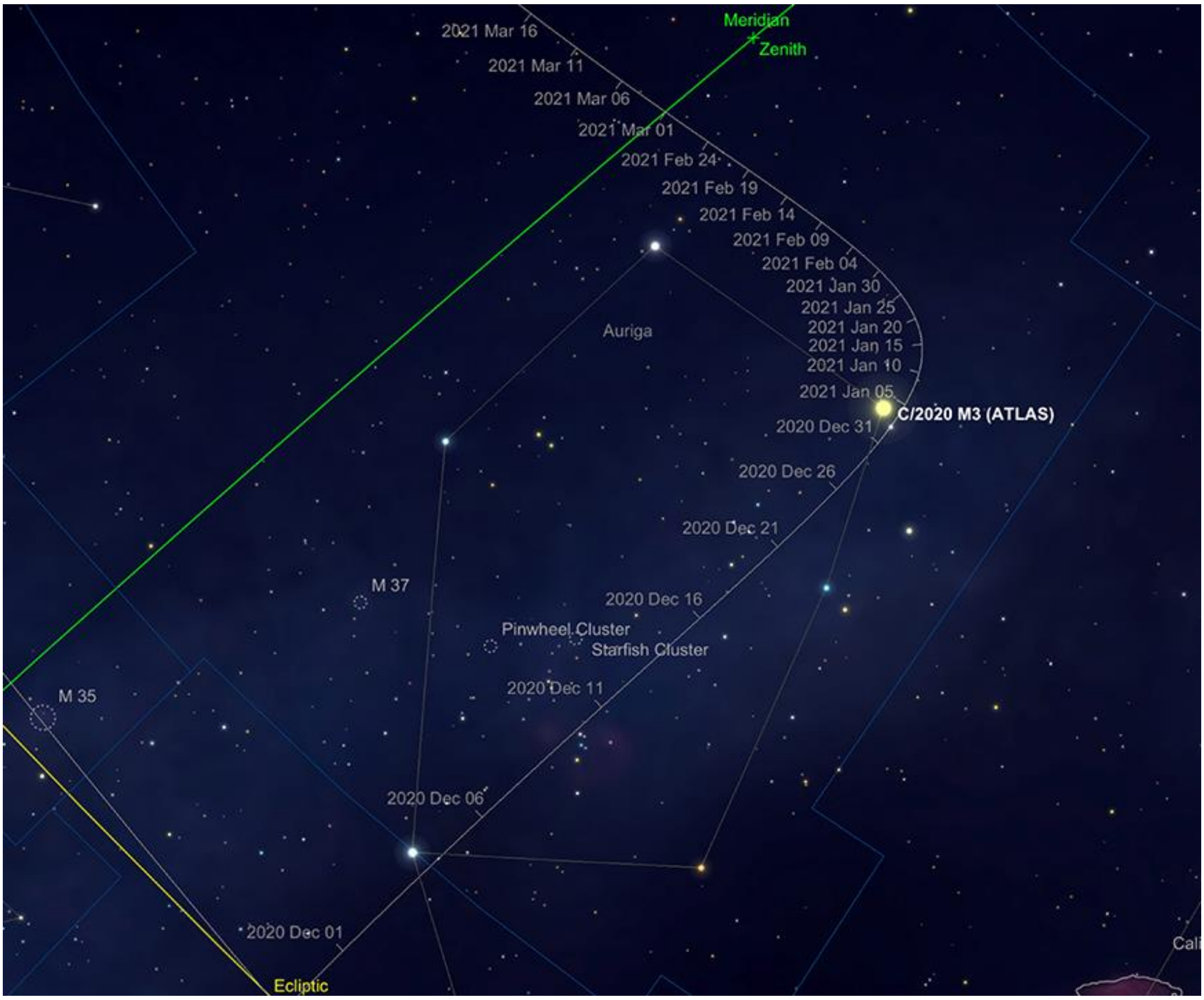
Uranus will be easier to find at +5.8 mag and presenting a 3.6 arc second diameter disk. The planet transits at a little before 6.30pm (GMT), setting around 8 hours later. Uranus is to be found much higher up in the sky than its neighbour, and will reach a maximum separation from the horizon of just under 53 degrees (from 51 degrees N). Around the 20th, Mars appears to draw up alongside Uranus to the north, with the two very different worlds reaching a separation of a degree and a half at their closest. This will naturally give those who haven't found Uranus before a really good pointer to its location. Given a suitably dark sky, it is just possible to find Uranus with the naked eye. However, we would always recommend the use of binoculars or a telescope under less than ideal conditions. The nearby Half Moon (8 degrees to the SW) will mean that the sky will be too bright to see Uranus without optical assistance on the evening of 20th, but it should be straightforward enough in binoculars and smaller telescopes. Uranus is often commented to look much like a brighter planetary nebula in smaller telescopes, appearing a valid green-grey disk in all but the largest of amateur instruments.



Uranus, Mars and the Moon, 20th January. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

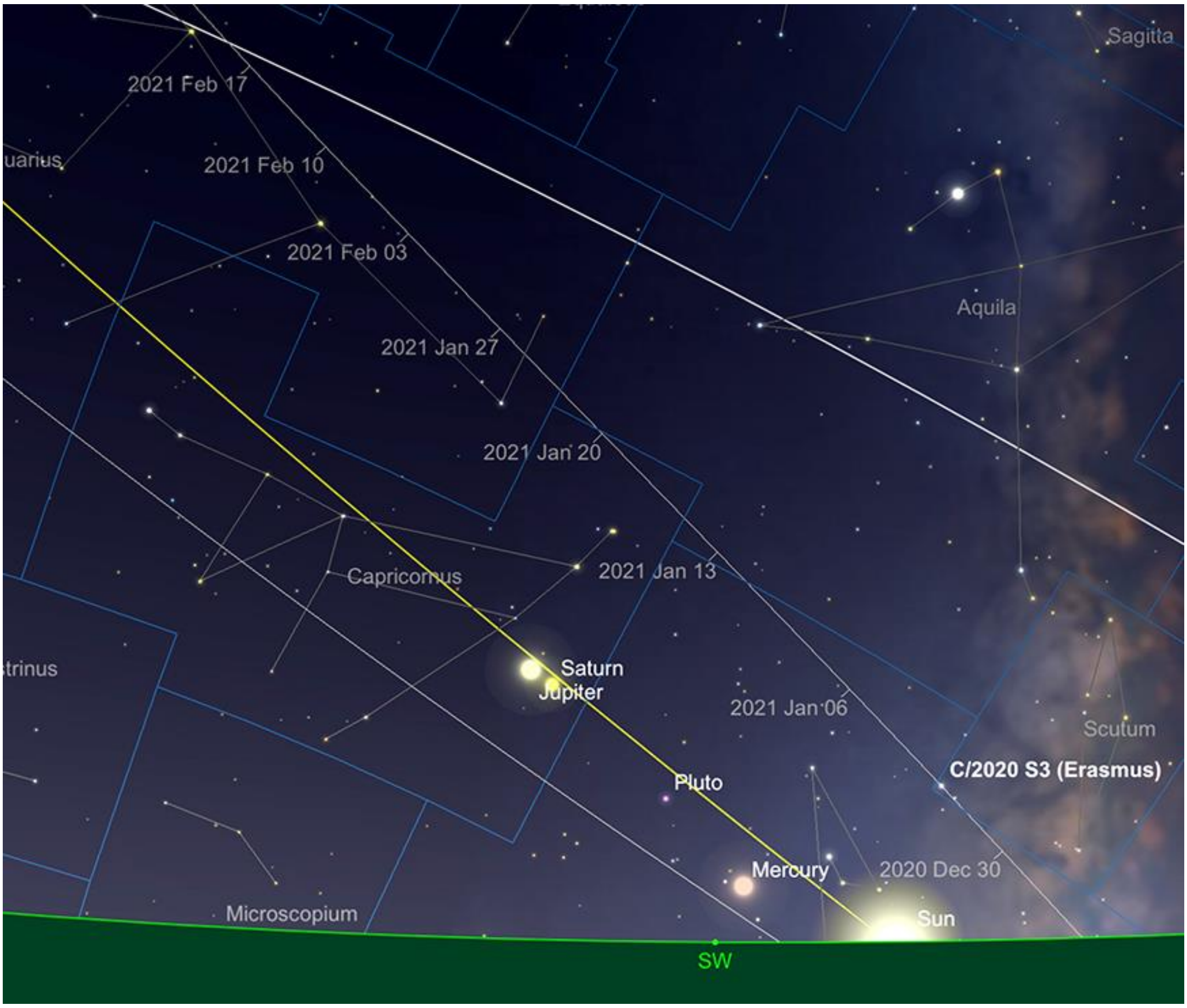
Comets

Comet 2020 M3 ATLAS was our best hope for cometary observations during December, but is now fading. At January's beginning it is found in Auriga on the 4th and will continue to track northwards through the constellation until mid-month when it will appear to make an abrupt dog leg to the east. 2020 M3 starts the month around 1/2 a degree from Capella (the third brightest star in the sky's northern hemisphere). Passing through this readily identifiable constellation should (in theory) make this comet relatively easy to find. However it is relatively faint, being only +10 mag at time of writing and possibly much fainter come January. Subsequently, this means this comet is the preserve of those with telescopes and larger binoculars only.



Comet 2020 M3 ATLAS path, January 2021. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Also attracting some attention is Comet 2020 S3 Erasmus - though we urge caution here. This comet is to be found almost due north of the Sun, emerging from December's Perihelion. It has proved somewhat brighter than initially predicted, peaking at around +3 magnitude in SOHO solar images. However, at time of writing is still invisible and will be a difficult target when it re-emerges from the Sun's glare. The comet will track NE through Sagittarius, Capricornus, Aquila and Aquarius during January, but the Sun, now on the march northward in the Ecliptic, will keep pace with its progress somewhat, so it won't be more readily observable until the Spring, by which time it will have faded. If circumstances were a little different, this comet may have put on a reasonable show, but orbital dynamics are against us here!

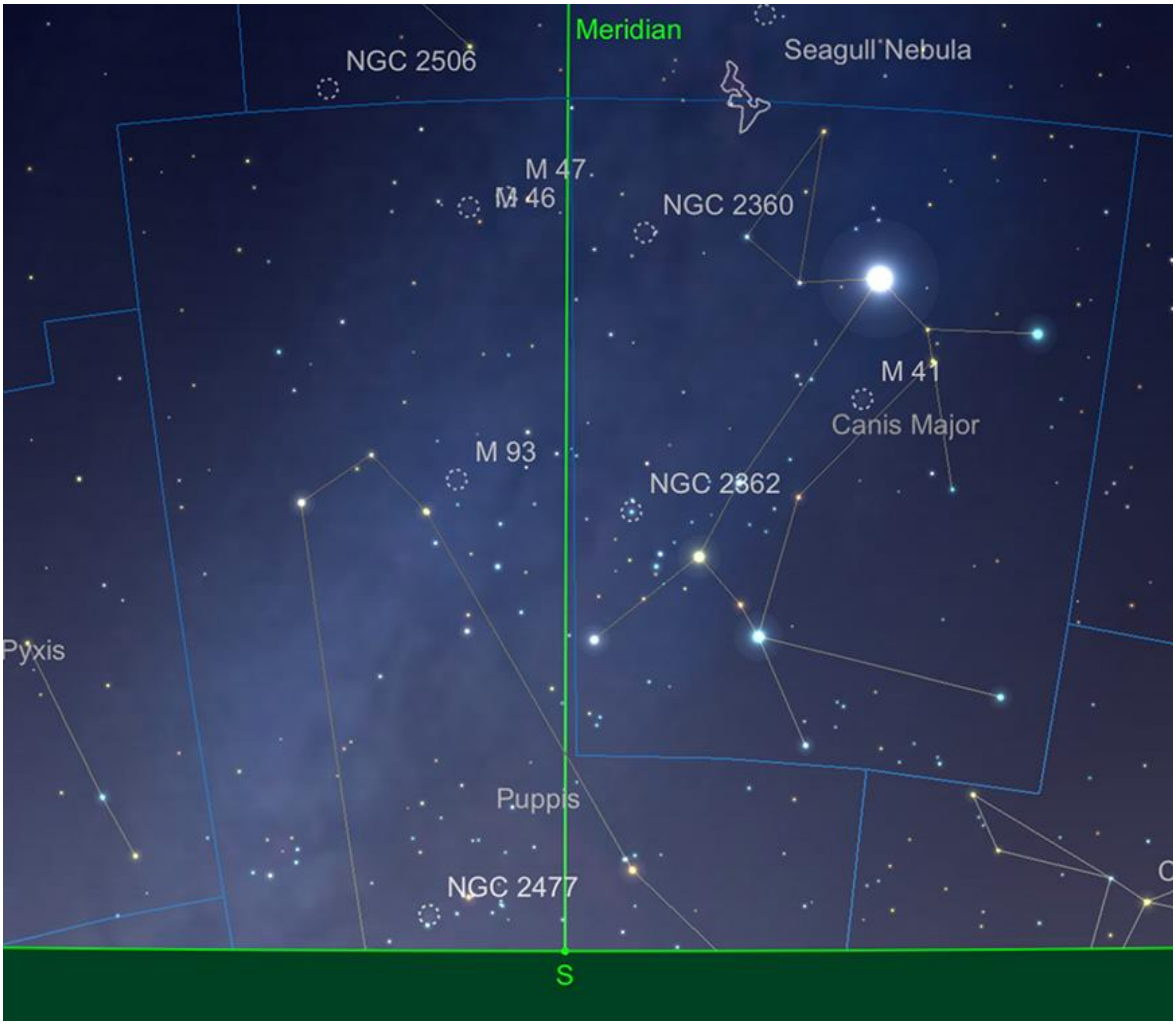


Comet 2020 S3 Erasmus path, January 2021. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Meteors

The Quadrantids are the major shower of January and are normally fairly numerous in ZHR, yet rather muted brightness-wise in comparison with the major showers of the year. The Quadrantids emanate from the northern polar region of the sky around Bootes, Draco and Hercules, in an area of sky which used to contain the now-defunct constellation of Quadrans Muralis (the mural quadrant). Possibly seeded by Minor Planet 2003 EH1, which may well be an extinct comet (first observed by Chinese astronomers around 500CE), the Quadrantids are numerous at their peak, sometimes reaching a Zenithal Hourly Rate in excess of 200 (though not all of these will be seen from a given location). This year, the peak date of the Quadrantids - January 3rd/4th - coincides with a Gibbous Moon, which rising at just after 9pm GMT (from 51 degrees N), will rather spoil the opportunity for observations, sitting in relatively nearby Leo. However, there is a reasonable window available in the early evening before moonrise, to catch a few Quadrantids. The Quadrantids sometimes peak with major storms, but the cloud of debris from which it is seeded is often perturbed by the passage of the major planets, which can't be easily predicted. With the Moon out of the way in the early evening, the Quadrantids will have a good chance to fulfil part - if not all - of their potential this year.

Deep Sky Delights in Puppis and Canis Major



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

Puppis and Canis Major are two notable constellations of the southern hemisphere of the sky. These constellations contain the strand of the "Winter" part of the Milky Way and as such are home to some significant objects. Unlike the southern part of the "Summer" Milky Way, with the riches of the galactic centre in Sagittarius, Scorpius and Ophiuchus, when we look towards the south of our galaxy's plane in the northern hemisphere's winter months, we are looking outwards of our galaxy, through the "Perseus Arm" (one of the two major arms of our galaxy, along with the

“Scutum-Centaurus Arm”) and outwards to the weaker and more diffuse structure of the “Outer Arm”.

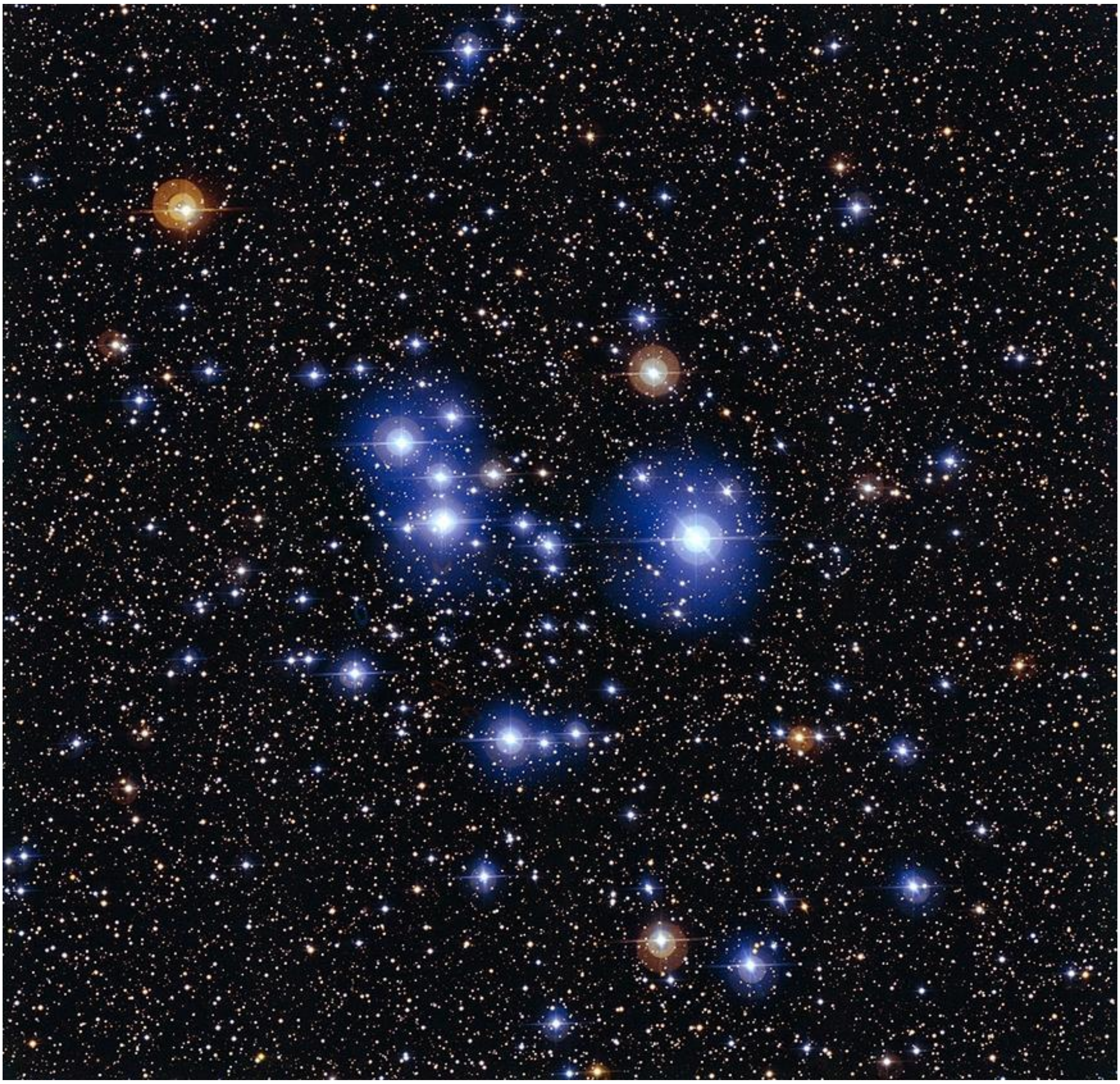
Puppis was part of the much larger Argo Navis, the Ship - then the largest constellation in the heavens. Argo Navis was first codified by Ptolemy back in the Second Century AD and remained so until well into the 18th century, when French Astronomer Nicolas Louis Lacaille sensibly broke it up into three manageable sections Carina, the Keel; Puppis the Stern and Vela, the Sails. The whole spectacle of Argo Navis is only well-seen from the Southern Hemisphere, though luckily for observers in more northerly climes, some of Puppis' best Deep Sky targets are still observable.

The first of these is the star cluster M46. This is a bright open cluster of +6.09 mag and about 20 arc minutes across, which was discovered by Messier in 1771, and has the distinction of being the first addition to his original list (Messiers 1-45), which was circulated for the first time in the same year. M46 is a populous cluster of about 500 stars, of which 150 of the brightest are visible in amateur instruments. M46 is also notable for the presence within its borders of the compact +11 mag planetary nebula NGC2438. Of the two objects, NGC2438 is most definitely the nearer at 2900 light years to M46's 4900-5400 light years distance. The overlapping of the two is merely a pleasant line of sight effect. Planetary Nebulae take much longer to evolve than the population of stars in M46 have been in existence, so it is not possible for the nebula to be a true member of the cluster.

M46. Image credit: Jose Luis Martinez. Creative Commons.

Next door to M46 is another cluster - M47. This cluster is brighter that its neighbour and its visible without optical aid on a good night, being +4.40 mag brightness. This cluster was first recorded by Sicilian Astronomer Giovanni Batista Hodierna in the 1650s, though was discovered independently by Messier in 1771 - though there is some confusion around this. Some believe Messier's description of the location of M47 actually refer to NGC2447, otherwise known as M93 (more of which later). M47 was thus a "Missing Messier" until T.F. Morris defined M47 and M48 as the catalogue numbers of the objects they now represent in 1959. Despite being lost for nearly two centuries, the object that now bears the moniker M47 is a good open cluster containing around 50 stars scattered over an area of 25 arc minutes diameter. The cluster is described in many sources as being "coarse" and "irregular", which are unhelpful descriptions, as they do not do justice to M47. There are many fine knots, chains and eddies of stars throughout the cluster, which are quite beautiful. The notable double star Struve 1121 sits pretty much central in the cluster and its +7 mag components are easily separated in all sizes of instrument. M47 lies around 1500-1600 light years away and is actually 15 light years in diameter, containing in total around 200-220 stars. Most sources estimate its age to be around 60 million years.


José Luis Martínez, 2015



M47. Image credit: European Southern Observatory. Creative Commons.

M46 and 47 can be fitted into the same field of average binoculars and while might not be as tightly clustered or quite as bright as the Double Cluster in Perseus, present a pleasing sight to the Binocular Astronomer.

The aforementioned M93, another open star cluster, lies some 9 1/2 degrees to the S of the pairing of M46 and 47. It is, again, another fine bright cluster, this time consisting of around 80 stars, which have a combined magnitude of around +6. M93 is quite condensed at 10 arc minutes diameter and is presents its stars to our line of sight in a shape described as "diamond", "parallelogram" or "wedge-shaped" in various sources. No matter what shape you think it is, this cluster should be sought out, though being much further South than M46 and M47 is a little more difficult to see well from higher Northern latitudes. Southern observers will, of course, see this cluster very well. The cluster lies around 3400-3600 light years from us and is slightly older than its neighbours. Due to the spectral signature of many of its members, M93 is thought to be around 100 million years old.

Hopping across the border into Canis Major, the larger of the two celestial dogs, we come to yet another excellent cluster, NGC2362. This cluster was discovered in the 1650s by the aforementioned Hodierna, who first catalogued it in 1654. At +4.1 mag it is a bright object so it is uncertain how the likes of Messier and his collaborators managed to miss it. Sir William Herschel discovered it independently in 1783.

NGC2362 is a compact cluster - barely 5 arc minutes across, though it is reasonably numerous in population. We can see many of its 60 stars in amateur telescopes, though the most prominent of these by far is the star Tau Canis Majoris, which often gives this cluster it unofficial name. Tau CM is a very unusual star - a spectroscopic binary with obsoletely enormous components of spectral type O8. This system is thought to be amongst some of the largest and most luminous Supergiant stars known, with an absolute magnitude of -7. Lying some 5000 light years away, NGC2362 is very luminous as a cluster and is surprisingly bright. It is thought to be a mere 5 million years of age, so its component stars are very young and vigourous - indeed, NGC2362 is amongst the youngest of all star clusters to be observed.

8 1/2 degrees to the NW of NGC2362 lies the large and spectacular cluster of M41. This 39 arc minute wide open cluster is easily visible to the naked eye from a good location at +4 mag, sitting just 4 degrees to the S of Sirius, Alpha Canis Majoris. It is possible that Aristotle first recorded M41 in 325 BC, but this is not certain, as it sits in such as rich area of the Milky Way and there are many other similar objects surrounding it - though t is doubtless one of the more prominent members of this part of sky. What is more certain is its definitive discovery by Hordierna in the 1650s, as it was part of his original catalogue published in1654. John Flamsteed independently discovered it in 1702 as well as the French Astronomers Le Gentil and finally Messier in 1765.

Being a large cluster, M41 is visible as a roughly Moon-sized hazy patch of sky to the naked eye. Binoculars show it extraordinarily well and widefield telescopes better still. There are numerous star chains which alternate from white-blue to many yellow and orange members. There are a number of members which appear to run in almost straight lines, though this is simply a chance line of sight effect. Lying some 2300-24000 light years away, M41 is thought to be around 25 light years across and around 200-250 million years old. Interestingly, M41 is home to many K type giant stars. These stars are very much like our own Sun in chemical composition, but are much, much larger and more luminous - the brightest of these, HD4909, puts out a staggering 700 times the output of our own parent star.


M41. Image credit: 2Mass (Two Micron All Sky Survey, University of Massachusetts & the Infrared Processing and Analysis Center/California Institute of Technology, funded by NASA and the National Science Foundation). Public Domain.

The nearby +2.59 mag asterism or very loose and ill-defined open cluster Collinder 121, which can be found under a degree to the E of Omicron Canis Minoris, is though to share a similar proper motion with M41, indicating a possible common origin for both objects. Both clusters lie around 60 light years from one another, so this is also indicative of a possible relationship.

Some 9 degrees to the NW of M41 lies yet another open cluster, NGC2360. Though not quite as bright or as large as some of its more illustrious and well-known neighbours, the is cluster is an attractive +7.19 mag, 13 arc minute diameter object. It was discovered by Caroline Herschel, sister of William, who was a very skilled and methodical observer and astronomer in her own right - and a great organiser and cataloguer of her brother's work. This is significantly thought to be her first independent discovery, though included on her own Deep Sky list as number 2. There are more than 100 stars of observable magnitude packed into this compact areas, of which the Western section is more populous than the Eastern half. There are many fine chains and voids within this cluster and it can easily be found in binoculars and smaller telescopes. It is probable that this cluster would be more conspicuous were it not appearing to merge with the Milky Way to its Southern reaches. The rich star clouds of our background galaxy appear to somewhat swamp NGC2360 in this area. NGC2360 is thought to be around 6100-6200 light years away.

Two 1/2 degrees to the N of NGC2360 lies the impressive complex of nebulosity known variously as Thor's Helmet, the Duck Nebula, or more properly, NGC2359.
This area of sky is a perennial favourite or astrophotographers, as long duration photos reveal this bubble of gas and surrounding filaments well. However, a decent OIII filter will reveal much of this to visual observers with reasonable-sized telescopes. At +11.5 mag, it may appear to the uninitiated that Thor's Helmet isn't particularly bright, and while this is true, at 8 x 6 arc minutes across, it is compact, which helps keep the surface brightness up somewhat. As mentioned, appropriate filtration helps immeasurably with observations of NGC2359, which reveals its U-shaped main arc, with what looks like a faint circular planetary nebula lurking at its bottom. This central bubble-like feature forms the "Helmet", with the "Horns" of nebulosity either side - to this observer, it looks much more like the titular helmet than the otherwise associated wildfowl! The spheroid feature in the centre is caused by the ferocious stellar wind from a central star, a Wolf-Rayet giant, which is in the final stages of burning all of its nuclear fuel before collapsing as a Supernova. When, inevitably, this star does die, it will be a spectacular event, though lying some 15000 light years away will not present us with any difficulties here on Earth.

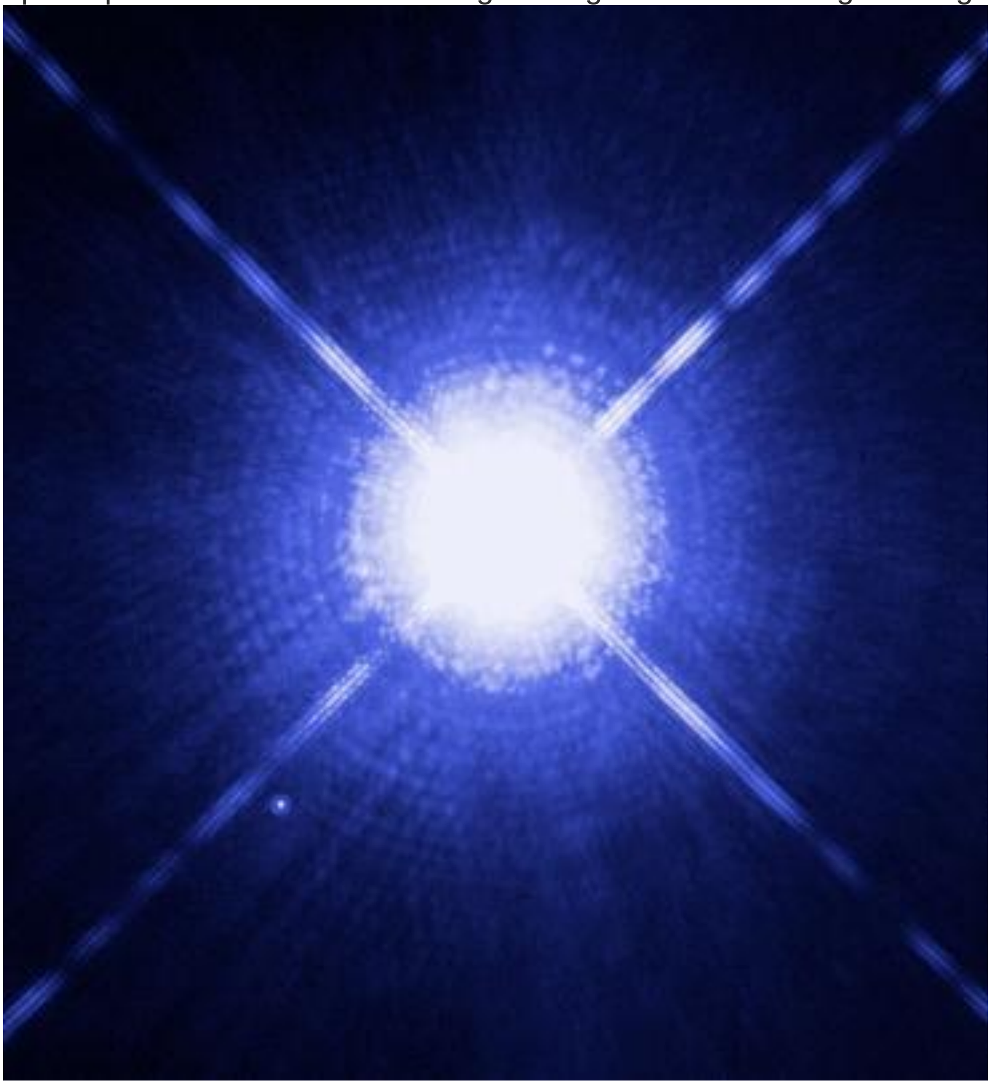

Thor's Helmet. Image credit: Joel Schulman, Mt. Lemmon Sky Survey. Creative Commons.

Naturally, we could not leave this month's journey around Canis Majoris without mentioning its most obvious feature, Alpha Canis Majoris and the brightest in the sky (after the Sun) - otherwise familiar to all as Sirius, or the Dog Star . The name Sirius derives from the Ancient Greek for "scorching" or "searing" - and we can certainly see why. at -1.46 mag it is well in excess of its nearest rival, Canopus in Carina, which only manages a "feeble" -0.62 mag in comparison!

Sirius is an A1 V class star, a white main sequence star with a surface temperature of around 9900 Kelvin. In comparison the Sun's mean surface temperature is around 5770K - so Sirius is most definitely the hotter and more energetic of the two. Sirius is nearly twice the size and over twice the mass of our Sun and considerably younger, as evidenced by the larger Iron content of its spectral signature. While Sirius is larger and brighter, the reason for its brightness is simple - it is pretty close by cosmic standards, just 8.58 light years away from us. Being so close, Sirius has a very large proper motion through the sky, which was discovered by Halley in the 17th Century. Halley studied Ptolemy, the Ancient Greek/Egyptian Astronomer's maps and by comparing the relative position of Sirius in these, in comparison to that of the time, found that the Dog Star had shifted position by half a degree - nearly the diameter of the Moon. Sirius is moving in a southerly direction at around 1.3 seconds of arc a year. It is also blue-shifted in its spectrum, meaning it is moving towards our Solar System at a closing speed of 7.6km per second. Indeed, it was the first star to be measured for this in 1868. Sirius also shares its proper motion with a number of nearby stars, including the central stars in The Plough (or Big Dipper): Merak, Phecda, Alioth, Megrez and Mizar. Interestingly, these are all relatively young A-type stars - possibly suggesting a common birthplace - though this is by no means certain.

The motion of Sirius was much-studied during the 19th century and was observed to have something of a regular deviation. This could most logically be explained by an unseen companion star. The search was on - but Sirius being so bright masked its companion. It was not until 1862 that the companion star, nicknamed "The Pup" was seen by Alvan Graham Clarke, whilst star testing the freshly-installed 18.5-inch Refracting telescope at the Northwestern University Dearbourne Observatory in Illinois, USA. At the time this telescope was the largest in the Americas - and this discovery is still a crowning achievement for this particular instrument. This discovery was later confirmed by smaller aperture telescopes. Later spectral analysis of Sirius B in 1915, via the Mount Wilson Observatory 1.5m reflector, led Astronomers to conclude that they were witnessing a White Dwarf star - only the second to be discovered (the first, 40 Erinadi B, was discovered as part of a multiple star system in 1783 by William Herschel, though not recognised as such at the time). Later radio observations from Jodrell Bank in the UK and other measurements carried out by a number of optical telescopes, including the Hubble Space Telescope have accurately measured Sirius B's diameter to a figure of 12,000 km or 7,500 miles - just under that of the Earth.   Yet the spectral signature of Sirius B suggested a surface temperature of 24,800 K - far hotter than Sirius A. But Sirius B's orbit suggested a mass in excess of the Sun's - so what was this mysterious object? The most logical conclusion to this conundrum was the theory of White Dwarf evolution - which is now accepted as the common fate of most main sequence stars. After consuming all of their conventional nuclear fuel, stars like Sirius and our Sun eventually swell to a red giant stage and then shrug off their outer layers which drift away into space as Planetary Nebulae. The core of the star is left to contract, not having the outward release of nuclear fusion to counteract the effect of gravity, which packs the star's leftover carbon and oxygen atoms ever more tightly until there is no more space left, even between atoms. This has the effect of increasing the surface temperature, though it takes a long time for the full energy of a White Dwarf to be released. It is thought that White Dwarf stars persist for billions of years in this state, until slowly they cool and fade. As a result of this atomic compression, a cubic inch of White Dwarf material is thought to weight an extraordinary 25 tons.

Observations of Sirius B can be made in telescopes of a surprisingly modest aperture - if conditions are right, experienced observers have claimed to see it at high powers with a 100mm telescope. The general consensus seems to be that 8-inch instrument using high magnification should be able to resolve it fairly straightforwardly under good conditions. It is recommended to keep magnification up around the 250-300x level and to ensure your telescope is properly cooled down and well acclimatised before any attempt is made. The brilliance of Sirius A can play havoc with attempts to resolve B, which at +8.43 mag is so much fainter. Orientation of the vanes of a Newtonian, producing inevitable diffraction spikes must be watched out for, as these will easily swamp B. As B appears almost due East of A, conventionally-mounted horizontal spider vanes of Dobsonians can be particular culprits from temperate latitudes (depending on the orientation of the system as it travels on its arc through the sky). In cases such as these, either putting Sirius just out of the field of view, or attempting to rig up an occulting bar, by blocking a section of the field lens of an eyepiece can work wonders. Those with unobstructed telescopes such as larger refractors and SCT-style instruments with supporting optical windows, rather than spiders, may fare more easily here. But everyone who owns a telescope should at least have a go at trying to observe the Pup. Those who find it will be satisfied they are observing an object less than the diameter of the Earth, 8.58 light years away - and currently separate from Sirius A by just 30 AU (roughly the distance from Earth to Neptune in our Solar System). Although there are other more easily visible White Dwarf stars, the Sirius A/B system, currently separated by 11.7 seconds of arc, remains great test of sky conditions, optical performance and observing skill - get out there and give it a go!



Sirius A & B, HST image. Public Domain.

Controversially, Sirius was listed by Ptolemy as a definitely red star. He is very clear about this colour - as Antares in Scorpius and Betelguese in Orion are also members of this list. Both these stars are unambiguously red in colour, as they are both M2 class Red Supergiants. Sirius, in comparison, is anything but. It has been postulated that during Ptolemy's era, Sirius may have been obscured by a cloud of interstellar dust or nebulosity - of which the nearby NGC2327 nebula is the prime candidate. However, this explanation seems rather far fetched. Another theory is that there is a further, unseen Red Dwarf star which is some way caused some occultation event of Sirius and led to the change in colour. Although there is some proper motional evidence that there is a third, as yet unseen, companion in the Sirius system, no direct observational evidence has supported this theory. With the sensitivity and resolutional ability of modern telescopes, it is unlikely we would have to have waited this long for confirmation of this third member of the Sirius family. However, a more prosaic explanation for Ptolemy's description exists - during ancient times, the appearance of Sirius above the horizon, just before dawn, as observed from Egypt, marked the start of the Nile's annual flood - an event of extreme significance to Egyptian agriculture, science and culture. When Sirius is observed in such a manner, just as atmospheric refraction causes the Sun to appear red at dawn and sunset, a object as bright as Sirius can appear with a distinctly reddish hue. Maybe this is the cause of the so-called "Red Sirius Mystery"?