

Earth reaches perihelion [its closest distance to the Sun] on Jan 4th at a distance of 147,105,052 km.

The January night sky now sees some familiar winter constellations rising by early evening, the winter night sky contains many fine objects to view with both binocular and small telescopes. Just half an hour **after sunset** four of planets Venus, Mercury, Saturn and Jupiter may be seen low in the SW aspect around Jan 4<sup>th</sup>, joined by a thin 5% waxing Crescent Moon (see notes). Mercury reaches max elongation on Jan 7<sup>th</sup>. Venus however rapidly heads into the bright sunset sky, conjunction Jan 8<sup>th</sup>. Planets Uranus in the constellation of Aries and Neptune in the constellation of Aquarius is the only other binocular /telescopic planet visible in the early evening skies.

The constellations of Cygnus and Lyra can be seen slipping into the west early evening; these are noted for the bright stars of Deneb and Vega which appear low in the north by late evening, both stars are circumpolar, i.e. are above the horizon from UK latitude.

The Milky Way stretches from the constellation of Auriga, marked by the bright star Capella in the east up into Perseus and through the 'W' shaped constellation of Cassiopeia high overhead and down along the cross shaped constellation of Cygnus low in the west. This faint band of stars best seen on dark moonless evenings.

Auriga has the bright star Capella, which is circumpolar from UK latitudes and so is always visible. The constellation of Auriga contains some nice star fields and star clusters M36, M37 and M38 all visible in binoculars.

In the south west the constellation of Pegasus, noted for its 'Square' shape and the adjacent constellation of Andromeda noted for The Andromeda Galaxy (M31), visible to the unaided eye as a faint fuzzy patch on moonless evening can now be seen mid evening. The Square of Pegasus is a useful sign post constellation and also is a good test for sky conditions, (how many faint stars you see within the square indicates just how good your seeing conditions are). Follow the two end stars (Scheat and Markab) down to find the constellation of Aquarius and the Planet Neptune (see notes)

In the north Ursa Major, The Plough or The Great Bear is seen low with its handle or tail tipped down towards the horizon mid evening. Use the right hand pair of stars Dubhe and Merak (The pointers) to find the faint pole star Polaris and hence the position of North.

Look to the east early evening to see the seven sisters' (Pleiades, M45) star cluster and constellation Taurus. The Hyades star cluster makes the characteristic 'V' shaped asterism in the constellation of Taurus and is noted for the bright, red foreground star Aldebaren in Arabic Al Dabaran is 'The follower' of the Pleiades across the skies, in old English known as *Oculus Tauri*, 'the eye of the bull'. Also in Taurus is the famous 'Crab Nebula' M1, the first object catalogued by French astronomer Charles Messier, it is a remnant from a supernova explosion witnessed by Chinese observers in AD1054. Telescopically it looks like a grey oval shaped nebula, but larger instruments show some detail ie extensions that give it its name, looking like the claw of a crab. At the centre of the Crab Nebula is a rapidly rotating pulsar star, the remains of the supernova, surrounded by the expanding shell of gas that is the Crab Nebula. The use of a light pollution reduction filter (LPR) improves the contrast for town observers.

By mid evening the familiar winter constellations of Orion (The Hunter) is rising with bright red star Betelgeuse (top left), white star Rigel (bottom right) and the three stars of Orion's belt Mintaka, Alnilam and Alnitak. Below Orion's belt can be seen the misty patch that is M42 / M43, visible to the unaided eye, it is one of the gem's of the winter skies when seen with a telescope. This nebula some 30 light years across is illuminated by a group of four hot young stars that is known as the 'Trapezium' asterism, visible under moderate magnification.

The Quadrantids meteor shower reaches maxima January 4<sup>th</sup>, this year maxima is coincident with moonless conditions around New Moon so its very favourable for seeing these blue/ yellow meteors on evenings over the period January 1<sup>st</sup> to January 6<sup>th</sup>.

Periodic comets with perihelion dates Feb 2<sup>nd</sup> and Jan 11<sup>th</sup> respectively are 19P Borrelly 9.3m [ LAS Newsletter No 314 ] and 104P Kowal 9.5m [LAS Newsletter No 315] are both telescopic / imaging objects moving night to night through the constellation of Cetus low in the SW mid evening . Both are extended low surface brightness objects – difficult observed visually from the town and in moonlight but favour imaging techniques.

Asteroid 7 Iris reaches opposition on January 13<sup>th</sup>, located in the constellation of Gemini [The Twins} , reaching 7.8m magnitude making it a binocular object with the aid of finder charts – LAS Newsletter 313.

Comet C2019 L3 ATLAS 10m also moves through the constellation of Gemini during January – requires telescopic /imaging methods and is another faint fuzzy - revised LAS Newsletter 312A

Comet 67P Churyumov-Gerasimenko 9.5m magnitude is now just past perihelion and is located in the elusive constellation of Cancer [The Crab] , close to the star iota Cancri - another faint fuzzy cometary coma requiring imaging techniques. [LAS Newsletter 311B] The Constellation also contains M44 the Beehive cluster, visible to the unaided eye on moonless evenings, binoculars really show this `busy` cluster of stars well.

Lunar observers may like to note that the moons libration [ slow rocking /tilting of the Moon] favours a glimpse of the elusive Mare Orientale on the SW Limb (Jan22nd) and also this month a Clair Obscure effect- the Jewelled Handle (Jan 12<sup>th</sup>) . Early riser's on Jan 26<sup>th</sup> may look at the lunar occultation of star  $\alpha$  Librae , Zubenelgenubi , a double star , star occults at 05:10 UT , reappearing from the dark lunar limb at 06:50 UT [ Details Sky at Night magazine -January 2022 edition ]

## Planets in January 2022

Mercury returns to evening twilight early January reaching maximum elongation Jan 7<sup>th</sup>:

Venus located in evening twilight low in the SW in early January, lost **into daylight skies ,Inferior conjunction 8<sup>th</sup>**.

Earth reaches perihelion, its closest point in its orbit to the Sun on January 4<sup>th</sup> distance 147,105,052 km.

Mars is visible low in dawn twilight with crescent waning Moon Jan 29<sup>th</sup> 7am GMT.

Jupiter slips sunward by month end; it is low in evening twilight with Saturn and Mercury in early January.

Saturn is seen low in evening twilight early January , poorly placed by month end , conjunction in early February.

Uranus is visible all evening in Aries (Binoculars required). See notes.

Neptune is located in Aquarius low in early evening twilight, sets by 21:00 hrs late January. See notes

## Moons phases in January 2022

New Moon      Jan 2<sup>nd</sup>              Moonless, best time for deep sky observing.

First Quarter    Jan 9<sup>th</sup>                      Best days to see shadow details in lunar craters (early evening).

Full Moon        Jan 17<sup>th</sup>                      Best days to see bright ray craters like Copernicus / Tycho.

Last Quarter    Jan 25<sup>th</sup>                      Moon visible in daytime skies. Do not look directly at the Sun.

## Meteor shower s

Quadrantids range Jan 1<sup>st</sup> to Jan 6<sup>th</sup>, Max Jan 4<sup>th</sup> ZHR 80 / hour – very favourable

## The highlights of the month.

Venus, Mercury, Saturn and Jupiter plus 5% waxing crescent Moon low in SW Jan 4<sup>th</sup> (16:15 GMT) (**after Sunset**)

Milky Way is visible high overhead on moonless evenings in darker skies.

M31 the Andromeda Galaxy is visible on moonless evenings, best seen in binoculars.

Double cluster, on the Perseus /Cassiopeia border, nice pair of star clusters.

Pleiades (Seven Sister's) star cluster (M45) rising in the east best seen with binoculars.

Orion Nebula (M42) is a beautiful sight seen telescopically.

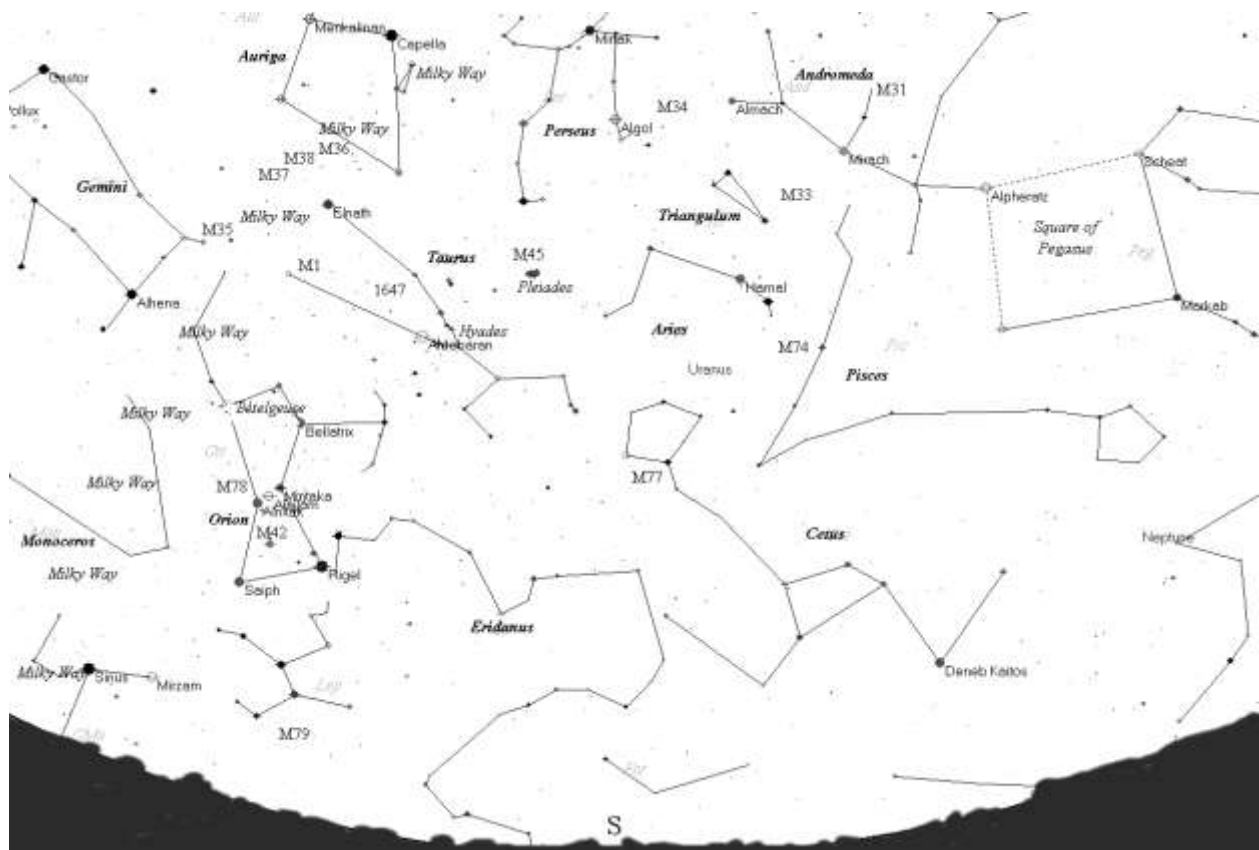
Beehive cluster (M44) visible to the unaided eye but best seen with binoculars.

Crescent Moon visibility, Jan 3<sup>rd</sup> 1.3% thin crescent **Moon sets 16:37 GMT half an hour after sunset.**

**(Caution, always wait until the sun has completely set below the horizon before looking for crescent Moon)**

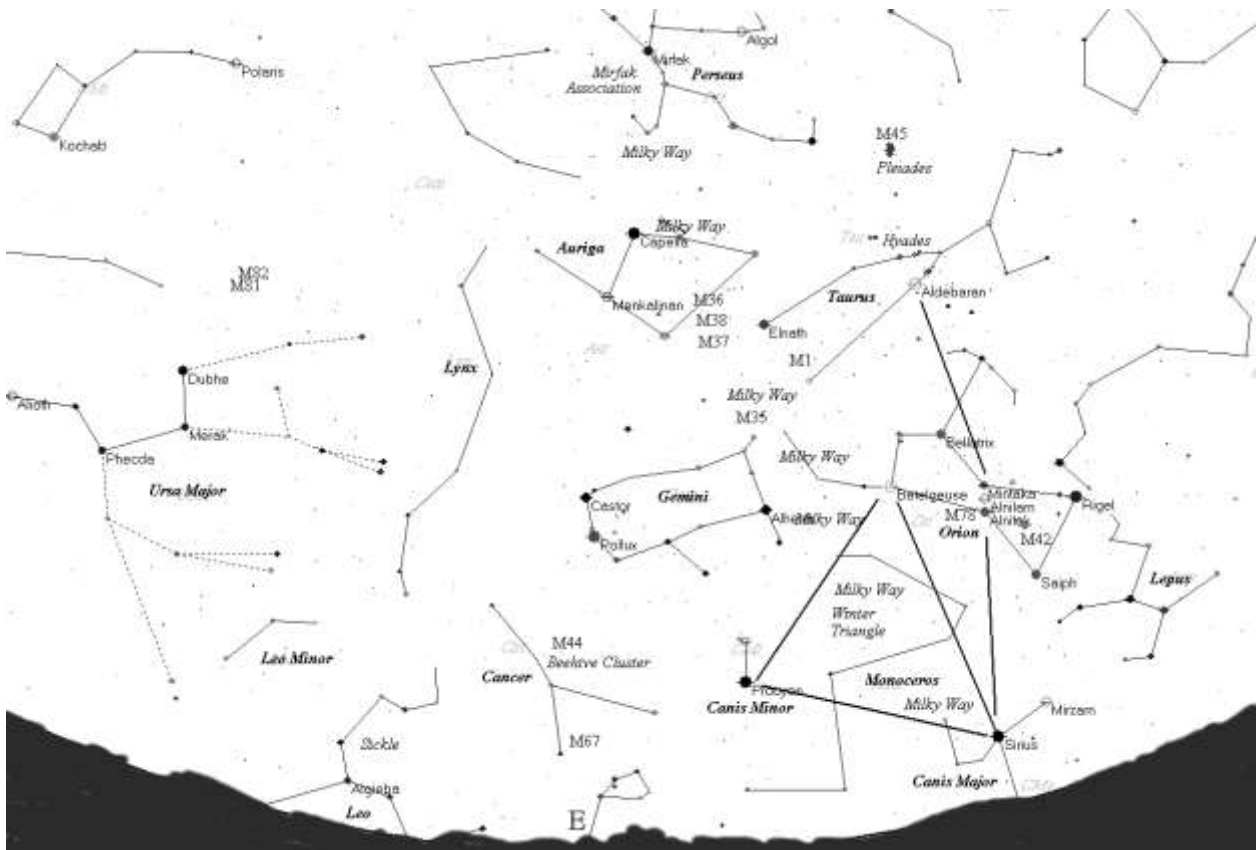
More detailed sky notes and LAS Newsletters, Finder charts are available to LAS members via the Members` page please refer to LAS Website [www.lutonastrolink.org.uk](http://www.lutonastrolink.org.uk)

Sky looking south 8 pm\_early January 2022



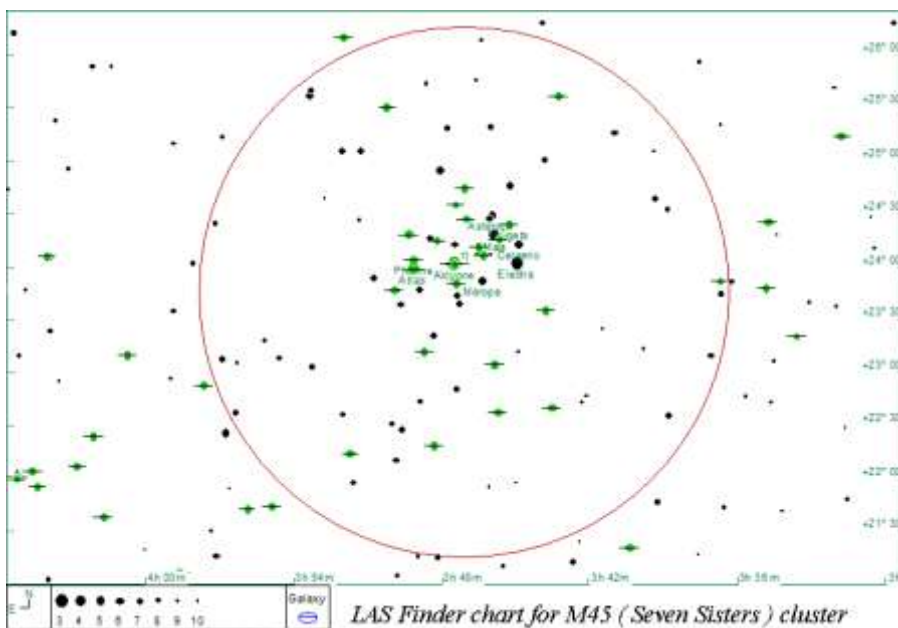
The constellation of Orion is now prominent in the SE aspect, with the constellation of Taurus above and Gemini to the east.

Sky looking east at 8pm early January 2022

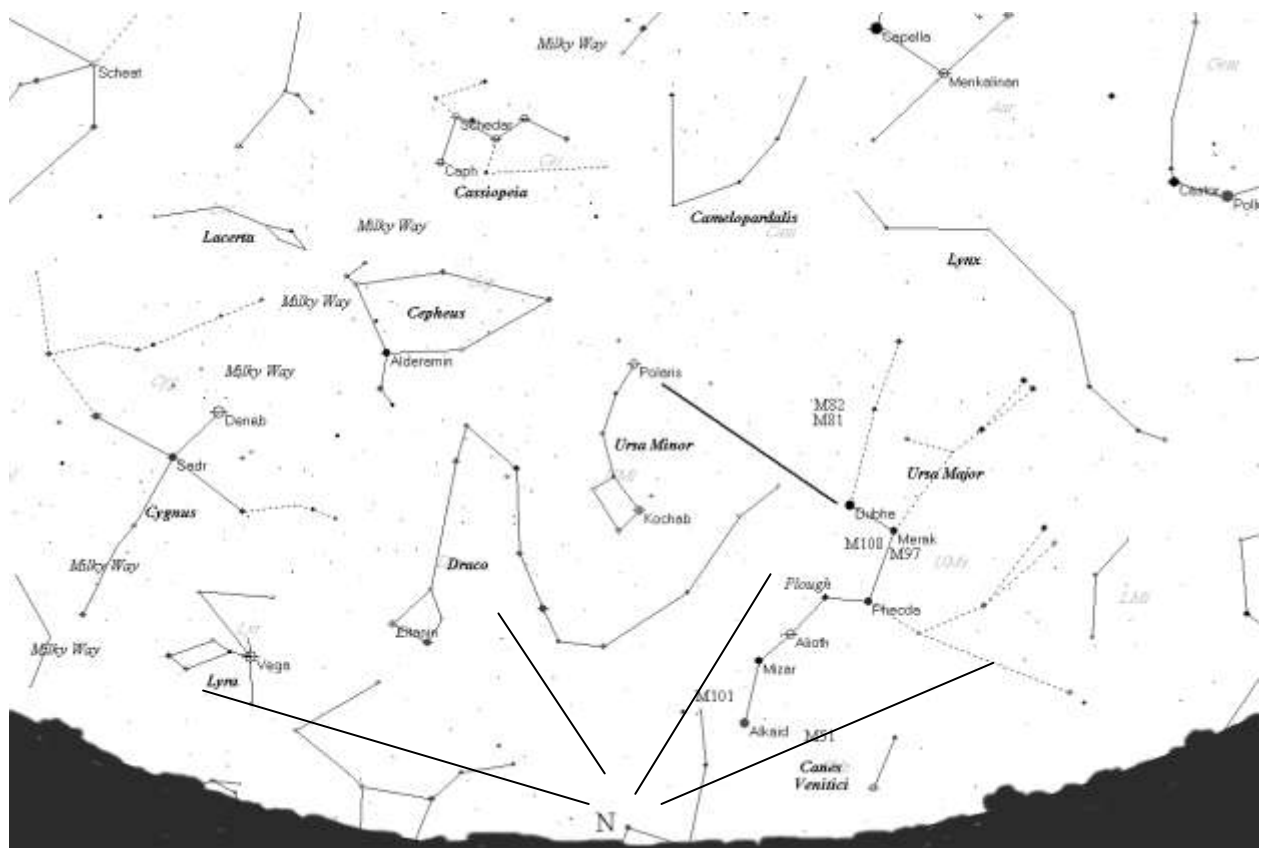


The constellations of Taurus, Auriga, Gemini and Orion can be seen rising early evening in January. The three stars Sirius, Procyon and Betelgeuse form the Winter Triangle asterism.

The Seven Sister's cluster (M45, Pleiades) is an easily identified star cluster. Some people with keen eyesight may see up to 13 stars (how many stars can you see with unaided eye?), but a telescope will show over 400 faint stars in the cluster. Circle represents the approximate field of View (FOV) of a 10x 50 binocular / Finderscope.



Sky looking north at 8pm early January 2022

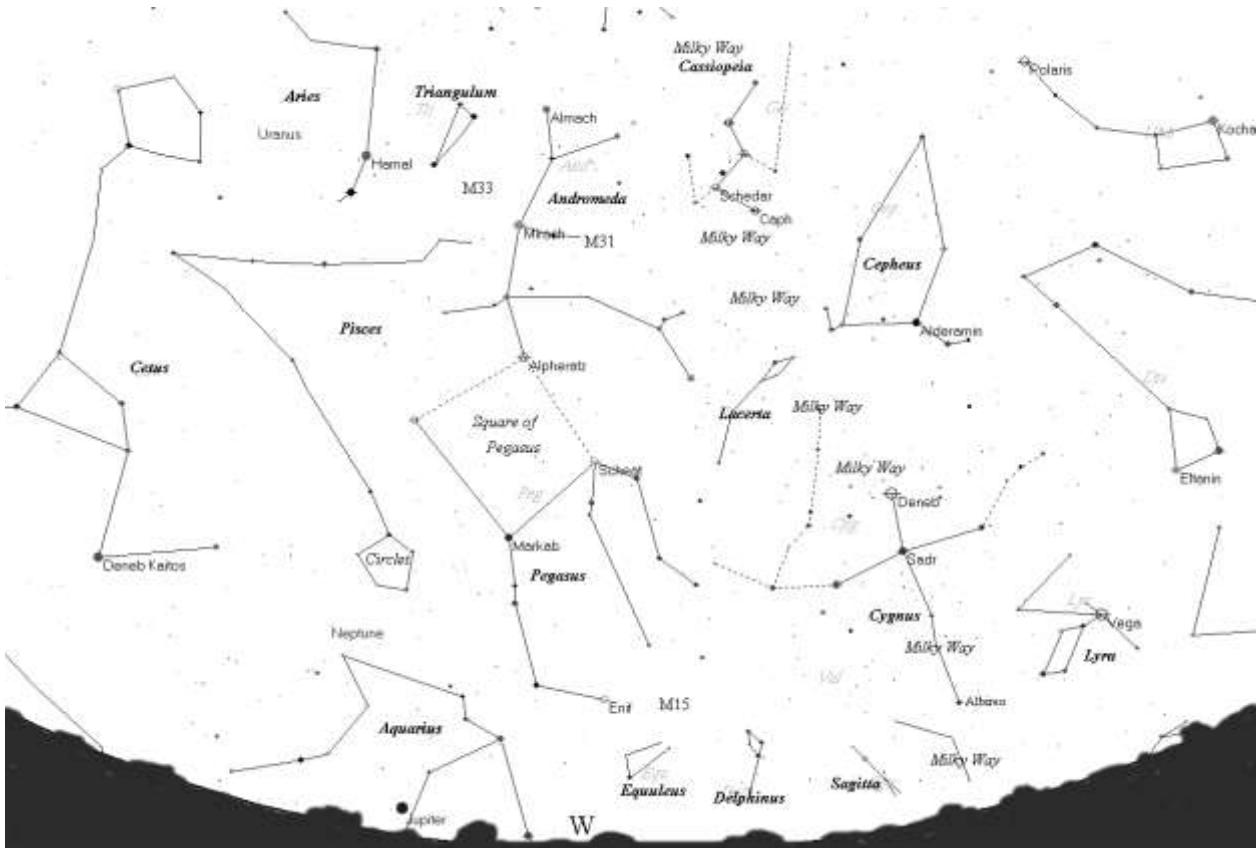


The Plough stands on its handle follow the pointer's Dubhe and Merak to find the polestar Polaris

The 'W' shaped constellation of Cassiopeia looks more like a 'M' and is on the opposite side of the polestar to the Plough.

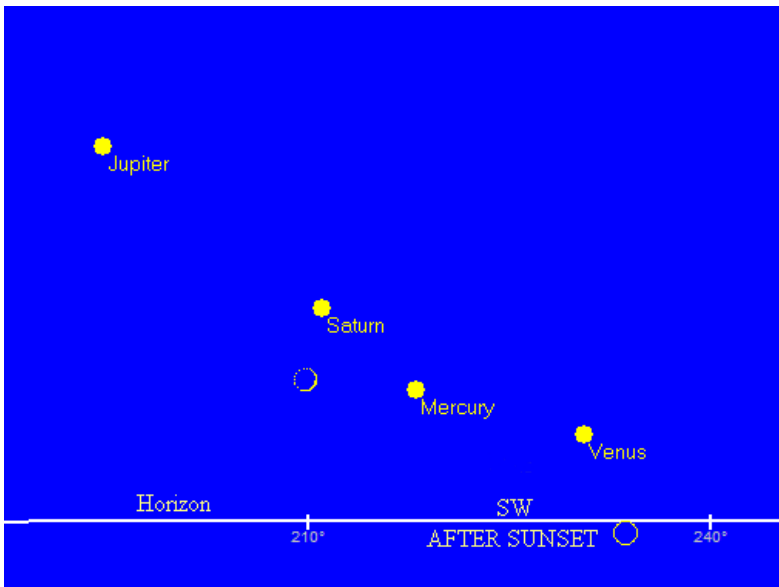
The radiant of the Quadrantids meteor shower is located low in the northern aspect, just above Bootes

Sky looking west at 8 pm early January 2022



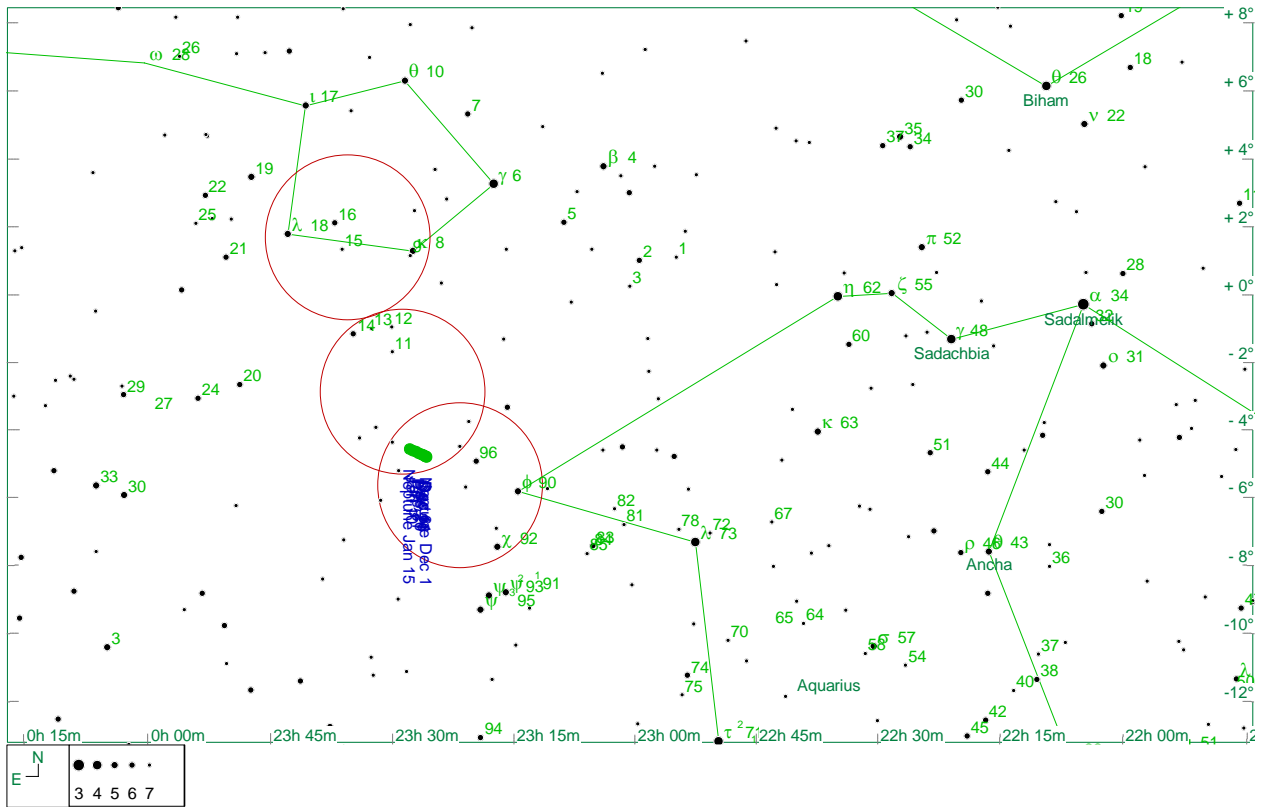
Stars of summer and autumn slip towards evening twilight, Aquarius and Neptune are seen early evening

Milky Way stretches up from the NW horizon, through Cygnus and Cassiopeia, visible to the unaided eye from dark sites on moonless evenings and a great sight seen with binoculars



View looking SW (**half an hour after Sunset**) shows Venus, Mercury, Saturn and Jupiter plus a nice waxing crescent Moon. January 4<sup>th</sup> at 16.15 GMT

Finder chart for Neptune - binoculars required. Red circle FOV of typical 10x50 binocular [Aquarius]



Finder chart for Uranus binoculars required. Red circle FOV of typical 10x50 binocular [Aries]

