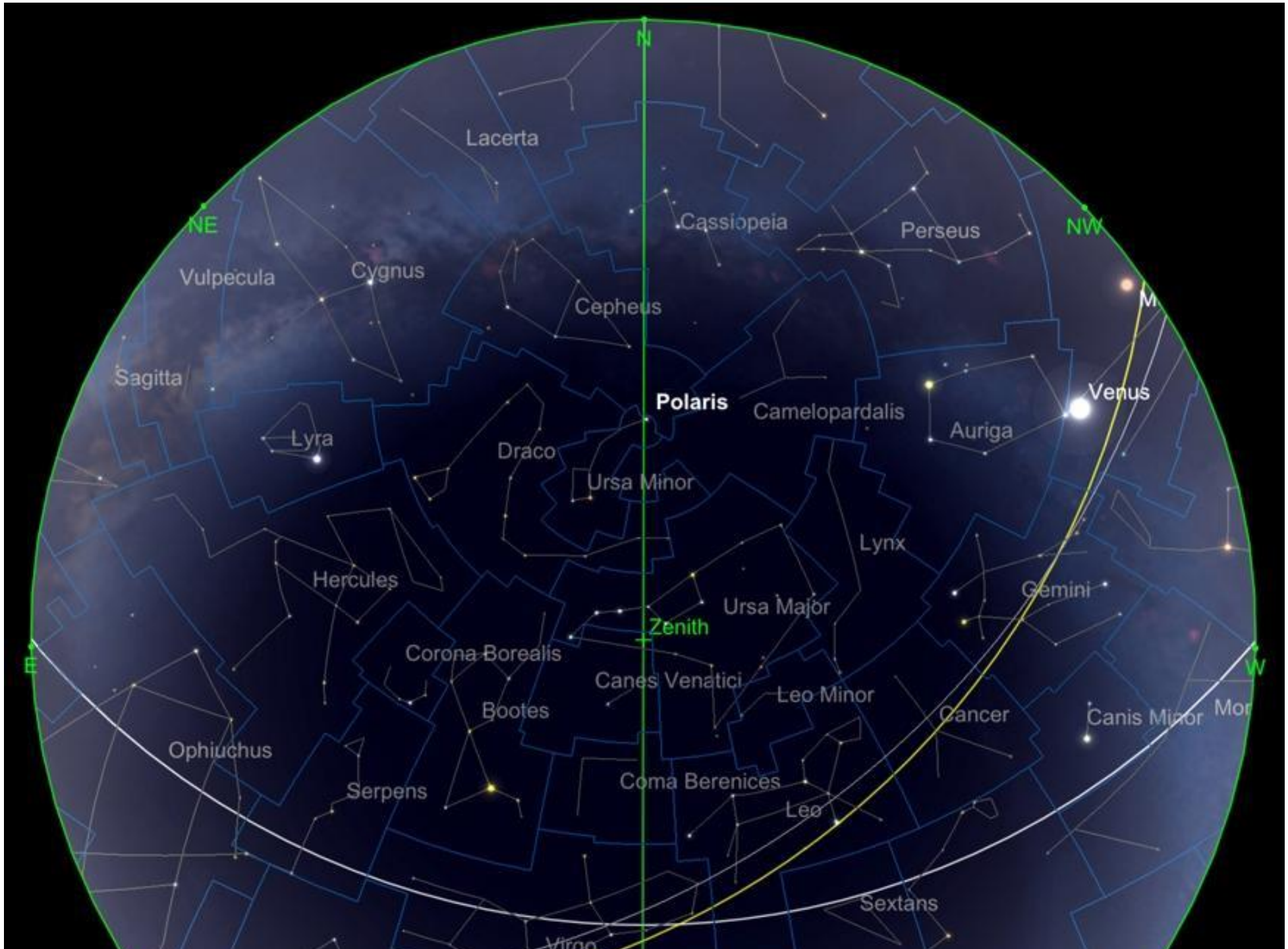

N
NE
NW
E
W
Lacerta
Cassiopeia
Perseus
Vulpecula
Cygnus
Cepheus
Sagitta
Polaris
Camelopardalis
Venus
Auriga
Lyra
Draco
Ursa Minor
Lynx
Hercules
Gemini
Ursa Major
Zenith
Corona Borealis
Canes Venatici
Leo Minor
Bootes
Cancer
Canis Minor
Ophiuchus
Serpens
Coma Berenices
Leo
Sextans

For of us in the Northern Hemisphere, the hours of darkness are rapidly departing, in anticipation of later June's Summer Solstice. By late May, many observers in temperate northern latitudes will be experiencing permanent astronomical twilight. But never fear - there are still plenty of targets in this month's sky guide that can be well seen, even if you're lacking true darkness. Of course, for our temperate southern hemisphere readers exactly the opposite is true - you'll now be in the run up to the darkest part of the year. Wherever you find yourself in the world, keep looking up - as ever, there's lots to see in the skies above us this month.

The Solar System

The Moon

The Moon starts May in Leo, at a day past First Quarter. This is the end of one of the Moon's last "Evening Spring Crescent" phases of the year and still one an excellent time of the year to observe the Moon from the Northern Hemisphere. The Moon will be transiting in the south a little before sunset during the early part of the month and will subsequently appear around its highest point in the sky.

The Moon will reach Full on the 7th, when it will be found in the constellation of Libra. This is another of the so-called "Supermoons" - more properly described as a Perigee-Syzygy Moon. This occurs a few times a year when the Moon reaches Full Phase at near to its closest point to Earth. While there's no great scientific importance to this, the Moon can look a little larger than usual, though this perception is often enhanced further by atmospheric lensing effect when the Moon is viewed when rising and lower in the sky. Sadly, as potentially exciting to beginners a "Supermoon" may sound, the Moon at Full phase is actually the worst time to observe it, as surface relief is bleached out by the Sun sitting directly behind us, as we observe it from the surface of the Earth. Those using a telescope will often need a Moon filter to deaden down the glare and reveal a little more surface detail when the Moon is Full. The one thing that is often interesting to do is to observe lunar mountains on the extreme limb of the Moon, when it's close to full illumination. If you run a telescope around the edge of the Moon at high power you will quickly see that in places the Moon's limb is dotted with mountains. Unlike the vast majority of the Earth's mountain ranges, Lunar mountains are not formed by slow-moving subduction events, where one continental crust pushes agains another. The Moon is a much more inert world and while there was the possibility of nascent Lunar continents in the very ancient past, when the Moon was considerably more geologically active than it is now, the Moon's mountains have pretty much all been formed in the aftermath of impact events, which have rucked up the surface, causing it to buckle and distort under enormous forces over a very quick period of time. The higher the Moon is from the horizon and the darker the background sky, the easier it is to make out the undulation of lunar mountains around the limb of the Moon. While Full Moon is not the greatest time to observe the majority of its surface, use this time to check out extreme edges of the Moon and see what discoveries you can make.

Naturally, around the 7th isn't the greatest part of the month for visual deep sky observations, or imaging without narrowband filtration. After becoming Full, the Moon will continue its gentle roll down the descending southern section of the Ecliptic, into Scorpius, Ophiuchus

and Sagittarius, until begins to climb back up northwards, reaching Last Quarter in Capricornus - rising in the early morning of 14th, when early-morning observers will find it lined up in a row alongside Jupiter, Saturn to the west and Mars to the east in the dawn sky.

The Moon will reach New on 22nd, gliding to the south of the Sun in Taurus. As the Moon is at New at this part of the month, this is going to be the most useful period for deep sky observations. While the latter part of the month is most certainly going to give us the best opportunity for imaging or observing deep sky targets, this must be tempered somewhat by the steady decrease in hours of true astronomical darkness for those of us in the northern hemisphere.

From this point, the Moon becomes an evening object and may just be found a few days later alongside Mercury and Venus in the extreme east of Taurus, though you will need clear horizons and decent observing conditions to see the tiny sliver of the Moon alongside the two planets in the early evening of the 24th, though it will be easier to spot the next evening on the 25th. Although we are now past the point of the more extreme High Spring Crescent phase of early evening observations of the Moon, late May still gives us plenty of opportunity to see the Moon at reasonable altitude in the sky,(from a northern hemisphere perspective), being found in the more northerly parts of the ecliptic in the evenings at this time of year. The Crescent Moon moves through Gemini and Cancer and on into Leo, during the latter days of the month. It is in Leo towards the end of the month on the 30th, where we find the Moon back at First quarter, transiting at a little under an hour and quarter before sunset. The Moon ends may on the 31st, having crossed over the border into the neighbouring constellation of Virgo.


Gemini
Auriga
Moon
Mercury
Venus
Sun
NW

The Moon, Venus and Mercury, sunset 25th May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Mercury

The 1st finds the Innermost planet very poorly-placed for observations in the morning sky. Mercury will rise in line with the Sun (from 51 degrees N) at sunrise. hWile its pretty bright, shining at -1.7 magnitude, it's way too close to the sun to be seen. Mercury will continue to drive sunward, reaching Superior Conjunction - passing behind the Sun - on the 4th May .

Fast forward to the latter half of May and Mercury as an evening object is a much better proposition for those of us in the Northern Hemisphere. Standing at just under 10 degrees high int he west at sunset, the planet is -1.2 mag in terms of brightness and at an 85% illuminated phase. Greatest Eastern Elongation from the sun occurs in early June, so the late stages of the month present another very good opportunity fir observing the illusive inner planet in the evening sky. On the 22nd, Mercury comes into close conjunction with Venus, with its brighter neighbour providing a convenient signpost to its location. Sunset finds the two world sitting at around 14 degrees elevation from the horizon (from 51 degrees N), with the two separated by just under a degree and a quarter. Venus, at -4.2 mag is by far the more easy to find target, but Mercury at -0.5 magnification and 6.2 arc seconds across should be pretty easy in binoculars.

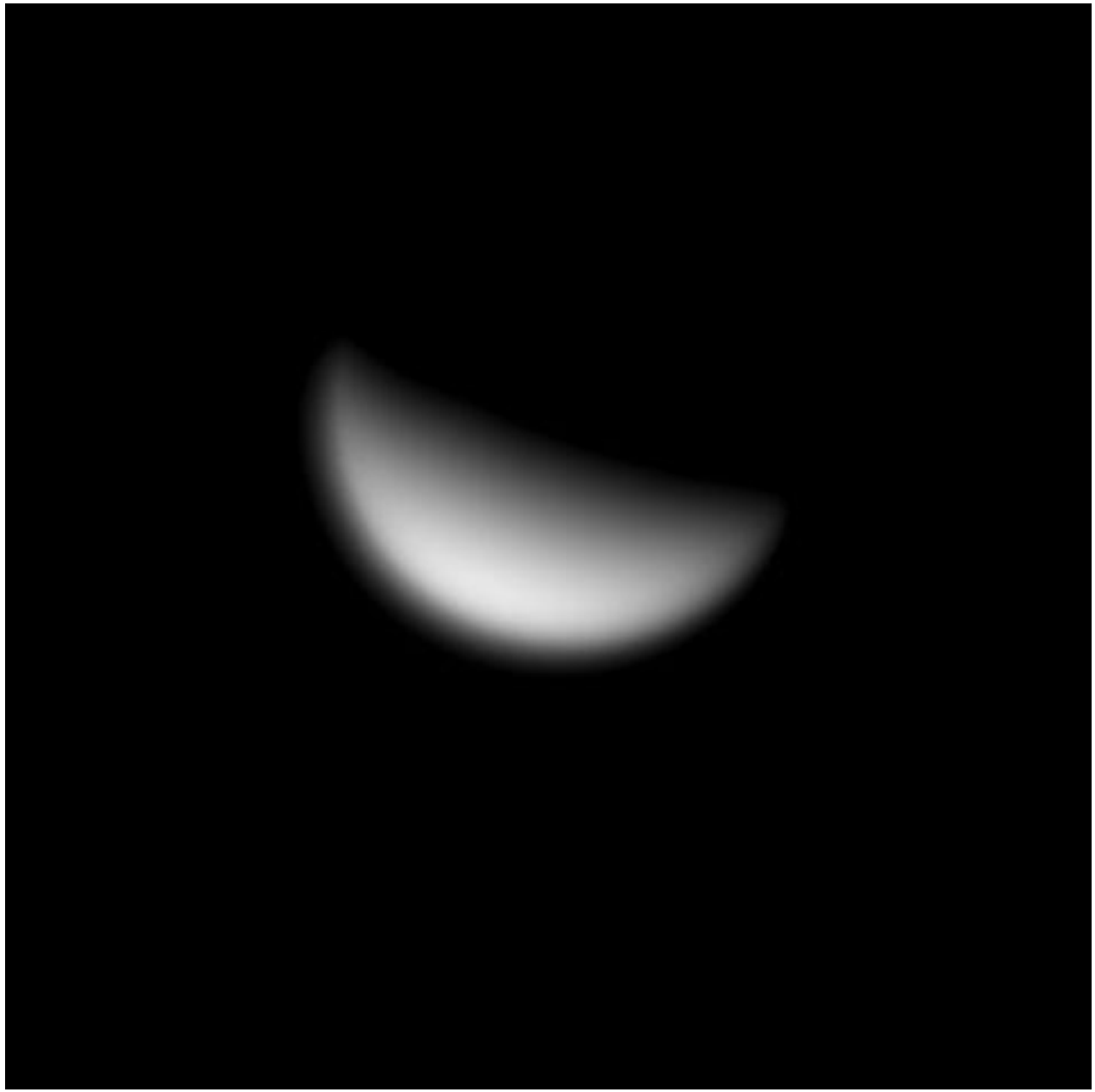

Mercury
Venus

Mercury and Venus Conjunction, sunset, 22nd May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

At the end of May, Mercury has faded a little to +0.2 mag and is now showing a 45% phase. At 7.5 arc seconds across, it will stand a little over 15 1/2 degrees high in the west at sunset, making this another favourable month for evening observation of this tiny world.

Venus

Venus has been exceptionally well-situated for observation during the past few months and continues to be so, although our neighbouring world has reached maximum elongation and will now appear to be dipping back down towards the Sun rapidly from our perspective on Earth. The early part of May is subsequently the best for observing our neighbour, as the closer it continues to get to us, the less apparent separation from the horizon the planet has.



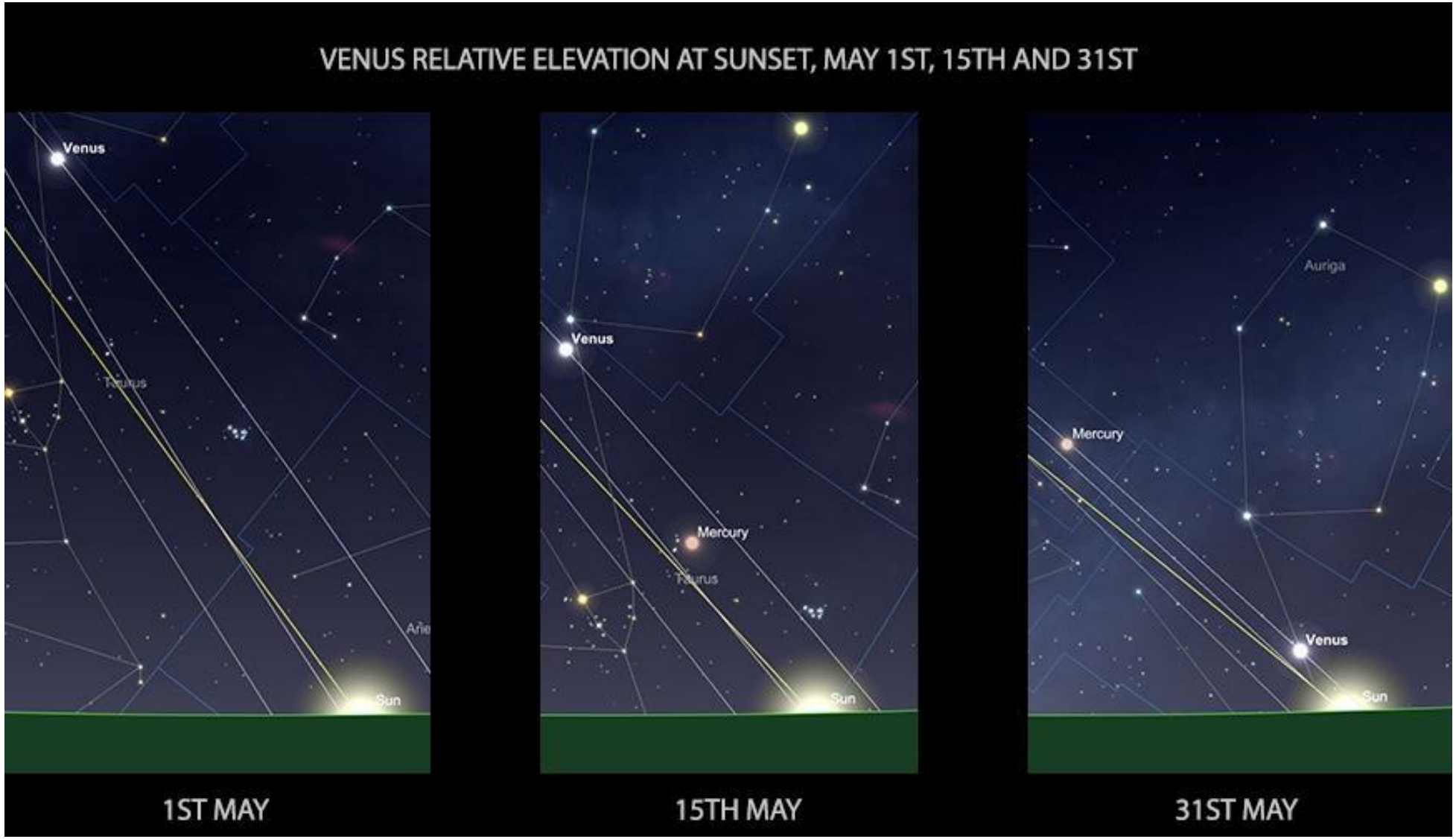
Venus, early evening, April 8th 2020. Image taken with Explore Scientific 127mm Triplet refractor, Explore Scientific 5x Barlow and ZWO ASI1600 Cooled Camera.

The beginning of the month sees Venus in the Taurus at sunset, blazing away at a brilliant -4.5 magnitude. At just over 32 degrees elevation from the horizon (from latitude 51 degrees N), the planet shows a 24% illuminated phase and is just under 40 arc seconds across. This is still an excellent time for using the No. 47 written filter and seeing if you can observe Venus' illusive cloud formations. Imaging, particularly using high speed USB cameras and 850nm IR filters, will also zero in on Venusian atmospheric features too. Venus is still swinging closer to us on its faster interior orbit and can be found just over 63 million km from Earth on the 1st.

By the 15th, Venus will have increased its angular size to 49 arc seconds across but has decreased its phase to just 11%. It is no brighter though and remains at -4.5 mag. Venus is now just under 51 million km from the Earth and sits 21 degrees high in the west at sunset.

A week later on the 22nd, as previously reported, Venus and Mercury can be found in conjunction with each other. By this point the planet has begun to fade a little as its phase has decreased to a tiny 5%. The planet's angular diameter is now a big 53.9 arc seconds. The two planets are just under 14 degrees high (from 51 degrees N) at sunset.

During the last week of May, the Venus appears to accelerate towards the Sun due to foreshortening of its observable angle, from our perspective on Earth. By the end of the month, Venus will still be -3.8 magnitude, but it will have decreased its phase to a tiny illumination of just 0.3% - it now has an angular diameter of 57.6 arc seconds though, which helps maintain this brilliance. The planet stands just 3 1/2 degrees high in the west as the Sun sets (from latitude 51 degrees N) and as such will be very difficult, if not impossible to observe. Thus, the end is brought to one of the most spectacular of Venus' evening apparitions within the last few years. By the end of May the planet will lie just over 43 million km from us - relative touching distance, by cosmic standards.



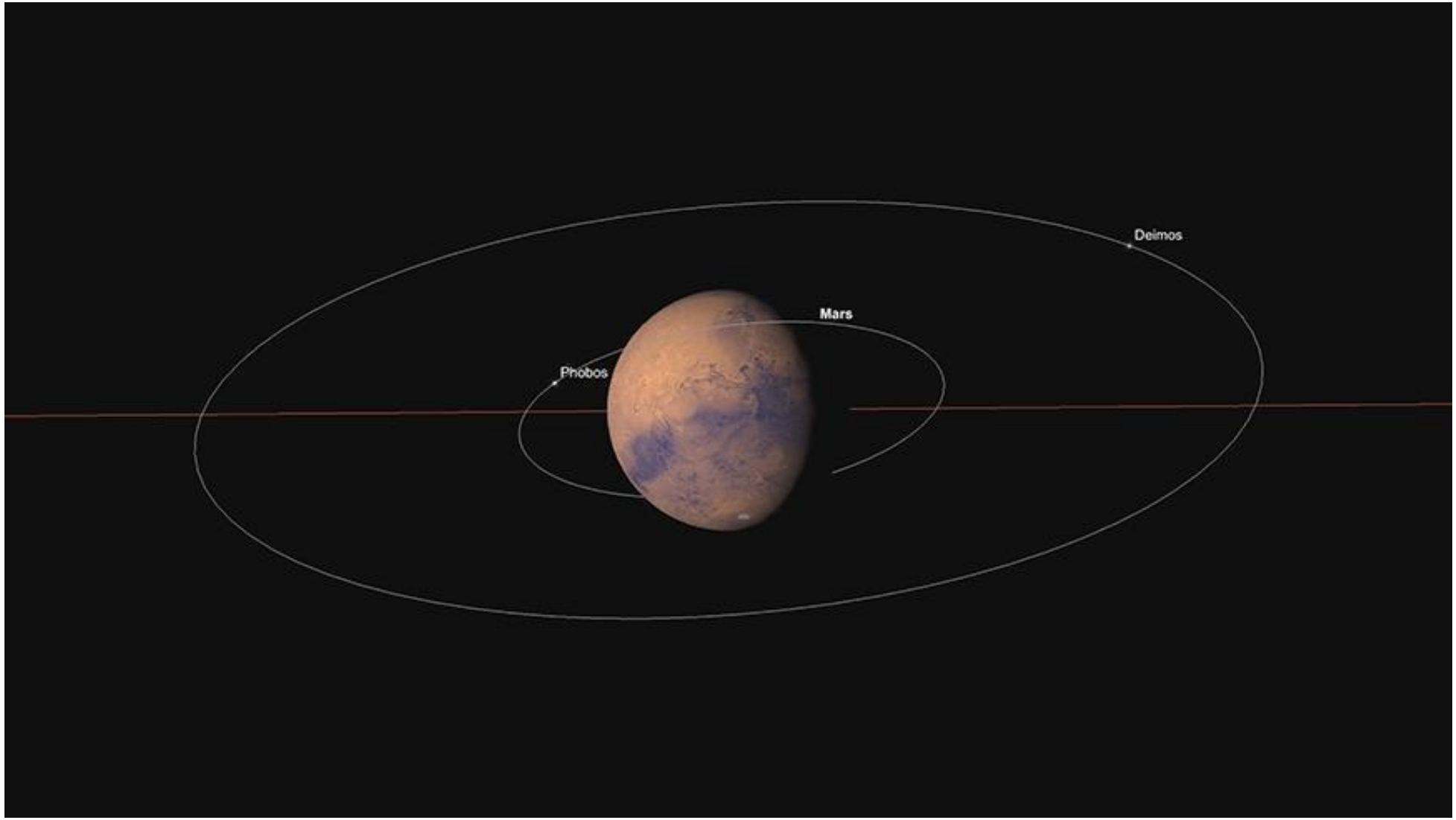
Venus' relative elevations at sunset, 1st, 15th and 31st May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Mars

At the beginning of the May, Mars is visible in the morning sky (rising about 3.30am BST), located in Capricornus at +0.4 mag. It is 7.6 arc seconds in angular diameter and the Red Planet stands just over 16 1/4 degrees high, in the SE at sunrise (from latitude 51 degrees N). Mars shows an 83% phase at this point in the month.

By mid-month, the +0.2 mag Mars has crossed over the border into Aquarius and stands just under 18 1/2 degrees high in the south at sunrise (from latitude 51 degrees N). The planet now rises at just before 3am (BST) and is joined in the same part of the sky as the Waning Crescent Moon as day breaks.

At the end of the month, Mars is still in Aquarius , rising at around 2.15am (BST) and now shines at +0.0 mag, standing just over 22 degrees high in the south at sunrise (from latitude 51 degrees N). By this point, the planet will be 9.2 arc seconds in angular diameter. While there's still a while before Mars is at its best, when it reaches opposition in October of this year, the Red Planet is definitely improving and worth taking a look at in a telescope, if you're up early enough.



Mars, just before sunrise, 31st May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

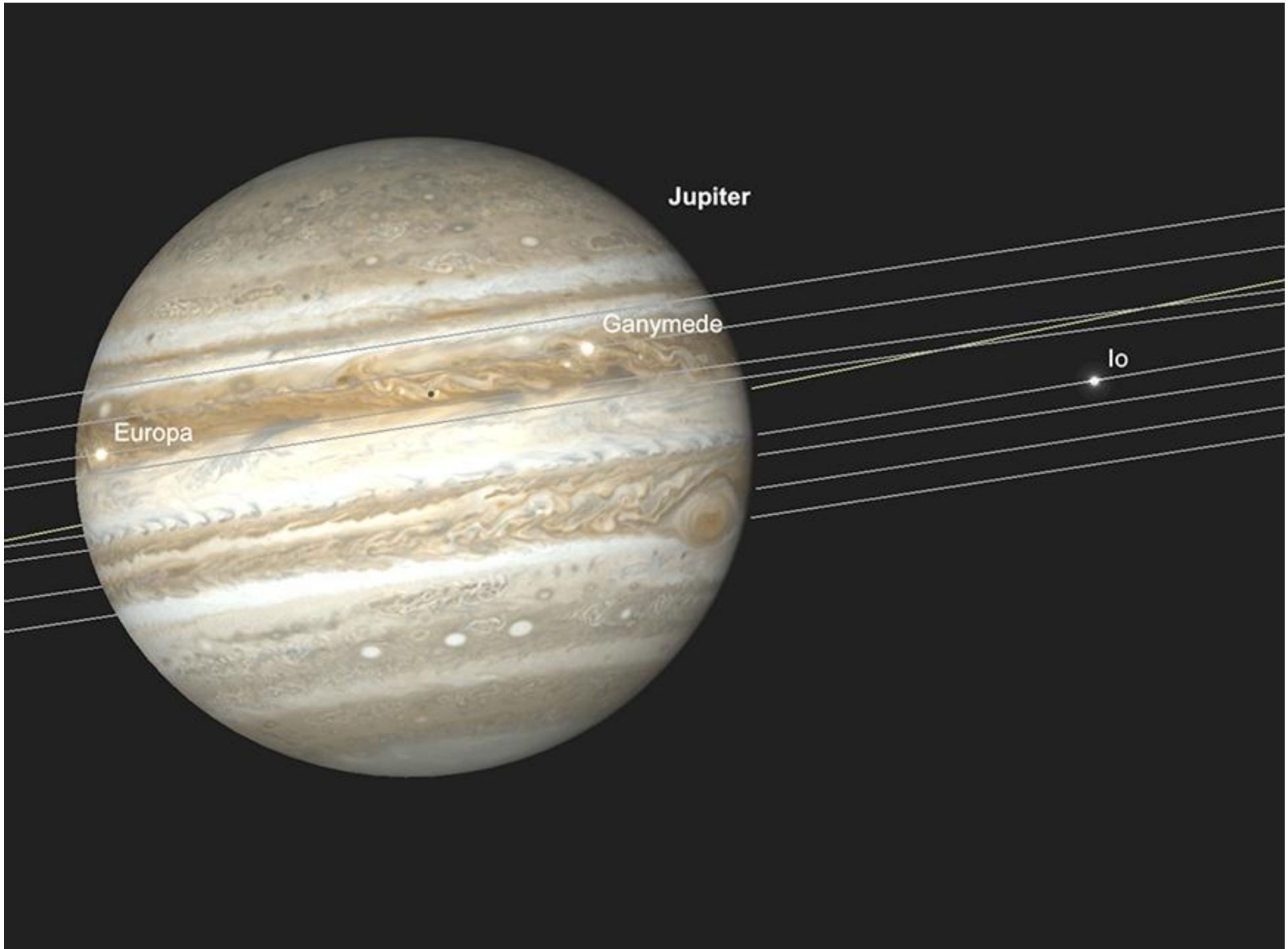
Jupiter

Jupiter is also morning object. At the start of the month Jupiter will be found a little over 104 degrees from the Sun on the western side — standing at an altitude of just over 17 1/2 degrees at sunrise on the 1st (from 51 degrees N). At -2.3 magnitude and just under 41 arc seconds across, it will be a fairly easy find in the dawn sky (if you have reasonable easterly horizons), but it will be at lower than optimal elevation, so will be require some very kindly sky conditions to be observed at higher powers in a telescope.

By mid-month, the situation has changed a little: Jupiter's brightened fractionally to -2.4 mag and is now 42.6 arc seconds angular diameter. Rising almost exactly four hours before the Sun, it's still low in the south as dawn breaks, but approaching transit point in the sky as this occurs.

By the 31st, Jupiter will have increased its magnitude to -2.6 and will sit at 18 degrees elevation in the south at sunrise. We are headed towards Jovian opposition in mid-July, so the trend is most definitely positive as far as Jupiter's concerned. By the time the month ends, Jupiter can be found 133 degrees to the west of the Sun, rising at a little after midnight.

There are a few worthwhile Jovian events looking out for if you're up early, during the month. On the early morning of the 7th, there's a nice mutual transit of the Great Red spot, Ganymede and Europa around 4am (BST). On the morning of the 14th the GRS and Ganymede can be found transiting together at around 4am and on the 21st it's the turn of Europa and Ganymede transiting the face of the giant planet, around dawn.


Jupiter
Ganymede
Io
Europa

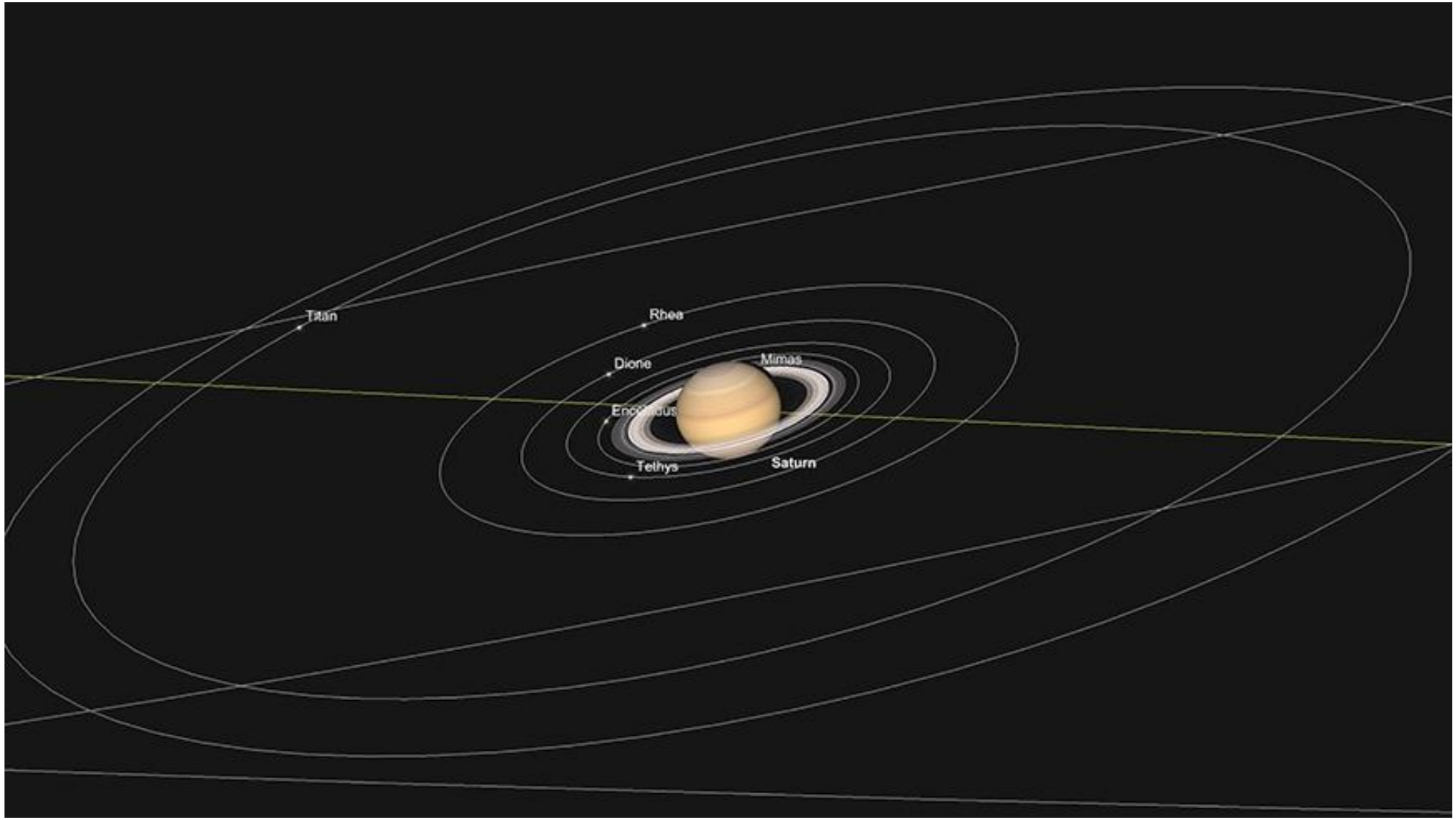
Jupiter with Ganymede, Europa and GRS Transit, May 7th, 3.51am. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Saturn

Like Jupiter and Mars, Saturn is found on the morning side of the Sun, rising at a little after 2.30am (BST, from 51 degrees N) and stands just over 18 degrees high in the S at sunrise. At +0.6 mag, and 16.9 seconds of arc diameter, Saturn isn't especially prominent, but still brighter than any star in its resident constellation of Capricornus (though somewhat overshadowed by the much brighter Jupiter, just under 5 degrees to the west). It is separated from the Sun by just under 99 degrees on the 1st.

By mid-month, Saturn is a shade brighter, at +0.5 magnitude and a little larger in angular size at 17.3 degrees of arc. The Ringed Planet will rise at 1.37am and will have attained a height of over 19 degrees above the horizon at sunrise (from 51 degrees N).

By the end of the month, the Ringed Planet is now +0.4 mag and is now 17.8 arc seconds across - a definite upward trend, which will continue up to late July's Saturnian Opposition. The planet now stands just over 19.23 degrees high at sunrise (from 51 degrees N), having risen at just past 12.30am (BST).

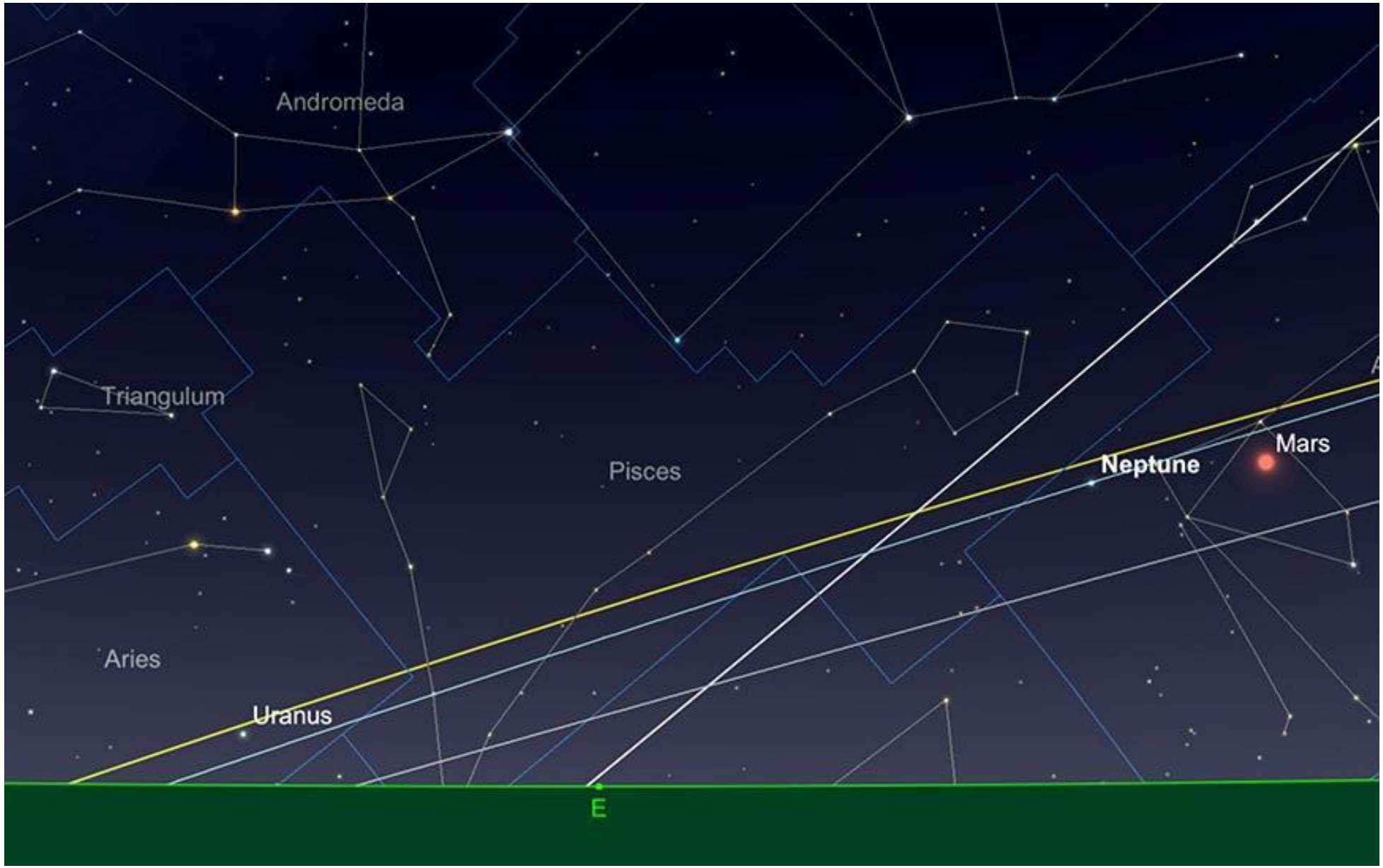


Saturn at sunrise, 31st May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Uranus and Neptune

Neptune is a morning object, but separated from the Sun by a little over 50 degrees at the beginning of the month and as a consequence, doesn’t gain a huge amount of altitude before dawn. By the end of the month it will have ginned a little more potential observing time before dawn, but this is a narrow window.

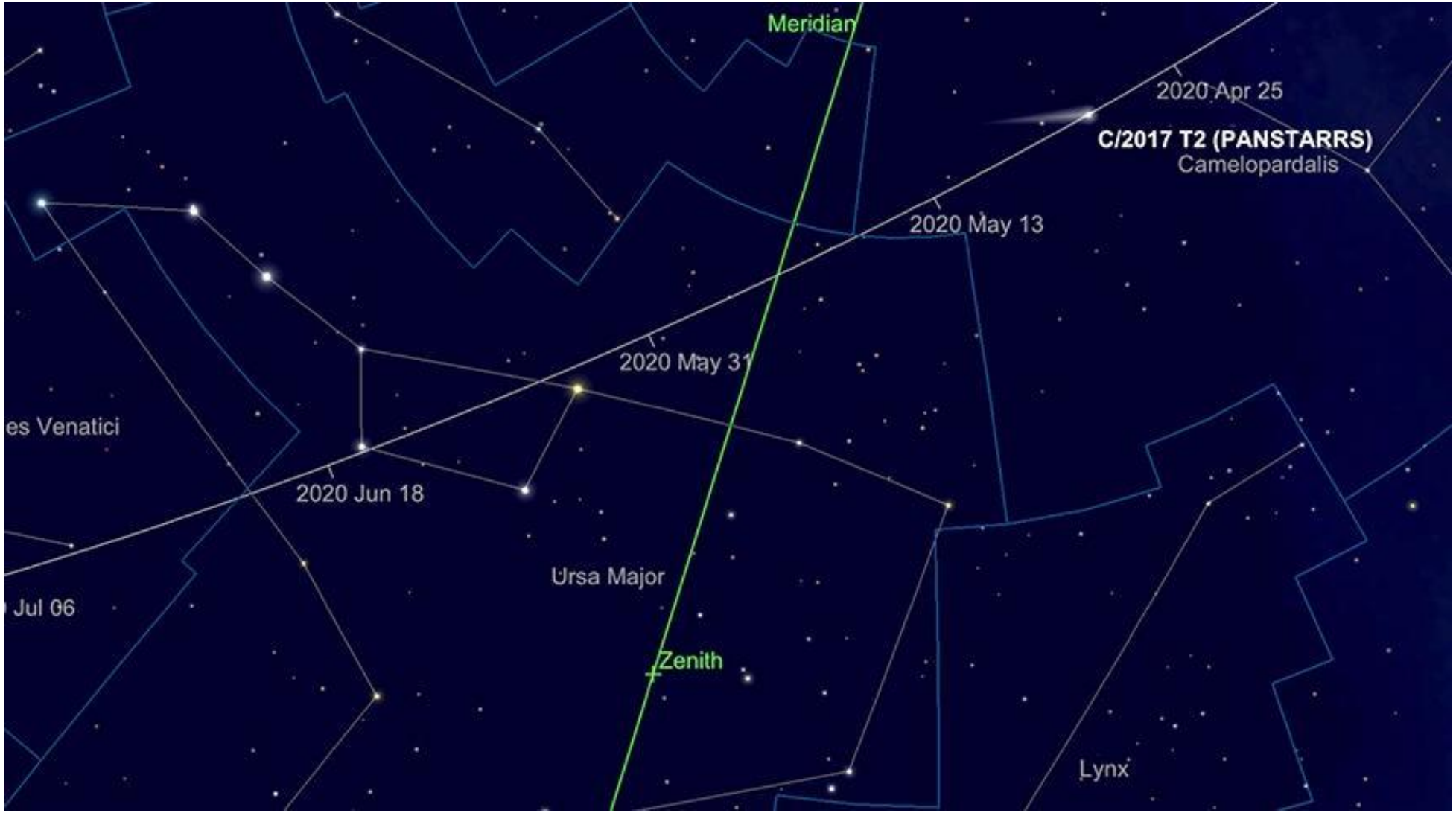
Uranus came to superior conjunction on the 26th April, after which it will slowly re-emerge as a morning object, though throughout most of May it is unobservable. It will be another month or so before it is in a better position to be caught before dawn in the east.


Andromeda
Triangulum
Pisces
Neptune
Mars
Aries
Uranus
E

Uranus and Neptune relative positions, early morning, 31st May. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Comets

C/2017 T2 PanSTARRS remains an interesting comet to track down in telescopes and larger binoculars. The comet begins the month in the Camelopardalis, dropping in a south easterly trajectory during the month. In the latter part of May, it will cross into the northerly part of Ursa Major, the Great Bear. At the end of the month it can be found not to far from Dubhe, the “leading” star in the Plough, or Big Dipper asterism, which makes for an easier part of the sky to locate the comet than the rather barren Camelopardalis. On the 31st, C/2017 T2 PanSTARRS will be found 3 1/2 degrees NW of Dubhe.



C/2017 T2 PanSTARRS path through May (comet position shown for 1st May). Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

C/2019 Y4 (ATLAS) has disintegrated in quite an interesting fashion, but this has really put paid to the comet as a relatively easily observable object. This comet was brightening quite nicely, but having splintered into anything up to 30 pieces - four major parts of which are observable in larger amateur telescopes - the comet (or comets) remain at around 9th magnitude at time of writing and barring some unforeseen brightening event, are likely to continue their fading trend.

Another comet found by the ATLAS sky survey, C/2019 Y1 is occupying a northern circumpolar position during the month. Although this comet brightened quite rapidly during April, it is unlikely to reach much more than 7th magnitude. Still, it may be worth seeking out.


2020 May 31
Zenith
Canes
Ursa Major
2020 May 22
2020 May 13
Ursa Minor
Camelopardalis

C/2019 Y4 (ATLAS) path through May (comet position shown for 1st May). Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

C/2020 F8 SWAN seems to be another potentially good comet to look out for in the latter part of May. At time of writing, it is only visible from the Southern Hemisphere, but beyond the middle of May will be a morning object in Triangulum and Perseus, for those of us in the Northern Hemisphere and may well reach relatively easy binocular brightness by then.


Cassiopeia
Camelopardalis
Andromeda
Perseus
Triangulum
C/2020 F8 (SWAN)
2020 May 25
2020 May 21
2020 May 17
2020 May 29
2020 May 13
2020 Jun 02
Auriga
2020 Jun 06
2020 Jun 10
2020 Jun 14
2020 Jun 18
Aries
Uranus
Sun
NE

C/2020 F8 SWAN path through the latter part of May (comet position shown for 15th May). Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

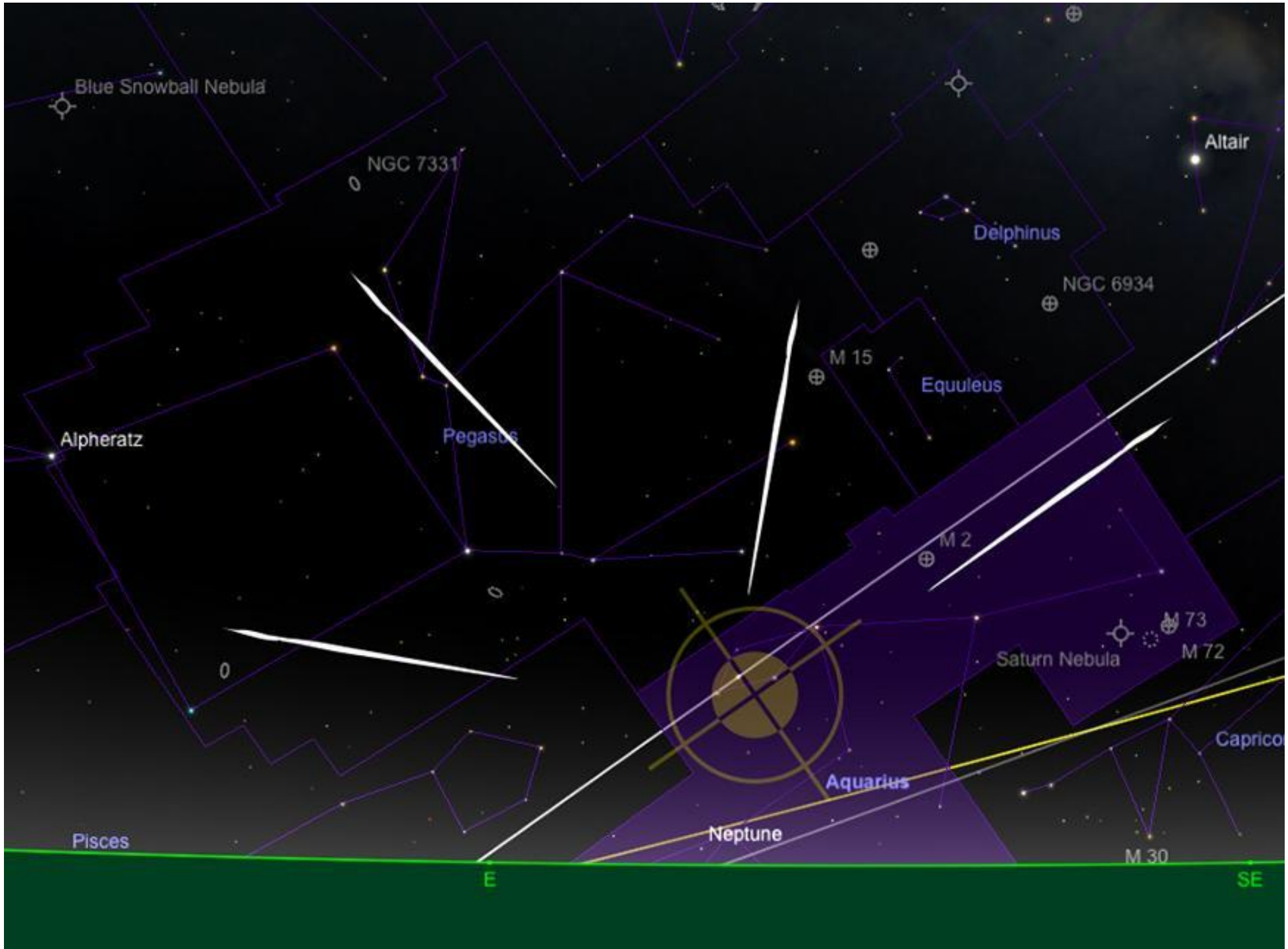
C/2019 U6 LEMMON is another potential binocular comet, though currently unobservable. Post-perihelion, in mid-June, the comet will start to climb up into the northern celestial hemisphere, making it one to look out for. If current light curve predictions continue as an average, the comet may make 4th magnitude, though as ever, this is just a prediction.

Last but not least, C/2020 F3 NEOWISE is a similar scenario to C/2019 U6 LEMMON: currently unobservable form the Northern Hemisphere, it will climb northward after perihelion in early July and could again be potentially a relatively easy comet to observe, as it climbs higher in the northern sky. Again, a possible peak magnitude of +4 has been predicted.

While none of the comets currently mentioned in this month's sky guide are likely to be spectacular (and certainly none of them visible to the naked eye), we have a reasonable crop of comets that are relatively straightforward to observe telescopically at present, or in the near future. For detailed predictions of cometary locations, those interested are encouraged to check in to the BAA Comet Section's website here: https://people.ast.cam.ac.uk/~jds/

Meteors

Peaking on the night of the 5th May the Eta Aquariids meteor shower peaks on the nights of May 4th-5th this year. While the zenith hourly rate of this shower - around 40 at maximum, this year - is not as high as some of the major annual showers, this event would be worth staying up for (or at least recording photographically), where it not for the pernicious influence of the Moon, the perennial upsetter of meteor shower observation, which will be at Gibbous phase and hanging around all night to spoil the party. This shower is seeded by the famous Halley's Comet, whose debris is quite fast-moving, resulting in bright, energetic meteors. The best of these will be visible, despite the Moonlight, but in truth, there will be better showers this year to try and catch.


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

The Eta Aquariid radiant rising, early moring, May 5th. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Deep Sky Delights in Canes Venatici and Northern Coma Berenices

Canes Venatici - the Hunting Dogs and Coma Berenices - Berenice's Hair are two visually underwhelming constellations, which sit underneath each other below the handle of the Plough or Big Dipper in Ursa Major. Whereas Ursa Major is a large constellation with prominent stars, these two constellations are exactly the opposite - but what they lack is bright stars, they certainly make up for in deep sky targets, particularly galaxies.


M 101
M 40
Owl Nebula
M 108
M 109
Zenith
Ursa Major
Whirlpool Galaxy
M 106
Sunflower Galaxy
NGC 4449
Canes Venatici
M 94
Cocoon Galaxy
NGC 5005
Silver Needle Galaxy
M 3
Whale Galaxy
NGC 4559
Mel 111
Needle Galaxy

Starting in the larger and more northerly Canes Venatici, the first and best-known of all these is the remarkable M51 - the Whirlpool Galaxy. The Whirlpool is possibly the archetypal face-on spiral galaxy.

M51, at +8.39 mag and 11.2 x 6.9 arc minutes area has a relatively high surface brightness. This galaxy has two massive spiral arms, bound around one another. On the tip of the northern arm, is a companion galaxy, NGC5195, which is in the process of heavy tidal interaction with M51.

M51 is a true Messier object - it was discovered by him in 1773, though Pierre Mechain discovered NGC5195 later in 1781. Lord Rosse made a famous sketch of M51 through is 72 inch reflector in 1845, which clearly showed M51's Spiral and its satellite - it is this sketch that gave rise to the nickname "Rosse's Question Mark" - for obvious reasons.


M51 Whirlpool Galaxy
© 2018 Mark L Blundell

M51 by Mark Blundell. Image used with kind permission.

Although M51 can be found relatively easily in binoculars, a dark sky will be needed to active this. Small telescopes will show M51's core easily and the first suggestion of a halo surrounding this. Basic spiral structure can be seen by an 8-inch reflector under reasonable skies. However, once the 10-12-inch barrier is broken in terms of aperture, then M51 really begins to come into its own visually. This aperture and above will show the Whirlpool in all its glory - and notable features such as the bridge between M51 and NGC5195 and M51's numerous H II regions really begin to stand out. However, it is in long duration images that M51 really reveals all - and in this respect is a constant source of inspiration to astrophotographers.

M51 is thought to be of a similar size to both our galaxy and M31, the Andromeda Galaxy, and lies around 27 million light years away.

Just under 40 arc minutes to the S of M51 lies the elliptical galaxy NGC5173, otherwise known as the Southern Integral Sign. Although +12.19 mag in brightness, it is relatively compact at just 1 x 0.9 arc minutes dimensions and is thus quite evident in small telescopes, though rather disappointingly bland in relation to the many spirals that surround it.

Just under 6 degrees to the south of M51 lies the lovely M63, the Sunflower Galaxy. This is a truly beautiful object - a tightly packed spiral with a bright core and fainter outlying arms. It certainly does look distinctly flower-like in long duration images.

The Sunflower has the distinction of being the first discovery made by Pierre Mechain - Charles Messier's partner and major contributor to his list. At +8.6 mag and 12.6 x 7.2 arc minutes across, M63 makes for a relatively straightforward target in most small telescopes, though larger instruments will be needed to make out the spiral structure. This was first noted by Lord Rosse during his survey of spiral nebulae during the 1840s.


M63/NGC 5055
Sunflower Galaxy
Const: Canes Venatici

M63 by Mark Blundell. Image used with kind permission.

M63 is thought to lie around 34 million light years from us and is part of the group of galaxies in this area of sky of which M51 is the dominant gravitational member.

4 and 3/4 degrees to the W of M63, we find the distinct galaxy M94, which was another discovery of Mechain in 1781 - and was added to the Messier list in the same year. M94 is, like its major neighbours, a spiral galaxy - albeit a rather unusual one. At +8.19 mag and 14.1 x 12.1 arc minutes area, M94 lies about half the distance from us - 14 million light years - than either M51 and M63. Its structure is notable - a tight compact, very bright spiral core, surrounded by two concentric fainter rings of stars. It is due to this structure that it has gained the nickname in some circles of the Cat's Eye Galaxy. This suggestion of spiral structure shows up well in even small telescopes, though instruments of 8-inches aperture + are needed in order to see much of the outer rings. M94 can be found in binoculars, if sky conditions are kind though a telescope is definitely needed to see anything more than a faint smudge. When imaged, M94 gives up considerable detail, especially in its outer ring.


M94 (NGC 4736) Galaxy
©2010 Mark L Blundell

M94 by Mark Blundell. Image used with kind permission.

Just over 5 1/2 degrees further S from M94 lies NGC5005 - yet another spiral galaxy. At +9.80 mag and 5.8 x 2.9 arc seconds area, this object has a really bright nucleus, surrounded by a much darker, almost sooty-looking outer arms. In larger telescopes, the elongated aspect of NGC5005 really begins to revel itself, though in truth, this galaxy is a rather disappointing object in smaller instruments and binoculars.

Under 7 1/2 degrees to the SW of NGC5005, sits the slightly easier to observe NGC4631, otherwise known as the Whale Galaxy. This +9.19 edge-on spiral galaxy does indeed resemble a galactic whale swimming through the cosmos. At 15.2 arc minutes long by just 2.8 arc minutes wide, the Whale has quite high surface brightness and is therefore a relatively easy object in most large binoculars and small telescopes. A companion galaxy, NGC4657, sits to the N of the Whale and is thought to be responsible for some of the larger galaxy's elongation. Both objects lie around 25 million light years away and were discovered by Sir William Herschel in 1787. To the SE of the Whale, by around half a degree, sits another spiral galaxy, NGC 4656, otherwise known as the Hockey Stick. Photographic evidence reveals why, as one edge of NGC4656 appears bent - just like a hockey stick. Just like NGC4631, the Hockey Stick was discovered by Herschel, though lies a little further from us than its neighbour, at 30 million light years away.


NGC4631 Whale Galaxy
NGC4656 Hockey Stick Galaxy
By Mark Blundell
31st May 2014

The Whale and Hockey Stick Galaxies by Mark Blundell. Image used with kind permission.

Under 8 degrees to the NW of the Whale, lies the superficially very similar NGC4244 - the Silver Needle Galaxy. This is another spiral which lies edge-on to our perspective and although a little fainter at +10.6 mag than its neighbour is well worth seeking out. At 16.6 x 1.9 arc minutes in area, the Silver Needle has a somewhat lower surface brightness that the Whale, but is impressive enough in larger telescopes. Although difficult to see from our point of view, NGC4244 is thought to be a barred spiral structure with two wide arms. Sources differ as to the distance this galaxy lies from us, with most seeming to favour the 14 million light years mark, though some putting it as close as 6.5 million light years away. If the latter is closer to the truth, NGC4244 is possibly an outer member of our own local group rather than a galaxy belonging to the Canes Venatici family.

NGC4244 by Ole Neilsen. Image credit: Creative Commons.

4 1/2 degrees to the NE of NGC4244 sits two interaction galaxies, NGCs 4485 and 4490 - otherwise known as the Cocoon. These 6.4 x 3.2 arc minute objects have a cumulative magnitude of +9.80 and have undergone a catastrophic interaction with each other - much as the Milky Way and M31 are thought to experience in the far future. Although both galaxies are now moving away from each other, there are some remnants of spiral structure left in a massive arc of stars and material stretching 24000 light years in length between both objects. This seemingly destructive interaction, as it often does, has sparked a huge amount of star formation in this region. Both galaxies - or what's left of them - are thought to lie some 31-50 million light years away from us.

2 1/2 degrees to the N of the Cocoon, sits NGC4449. This galaxy is something of a rarity in this part of the sky, being of an irregular, rather than a spiral structure.
NGC4449 was discovered by Sir William Herschel in 1788 and is +9.6 mag in brightness and 6.4 x 4.4 arc minutes in size. NGC4449 is superficially very similar to the larger of our two satellite galaxies, the Large Magellanic Cloud, though observations of this diminutive galaxies in radio wavelengths have revealed that the visible part of NGC4449 is dwarfed by a huge, optically invisible halo of gas, which is 14 times its diameter. NGC4449 is easily enough found in larger telescopes, and the mottling of its HII regions is impressive if enough aperture is directed its way - though admittedly this galaxy does lack some of the glamour of its neighbours.

NGC4449, Hubble Space Telescope image. Public domain.

Just over 3 1/2 degree to the N of NGC4449, lies the last galaxy in our epic jaunt around this constellation - M106. This +8.39 mag spiral galaxy was discovered by Mechain in 1781, but was not added to the catalogue by Messier at the time. M106 is, like some previously mentioned galaxies, a later, 20th century addition to the original list. M106 is a fine galaxy - well presented from our perspective and bright enough to be seen in diminutive telescopes. However, a 12-inch + class of telescope will really start to reveal the two massive bound spiral structure of the arms and the darker material that lies between. At 18.6 x 7.2 arc minutes, M106 is a healthy size for a galaxy - larger than M51 and as such, should probably get a little more attention than often does.


M106 Galaxy
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M106 by Mark Blundell. Image used with kind permission.

The last object in this remarkable constellation isn't a galaxy, but one of the best globular clusters in the sky, M3. M3 was discovered by Charles Messier in 1764 and as its catalogue number suggests is one of the first objects he recorded in his list of "fixed" objects that could be misidentified as comets. M3, at +6.19 mag is one of the brightest Globulars in the northern hemisphere of the sky - bested in brightness only by the superlative M13 in Hercules and M5 in Serpens. M3 can be seen by the keen-eyed under good conditions with the naked eye, but it is in binoculars and telescopes that it really reveals its true beauty. With binoculars, it is easily seen as a fuzzy ball of delicate light. A 3 or 4 inch refractor will resolve some stars on the outer edge and will definitely show signs of granular structure. An 8-inch+ reflector will resolve individual stars in M3's core - which was first achieved by none other than William Herschel, who counted it as one of his favourite objects to observe. Tracing a line up from Arcturus, Alpha Aurigae in neighbouring Auriga to Cor Caroli, Alpha Canes Venaticorum, will reveal M3 round 2/5ths of the way between the stars. At just under 34,000 light years away, M3 is home to around half a million stars. The cluster is thought to be around 8 billion years old.


M3 Globular Cluster
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M3 by Mark Blundell. Image used with kind permission.

Coma Berenices is a rather poor constellation, containing three major stars of the 4th magnitude. However, what it lacks in brightness, it more than makes up for in deep sky objects. This first of these is not a galaxy, it's actually an open star cluster - Melotte 111. This collection of around 40 stars is loosely gathered over a NGC4725 1/2 degree area and was first noted by Ptolemy in around 138CE. This hazy collection is visible to the naked eye from a good site, and although once represented as the tail of neighbouring Leo, was re-classified by Ptolemy as a constellation in its own right, representing the legend of the Egyptian Queen Berenice's hair which was sacrificed to the goddess Aphrodite in return for the safe return of the Queen's husband Euergetes. Legend has it that Aphrodite was so pleased by the gift that she placed it in the sky for all to see - hence the constellation's title, Coma Berenices - or Berenice's Hair.

In reality, Melotte 111 lies around 300 light years away from us, making it the third closest star cluster to us, after the asterism of the Plough or Big Dipper in Ursa Major and the Hyades in Taurus. Somewhat curiously, Meotte 111 is neither receding or approaching us, rather keeping pace with our position in our mutual journey around the Milky Way galaxy.

Due to its large size, Melotte 111 is best seen in low power binoculars or by the naked eye. However, wide field images of the area reveal it well.

Just under a degree and a half from the Eastern edge of Melotte 111, sits the elliptical galaxy NGC4494. This 4.8 x 3.5 arc minute object is +9.80 mag and It is somewhat bland in appearance, though can be seen in instruments of many sizes.

The same cannot be said of NGC4494's neighbour, the spectacular NGC4565, otherwise known as the Needle Galaxy. This +9.60 mag, 15.8 x 2.1 arc minute edge on spiral is a delight in larger instruments and has surface brightness high enough to be seen in many smaller instruments. Discovered by William Herschel in 1785, NGC4565 is much beloved of astronomers, and is often considered the Springtime equivalent of the Autumnal NGC891 in Andromeda. A large dust lane intersects the galaxy right down its major axis - this lane can clearly be seen in telescopes of 8-inch aperture and above in notable relief against the glow of the galaxy's centre. However, this galaxy is well worth seeking out no matter what size your telescope is.


NGC 4565 Needle Galaxy
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NGC4565, The Needle Galaxy by Mark Blundell. Image used with kind permission.

Three and 3/4 degrees to the N of NGC4494, sits a pretty, if rather fainter (at +10 mag) spiral galaxy - NGC 4559. This spiral is 10.7 x 4.4 arc minutes in size and rather lower in surface brightness than its better-known neighbour. It is thought to lie some 35 million light years away from us.

NGCs 4278 and 4414 lie to the NW and N of NGC4494, both equidistant by about 3 3/4 degrees. An elliptical and a spiral galaxy respectively, these are rather compact targets and worth seeking out if you have a larger telescope. Though part of the greater Coma cluster of galaxies, they lie further away from us at around 55 and 58 million light years distance.

Moving down diagonally SE through NGC4494, by about 4 degrees, we come to the pretty spiral galaxy NGC4725. This 10.7 x 7.6 arc minute object sits at +9.39 mag and displays a prominent central bar, around which loops a bright halo. NGC4725 is somewhat of an oddity, having just one enormous continuous spiral arm, which appears to loop round itself 3 1/2 times. Most spiral galaxies display at least two arms, so NGC4725 is a rarity. It8 lies some 40 million light years from us.


NGC 4725 Galaxy
Const: Coma Berenices
By Mark Blundell
Combined Image From
14th April & 13th May 2015

NGC4725 by Mark Blundell. Image used with kind permission.

Another 4 degrees SE of NGC4725 lies one of Coma's highlights, and much beloved of imagers and visual observers alike - the marvellous M64 - otherwise known, for reasons that will be obvious to all those who see it, as the Black Eye Galaxy.
First discovered in 1779, by astronomer Edward Pigott, M64 was independently found by Messier the following year. This +8.5 mag, 10 x 5.4 arc minute object can be found in small telescopes and even powerful binoculars from a good site. The reasons for its nickname will become apparent to all those who glimpse it through a more powerful scope: M64 has a large dark dust lane encircling its core, which stands out in stark contrast to the soft glow of its interior. It does indeed look somewhat like a black eye - albeit a rather large one on the cosmic scale.. M64 lies relatively close to us - some 17 million light years - but is a rather diminutive spiral galaxy , which is wreathed in a larger out halo of stars, thought to be the remnants of an absorbed satellite galaxy. This halo appears to rotate in the opposite direction to the main body of M64 and may be responsible for the compression of the dark black eye feature, making it more prominent to outside observers than it would be otherwise. M64 is a very rewarding target for astrophotographers as Mark Blundell's photo shows. Don't miss this rewarding target, whatever optical aid you employ.


M64 Black Eye Galaxy
© 2018 Mark L Blundell

M64 by Mark Blundell. Image used with kind permission.

Just over 5 degrees further SE from M64, lies a lovely globular cluster, M53. Discovered in 1775 by Bode and catalogued by Messier two years later, M53 is 2.6 arc minutes in diameter and +7.6 mag in brightness. While not quite as prominent as other major globulars, this is easily seen in telescopes of any size and also shows up in binoculars. Larger telescope will resolve its core well, but M53 is really a victim of its distance from us - some 58,000 light years away. When compared to M13 in Hercules, at 25,000 light years distance, M53 seems quite distant.

M53 NGC4449, Hubble Space Telescope image. Public domain.

Next door, by a degree to the E, is a much slightly larger and poorer globular, NGC5053. At +9.47 mag brightness and 5.2 arc minutes diameter, this is a much more difficult object than its more illustrious neighbour, though is fairly easy to find due to its proximity. Both globulars are approaching us at around 79 km per second.

11 degrees to the W of M64, sits the large lentinicular galaxy M85. At +9.1mag and 7.1 x 5.5 arc minutes in angular size, M85 has a bright, compact core, surrounded by a rather uniform ring of stars. Shining at +9.10 mag it is easy visible, but unlike the Spindle Galaxy, NGC 3115, the lentinicular galaxy we reviewed last month, M85 is presented much more face on and is thus fainter. However, the two galaxies are similar in their rather elderly stellar population. M85 was discovered in 1781 by the prolific Pierre Mechain and added to the Messier list by Charles Messier later that year.

M85, Hubble Space Telescope image. Public domain.

Orignal text: Kerin Smith